

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, DC 20549

FORM 20-F

☐ REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

☐ SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number 001-15102

EMBRAER S.A.

(Exact name of Registrant as specified in its charter)

EMBRAER Inc.

(Translation of Registrant's name into English)

Federative Republic of Brazil

(Jurisdiction of incorporation)

Avenida Dra. Ruth Cardoso, 8501, 30th floor,
Pinheiros, São Paulo, SP, 05425-070, Brasil
(Address of principal executive offices)

Antonio Carlos Garcia

Head of Investor Relations

(55) 11 3040 6874

Investor relations department, (55) 11 3040 6874, investor.relations@embraer.com.br
(Name, Telephone, E-mail and/or facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act

<u>Title of each class:</u>	<u>Trading Symbol</u>	<u>Name of each exchange on which registered</u>
Common shares, without par value (represented by, and traded only in the form of, American Depositary Shares (evidenced by American Depositary Receipts), with each American Depositary Share representing four common shares)	ERJ	New York Stock Exchange
5.150% Notes due 2022 of Embraer S.A.(1)	ERJ/22	New York Stock Exchange
5.050% Guaranteed Notes due 2025 of Embraer Netherlands Finance B.V.(1)	ERJ/25	New York Stock Exchange
5.40% Guaranteed Notes due 2027 of Embraer Netherlands Finance B.V.(1)	ERJ/27	New York Stock Exchange

- (1) In connection with our then pending strategic partnership with The Boeing Company, in March 2020, after receiving the requisite consents from holders of our notes due 2022, 2025 and 2027, we started the process to deregister these notes with the SEC and delist the same notes from the New York Stock Exchange. These notes were delisted from the New York Stock Exchange on April 13, 2020. For additional information, see “5B. Liquidity and Capital Resources—Credit Facilities and Lines of Credit—Long-term Facilities.”

Securities registered or to be registered pursuant to Section 12(g) of the Act

None.

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act

Title of each class

6.375% Guaranteed Notes due 2020 of Embraer Overseas Ltd. Guaranteed by Embraer S.A.

Number of outstanding shares of each of the issuer's classes of capital or common stock as of December 31, 2019:

736,078,625 common shares, without par value

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definition of "large accelerated filer," "accelerated filer" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer	<input checked="" type="checkbox"/>	Accelerated Filer	<input type="checkbox"/>	Non-accelerated filer	<input type="checkbox"/>
				Emerging growth company	<input type="checkbox"/>

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards[†] provided pursuant to Section 13(a) of the Exchange Act. ☐

[†] The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP	<input type="checkbox"/>	International Financial Reporting Standards as issued by the International Accounting Standards Board	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>
-----------	--------------------------	---	-------------------------------------	-------	--------------------------

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

[Table of Contents](#)

TABLE OF CONTENTS

	PART I	
Item 1.	IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS	6
Item 2.	OFFER STATISTICS AND EXPECTED TIMETABLE	6
Item 3.	KEY INFORMATION	6
3A.	Selected Financial Data and Other Data	6
3B.	Capitalization and Indebtedness	9
3C.	Reasons for the Offer and Use of Proceeds	9
3D.	Risk Factors	9
Item 4.	INFORMATION ON THE COMPANY	26
4A.	History and Development of the Company	26
4B.	Business Overview	30
4C.	Organizational Structure	54
4D.	Property, Plant and Equipment	54
4E.	UNRESOLVED STAFF COMMENTS	57
Item 5.	OPERATING AND FINANCIAL REVIEW AND PROSPECTS	57
5A.	Operating Results	58
5B.	Liquidity and Capital Resources	84
5C.	Research and Development, Patents and Licenses, etc.	90
5D.	Trend Information	94
5E.	Off-Balance Sheet Arrangements	99
5F.	Tabular Disclosure of Contractual Obligations	102
5G.	Safe Harbor	102
Item 6.	DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES	102
6A.	Directors and Senior Management	102
6B.	Compensation	108
6C.	Board Practices	111
6D.	Employees	113
6E.	Share Ownership	113
Item 7.	MAJOR SHAREHOLDERS AND RELATED-PARTY TRANSACTIONS	113
7A.	Major Shareholders	113
7B.	Related-Party Transactions	114
7C.	Interests of Experts and Counsel	116
Item 8.	FINANCIAL INFORMATION	116
8A.	Consolidated Statements and Other Financial Information	116
8B.	Significant Changes	122
Item 9.	THE OFFER AND LISTING	125
9A.	Offer and Listing Details	125
9B.	Plan of Distribution	125
9C.	Markets	125
9D.	Selling Shareholders	128
9E.	Dilution	128
9F.	Expenses of the Issue	128
Item 10.	ADDITIONAL INFORMATION	128
10A.	Share Capital	128
10B.	Memorandum and Articles of Association	128
10C.	Material Contracts	143
10D.	Exchange Controls	145

Table of Contents

10E.	Taxation	146
10F.	Dividends and Paying Agents	154
10G.	Statements by Experts	154
10H.	Documents on Display	154
10I.	Subsidiary Information	154
Item 11.	QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK	155
Item 12.	DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES	159
12A.	Debt Securities	159
12B.	Warrants and Rights	159
12C.	Other Securities	159
12D.	American Depositary Shares	159
PART II		
Item 13.	DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES	160
Item 14.	MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS	161
Item 15.	CONTROLS AND PROCEDURES	161
Item 16.	Reserved	162
Item 16A.	AUDIT COMMITTEE FINANCIAL EXPERT	162
Item 16B.	CODE OF ETHICS	162
Item 16C.	PRINCIPAL ACCOUNTANT FEES AND SERVICES	162
Item 16D.	EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES	163
Item 16E.	PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS	163
Item 16F.	CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT	163
Item 16G.	CORPORATE GOVERNANCE	163
Item 16H.	MINE SAFETY DISCLOSURE	166
PART III		
Item 17.	FINANCIAL STATEMENTS	166
Item 18.	FINANCIAL STATEMENTS	166
Item 19.	EXHIBITS	167

INTRODUCTION

In this annual report, “Embraer,” “we,” “us,” “our” or the “Company” refer to Embraer S.A. and its consolidated subsidiaries. All references herein to the “*real*,” “*reais*” or “R\$” are to the Brazilian *real*, the official currency of Brazil. All references to “US\$,” “dollars” or “U.S. dollars” are to United States dollars. All references to the “Brazilian government” are to the federal government of Brazil.

Presentation of Financial and Other Data

Financial Data

Our audited consolidated financial statements as of December 31, 2019 and 2018 and for the three years in the period ended December 31, 2019 (2019 audited consolidated financial statements) are included in this annual report.

Our consolidated financial statements have been prepared in accordance with International Financial Reporting Standards, or IFRS, as issued by the International Accounting Standards Board, or IASB.

According to IFRS 5, in light of the approval of the then pending strategic partnership with The Boeing Company (“Boeing”), in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement (as defined below) providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement (as defined below) that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

IFRS 16 – Leases became effective on January 1, 2019. IFRS 16 establishes the principles for the recognition, measurement, and disclosure of leases and requires lessees to recognize a single accounting model in the statements of financial position. The lessor’s accounting in IFRS 16 remains substantially unchanged in relation to IAS 17. Lessors will continue to classify between operating or finance leases, using principles similar to the former standard and, therefore, IFRS 16 has no impact on leases where we are the lessor. We adopted the modified retrospective model. Under this approach, the financial information comparative to prior periods is not being restated and remains as previously reported in accordance with IAS 17.

As a result of the initial application of the IFRS 16 on leases of land and buildings, facilities, machinery, vehicles and other equipment that we previously recorded as operating leases, we recognized:

- as of January 1, 2019, lease liabilities in the amount of US\$57.6 million related to the lease payments according to the cash flows of each contract, discounted to present value at the incremental borrowing rate. The incremental weighted average borrowing nominal rate applied to lease liability on January 1, 2019 was 6.3%.
- depreciation and interest expenses instead of operating lease expenses. In 2019, we recognized US\$10.4 million as depreciation and US\$6.0 million as interest on lease liabilities.
- right-of-use assets representing the right to use the underlying assets of certain agreements were measured in an amount corresponding to the lease liability.

[Table of Contents](#)

For additional information on our adoption of new accounting standards, such as IFRS 16 – Leases, see Note 2.2.1.1 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

After analyzing our operations and businesses on a standalone basis with regard to the applicability of International Accounting Standards, or IAS 21 – The Effects of Changes in Foreign Exchange Rates, particularly in relation to the factors involved in determining our functional currency, management concluded that our functional currency is the U.S. dollar. This conclusion was based on an analysis of the following factors, as set forth in IAS 21: (i) the currency that most influences sale prices of goods and services; (ii) the currency of the country whose competitive forces and regulations most determine the sale prices of our goods and services; (iii) the currency that most influences the costs of providing goods and services; and (iv) the currency in which the funds for financial operations are largely obtained. Our audited consolidated financial statements included elsewhere in this annual report are presented in U.S. dollars, which is our presentation currency.

In our 2019, 2018 and 2017 consolidated financial statements, gains or losses resulting from the remeasurement of the monetary items and from foreign currency transactions have been reported in the consolidated statement of income as a single line item as foreign exchange gain (loss), net.

For certain purposes, including providing reports to our Brazilian shareholders, filing financial statements with the *Comissão de Valores Mobiliários* (Brazilian securities commission), or CVM, and determining dividend payments and other distributions and tax liabilities in Brazil, we have prepared, and will continue to be required to prepare, financial statements in accordance with Law No. 6,404 of December 15, 1976, as amended, or the Brazilian Corporate Law.

Other Data and Backlog

In this annual report:

- some of the financial data reflects the effect of rounding;
 - aircraft ranges are indicated in nautical miles;
 - one nautical mile is equal to approximately 1.15 ordinary or “statute” miles, or approximately 1.85 kilometers;
 - aircraft speeds are indicated in nautical miles per hour, or knots, or in Mach, which is a measure of the speed of sound;
 - the term “regional jet” refers to commercial jet aircraft in the 35-120 seat-segment;
 - the term “commercial aircraft” as it applies to Embraer, refers to our aircraft in the up to 150 seat-segment, which includes our regional jets;
 - the terms “entry-level jet” and “light jet” refer to executive jets that usually carry from four to eight passengers and up to nine passengers, respectively, that are designed for short take-off distances;
 - the term “medium cabin jet” refers to executive jets that usually carry up to 12 passengers and can cover distances ranging from 1,700 to 3,900 nautical miles;
 - the term “large jet” refers to executive jets that usually carry up to 19 passengers and can cover distances greater than 4,000 nautical miles;
 - the term “ultra-large jet” refers to executive jets that usually have longer ranges and over-sized cabin spaces and can carry up to 19 passengers;
- and

[Table of Contents](#)

- the term “executive jets,” as it applies to us, refers to our aircraft sold to companies, including fractional ownership companies, charter companies and air-taxi companies and high-net-worth individuals.

We calculate our backlog as the sum of the contract values of all firm orders (i) for any aircraft that have not yet been delivered, (ii) for services and support contracts for all business units, including repair services and spare parts contracts for a period of more than one year, and (iii) for services and technologies contracted and not yet performed in our Defense and Security business unit. A firm order is a firm commitment from a customer, represented by a signed contract. Options to acquire aircraft are not considered as part of our backlog.

Special Note Regarding Forward-Looking Statements

This annual report includes forward-looking statements, within the meaning of Section 27A of the U.S. Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the U.S. Securities Exchange Act of 1934, as amended, or the Exchange Act, principally in Items 3 through 5 and Item 11 of this annual report. We have based these forward-looking statements largely on our current expectations and projections about future events and industry and financial trends affecting our business. These forward-looking statements are subject to risks, uncertainties and assumptions, including, among other things:

- general economic, political and business conditions in Brazil and in our other markets;
- changes in competitive conditions and in the general level of demand for our products;
- management’s expectations and estimates concerning our future financial performance, financing plans and programs, and the effects of competition;
- the effects of customers canceling, modifying and/or rescheduling contractual orders;
- the effect of changing priorities or reductions in the Brazilian government or international government defense budgets on our revenues;
- our level of indebtedness;
- our expenditure plans;
- inflation and fluctuations in exchange rates;
- the impact of volatile fuel prices and the airline industry’s response;
- our ability to develop and deliver our products on a timely basis;
- availability of sales financing for our existing and potential customers;
- existing and future governmental regulation;
- our relationship with our workforce;
- the outbreak of communicable diseases in Brazil and other countries; and
- other risk factors, including those set forth under “Item 3. Key Information—3D. Risk Factors.”

The words “believe,” “may,” “will,” “forecast,” “estimate,” “plan,” “continue,” “anticipate,” “intend,” “expect” and similar words herein are intended to identify forward-looking statements. We undertake no obligation to update publicly or revise any forward-looking statements because of new

[Table of Contents](#)

information, future events or other factors. In light of these risks and uncertainties, the forward-looking events and circumstances discussed in this annual report might not occur. Our actual results and performance could differ substantially from those anticipated in our forward-looking statements. As a result of various factors, including those risks described in “Item 3. Key Information—3D. Risk Factors,” undue reliance should not be placed on these forward-looking statements.

EXPLANATORY NOTE

Termination of Strategic Partnership with Boeing

On January 24, 2019, we entered into a Master Transaction Agreement (the “MTA” or “Master Transaction Agreement”) and certain other transaction documents with Boeing and certain subsidiaries of Embraer or Boeing, pursuant to which a subsidiary of Boeing would acquire a controlling stake in Embraer’s Commercial Aviation business unit and Embraer, or a subsidiary of Embraer, and Boeing, or a subsidiary of Boeing, would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission transport aircraft (collectively, the “Transaction”).

On January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã Indústria Aeronáutica S.A. (the “Commercial Aviation NewCo” or “Yaborã”) of the net assets comprising assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. In exchange for the contribution, the Commercial Aviation NewCo issued common shares and redeemable preferred shares to Embraer. The Commercial Aviation NewCo’s redeemable preferred shares have a liquidation preference, a right to receive an annual fixed cumulative dividend payable at a 3.3% rate, a right to be redeemed after two years from the date of issuance, and have no voting rights.

On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing’s assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement.

We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement and that it had a continuing obligation to abide by the terms thereof. Embraer strongly believes that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing’s wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us.

Assets Held for Sale and Discontinued Operations

Overview

A discontinued operation is a company’s business component that comprises operations and cash flows that may be clearly distinct and:

- that represents a separate major line of business or geographic area of operations;
- that is part of a coordinated single plan for the sale of a separate major line of business or geographic area of operations; or
- that is a subsidiary acquired exclusively with a view to resale.

[Table of Contents](#)

The classification of a company's operation as a discontinued operation is achieved through its disposal, or at the time the transaction meets the criteria of IFRS 5 to have its assets and liabilities classified as held for sale, whichever occurs earlier.

An asset or group of assets and liabilities is held for sale when it is expected that its carrying amount will be recovered mainly from the sale transaction rather than continuous use. This occurs if the asset is available for immediate sale under its current conditions, subject only to customary and usual terms for the conclusion of the transaction, when the sale transaction is defined as "highly probable" under the accounting standard.

Commercial Aviation Business Unit

According to IFRS 5, in light of the approval of the then pending strategic partnership with Boeing, our financial statements as of and for the year ended December 31, 2019 were prepared considering the designation, measurement and presentation of the assets, liabilities and results of the Commercial Aviation business unit and related services as assets held for sale and discontinued operations, pursuant to the terms of the Master Transaction Agreement. Accordingly, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position.

Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. The balances of assets and liabilities held for sale as of December 31, 2019, was US\$5,174.6 million and US\$4,984.0 million, respectively. The results of discontinued operations for the years ended December 31, 2019, 2018 and 2017 was a loss of US\$111.8 million, a profit of US\$90.1 million and a profit of US\$403.3 million, respectively.

In addition, for comparative purposes of the financial data presented in Item 3 of this annual report, we have recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited.

On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

The reduction in the demand for travel combined with government-imposed travel restrictions is materially and adversely affecting the aerospace industry, causing some airlines to suspend, cancel or reduce flights. As a consequence, demand for new aircraft has declined as airlines are wary of the COVID-19 air travel restrictions and its consequences. Our customers are now, due to COVID-19, focused on preserving capital and avoiding purchasing aircraft, which will adversely and materially affect us.

Accordingly, we expect that 2020 will be a distinct year in terms of orders and deliveries due to the impacts of the COVID-19 pandemic. The airline business has been adversely affected due to COVID-19, and we will have to review our production chain in order to reflect the new and uncertain demand scenario. We have already implemented employee furloughs and workload reduction measures and, accordingly, we had to make adjustments to our production capacity. As a result of COVID-19, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. Although we cannot predict the full impact of the COVID-19 pandemic in the short-to-medium term to our business, we expect that customers will continue to postpone their scheduled aircraft deliveries and will cancel their orders.

[Table of Contents](#)

As a result of the now terminated Transaction, we also expect that our results of operations and financial condition may be affected by costs and expenses associated with the creation of, and contribution of assets and liabilities to, the Commercial Aviation NewCo. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Part I

Item 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

Item 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

Item 3. KEY INFORMATION

3A. Selected Financial Data and Other Data

The following tables present a summary of our selected financial data derived from our audited consolidated financial statements prepared in accordance with IFRS as issued by IASB as of and for the years ended December 31, 2019, 2018 and 2017. The selected financial data as of December 31, 2019 and 2018 and for the three years ended in the period December 31, 2019 should be read together with our audited consolidated financial statements as of December 31, 2019 and 2018 for the three years in the period ended December 31, 2019 and related notes thereto included elsewhere in this annual report. We have also recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited. For information on our business unit results, see Note 39 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Selected Financial Data

Consolidated Statements of Income Data

	Year Ended December 31, ⁽⁸⁾				
	2019 ⁽⁷⁾	2018	2017	2016 ⁽¹⁾	2015 ⁽¹⁾
		Recast	Recast	Recast	Recast
		(in US\$ millions)			
Revenue	2,618.1	2,127.7	2,546.5	2,729.7	2,643.5
Cost of sales and services	(2,259.9)	(1,929.6)	(2,248.6)	(2,264.5)	(2,339.2)
Gross profit	358.2	198.1	297.9	465.2	304.3
Operating income (expense)					
Administrative	(136.7)	(136.1)	(138.9)	(113.1)	(128.9)
Selling	(148.2)	(151.4)	(169.9)	(203.8)	(202.2)
Research	(19.7)	(19.5)	(22.2)	(20.0)	(19.5)
Other operating income (expense), net	(215.8)	(173.8)	(163.9)	(353.1)	(35.4)
Equity in income (losses) of associates	(0.2)	(0.4)	1.2	(0.3)	(0.3)
Operating loss before financial result	(162.4)	(283.1)	(195.8)	(225.1)	(82.0)
Financial income, net	61.5	6.1	95.0	116.6	97.7
Foreign exchange gain (loss), net	(0.3)	(5.0)	5.7	43.9	(88.7)
Loss before income tax	(101.2)	(282.0)	(95.1)	(64.6)	(72.9)
Income tax expense	(103.5)	20.7	(28.2)	188.4	(183.7)
Loss of the continuing operations period	(204.7)	(261.3)	(123.3)	178.6	69.2
Net Income (loss) of the discontinued operations	(111.8)	90.1	403.3	56.5	337.5

Table of Contents

Consolidated Statements of Income Data	Year Ended December 31 ⁽⁸⁾				
	2019 ⁽⁷⁾	2018	2017	2016 ⁽¹⁾	2015 ⁽¹⁾
	Recast	Recast	Recast	Recast	Recast
	(in US\$ millions)				
Net Income (loss) for the period	(316.5)	(171.2)	280.0	180.3	80.8
Attributable to:					
Owners of Embraer S.A.	(322.3)	(178.2)	264.0	178.6	69.2
Noncontrolling interests	5.8	7.0	16.0	1.7	11.6
Earnings per Share—Basic	Year Ended December 31, ⁽⁸⁾				
	2019⁽⁷⁾	2018	2017	2016⁽¹⁾	2015⁽¹⁾
	Recast	Recast	Recast	Recast	Recast
	(in US\$, except for share data)				
Net income (loss) attributable to owners of Embraer S.A.	(322.3)	(178.2)	264.0	178.6	69.2
Weighted average number of shares (in thousands)	735,850	734,065	734,264	735,571	730,205
Basic earnings per share—U.S. dollars	(0.44)	(0.24)	0.36	0.24	0.09
Earnings per Share—Diluted	Year Ended December 31, ⁽⁸⁾				
	2019⁽⁷⁾	2018	2017	2016⁽¹⁾	2015⁽¹⁾
	Recast	Recast	Recast	Recast	Recast
	(in US\$, except for share data)				
Net income attributable to owners of Embraer S.A.	(322.3)	(178.2)	264.0	178.6	69.2
Weighted average number of shares (in thousands)	735,850	734,065	734,264	735,571	730,205
Dilution for the issuance of stock options (in thousands)(2)	—	—	545	1,690	3,364
Weighted average number of shares (in thousands) diluted	735,850	734,065	734,809	737,261	733,569
Diluted earnings per share	(0.44)	(0.24)	0.36	0.24	0.09
Consolidated Statement of Financial Position Data	As of December 31, ⁽⁸⁾				
	2019⁽⁷⁾	2018	2017	2016	2015⁽¹⁾
	(in US\$ millions)				
Cash and cash equivalents	855.2	1,280.9	1,270.8	1,214.5	2,165.5
Financial investments (current)	409.8	1,743.4	2,366.1	1,775.6	622.6
Inventories	1,304.4	2,507.0	2,148.7	2,496.4	2,314.6
Other current assets(3)	827.4	1,539.7	1,294.0	1,310.1	1,308.9
Property, plant and equipment, net	968.9	1,964.7	2,104.9	2,154.2	2,027.4
Intangible assets, net	894.1	1,898.8	1,882.4	1,664.6	1,405.4
Other long-term assets(4)	138.1	358.8	907.7	1,077.4	1,825.1
	5,397.9	11,293.3	11,974.6	11,719.8	11,669.5
Assets held for sale	5,174.6	—	—	—	—
Total assets	10,572.5	11,293.3	11,974.6	11,719.8	11,669.5
Short-term loans and financing	14.9	179.3	388.9	510.3	219.4
Other current liabilities(5)	1,387.1	2,849.3	2,414.3	2,717.5	2,861.0
Long-term loans and financing	76.1	3,468.4	3,809.6	3,249.6	3,311.1
Other long-term liabilities(6)	495.8	856.2	1,184.3	1,306.0	1,434.3
Shareholders' equity	3,517.7	3,845.7	4,064.1	3,844.0	3,741.8
Non-controlling interests	96.9	94.4	113.4	92.4	101.9
Total shareholders' equity	3,614.6	3,940.1	4,177.5	3,936.4	3,843.7
Liabilities held for sale	4,984.0	—	—	—	—
Total liabilities and shareholders' equity	10,572.5	11,293.3	11,974.6	11,719.8	11,669.5

- (1) The consolidated financial information as of and for the year ended December 31, 2015 has been derived from our historical financial statements but was not restated for the retrospective application of IFRS 9 and IFRS 15 as management cannot provide this financial information without unreasonable effort or expense.
- (2) Refers to the effect of potentially dilutive shares.
- (3) Other current assets consist of trade accounts receivable, net; derivative financial instruments; customer and commercial financing; collateralized accounts receivable; income tax and social contribution; contract assets; guarantee deposits and other assets.
- (4) Other long-term assets consist of financial investments; derivative financial instruments; customer and commercial financing; collateralized accounts receivable; guarantee deposits; deferred income tax and social contribution; other assets; investments and rights of use.
- (5) Other current liabilities consist of trade accounts payable; lease liability; recourse debt and non-recourse debt; other payables; contract liabilities; derivative financial instruments; taxes and payroll charges payable; income tax and social contribution; financial guarantee and residual value; dividends payable and unearned income; and provisions.
- (6) Other long-term liabilities consist of lease liability; recourse debt and non-recourse debt; other payables; contract liabilities; derivative financial instruments; taxes and payroll charges payable; deferred income tax and social contribution; financial guarantee and residual value; unearned income; and provisions.
- (7) IFRS 16 – Leases became effective on January 1, 2019. We adopted modified retrospective model with first-time adoption date on January 1, 2019. Under this approach, the financial information comparative to prior periods is not being restated and remains as previously reported in accordance with IAS 17.

Table of Contents

- (8) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. We have also recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

The following tables present a summary of our operational data as of the dates and for the periods indicated.

Other Data

Other Data: Aircraft delivered:	Year ended December 31,				
	2019	2018	2017	2016	2015
To the Commercial Aviation Market⁽¹⁾	89	90	101	108	101
EMBRAER 170	—	1	—	—	2
EMBRAER 175	67	67	79	90	82
EMBRAER 190	5	13	12	11	8
EMBRAER 195	3	5	10	7	9
EMBRAER 190-E2	7	4	—	—	—
EMBRAER 195-E2	7	—	—	—	—
To the Defense and Security Market	13	15	8	16	20
EMB 145 AEW&C/RS/MP	6	6	5	3	1
EMB 312 Tucano/AL-X/ Super Tucano	5	9	3	13	19
C-390	2	—	—	—	—
To the Executive Jets Market	109	91	109	117	120
Legacy 600/650	5	4	7	9	12
Legacy 450/500	26	23	29	33	23
Praetor 500	3	—	—	—	—
Praetor 600	13	—	—	—	—
Phenom 100	11	11	18	10	12
Phenom 300	51	53	54	63	70
Lineage 1000	—	—	1	2	3
To the General Aviation Market	15	18	16	2	19
Light Propeller Aircraft	15	18	16	2	19
Total delivered (in aircraft)	226	214	234	243	260

Other Data: Aircraft in backlog	As of December 31,				
	2019	2018	2017	2016	2015
In the Commercial Aviation Market⁽¹⁾	338	368	435	450	513
EMBRAER 170	—	—	1	3	3
EMBRAER 175	181	204	103	104	169
EMBRAER 190	4	7	46	56	55
EMBRAER 195	—	3	5	12	19
EMBRAER 175 – E2	—	—	100	100	100
EMBRAER 190 – E2	16	43	74	85	77
EMBRAER 195 – E2	137	111	106	90	90
In the Defense and Security Market	80	76	73	64	74
EMB 312 Tucano/EMB 314/EP Super Tucano	15	8	14	7	14
LAS	12	15	6	—	6
E99	5	5	5	5	5
C-390	31	28	28	28	28
VU-Y	2	3	4	4	6
MFTS	—	—	1	5	—
F-39	15	15	15	15	15
PHENOM 100*	0	2	—	—	—
In the Executive Jets Market	94	61	64	122	163
Legacy 450/500/600/650/Phenom 100/300/Lineage 1000/EMBRAER 170/190 Shuttle	64	61	64	122	163
Total backlog (in aircraft)	512	505	572	636	750
Total backlog (in US\$ millions)	16,755.0	16,300.5	18,337.0	19,622.8	22,460.7

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of

[Table of Contents](#)

assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. We have also recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

- * Although the PHENOM 100 is part of our Executive Jets business unit portfolio, we have sold the aircraft presented herein to undisclosed customers of our Defense and Security business unit.

3B. Capitalization and Indebtedness

Not applicable.

3C. Reasons for the Offer and Use of Proceeds

Not applicable.

3D. Risk Factors

Risks Relating to Embraer

The outbreak of communicable diseases around the world, including COVID-19, may lead to higher volatility in the global capital markets and recessionary pressure on the global economy.

The outbreak of communicable diseases on a global scale has affected investment sentiment and result in sporadic volatility in global capital markets and may have a recessionary effect on the global economy, including in Brazil.

The outbreak of the novel coronavirus, known as COVID-19, was first identified in December 2019 in Wuhan, China, and has since spread globally. The COVID-19 outbreak has compelled governments around the world to adopt measures to contain the spread of COVID-19 by means such as lockdowns of cities, restrictions on travel and public transportation, business and store closures, and emergency quarantines, among others, and responses by businesses and individuals to reduce the risk of exposure to infection, including reduced travel, cancellation of meetings and events, and implementation of work-at-home policies, among others, which has caused significant disruptions to the global economy and normal business operations across a growing list of sectors and countries. It adversely affected business confidence and consumer sentiment, and have been, and may continue to be, accompanied by significant volatility in financial and commodity markets. The spread of COVID-19, especially if the measures to curb the spread of the virus last for longer than expected, may have broader macro-economic implications, including reduced levels of economic growth and possibly a global recession, the effects of which could be felt well beyond the time the spread of infection is contained.

The reduction in the demand for travel combined with government-imposed travel restrictions is materially and adversely affecting the aerospace industry, causing some airlines to suspend, cancel or reduce flights. As a consequence, demand for new aircraft has declined as airlines are wary of the COVID-19 air travel restrictions and its consequences. Our customers are now, due to COVID-19, focused on preserving capital and avoiding purchasing aircraft, which will adversely and materially affect us.

Additionally, as a result of COVID-19 pandemic, on March 17, 2020, our Brazilian corporate employees responsible for critical functions started to work from home and, on March 22, 2020, we decided to put our Brazilian employees that could not work remotely on paid leave until March 31, 2020. Until March 31, 2020, we were only carrying out essential activities at our facilities, including customer support, aircraft maintenance and manufacturing. On March 30, 2020, we further decided to put our Brazilian employees responsible for non-critical functions on collective vacation from April 1 to April 9, 2020. During this temporary shutdown of our facilities, we implemented safety measures to adapt our facilities to the World

[Table of Contents](#)

Health Organization (“WHO”) guidelines. On April 10, 2020, we implemented a job preservation plan that included temporary furloughs, reduction in working hours and pay cuts to certain of our employees, as a means of guaranteeing their employment upon completion of the plan. This plan started on April 13, 2020 and will last between 60 and 90 days. On April 13, 2020, all of our Brazilian employees that could not work remotely and were not included in the job preservation plan returned to work at our adapted facilities. Our or other companies’ operations may be suspended again or remain suspended for a longer time. Due to the uncertainty related to the spread of COVID-19, we have also suspended the projections relating to our expected results for 2020, last updated on November 12, 2019. Although, as of the date of this annual report, we have experienced certain delays in our supply chain, production operations and material impacts on the demand for our products, as well as a cancellation of firm orders of our Executive Jets business unit and reschedules of our Commercial Aviation and Executive Jets business units aircraft deliveries, we expect that COVID-19 will continue to disrupt our business operations and will adversely and materially impact our results of operations or those of other companies or customers on which we depend.

A downturn in our key markets may reduce our sales and revenue, and, consequently, our profitability.

We expect that a substantial portion of our results will be affected, directly or indirectly, from sales of aircraft, which have historically been cyclical due to a variety of factors that are both external and internal to the air travel industry, including general economic conditions, and, most recently and importantly, the effects of COVID 19 on our operations and financial condition, which we cannot fully foresee as of the date of this Annual Report. For additional information on the impacts of COVID-19, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—The outbreak of communicable diseases around the world, including COVID-19, may lead to higher volatility in the global capital markets and recessionary pressure on the global economy.”

Economic downturns in our industry may reduce air travel demand and corporate and personal spending, which may negatively impact our Commercial Aviation and Executive Jets business units. As a result of the COVID-19 pandemic, as of the date of this annual report, one of our executive jets customers cancelled its firm orders and customers of our Commercial Aviation and Executive Jets business units have rescheduled their aircraft deliveries. Downturns have in the past and may also in the future, due to COVID-19 or to other reasons, lead to a decrease in the volume of financing available to our customers for aircraft purchases, particularly in the aforementioned business units. A continued downturn in general economic conditions could result in further reductions in air travel and decreased orders for our aircraft. Our customers could also continue to defer or to cancel their purchases of our aircraft. We cannot predict the magnitude or duration of the impact that the aforementioned events would not only have on the air transport industry as a whole, and on our business in particular.

We depend on key customers.

In the Executive Aviation business unit, we have been increasingly relying on individual orders as the share of fleet orders in the backlog has been diminishing. Despite the fact that we sold a Praetor and Phenom fleet to a large fractional operator in 2019, we believe that fleet renewal demand will occur at a more moderate rate over a longer period as the current operator’s fleet ages.

In our Defense and Security business unit, the Brazilian government is our largest customer of defense aircraft products. Revenue from sales to the Brazilian government accounted for 54.4% of the business unit revenue for the year ended December 31, 2019. A decrease in defense investments by the Brazilian government due to budgetary constraints or other factors that are out of our control could decrease our Defense and Security revenue. We cannot assure you that the Brazilian government will continue to acquire defense products and services from us in the future at the same rate or at the same level.

[Table of Contents](#)

Our aircraft sales are subject to cancellation and rescheduled delivery provisions that may reduce our future income, profitability, backlog and cash flow.

A portion of our aircraft firm orders is subject to significant contingencies before delivery. Prior to delivery, some of our purchase contracts may be terminated, or all or a portion of a particular firm order may be canceled, for different reasons, including (i) extended delays in delivering aircraft or failure to obtain certification of the aircraft or otherwise meet performance milestones and other requirements, (ii) the failure of a customer to honor its aircraft purchases or (iii) production rate shortfalls.

Our customers may also reschedule deliveries or cancel orders, particularly during an economic downturn. In 2019, we had income, considering our continuing and discontinued operations, of US\$31.0 million related to contractual fines paid by customers due to contract cancellations, compared to contractual fines income of US\$35.4 million in 2018 and US\$2.4 million in 2017. Material cancellations, delays or decreases in the number of aircraft delivered in any year would reduce our sales and revenue, and, consequently, our profitability, cash flow and backlog.

Legal proceedings pertaining to the now terminated strategic partnership with Boeing, including arbitration proceedings related to Boeing's termination of and failure to close the MTA and/or the Contribution Agreement, may adversely impact our business, financial condition and results of operations.

We have incurred and may continue to incur additional costs in connection with the prosecution, defense or settlement of the currently pending and any future legal proceedings relating to the Transaction and/or Boeing's termination of and failure to close the Transaction. Such legal proceedings include, among other matters, the ongoing arbitration proceedings between Embraer and Boeing that have commenced in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. Both Embraer and Boeing have separately commenced arbitrations in connection with the termination. Such legal proceedings may also include litigation brought by our stockholders and holders of our ADRs related to the Transaction and/or Boeing's termination of, and failure to consummate the transactions contemplated by, the MTA and the Contribution Agreement. We continue to strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement, that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement and that our pending arbitration proceedings against Boeing and its affiliates are a valid enforcement of our rights under the MTA and the Contribution Agreement. We cannot predict the outcome of any such legal proceedings. Such legal proceedings may also create a distraction for our management team and board of directors and require time and attention. In the case of an adverse determination in the arbitration proceedings, we may not recover any damages from Boeing and we may be required to pay significant monetary damages to Boeing. In addition, even if we ultimately succeed in such legal proceedings, there may be negative publicity attached to such legal proceedings, which may materially and adversely affect our reputation and brand names. As a result, any legal proceedings relating to the Transaction or Boeing's termination of and failure to close the Transaction could, among other things, adversely affect our business, financial condition and results of operations.

We may face a number of challenges resulting from the development of new products and the possible pursuit of strategic opportunities and transactions.

We cannot assure you that our products will be accepted by our customers and the market, and if any of our new products do not meet customer expectations or market demand, our business would be adversely affected. In addition, as we continue to develop new products, we may need to reallocate existing resources and coordinate with new suppliers and risk-sharing partners. Finally, cost overruns and delays in the development and delivery of new products would adversely affect us.

We may pursue strategic opportunities and transactions, just as we have in the past, including joint ventures, partnerships, acquisitions or divestitures. We may face a number of challenges, including difficulties in identifying appropriate partners, assimilating with or adjusting to our partners' or targets' operations and personnel, maintaining internal standards and controls, as well as the diversion of our management's focus from our ongoing business. We cannot assure you that we will be able to meet these challenges and that our business or the trading price of our common shares or ADSs will not face disruptions as a result of such opportunities or transactions or the markets' perception thereof.

[Table of Contents](#)

We may be required to refund cash contributions in connection with the production or development of our aircraft if certain milestones for our aircraft are not reached.

We have arrangements with our risk-sharing partners, pursuant to which they have contributed to us, in cash over the years, a total of US\$1,369.5 million since the beginning of the development of the EMBRAER 170/190 (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019), Phenom 100/300, Legacy 450/500 jet families and the E2 jet family (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019) through December 31, 2019. Cash contributions would have to be refunded by us to the risk-sharing partners to the extent that we had failed to fulfill certain agreed-upon milestones. In 2019, we met all the required milestones, and as a result, the full amount of the cash contributions was nonrefundable.

Although, currently, no cash contributions from our risk-sharing partners are refundable, we may enter into similar arrangements, and if we are unable to meet certain milestones agreed upon with our risk-sharing partners, we may be required to refund cash contributions for which we have not established provisions.

We face significant international competition, which may adversely affect us.

As a relatively new entrant to the executive jets market, we face significant competition from companies with longer operating histories and established reputations in the industry. Some of our competitors in the executive jets market have a longer track record and a more established customer base. In addition, the level of pre-owned aircraft for sale, continues to pressure new aircraft demand in this business unit and may impact the value of the used aircraft in our portfolio. We cannot assure you that we will increase our market share in the executive jets market business unit, or that we will not experience a reduction in our current market share in this business unit, especially taking into account an instable and contracting market demand scenario that we expect in 2020.

Protectionist measures adopted by the governments of specific countries could adversely affect us. Our production is spread globally, with parts manufactured in one or more countries and assembled in another, and as a result any limitations to trade, including quotas, tariffs, subsidies or local content requirements, may increase our production costs and affect our capacity to compete in equal terms in the market for our products.

We work with a limited number of key suppliers.

We do not manufacture all of the parts and components used in the production of our aircraft. Approximately 65.4% of the production costs in our Executive Jets and Defense and Security business units and approximately 86.8% of the production costs in Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019) consist of materials and equipment purchased from our risk-sharing partners and other major suppliers. Risk-sharing arrangements are those in which suppliers are responsible for the design, development and manufacture of major components or systems of our aircraft. In some cases, the aircraft are designed specifically to accommodate a particular component, which cannot be substituted by another manufacturer without significant delays and expense. In addition, there exist only a limited number of suppliers of certain key components of aircraft globally. We work closely with our main suppliers in order to mitigate any potential supply chain risk, but we cannot assure you that these risks, which could negatively and adversely affect our operating and financial performance, will not materialize.

Intellectual property violations may adversely affect us.

We rely on patent, copyright, trademark and trade secret laws, and agreements with our employees, customers, suppliers and other parties, to establish and maintain our intellectual property rights in technology and products used in our operations. Despite these efforts to protect our intellectual property rights, any of our direct or indirect intellectual property rights could be challenged, invalidated or circumvented. In addition,

[Table of Contents](#)

although we believe that we lawfully comply with the intellectual property rights granted to others, we may be accused of infringement on occasion and could have claims asserted against us in the future. These claims could harm our reputation, lead to fines and penalties and prevent us from offering certain products or services. Any claims or litigation in this area, whether we ultimately win or lose, could be time-consuming and costly, hurt our reputation and/or require us to enter into licensing arrangements. We may not be able to enter into these licensing arrangements on acceptable terms. If any infringement brought against us is successful, an injunction may also be ordered against us to stop infringing the alleged rights, which could adversely affect us, our research and/or production.

Unauthorized access to, or release or violation of our, our customers' or our business partners' systems and data could materially and adversely affect our business and reputation.

We, like all business organizations in the digital world, have been subject to a broad range of cyber threats, including attacks, with varying levels of sophistication. These cyber threats are related to the confidentiality, availability and integrity of our systems and data, including our customers' confidential, classified or personal information. In addition, because we have access to certain information technology systems of some of our customers, our systems may be subject to attacks aimed at accessing, tampering with or exposing our customers' systems and their data.

We maintain extensive technical security controls, policy enforcement mechanisms, monitoring systems and management oversight in order to address these threats. While these measures are designed to prevent, detect and respond to unauthorized activity in our systems, certain types of attacks, including cyber-attacks, which could materially and adversely affect our business and reputation.

Furthermore, some of our business partners, such as our suppliers, have significant access to confidential and strategic information regarding our projects and engineering data. Many of these suppliers face similar security threats and any attacks on their systems could result in unauthorized access to our systems or data.

Any unauthorized access to, or release or violation of our systems and data or those of our customers or business partners could materially and adversely affect our business and reputation.

We may suffer from a lack of qualified personnel.

From time to time, there is significant competition within the aviation industry for skilled personnel in general and engineers in particular. To the extent the competition re-emerges, we may be unable to recruit and retain the necessary number of highly skilled engineers and other personnel we require. Failure to coordinate our resources in a timely manner or to attract and retain skilled personnel could slow down our development efforts and cause delays in production and deliveries of our aircraft, which would adversely affect us.

We are subject to environmental, health and safety risks.

Our products, as well as our manufacturing and service activities, are subject to environmental laws and regulations in each of the jurisdictions in which we operate. These laws regulate product performance or content, energy use, greenhouse gas emissions, air quality, water and noise pollution, hazardous substance management, human health risks arising from the exposure to hazardous or toxic materials and the remediation of soil and groundwater contamination.

In addition, environmental regulations related to climate change, including CO₂ emissions standards adopted by the International Civil Aviation Organization, or the ICAO, in March 2017, are one of the main drivers of global aerospace industry research and development investments since they may affect customer preferences. We may incur additional costs to improve or create new compliance programs to meet environmental regulatory requirements. We currently have several comprehensive programs in place to reduce the effects of our operations on the environment. For additional information, see "Item 4. Information on the Company—4D. Property, Plant and Equipment."

[Table of Contents](#)

Moreover, our services and products must comply with health and safety laws and regulations, as well as substances and preparations. We strive to maintain the highest quality standards and closely follow potential and confirmed changes in laws and regulations to adapt, redesign, redevelop, recertify or eliminate our products to remain compliant with those claims. Seizures of non-compliant products may occur, and we may incur administrative, civil or criminal penalties. In the event of an accident or other serious incident involving a product, we may be required to conduct investigations and undertake remedial activities.

We benefit from certain tax and other government-granted benefits and the suspension, cancellation or non-renewal of those benefits would have a material adverse effect on us.

Similarly to other Brazilian companies across multiple industries, we receive certain tax and other government-granted benefits, including incentives related to our export and research and development activities. For additional information, see “Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Brazilian Economic Environment—Tax Incentives.”

We cannot assure you that these incentives will be maintained or renewed or that we will be able to obtain new incentives. We could be materially adversely affected in the event our existing benefits are canceled or not renewed.

Investigations by government authorities under the FCPA and other applicable anti-corruption laws may result in substantial fines and other adverse effects.

On October 24, 2016 we finalized definitive agreements, or the Final Agreements, with the U.S. Department of Justice, or DOJ, and the U.S. Securities and Exchange Commission, or the SEC, for the settlement of criminal and civil violations of the U.S. Foreign Corrupt Practices Act of 1977, as amended, or FCPA. We also finalized a term of undertaking (*termo de compromisso e de ajustamento de conduta*), or TCAC, with the Brazilian Federal Public Prosecutor’s Office (*Ministério Público Federal*), or MPF, and the Brazilian Securities and Exchange Commission, or the CVM, for the resolution of violations of certain Brazilian laws.

Under these settlements, in addition to paying a total of US\$205.5 million to the SEC, DOJ and a Brazilian federal fund, we agreed to an external and independent monitorship for a period of three years. The monitorship period may be extended at the DOJ’s discretion depending on our compliance with the deferred prosecution agreement, or DPA. In February 2017, the United States authorities appointed the monitor, who has been preparing annual reports containing certain observations and recommendations to further improve our anti-corruption and compliance policies and procedures. In February 2020, we agreed to extend the term of the external and independent monitorship for an additional 90 days in order to allow the monitor to complete his work. On April 13, 2020, the monitor delivered his final report to the DOJ and to the SEC, finding that Embraer’s compliance program is reasonably designed and implemented to detect and prevent violations of the anti-corruption laws. On May 22, 2020, the monitorship term expired. Under both the DPA and the SEC Consent, there remain certain additional steps that the Company must take to complete the requirements of the DPA and the SEC Consent.

In addition, under the DPA the DOJ has agreed to defer prosecution for three years of the facts acknowledged by us that occurred between 2007 and 2011, after which period the charges will be dismissed with prejudice if we do not violate the terms of the DPA. If the DOJ determines that we have breached the DPA, the DOJ may commence prosecution or extend the term of the DPA for up to one year. Similarly, if we breach our obligations under the TCAC, it may also be terminated by the MPF and the CVM in which case we would be subject to sanctions. The criminal prosecution or sanctions could have a material adverse effect on our business, financial condition, results of operations, or cash flows.

[Table of Contents](#)

Moreover, related proceedings and developments are ongoing and could result in additional fines and possibly other sanctions and adverse consequences, which may be substantial. We currently cannot estimate the costs, sanctions or other adverse consequences in connection with these proceedings, nor can we predict the manner in which any proceedings will be resolved. However, any costs, sanctions or other adverse consequences could be significant, and any resolution could have a material adverse effect on our business, financial condition, results of operations, or cash flows. We believe that there is no adequate basis at this time for estimating accruals or quantifying any contingency with respect to these matters.

For additional information on these settlements, see “Item 8. Financial Information—8A. Consolidated Statements and Other Financial Information—Legal Proceedings—SEC/DOJ and Brazilian Public Prosecutor’s Investigations.”

Risks Relating to our Discontinued Operations

In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Our Commercial Aviation business unit depends on key customers

In our Commercial Aviation business unit, as of December 31, 2019, 78.9% of our firm orders in backlog for the current EMBRAER 170/190 jet family were from Republic Airlines, United Airlines and Skywest. Moreover, our E-Jets E2 family backlog mainly comprises orders from the companies Azul, AerCap, AirCastle and AirPeace, which represent approximately 85% of our E-Jets E2 family orders. We believe we will continue to depend on a select number of key customers, and the loss of any one of them would significantly reduce our sales and market share.

Progressively, the commercial airline industry is seeking to reduce costs and increase efficiency, while is experiencing a consolidation process through mergers and acquisitions and alliances based in code-sharing arrangements. Although we expect that these consolidations and alliances may result in the creation of more stable and competitive airlines, they may also have the effect of reducing the number of existing and potential customers and, possibly, the number of aircraft purchases, which may adversely affect us.

Most recently, the government measures adopted to contain the spread of the COVID-19 pandemic have materially and adversely affected airlines and aircraft lessors around the globe, including many of our customers, and we cannot foresee to what extent these trends will continue and to what extent the financial health of our customers will be negatively affected.

Financial difficulties, restructurings and bankruptcy proceedings of customer airlines can materially and adversely affect our results of operations and financial condition. In February 2016, Republic Airways Holdings, which by that time operated a fleet of 230 Embraer Commercial Aviation aircraft (of which 50 are of the ERJ145 family and 180 are E170/E175 models), filed for a Chapter 11 bankruptcy. As a result, we have provisioned a total of US\$100.9 million to account for expected expenses related to obligations from financial guarantees offered to the main financing agent of the ERJ 140/145 aircraft, acquired by and delivered to this customer. As of December 31, 2019, all obligations relating to the Chapter 11 bankruptcy filing were fully settled by Republic Airways Holdings. Accordingly, we reversed the provision previously established. For additional information on these provisions, see “Item 5. Operating and Financial Review and Prospects—5E. Off-Balance Sheet Arrangements.”

[Table of Contents](#)

In addition, delays in payment cycles by significant customers may have an impact on our cash position and working capital.

Scope clause restrictions in airline pilot contracts may limit demand for commercial aircraft in the U.S. market.

A key limiting factor in demand for regional jets is the existence of scope clauses contained in airline pilot contracts. These scope clauses, which are more prevalent in North America, but also existing in other important regions, including Europe, are negotiated between the airlines and the pilot unions, usually every three years, for purposes of imposing restrictions relating to the (i) number of aircraft that a regional carrier may operate; (ii) number of seats in an aircraft that a regional carrier may operate; and (iii) the weight of the aircraft that a particular regional carrier may operate. A new round of negotiations between the major airlines and the pilot unions started at the end of 2019 and, as of the date of this annual report, still ongoing. As a result, our opportunities for near-term growth in the U.S. regional jets market in the 76 seat jet category may be limited. The U.S. is the most important market for the E175 aircraft. We cannot assure that current restrictions will be reduced, or that they will not be expanded, including by amending these scope clauses to cover larger-sized commercial aircraft.

The supply of pilots to the airline industry may be limited.

U.S. Federal Aviation Administration, or the FAA, regulations may negatively impact the supply of qualified pilot candidates eligible to be hired in the airline industry. A first officer in U.S. domestic operations must hold an airline transport pilot certificate and an aircraft type rating to fly the aircraft. An airline transport pilot certificate requires that a pilot be 23 years of age and have 1,500 hours total time as a pilot. Due to these requirements, there may be a growing scarcity of new entrant pilots who meet the experience qualifications, mainly affecting regional carriers which are the usual entry airlines for new pilots (major airlines are expected to hire many of their experienced pilots).

In order to mitigate this issue, certain airlines, for example American Airlines and Jet Blue especially in the United States, have adopted internal measures, including but not limited to creating professional pilot programs and providing financing alternatives. However, any inability to recruit, train and retain qualified pilots may materially affect our customers' operations.

We are subject to stringent certification and regulatory requirements, which may adversely affect us.

Our civil aviation products are subject to regulation in Brazil and in each jurisdiction where our customers are located. The aviation authority in Brazil, known as the National Civil Aviation Agency (*Agência Nacional de Aviação Civil – ANAC*), or the Brazilian Aviation Authority, as well as authorities in other countries in which our customers are located, most notably the FAA and the European Aviation Safety Agency, or the EASA, must certify our civil aviation products before we can deliver them to our customers. We cannot assure you that we will be able to obtain certification of our aircraft on a timely basis or at all. In addition, complying with the requirements of regulatory authorities can be both expensive and time-consuming. If we fail to obtain a required certification from an aviation authority for any of our aircraft, that aviation authority can prohibit the registration of that aircraft within its jurisdiction until certification has been obtained. Changes in government regulations and certification procedures could also delay our start of production as well as entry of a new product into a new market. Despite our continuous efforts to strictly observe and comply with all aviation certification and other regulatory requirements, we cannot predict how future laws or changes in the interpretation, administration or enforcement of those laws will affect us. We may be required to incur significantly more costs to comply with these laws and/or to respond to these changes.

[Table of Contents](#)

Any accidents or catastrophic events involving our aircraft could adversely affect us.

We believe that our reputation and the safety record of our aircraft are important selling points for our products. However, the safe operation of our aircraft depends to a significant degree on a number of factors largely outside our control, including our customers' proper maintenance and repair of our aircraft and pilot skill. The occurrence of one or more accidents or catastrophic events involving one of our aircraft could adversely affect our reputation and future sales, as well as the market price of our common shares and the ADSs.

Some of our aircraft sales may be subject to financial and residual value guarantees and trade-in options that may require us to make significant cash disbursements.

For certain aircraft sales contracts, we guarantee a portion of the financial value and the residual value for aircraft that we have already delivered. Financial guarantees are provided to financing parties to support a portion of the payment obligations of purchasers of our aircraft under their financing arrangements to mitigate default-related losses. These guarantees are secured by the financed aircraft.

Residual value guarantees typically ensure that, at the exercise date (between six and 19 years after the aircraft delivery date), the relevant aircraft will have a residual market value equal to a percentage of the original sale price. Most of our residual value guarantees are subject to a limitation (a "cap") and, therefore, on average, our residual value guarantee exposure is limited to 11% of the original sale price. In the event of an exercise by a purchaser of its residual value guarantee, we will bear the difference, if any, between the guaranteed residual value and the market value of the aircraft at the time of exercise, limited to the cap.

Assuming all customers who are supported by off-balance sheet financial guarantees defaulted on their aircraft financing arrangements, and also assuming we were required to pay the full aggregate amount of outstanding financial and residual value guarantees and were unable to remarket any of the aircraft to offset our obligations, our maximum exposure would have been US\$240.2 million (or US\$99.9 million, net of provisions of financial guarantee of residual value and financial guarantee already recorded in the amount of US\$140.3 million as reflected in Note 37.2 to our 2019 audited consolidated financial statements) under these guarantees as of December 31, 2019. As a result, we would be obligated to make substantial payments that may not be recoverable through proceeds from aircraft sales or leases, particularly if we are not able to remarket any of the aircraft to offset our obligations or financing defaults occur with respect to a significant portion of our aircraft. The value of the underlying aircraft are more likely to decrease and third parties are more likely to default during economic downturns. For additional discussion see our exposure to these guarantees in Note 37.2 to our 2019 audited consolidated financial statements and "Item 5. Operating and Financial Review and Prospects—5E. Off-Balance Sheet Agreements."

In addition, we sometimes provide trade-in options to our customers in purchase agreements for new aircraft. These options provide customers with the right to trade in aircraft upon the purchase and acceptance of a new aircraft. In 2019, we accepted 17 aircraft, of which one was from the Commercial Aviation business unit and 16 from the Executive Aviation business unit, with a total invoiced value of US\$84.9 million, for trade-in pursuant to trade-in options, as compared to 11 aircraft, with a total invoiced value of US\$109.6 million, in 2018 and 23 aircraft, with a total invoiced value of US\$114.0 million, in 2017. The trade-in price is determined based on the new aircraft sold, as well as other factors, including a market value assessment performed by independent third-party appraisers. We may be required to accept trade-ins at prices that could result in financial loss for us when we receive the aircraft.

We continuously re-evaluate our risk related to financial guarantees and trade-in obligations based on a number of factors, including the estimated future market value of our aircraft based on third-party appraisals, information on similar aircraft remarketing in the secondary market and the credit rating of the customers.

In 2019, 2018 and 2017, we maintained provisions and contract liabilities on financial guarantees and residual value guarantees of US\$140.3 million, US\$152.1 million and US\$156.8 million (including provision for Chapter 11 filed by Republic Airways on, US\$15.1 million in 2018 and US\$30.8 million in 2017), respectively, related to exposure from financial guarantees offered to the main financing agent of the ERJ 140/145 aircraft, acquired by and delivered to this customer.

[Table of Contents](#)

Any unexpected decrease in the market value of the aircraft covered by trade-in rights or financial guarantees would decrease our ability to recover the amounts payable to satisfy our obligations and cause us to incur additional charges to income. If we are required to pay amounts related to the guarantees, we may not have sufficient cash or other financial resources available to do so and may need to seek financing to fund these payments. We cannot assure you that the prevailing market conditions at the time would allow us to resell or lease the underlying aircraft at its anticipated fair value or in a timely manner. Consequently, honoring our financial guarantee or trade-in obligations could require us to make significant cash disbursements in a given year, which, in turn, would reduce our cash flow in that year.

Any decrease in Brazilian government-sponsored customer financing, or increases in government-sponsored financing that benefits our competitors, may decrease the competitiveness of our aircraft.

Traditionally, aircraft original equipment manufacturers, or OEMs, from time to time, have received support from governments through governmental export credit agencies, or ECAs, in order to offer competitive financing conditions to their customers, especially in periods of credit tightening from the traditional lending market.

Official government support may constitute unofficial subsidies causing market distortions, which may rise to disputes among governments at the World Trade Organization, or WTO. Since 2007, an agreement known as the Aircraft Sector Understanding, or ASU, developed by the Organization for Economic Co-operation and Development, or OECD, has provided guidelines for the predictable, consistent and transparent use of government-supported export financing for the sale or lease of civil aircraft, in order to establish a “level-playing field.” ECAs from signatory countries are required to offer terms and conditions no more favorable than those contained in the ASU’s base financial agreement when financing sales of aircraft that compete with those produced by the OEMs of their respective countries. The effect of the agreement is to encourage aircraft purchasers to focus on the price and quality of aircraft products offered by OEMs rather than on the financial packages offered by their respective governments.

The Brazilian ECA, Brazilian Social and Economic Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social*), or BNDES, together with the Brazilian National Treasury Export Guarantee Fund, offer financing and export credit insurance to our customers under terms and conditions required by the ASU. Any reduction or restriction to the Brazilian export financing program, and any increase in our customers’ financing costs for participation in this program, above those provided in the ASU’s base financial agreement, may cause the cost-competitiveness of our aircraft to decline. Other external factors may also impact our competitiveness in the market, including, but not limited to, aircraft OEMs from countries which are not signatories to the ASU agreement offering attractive financing packages, or any new government subsidies supporting any of our major competitors.

From 2005 through 2019, approximately 28% of our Commercial Aviation deliveries was subject to official export credits. In 2018 and 2019, approximately 51% and 16%, respectively, of our Commercial Aviation deliveries were supported by the Brazilian export financing program. We cannot assure that the Brazilian government, for policy reasons or otherwise, will not reduce or discontinue this type of funding for the financing of our aircraft or that other sources of funding will be available to our customers. The loss or significant reduction of funds available to our customers, without an adequate substitute, could lead to a reduction in sales of our aircraft or to an increase of eventual aircraft financing arrangements.

[Table of Contents](#)

Risks Relating to Brazil

Brazilian political and economic conditions have a direct impact on our business and the trading price of our common shares and ADSs.

The Brazilian government has frequently intervened in the Brazilian economy and occasionally has made drastic changes in policy and regulations. The Brazilian government's actions to control inflation and affect other policies and regulations have involved, among other measures, increases in interest rates, changes in tax policies, price controls, currency exchange and remittance controls, devaluations, capital controls and limits on imports. Our business, financial condition, results of operations and the trading price of the common shares and the ADSs may be adversely affected by changes in policy or regulations at the federal, state or municipal level involving or affecting factors, such as:

- interest rates;
- currency fluctuations;
- monetary policies;
- inflation;
- liquidity of capital and lending markets;
- tax policies;
- labor regulations;
- energy and water shortages and rationing; and
- other political, social and economic developments in or affecting Brazil.

On January 1, 2019, Jair Bolsonaro took office as Brazil's president. Uncertainty over whether the Brazilian government will implement changes in policy, regulation or legislation creates instability in the Brazilian economy, increasing the volatility of the Brazilian securities markets. These uncertainties and other future developments in the Brazilian economy may adversely affect our activities, and consequently our operating results, and may also adversely affect the trading price of our common shares and ADSs. The President of Brazil has authority to determine policies and issue governmental acts regarding the Brazilian economy that may affect the operations and financial performance of companies, including us. We cannot predict which policies the president will adopt or if these policies or changes in current policies may have an adverse effect on us or the Brazilian economy. These factors are compounded as Brazil emerges from a prolonged recession after a period of a slow recovery, with only meager GDP growth in 2019.

Since 2011, Brazil's economy has been weak. The Gross Domestic Product, or GDP, growth rate was 1.1% in 2019, 1.3% in 2018, 1.3% in 2017, compared to contraction rates of 3.3% in 2016 and 3.5% in 2015, and GDP growth was 0.5% in 2014, 3.0% in 2013, 1.9% in 2012 and 4.0% in 2011, compared to a GDP growth of 7.5% in 2010. According to the Focus bulletin dated May 22, 2020, Brazilian GDP will decrease 5.9% in 2020.

Our results of operations and financial condition have been, and will continue to be, affected by the growth rate of the Brazilian GDP. Developments in the Brazilian economy may affect Brazil's growth rates and, consequently, the use of our products and services.

[Table of Contents](#)

Political instability may adversely affect our business and results of operations, the price of our common shares and our debt instruments.

Brazil's political environment has historically influenced, and continues to influence, the performance of the country's economy. Political crises have affected, and continue to affect, the confidence of investors and that of the public in general, resulting in economic downturn and heightened volatility of securities issued by Brazilian companies.

Recent economic instability contributed to decrease market's confidence in the Brazilian economy and worsen the domestic political environment. Additionally, Brazilian markets have experienced heightened volatility due the uncertainties from ongoing investigations on money laundering and corruption conducted by the Brazilian Federal Police and the Office of the Brazilian Federal Prosecutor, including the *Lava Jato* investigation. These investigations adversely affected the Brazilian economy and political scenario.

The ultimate outcome of the investigations related to the *Lava Jato* investigation is uncertain, but they have already had an adverse impact on the image and reputation of the implicated companies, and on the general market perception of the Brazilian economy. We cannot predict whether the allegations will lead to further political and economic instability or whether new allegations against government officials will arise in the future. We cannot predict the outcome of any of these allegations nor their effect on the Brazilian economy. The development of those unethical conduct cases has affected and may continue to adversely affect our business, financial condition and results of operations and may adversely affect the trading price of our common shares and ADSs.

Inflation and government efforts to combat inflation may contribute significantly to economic uncertainty in Brazil and to heightened volatility in the Brazilian securities markets and, consequently, may adversely affect the market value of our common shares.

Historically, Brazil has experienced high inflation rates. Inflation and certain actions taken by the Central Bank to curb it have had significant negative effects on the Brazilian economy. After the implementation of the *Plano Real* in 1994, the annual rate of inflation in Brazil decreased significantly, as measured by the National Broad Consumer Price Index (*Índice Nacional de Preços ao Consumidor Amplo*), or IPCA. Inflation measured by the IPCA index was 4.3%, 3.8% and 3.0% in 2019, 2018 and 2017, respectively, and the tendency is decreasing inflation for 2020.

Inflation and the Brazilian government's measures to fight it, principally the Central Bank monetary policy, have had and may have significant effects on the Brazilian economy and us. Among the effects of such inflationary pressure is a rise in labor costs. Contracts in U.S. dollars, which represent the majority of our executive jets businesses, are adjusted for U.S. inflation, through the application of the U.S. Consumer Price Index for Urban Wage Earners and Clerical Workers index when delivery is not in the same year of the sale and depending upon the specific commercial terms negotiated in the contracts. While contracts in Brazilian *real* represent a small portion of the Executive Jets business unit, the same price adjustment mechanism concept applies using national index, typically the I-GPM. Major contracts in our Defense and Security business unit are adjusted for Brazilian inflation. If Brazil experiences high inflation again, our operating expenses and borrowing costs may increase, our operating and net margins may decrease and, if investor confidence decreases, the price of our common shares and ADSs may fall.

Tight monetary policies with high interest rates have restricted and may restrict Brazil's growth and the availability of credit. Conversely, more lenient government and Central Bank policies and interest rate decreases have triggered and may trigger increases in inflation, and, consequently, growth volatility and the need for sudden and significant interest rate increases, which could adversely affect us. Increases in interest rates could adversely affect our ability to incur additional debt and increase the cost of service of debt, resulting in an increase in our financial costs, which may reduce our liquidity, thereby adversely affecting our ability to meet our financial obligations. As of December 31, 2019, approximately 2.5% of our consolidated cash and cash equivalents were indexed to the variation of the SELIC and CDI rates, while approximately 5.1% of the cash and cash equivalents of our continuing operations were indexed to the same rates. Therefore, fluctuations in Brazilian interest rates and inflation may adversely affect us. On the other hand, a significant decrease in the CDI or inflation rates may adversely affect the revenue we receive from our financial investments.

[Table of Contents](#)

Exchange rate volatility may adversely affect us.

The Brazilian currency has, during the last decades, experienced frequent and substantial variations in relation to the U.S. dollar and other foreign currencies. For example, the *real* was valued at R\$1.67 per US\$1.00 in August 2008. Following the onset of the crisis in the global financial markets with consequences for our businesses, the *real* depreciated 31.9% against the U.S. dollar and reached R\$2.34 per US\$1.00 at the end of 2008. In 2010, the *real* appreciated against the U.S. dollar, reaching R\$1.661 per US\$1.00 at the end of 2010. Since 2011, the *real* depreciated against the U.S. dollar, reaching R\$3.9048 per US\$1.00 at the end of 2015 with a 47.0% devaluation in 2015. In 2016, the *real* appreciated against the U.S. dollar, reaching R\$3.2591 per US\$1.00 as of December 31, 2016. In 2017, the *real* appreciated against the U.S. dollar in comparison to 2016, reaching R\$3.3080 per US\$1.00 as of December 31, 2017. In 2018, the *real* depreciated against the U.S. dollar in comparison to December 31, 2017, reaching R\$3.8748 per US\$1.00 as of December 31, 2018. In 2019, the *real* depreciated against the U.S. dollar in comparison to December 31, 2018, reaching R\$4.0307 per US\$1.00 as of December 31, 2019. As of May 28, 2020, the *real*/U.S. dollar exchange rate was R\$5.3405 per US\$1.00. There can be no assurance that the *real* will not depreciate further against the U.S. dollar.

Depreciation of the *real* against the U.S. dollar creates inflationary pressures in Brazil and causes increases in interest rates, which negatively affects the growth of the Brazilian economy as a whole, curtails access to foreign financial markets and may prompt government intervention, including recessionary governmental policies. Depreciation of the *real* against the U.S. dollar has also, including in the context of an economic slowdown, led to decreased consumer spending, deflationary pressures and reduced growth of the economy as a whole. On the other hand, appreciation of the *real* relative to the U.S. dollar and other foreign currencies could lead to a deterioration of the Brazilian foreign exchange current accounts, as well as dampen export-driven growth. Depending on the circumstances, either depreciation or appreciation of the *real* may materially and adversely affect us.

Although most of our revenue and debt is U.S. dollar-denominated, the relationship of the *real* to the value of the U.S. dollar, and the rate of depreciation of the *real* relative to the prevailing rate of inflation, may adversely affect us, mainly due to the following factors:

- Approximately 30% of our total costs are incurred and denominated in *reais*.
- Because taxes on income are largely determined and paid in *reais* based on our Brazilian tax books, the income tax expense line item of our statements of income, which has the U.S. dollar as our functional currency, is significantly impacted by appreciation of the *real* relative to the U.S. dollar to the extent we must record deferred taxes resulting from exchange rate fluctuations on the reported basis of our nonmonetary assets (mainly property, plant and equipment and intangible assets). If the *real* had devalued or appreciated by 10% against the U.S. dollar in relation to the actual exchange rate as of December 31, 2019, the deferred income tax expense would have been higher or lower by approximately US\$148.0 million. For additional information on the effects of the variation of the *real* against the U.S. dollar, see Note 28 to our 2019 audited consolidated financial statements
- Depreciation of the *real* against the U.S. dollar or other currencies would reduce our *real*-denominated revenues from our Defense and Security business unit, when converted to the U.S. dollar as our functional currency.
- Depreciations of the *real* relative to the U.S. dollar would also reduce the U.S. dollar value of distributions and dividends on our ADSs and may also reduce the market value of our common shares and ADSs.
- Appreciation of the *real* against the U.S. dollar or other currencies increases the costs of our products when measured in U.S. dollars, and may result in a decrease in our margins.

[Table of Contents](#)

As a result, we may be materially and adversely affected by exchange rate variations.

Developments and the perception of risk in other countries, especially other emerging markets, may adversely affect the market price of Brazilian securities, including our ADSs, our common shares and our debt instruments.

The market value of securities of Brazilian issuers, including securities issued by us, may be affected by economic and market conditions in other countries, including the United States, European Union and Latin American countries and other emerging market countries. Although economic conditions in those countries may differ significantly from economic conditions in Brazil, investors' reactions to developments in other countries may have an adverse effect on the market value of securities of Brazilian issuers. Crises elsewhere may diminish investor interest in securities of Brazilian issuers, including ours. This could adversely affect the trading price of our securities and could also make it more difficult for us to access the capital markets and finance our operations in the future on acceptable terms, or at all.

Any further downgrading of Brazil's credit rating could adversely affect the market price of our common shares, ADSs and debt instruments.

Credit ratings affect investors' perceptions of risk and, as a result, the yields required on debt issuances in the financial markets. Rating agencies regularly evaluate Brazil and its sovereign ratings, taking into account a number of factors including macroeconomic trends, fiscal and budgetary conditions, indebtedness and the prospect of change in these factors.

In September 2015, Standard & Poor's downgraded Brazil's sovereign debt credit rating from BBB-minus to BB-plus, citing the general instability of the Brazilian market due to the interference of the Brazilian government in the economy and budgetary difficulties, among other reasons. In February 2016, Standard & Poor's downgraded Brazil's sovereign debt credit rating again from BB-plus to BB, maintaining its negative outlook on the rating, citing Brazil's worse credit scenario since the first downgrading. In January 2018, Standard & Poor's downgraded Brazil's sovereign debt credit rating from BB to BB-minus with a stable outlook in light of doubts regarding the presidential election and social security reform efforts. In February 2019, Standard & Poor's affirmed Brazil's sovereign credit rating at BB-minus with a stable outlook. In December 2019, Standard & Poor's affirmed Brazil's sovereign credit rating at BB-minus with a positive outlook. In April 2020, Standard & Poor's maintained Brazil's sovereign credit rating at BB-minus and revised the outlook on this rating to stable.

In December 2015, Moody's placed Brazil's Baa3 sovereign debt credit rating on review, citing negative macroeconomic trends and a deterioration of the government's fiscal conditions. Moody's subsequently downgraded Brazil's sovereign debt credit rating in February 2016 below investment grade, to Ba2 with a negative outlook, citing the prospect for further deterioration in Brazil's indebtedness indicators, considering a low economic growth and a challenging political environment. In April 2018, Moody's maintained Brazil's sovereign debt credit rating at Ba2, but changed its prospect from negative to stable, maintaining it in September 2018, citing the expected new government spending cuts. In May 2019, Moody's affirmed Brazil's sovereign credit rating at Ba2 and changed the outlook to stable. In May 2020, Moody's reaffirmed Brazil's sovereign credit rating at Ba2 with a stable outlook.

Fitch downgraded Brazil's sovereign credit rating to BB-plus with a negative outlook in December 2015, citing the country's rapidly expanding budget deficit and worse-than-expected recession, and made a further downgrade in May 2016 to BB with a negative outlook, which was maintained in 2017. In February 2018, Fitch downgraded Brazil's sovereign credit rating again to BB-negative, citing, among other reasons, fiscal deficits, the increasing burden of public debt and an inability to implement reforms that would structurally improve Brazil's public finances. In November 2019, Fitch maintained Brazil's sovereign credit rating at BB-minus, citing the risk of tax and economic reforms and political instability. In May 2020, Fitch reaffirmed Brazil's sovereign credit rating at BB- and revised the outlook on this rating to negative.

[Table of Contents](#)

As of the date of this annual report, Brazil's credit rating was classified as BB-, Ba2 and BB- by Standard & Poor's, Moody's and Fitch, respectively. Any further downgrading in Brazil's sovereign credit ratings or our rating may increase the perception of risk of investors and, as a result, increase the future cost of debt issuances, adversely affecting us. We cannot guarantee that the rating agencies will maintain these classifications in relation to Brazilian credit and any further downgrade in Brazil's sovereign credit ratings or our ratings could materially adversely affect the trading price of our debt and equity securities.

Risks Relating to Our Common Shares and ADSs

If holders of our ADSs exchange the ADSs for common shares, they risk losing the ability to remit foreign currency abroad and Brazilian tax advantages.

The Brazilian custodian for the common shares has obtained an electronic certificate of registration from the Central Bank permitting it to remit foreign currency abroad for payments of dividends and other distributions relating to the common shares or upon the disposition of the common shares. These remittances under an ADR program are subject to a specific tax treatment in Brazil that may be more favorable to a foreign investor if compared to remitting gains originated from securities directly acquired by the investor in the Brazilian regulated stock markets. Therefore, an investor who opts to surrender ADSs in exchange for the underlying common share may be subject to less favorable tax treatment on gains with respect to these investments.

Pursuant to CMN Resolution No. 4,373, in order for the investor to surrender ADSs for the purpose of withdrawing the common shares represented thereby, the investor is required to appoint a Brazilian financial institution duly authorized by the Central Bank of Brazil and CVM to act as its legal representative, who shall be responsible, among other things, for keeping and updating the investors' certificates of registrations with the Central Bank of Brazil, which entitles registered foreign investors to buy and sell directly on the B3 – *Brasil, Bolsa, Balcão*, or B3. These arrangements may require additional expenses from the foreign investor. Moreover, if the representatives fail to obtain or update the relevant certificates of registration, investors may incur additional expenses or be subject to operational delays which could affect their ability to receive dividends or distributions relating to the common shares or the return of their capital in a timely manner.

The custodian's certificate of registration or any foreign capital registration directly obtained by the holders may be affected by future legislative or regulatory changes, and we cannot assure the holders that additional restrictions applicable to them, the disposition of the underlying common or preferred shares, or the repatriation of the proceeds from the process will not be imposed in the future.

The Brazilian government has veto power over the change in our corporate control, and of our name, trademark or corporate purpose and over the creation or alteration of our Defense and Security programs, and its interests could conflict with the interests of the holders of our common shares and ADSs.

The Brazilian government holds one share of a special class of our common stock called a "golden share," which carries veto power over our change of control, name, trademark or corporate purpose and over the creation or alteration of our Defense and Security programs (whether or not the Brazilian government participates in those programs). For example, (i) in 2010, we changed our corporate name to Embraer S.A. and altered our bylaws to allow us to enter the defense and security market, which required the approval of the Brazilian government and (ii) in 2019, the Brazilian government granted its approval for the then pending strategic partnership between Embraer and Boeing. For additional information on the Transaction, see the Explanatory Note on page 4 of this annual report. The Brazilian government may veto transactions that may be in the interest of the holders of our common shares or ADSs. We cannot assure you that we will be able to obtain approvals from the Brazilian government in the future to effect important corporate changes or transactions, or other important corporate changes that may be required.

[Table of Contents](#)

Our bylaws contain provisions that could discourage our acquisition or prevent or delay transactions that you may favor.

Our bylaws contain provisions that have the effect of avoiding the concentration of our common shares in the hands of a small group of investors to promote the dispersed ownership of those shares. These provisions require any shareholder or group of shareholders that acquires or becomes the holder of (i) 35% or more of the total shares issued by us or (ii) other rights over shares issued by us that represent more than 35% of our capital, to submit to the Brazilian government a request for making a public tender offer to purchase all of our shares on the terms specified in our bylaws. If the request is approved, the shareholder or group of shareholders must commence the public tender offer to purchase all of our shares within 60 days of the date of approval. If the request is refused, the shareholder or group of shareholders must sell all of their shares that exceed the 35% limit within 30 days, so that the holding of this shareholder or group of shareholders falls below 35% of our capital stock. These provisions may have anti-takeover effects and may discourage, delay or prevent a merger or acquisition, including transactions in which our shareholders might otherwise receive a premium for their common shares and ADSs. These provisions can only be altered or overridden with the approval of our board of directors and our shareholders in a shareholders' meeting convened for this purpose and with the consent of the Brazilian government, as holder of the golden share.

Our bylaws contain provisions that limit the voting rights of certain shareholders, including non-Brazilian shareholders.

Our bylaws contain provisions that limit the rights of a shareholder or group of shareholders, including brokers acting on behalf of one or more holders of ADSs, to exercise voting rights in respect of more than 5% of the outstanding shares of our capital stock at any general meeting of shareholders. See "Item 10. Additional Information—Memorandum and Articles of Association—Description of Capital Stock—Voting Rights of Shares—Limitations on the Voting Rights of Certain Holders of Common Shares."

Our bylaws also contain provisions that limit the right of non-Brazilian shareholders to exercise voting rights in respect of more than two-thirds of the voting rights that may be exercised by Brazilian shareholders present at any general meeting of shareholders. This limitation will effectively prevent our takeover by non-Brazilian shareholders and limit the ability of non-Brazilian shareholders to effect control over us. For additional information on our voting rights, see "Item 10. Additional Information—10B. Memorandum and Articles of Association—Voting Rights of Shares—Limitation on the Voting Rights of Non-Brazilian Shareholders."

The absence of a single, controlling shareholder or group of controlling shareholders may render us susceptible to shareholder disputes or other unanticipated developments.

The absence of a single, controlling shareholder or group of controlling shareholders may create difficulties for our shareholders to approve certain transactions, because, among other things, the minimum quorum required by law for the approval of certain matters may not be reached. We and our shareholders may not be afforded the same protections provided by the Brazilian Corporate Law against abusive measures taken by other shareholders and, as a result, may not be compensated for any losses incurred. Any sudden and unexpected changes in our management, changes in our corporate policies or strategic direction, takeover attempts or any disputes among shareholders regarding their respective rights may adversely affect our business and results of operations.

Holders of ADSs may not be able to exercise their voting rights.

Holders of ADSs may only exercise their voting rights with respect to the underlying common shares in accordance with the provisions of the deposit agreement governing our ADSs. Under the deposit agreement, ADS holders must vote the common shares underlying their ADSs by giving voting instructions to the depository. Upon receipt of the voting instructions from the ADS holder, the depository will vote the underlying common shares in accordance with these instructions. Otherwise, ADS holders will not be able to exercise their voting right unless they surrender the ADS for cancellation in exchange for the common shares.

[Table of Contents](#)

Pursuant to our bylaws, the first call for a shareholders' meeting must be published at least 30 days in advance of the meeting and the second call must be published at least 15 days in advance of the meeting. When a shareholders' meeting is convened, holders of ADSs may not receive sufficient advance notice to surrender the ADSs in exchange for the underlying common shares to allow them to vote with respect to any specific matter. In addition, the depositary has no obligation to notify ADS holders of an upcoming vote or distribute voting cards and related materials to ADS holders, unless we specifically instruct the depositary to do so. If we ask the depositary to seek voting instructions from ADS holders, the depositary will notify ADS holders of the upcoming vote and will arrange to deliver proxy cards to those holders. We cannot assure you that ADS holders will receive proxy cards in time to allow them to instruct the depositary to vote the shares underlying their ADSs. In addition, the depositary and its agents are not responsible for failing to carry out voting instructions or for an untimely solicitation of voting instructions. As a result, holders of ADSs may not be able to fully exercise their voting rights.

The relative illiquidity and volatility of the Brazilian securities markets may substantially limit the ability of holders of our common shares or the ADSs to sell the common shares underlying ADSs at the price and time they desire.

Investing in securities, including our common shares or the ADSs, of issuers from emerging market countries, including Brazil, involves a higher degree of risk than investing in securities of issuers from more developed countries.

The Brazilian securities markets are substantially smaller, less liquid, more concentrated and more volatile than major securities markets in the United States and other jurisdictions and are not as highly regulated or supervised as some other markets. The relatively small market capitalization and illiquidity of the Brazilian equity markets may substantially limit the ability of holders of our common shares or ADSs to sell the common shares or the ADSs at the price and time desired. For additional information on the B3, see "Item 9. The Offer and Listing—9C. Markets—Trading on the B3."

In addition, we cannot assure you that the Transaction, if consummated, will not have an adverse effect on the liquidity of our common shares and ADSs in the market. For additional information on the Transaction, see Explanatory Note on page 4 of this annual report.

Holders of our ADSs might be unable to exercise preemptive rights with respect to the common shares.

Holders of our ADSs may not be able to exercise the preemptive rights relating to the common shares underlying their ADSs unless a registration statement under the Securities Act is effective with respect to those rights or an exemption from the registration requirements of the Securities Act is available. We are not obligated to file a registration statement with respect to the shares or other securities relating to these preemptive rights, and we cannot assure holders of our ADSs that we will file any registration statement. Unless we file a registration statement or an exemption from registration applies, holders of our ADSs may receive only the net proceeds from the sale of their preemptive rights by the depositary or, if the preemptive rights cannot be sold, the rights will lapse.

Judgments of Brazilian courts with respect to our common shares will be payable only in reais.

If proceedings are brought in the courts of Brazil seeking to enforce our obligations in respect of the common shares, we will not be required to discharge our obligations in a currency other than *reais*. Under Brazilian exchange control limitations, an obligation in Brazil to pay amounts denominated in a currency other than *reais* may only be satisfied in Brazilian currency at the exchange rate, as determined by the Central Bank, in effect on the date the judgment is obtained, and those amounts are then adjusted to reflect exchange rate variations through the effective payment date. The then prevailing exchange rate may not provide non-Brazilian investors with full compensation for any claim arising out of or related to our obligations under the common shares or the ADSs.

[Table of Contents](#)

Item 4. INFORMATION ON THE COMPANY
4A. History and Development of the Company

Corporate History

Embraer S.A. is a publicly held corporation duly incorporated under the laws of Brazil with an indefinite term of duration. Our principal executive office is located at Avenida Dra. Ruth Cardoso, 8,501 (formerly known as Avenida Nações Unidas, No. 8,501), 30th floor, Eldorado Business Tower, Pinheiros, ZIP Code 05425-070, city of São Paulo, state of São Paulo, Brazil. Our telephone number is 55-11-3040-6874, and our internet address is <http://www.ri.embraer.com.br>. Our agent for service of process in the United States is National Registered Agents, Inc., with offices at 875 Avenue of the Americas, Suite 501, New York, New York 10001.

Originally formed in 1969 by the Brazilian government, we became a publicly held corporation in 1989 and were privatized in 1994. In the privatization process, the Brazilian government created the golden share, a special class of shares to ensure that the Brazilian government has certain veto rights, in particular regarding military programs.

In 2000, we registered with the SEC and listed our American Depositary Receipts in the New York Stock Exchange.

In 2006, we promoted a corporate restructuring process focused on simplifying our capital structure, which since then is comprised of only common shares, and we also joined a special listing segment of the B3 known as *Novo Mercado*, enhancing our corporate governance standards. Since then we do not have a controlling shareholder or controlling shareholder group.

In 2010, our shareholders approved a change of our corporate name from “Embraer – Empresa Brasileira de Aeronáutica S.A.” to “Embraer S.A.,” as well as the addition of capabilities and the broadening of the scope of our Defense and Security business unit to allow this business unit to manufacture and trade equipment, materials, systems, software, accessories and components for the defense, security and energy industries, as well as to perform technical activities and services related to these areas. As a result, our bylaws were amended to reflect the addition of these activities to our corporate purposes.

In 2011 and 2012, we made acquisitions and entered into partnerships in the Defense and Security business unit, including the acquisition of Atech Negócios em Tecnologias S.A. and Bradar Indústria S.A., or Bradar (which was merged into Embraer in 2018), Savis Tecnologias e Sistemas S.A. and Visiona Tecnologia Espacial S.A.

On January 24, 2019, we entered into the Master Transaction Agreement and certain other transaction documents with Boeing and certain subsidiaries of Embraer or Boeing, pursuant to which a subsidiary of Boeing would acquire a controlling stake in Embraer’s Commercial Aviation business unit and Embraer or a subsidiary of Embraer and Boeing or a subsidiary of Boeing would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission transport aircraft. On April 25, 2020, Boeing terminated the Master Transaction Agreement. In addition, Boeing terminated the Contribution Agreement. We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing’s wrongful termination and violation of the MTA and/or the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and the Contribution Agreement by Boeing. For additional information on the now terminated Transaction, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing.”

[Table of Contents](#)

Termination of Strategic Partnership with Boeing

Overview

In December 2017, Embraer and The Boeing Company, or Boeing, announced that the two companies were engaged in discussions regarding a potential strategic partnership. In July 2018, the two companies entered into a preliminary and non-binding memorandum of understanding establishing the basic premises for a potential strategic partnership involving certain of Embraer's businesses. In December 2018, the board of directors of Embraer approved, in principle, the terms and conditions of the strategic partnership, subject to the approval by the Brazilian government, which holds the common share of special class issued by Embraer (golden share). The Brazilian government approved the Transaction (as defined below) in early 2019.

On January 24, 2019, Embraer and Boeing and certain of their subsidiaries entered into the MTA and certain other transaction agreements, pursuant to which, subject to certain approvals and other conditions precedent, a Brazilian subsidiary of Boeing would acquire a controlling stake in Embraer's Commercial Aviation business unit and Embraer and Boeing or their respective subsidiaries would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission aircraft.

Subject to the conditions in the MTA, upon consummation of the Transaction, Boeing Brazil would acquire 80% of the issued and outstanding common shares and redeemable preferred shares of the Commercial Aviation NewCo, through the subscription of new shares to be issued by the Commercial Aviation NewCo and the acquisition directly from Embraer of existing shares issued by the Commercial Aviation NewCo, at an aggregate value of approximately \$4.2 billion, subject to adjustments customary for transactions of the same nature.

On February 26, 2019, the shareholders of Embraer approved the terms and conditions of the Transaction at an annual and special general shareholders' meeting.

On January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of the Commercial Aviation NewCo of the net assets comprising of assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. In exchange for the contribution, the Commercial Aviation NewCo issued common shares and redeemable preferred shares to Embraer. The Commercial Aviation NewCo's redeemable preferred shares have a liquidation preference, right to receive an annual fixed cumulative dividend payable at a 3.3% rate, a right to be redeemed after two years from the date of issuance, and have no voting rights.

On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing's assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement.

We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement and that it had a continuing obligation to abide by the terms thereof. Embraer strongly believes that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing's wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us.

[Table of Contents](#)

For risks relating to the termination of the Transaction, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Legal proceedings pertaining to the strategic partnership with Boeing including arbitration proceedings related to Boeing’s termination of and failure to close the MTA and/or the Contribution Agreement, may adversely impact our business, financial condition and results of operations.”

Assets Held for Sale and Discontinued Operations

According to IFRS 5, in light of the approval of the then pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Business Development

We have grown from a government-controlled company, established to develop and produce aircraft for the Brazilian Air Force, into a publicly held company that produces aircraft for commercial and executive aviation and for defense and security purposes and related services.

As part of our evolution, we have obtained, developed and enhanced our engineering and technological capabilities through our own development of products for the Brazilian Air Force and through joint product development with foreign companies on specific projects. We have applied these capabilities that we gained from our Defense and Security business unit to further develop our Commercial Aviation business (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019).

Our first regional aircraft was the Bandeirante, a 19-passenger twin-engine non-pressurized turboprop aircraft initially designed to service the transport needs of the Brazilian Air Force. This aircraft was certified in 1973. The Bandeirante was followed by the EMB 120 Brasília, which was certified in 1985. The EMB 120 Brasília is a high performance, pressurized turboprop commercial aircraft seating up to 30 passengers and was designed to serve the longer routes and higher passenger traffic of the growing regional aircraft market. Drawing upon the design of the EMB 120 Brasília and the jet technology acquired in our development of the AM-X, a jet strike bomber for the Brazilian Air Force, we developed the ERJ 145 regional aircraft family, our first jet product for commercial use. This family comprises three aircraft, which seat up to 37, 44 and 50 passengers. The first member of the ERJ 145 family, the ERJ 145, was certified in 1996. We have expanded our jet product line with the development of the EMBRAER 170/190 jet family, which has the capacity to seat between 70 and 118 passengers and was designed to serve the aircraft market’s trend towards larger, higher volume and longer-range jets. The first member of this family, the EMBRAER 170, was certified in February 2004, and its derivatives, the EMBRAER 175 and the EMBRAER 190, were certified in December 2004 and August 2005, respectively. The certification of the EMBRAER 195 was granted in June 2006. In June 2013, Embraer launched the second generation of its E-Jets family of commercial aircraft, the E-Jets E2, comprising three new aircraft, the E175-E2, E190-E2 and E195-E2. The E190-E2 and the E195-E2 entered into service in April of 2018 and September of 2019, respectively. As of the date of this annual report, the E175-E2 family is engaged in the certification process to ensure compliance with regulatory requirements.

[Table of Contents](#)

Our Commercial Aviation business unit (part of our discontinued operations as of December 31, 2019) accounted for 40.9% of our total revenue, including continuing and discontinued operations, for the year ended December 31, 2019. In light of the approval of the then pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. For additional information on our assets held for sale and discontinued operations, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Partnership with Boeing—Assets Held for Sale and Discontinued Operations” and Note 4 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

We developed a line of executive jets throughout time, first the Legacy 600, which was discontinued in 2016 to focus on the success of its longer-range successor, the Legacy 650, followed by the Phenom 100, an entry-level jet, and the Phenom 300, a light jet, both launched in 2005. The Lineage 1000, an ultra-large jet, was added in 2006 as the largest executive jet in our executive jets portfolio and an enhanced version was introduced in 2013, the Lineage 1000E. In 2008, we launched the Legacy 450 and Legacy 500, both medium cabin jets. In 2009, we presented the Legacy 650, a large executive jet that is positioned in our portfolio between the Legacy 500 and the Lineage 1000E. The Legacy 500 and the Legacy 450 entered into service in October of 2014 and December 2015, respectively. In 2016, we launched the Phenom 100EV and the Legacy 650E. In 2017, the Phenom 100EV entered into service and we also launched the Phenom 300E, an enhanced version of our Phenom 300, with a revolutionary interior design, which entered into service in October 2017 with a demonstration aircraft. In our latest development, we introduced the new Praetor 500 midsize and Praetor 600 super-midsize business jets in 2018, during a company event in the Orlando Executive Airport. The Praetor 600 and Praetor 500 entered into service in June and in December 2019, respectively. In 2019, we have successfully implemented the sunset strategy of the legacy 650 and Lineage 1000E. Our Executive Jets business unit accounted for 25.6% of our total revenue, including our continuing and discontinued operations, for the year ended December 31, 2019.

We are the leading supplier of defense aircraft for the Brazilian Air Force, based on number of aircraft sold, and have sold aircraft to armed forces in the U.S., Europe, Asia and Latin America. In the defense and security market, we offer a line of intelligence, surveillance and reconnaissance aircraft, services, systems and solutions, ground radar, transportation of authorities, tactical military transport and aerial refueling (C-390 Millennium), basic and advanced training and light attack and training aircraft (Super Tucano) and satellites solutions. Using our commercial aircraft platforms, we are able to offer a comprehensive range of aircraft dedicated to transportation of officials, medical evacuation and general transportation missions for the defense and security market.

In 2018, Embraer entered into a consortium with Thyssenkrupp Marine Systems, named Águas Azuis, and, in 2019, this consortium was chosen as preferred supplier to build four new Tamandaré Class Frigates. In 2020, SPE Águas Azuis entered into an agreement providing for the manufacturing of these Class Tamandaré Ships with the Company for Naval Projects (*Empresa Gerencial de Projetos Navais – EMGEPRON*), a Brazilian government-owned company linked to the Brazilian Ministry of Defense, and the Brazilian Navy. In 2019, Embraer and Elta System formalized a strategic cooperation agreement to develop and sell a comprehensive airborne early warning, or AEW, solution based on Praetor 600 super midsize bizjet. This solution provides an affordable AEW solution comprising extended coverage and situational picture for air surveillance, air defense, and homeland security missions, law enforcement enabling monitoring of aerial activity outside ground radar detection coverage. Additionally, in 2019, Embraer delivered the first two C-390 Millennium multi-mission transport aircraft to the Brazilian Air Force.

Our Defense and Security business unit accounted for 14.2% of our total revenue for the year ended December 31, 2019. Revenues from sales to the Brazilian government accounted for 54.4% of this business unit revenue for the year ended December 31, 2019.

[Table of Contents](#)

We also provide fuel systems, structural parts, and mechanical and hydraulic systems to Sikorsky Aircraft Corporation, or Sikorsky, a Lockheed Martin Company, for its production of helicopters. We provide to Sikorsky the services of development and manufacture of the landing gear, fuel system and fuel tanks for the S-92 and H-92 Helibus helicopters. We also act as a risk-sharing partner for Sikorsky. These contracts were renewed in 2015 and will expire in 2020. In addition, we developed Ipanema, a crop duster aircraft pursuant to specifications of the Brazilian Ministry of Agriculture. These aircraft are produced only on demand. Through December 31, 2019, we had delivered a total of 1,422 of these aircraft. Our Other Related business unit accounted for 0.2% of our revenue for the year ended December 31, 2019.

On December 20, 2016, we announced the creation of Embraer Services and Support, a business unit focused on services and customer support, which brings together capabilities that were previously allocated to each business area, and is responsible for developing solutions in support of current and new products and services, as well as for managing the associated processes and resources. This represents an opportunity to obtain greater operational efficiency and recurring revenues. Currently there are approximately 2,360 Embraer commercial aircraft and over 1,400 Embraer executive jets, as well as more than 600 defense aircraft, in operation. During 2017, the new Service and Support business unit consolidated the services and customer support processes previously allocated to each of our business units to identify synergies and quantify our expertise in our Commercial Aviation, Executive Jets and Defense and Security business units regarding services and support. Since the first quarter of 2018, we have reported the Services and Support business as a separate business unit in our financial statements. For additional information, see Note 39.4 to our 2019 audited consolidated financial statements included elsewhere in this annual report. Our Services and Support business unit accounted for 19.2% of our revenue for the year ended December 31, 2019. For a description of our capital expenditures, see “Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Capital Expenditures.”

4B. Business Overview

We are the leading manufacturer of jets up to 150 seats aircraft in the world, based on the number of deliveries over the last decade, and we have a franchise footprint represented by our global customer base. Our focus is to achieve customer satisfaction with a range of products and services addressing the commercial airline, executive jets and defense and security markets. We have grown from a government-controlled company established to develop and produce aircraft for the Brazilian Air Force into a publicly held company that produces aircraft for commercial and executive aviation, and for defense and security purposes and related services. We also produce, market and sell executive jets in the entry-level and light, medium cabin, large and ultra-large categories: the Phenom 100/300 family, the Legacy 450/500 family, the Praetor 500/600, the Legacy 650E and the Lineage 1000E, respectively. Providing high quality customer support is a key element of our customer focus and is critical to our ability to maintain customers with whom we have a long-term relationship. For the year ended December 31, 2019, we generated revenue of US\$5,462.6 million, considering our continuing and discontinued operations, of which approximately 90.8% was U.S. dollar denominated. Of our revenue in 2019, 40.9% was from our Commercial Aviation business unit, 25.6% was from our Executive Jets business unit, 14.2% was from our Defense and Security business unit, 19.2% was from Services and Support business unit and 0.2% was from our Other Related business unit. As of December 31, 2019, we had a total firm order backlog of US\$16.8 billion.

Our Strengths

We believe that our primary strengths are:

Aircraft Design; Technology; Cost and Operating Efficiency. We conceive, develop and manufacture clean sheet design aircraft with cutting edge technology to provide our customers with reduced operating, maintenance and training costs due to the similarity and efficiency in design and the commonality of parts within a jet family. As an example, the all-new Praetor 500 and Praetor 600 jets share characteristics and technologies that enhance our value proposition for the midsize and super-midsize business units. These similarities enable us to significantly reduce our design, development and production costs and pass these savings along to our customers in our competitive sale prices, reducing the development time of our aircraft. Our investment in innovative technologies, such as design for automation, enable us to increase operational efficiency by reducing engineering and production costs as well as lowering customers’ maintenance costs.

[Table of Contents](#)

Strategic Risk-Sharing Partners. With respect to our commercial and business aircraft, we developed strategic relationships with key risk-sharing partners. These risk-sharing partners develop and manufacture significant portions of the systems and components of our aircraft with their own funds, thereby reducing our development expenses. These risk-sharing partners also fund a portion of our research and development expenses through direct contributions of cash or materials. These strategic relationships enable us to reduce our development expenses and risks, improve our operating efficiency, enhance the quality of our products and reduce the number of our suppliers, thereby providing us with flexibility of our production process.

Funded Development of Defense Products. Historically, development expenditures related to defense aircraft have been funded in large part by our customers, which in this business unit include the governments of different countries. These customers have had an important role in our engineering and industrial development. In addition, we use well-proven civil platforms as a solution for certain defense products.

Flexibility of Production to Meet Market Demands. We believe the flexibility of our production processes and our operating structure, including our risk-sharing partnerships, allow us to adjust our production in response to market demand.

Experienced and Highly Skilled Workforce. Our employees are experienced and highly skilled. As of December 31, 2019, engineers comprised approximately 31.0% of our workforce. Due to the high level of knowledge and skill of our employees, and our continuous training and incentive programs, we are able to efficiently pursue new programs and provide our customers with differentiated technical expertise and guidance.

Leading Commercial Aircraft Manufacturer with a Global Customer Base. Based on the number of aircraft delivered, we are the leading manufacturer of jets with up to 150 seats, with a strong global customer base. Around 170 airlines from over 80 countries are flying our commercial aircraft on five continents. Our customers include some of the largest and most significant network, regional and low cost carriers in the world.

High skilled engineering for defense application and development of market leading products for our Defense and Security business unit. Super Tucano and C-390 Millennium are the main products of our Defense and Security business unit. We believe Super Tucano is the market benchmark for its class, as it combines a rugged and reliable turboprop platform with a high precision weapons delivery system. It is the only combat-proven light attack aircraft currently in production. On the other hand, the C-390 Millennium is a multi-role military transport aircraft developed to become a market leader in its category as it is appropriate for several uses, including adverse situations such as firefighting, as well as features flexibility, strength, mobility, easy maintenance and new technology. Our workforce is highly capable of understanding the customers' requirements for our defense products and services portfolio and their operational needs, transforming it into flexible and lower lifecycle cost products with global applications. We also count with strong ability to engage with several stakeholders in partnerships, enabling the development of state-of-the-art of the defense and space solutions with reduced cycles.

[Table of Contents](#)

Business Strategies

With a view to continue growth of our business and increasing our profitability, we intend to continue to offer our customers cost-effective, high quality, and reliable aircraft and services. The key elements of our strategy are the following:

Strengthening Our Position in the Executive Jets Market. We believe we are well positioned to grow in the small and medium cabin jet classes. We have streamlined our portfolio to feature the Phenom 100EV, an entry-level jet, the Phenom 300E, a light jet, Legacy 450 and Legacy 500, both medium cabin jets, the Praetor 500 and the Praetor 600, midsize and super-midsize jets, respectively. This renewed portfolio is industry-leading in performance, comfort and technology. We have endeavored to understand and respond to market and customer needs, to continuously improve the product and customer support for our executive jets. In the last 13 years, we have introduced disruptive clean sheet design aircraft to the market. In 2019, the Phenom 300E, was yet again the most delivered light jet. This is the eighth consecutive year that the Phenom 300 series achieves this mark.

Continue to Pursue Market Niche Opportunities in the Defense and Space Market. We currently offer products for transportation, light attack, training, intelligence, surveillance and reconnaissance. With our products, we have been able to provide enhanced capabilities through a portfolio of defense-integrated solutions, meeting the needs of a wide range of governments to address their military assignments.

Consolidate our key position with the Brazilian Ministry of Defense. We are fully committed to consolidate our position as a key partner of the Brazilian Armed Forces. We believe that our state-of-art engineering, operations capability and supply chain management knowledge will continue to address the needs of our most strategic customers, including the Brazilian Ministry of Defense, providing them with personalized solution. The use of the products comprising the portfolio of our Defense and Security business unit by the Brazilian Armed Forces is an opportunity to market our products to other governments around the world, increasing the demand for our products.

Continued focus on customer satisfaction through our established and respected services and support. We believe that our focus on customer satisfaction is fundamental to our entrepreneurial success and our business strategy. Providing high quality customer services and support is a key element of our customer focus and it is critical to our ability to maintain long-term relationships with our customers and keep our products competitive in the market. As the number of our aircraft in operation continues to grow, and our business expands, we have further increased our commitment to providing our customers with an appropriate level of after-sale support, including technical assistance, training, maintenance, spare parts, product modifications and other related services. We own and manage several service centers, strategically located in various parts of the world. In addition, our customers can rely on several authorized third-party maintenance service centers around the world to comply with their maintenance needs. On December 20, 2016, we announced the creation of Embraer Services and Support. In 2017, the new business unit completed the consolidation of all services and customer processes previously allocated to each of our other business areas. Since the first quarter of 2018, we have reported the services and support business as a separate business unit in our financial statements. For additional information on our services and support network, see “—Services and Support” and “—4A. History and Development of the Company—Business Development.”

Continue to provide complete and integrated services to the customers of our Defense and Security business unit. In the Defense and Security business unit, we offer a broad range of services to our customers covering air, land, sea, space and cyber security environments. For example, Atech develops products and services in the area of command and control, communications, computer and intelligence, cyber defense, air defense and air traffic control for the defense, security and other civil applications, and Visiona develops satellite and was the prime contractor for the Brazilian Strategic and Defense Communications Geostationary Satellite, or SGDC. We are constantly evaluating, developing and efficiently integrating new opportunities to fit our clients’ needs.

Continuing to Market Our Commercial Aircraft. We are fully committed to marketing our jets of up to 150 seats. As of December 31, 2019, we had more than 500 units in the ERJ family and almost 1,400 units in the EMBRAER 170/190 jet family in active service. In 2018 and 2019, we also made the first deliveries of the 190-E2 and 195-E2 jets, respectively. In total, the E2 generation had almost 20 units in operation within two years of its entry into service. The 175-E2 jets had its first flight also in 2019, and is engaged in a certification process to ensure compliance with regulatory requirements. We believe that market opportunities exist for the EMBRAER 170/190 and for the new E2 generation, especially with airlines seeking to expand their fleet, due to organic growth, exploring new markets in the mid-density segment, and substituting aging aircraft in the below-150 seat category. Additionally commercial jets will have opportunities with mainline and low-cost carriers that are right sizing their fleets to adjust capacity and will provide us with significant opportunities to increase our competitiveness by offering a full range of jets of up to 150 seats to our customers.

[Table of Contents](#)

Committed to maintain the market leadership of our commercial jets up to 150 seats. Our new generation of commercial aircraft, the E2s, reinforce our commitment to maintain the market leadership in the segment of commercial jets up to 150 seats. Embraer's commercial aircraft have state-of-the-art engines, which, combined with aerodynamically advanced wings, full fly-by-wire flight controls and improvements to other systems, increase efficiency by delivering significant reductions in fuel burn, maintenance costs, emissions and external noise.

Continue to Motivate Our Employees and Improve Our Production Processes and Managerial Practices. We are constantly seeking to exceed our customers' expectations. In order to achieve this goal, we must, on a daily basis, continuously seek to implement the most efficient production processes and best managerial practices. Because the success of our products and services is ultimately a combination of the contribution of our employees and the production processes we have developed over the years, we recognize that we must continue to motivate our employees and refine our production processes. To that effect, we have implemented, and intend to further develop, corporate programs based on a "lean manufacturing" philosophy, such as the Embraer Enterprise Excellence Program, or P3E.

Evolution in Business Management – Passion for Excellence and P3E Programs

Launched in 2007, the Embraer Enterprise Excellence Program, or P3E, promotes excellence in corporate management, processes and products. P3E is comprised of four pillars: (i) the development of Embraer's organizational culture; (ii) personnel development; (iii) continuous training; and (iv) the pursuit of excellence and efficiency in all processes.

Based on continuous improvement, P3E encompasses all of Embraer's businesses, operating locations and processes. In addition, it generates value for stakeholders by connecting each area to value streams with resulting strategies. P3E uses the Kaizen concept as a tool to optimize processes with a particular focus on productivity gains and the elimination of waste.

In 2017, Embraer launched the Passion for Excellence Program with the goal of transforming Embraer into the best and most efficient aerospace and defense company in the world, creating value to our stakeholders. The transformation office, launched shortly thereafter, is a department that is responsible for the management of priority working areas and workstreams. The workstreams comprising this program are direct procurement, indirect procurement, design to value, inventory, engineering, manufacturing, services and support, support function, zero-based budget, organizational design, digital transformation, industrial intelligence, culture and investment forum.

In addition, our transformation office monitors project execution and adherence to expected results, while reinforcing the "lean manufacturing" and excellence concepts which have been fundamental to our Company's management since the launch of P3E in 2007.

P3E is a valuable component of the Passion for Excellence Program, both of which are managed by our transformation office.

[Table of Contents](#)

Executive Aviation Business Unit

We refer to our business aviation business unit as our “Executive Jets business.” Our current portfolio comprises the entry-level Phenom 100 EV, the light Phenom 300E, the medium cabin Legacy 450 and Legacy 500 the midsize jet Praetor 500 and the super-midsize jet Praetor 600.

We market our executive jets to companies, including fractional ownership companies, charter and air-taxi companies, high-net-worth individuals and to flight academies, both independent as well as those belonging to airlines and armed forces. Our Executive Jets business unit accounted for 25.6% of our revenue for the year ended December 31, 2019. On December 31, 2019, our firm orders in backlog for our executive jets totaled US\$1.4 billion.

In May 2005, we launched the Phenom 100 and Phenom 300, which are executive jets in the entry-level and light jet categories, respectively. The Phenom 100 jet, which carries six to eight people, received the Brazilian Aviation Authority and FAA certification in December 2008, the same month of its entry into service. The Phenom 300 carries up to ten people and has a larger fuselage and wingspan and longer range than the Phenom 100. It received the Brazilian Aviation Authority and FAA certification and entered service one year after the Phenom 100. By the end of 2019, the Phenom 100 fleet comprised more than 370 aircraft distributed in more than 30 countries and the Phenom 300 fleet comprised over 530 jets distributed in more than 30 countries. Focused on constant improvement, we launched the Phenom 100EV and the Phenom 300E in 2016 and 2017, respectively.

In May 2006, we launched the Lineage 1000, an ultra-large executive jet based on the EMBRAER 190 commercial jet platform. The Lineage 1000 is configured to accommodate up to 19 passengers in a total cabin area of 750 square feet (70 square meters). The Lineage 1000 was certified by the Brazilian Aviation Authority in December 2008 and by the FAA in January 2009 and entered service in the first half of 2009. By the end of 2018, the Lineage 1000 fleet comprised more than 25 units distributed in more than 10 countries. Continued investments in the Lineage 1000 resulted in the introduction of the Lineage 1000E, in 2013, enhancing the customer experience by extending its range capability and offering new interior amenities. In 2019, we have successfully implemented the sunset strategy of the Lineage 1000E.

In April 2008, we formally launched two new programs in the medium cabin category, the medium cabin Legacy 450 jet, with a 2,575 nautical mile range and a capacity for up to nine passengers, and the medium cabin Legacy 500 jet, with a 3,125 nautical mile range and a capacity for up to 12 passengers. The Legacy 450/500 medium cabin jets are positioned in our executive jets portfolio between the Phenom 300 and the Legacy 650. The Legacy 500 was certified by the Brazilian Aviation Authority and the FAA in 2014, the same year that it entered service. The Legacy 450 was certified by the Brazilian Aviation Authority and the FAA in August 2015 and by the EASA in September 2015. In November of the same year, we announced an increase of 2,900 nautical miles in the Legacy 450's range, and it entered service in December. In November 2017, we introduced the best-in-class 5,800-foot cabin altitude for the Legacy 450/500 jets, which further enhanced customer experience. These two aircraft programs have helped strengthen our position in the market and establish our portfolio as one of the broadest in the executive aviation industry. By the end of 2019, the Legacy 450/500 fleet was composed of more than 130 units distributed in 15 countries.

In October 2009, we introduced the Legacy 650 jet, a large jet based on the Legacy 600 platform, with a longer range for up to 14 passengers. The Legacy 650 received the Brazilian Aviation Authority and FAA certification in October 2010 and February 2011, respectively, and entered service in November 2010. The latest evolution of the aircraft that started our Executive Jets business unit is the Legacy 650E, which introduces auto-throttle and interior enhancements, in addition to a ten-year warranty, which set a new industry standard for performance and reliability. By the end of 2019, the fleet of Legacy 600 and Legacy 650 comprised more than 260 jets in service in over 40 countries. In 2019, we have successfully implemented the Legacy 650 series sunset strategy.

In October 2018, we launched the new Praetor 500 midsize and Praetor 600, the most disruptive and technologically advanced midsize and super-midsize jets, respectively, introducing unprecedented range into their categories. The Praetor 600 is expected to be the farthest-flying super-midsize business jet, which allows nonstop flights between London and New York. The Praetor 500 will be the fastest midsize aircraft, capable of reaching Europe from the west coast of the US with a single stop. The Praetor 600 was certified and entered service in June of 2019 and in December of 2019, respectively.

[Table of Contents](#)

Competition

Phenom 100EV and Phenom 300E competitors in the entry-level and light jet categories include Textron, Bombardier, Honda and Pilatus. In the medium cabin category, the Legacy 500 and Praetor 600 compete with Textron, Bombardier, Dassault and Gulfstream aircraft, while the Legacy 450 and Praetor 500 compete largely with aircraft produced by Bombardier and Textron.

Continuing Internationalization

In October 2014, we announced the opening of our Legacy 500 and Legacy 450 assembly complex in Melbourne, Florida, more than doubling the size of our campus at Melbourne International Airport. The new complex consists of four new buildings: a delivery center, an assembly hangar, a paint facility and a flight preparation facility, which are operational, as well as a new dedicated delivery center that began operations in the first half of 2018. As of December 31, 2019, our Melbourne campus had a constructed area of approximately 180,000 square feet.

Defense and Security Business Unit

We conceive, design, develop, manufacture and support a wide range of integrated solutions for the defense and security market. Our products include training, light attack aircraft, aerial surveillance platforms, military transport aircraft, government transport aircraft and command, control, communications, computer, intelligence, surveillance and reconnaissance systems and border surveillance and security. We offer a complete portfolio of customer services, ranging from maintenance and material solutions to complete Contractor Logistical Support programs.

As of December 31, 2019, we had sold more than 1,350 defense aircraft, including government transport aircraft, to more than 60 armed forces and operators worldwide. We are also the leading supplier of defense aircraft to the Brazilian Air Force based on the total number of aircraft in its fleet. Our Defense and Security business unit accounted for 14.2% of our revenue for the year ended December 31, 2019.

Products

Military Transport – C-390 Millennium

Our new multi-mission aircraft C-390 Millennium (formerly known as KC-390), maintained its features for civilian use (as certified by ANAC) and military use (as certified by the Department of Aeronautical Science and Technology – DCTA, and the Industrial Development and Coordination Institute – IFI) after its rebranding in 2019.

The C-390 Millennium is a multi-role military transport aircraft developed to set higher standards in its class. The C-390 Millennium is efficient for cargo and troop transport, aerial resupply and humanitarian missions, among other uses, as well as for uses in adverse situations, evacuations and firefighting. Designed with modern engineering solutions, this new aircraft is an innovation in military transport aviation. The C-390 Millennium features flexibility, strength, mobility, easy maintenance and new technology.

In 2016, Embraer and Boeing entered into an agreement to jointly market and support the C-390 Millennium military transport aircraft. Under the agreement, the companies will pursue new business opportunities together, both for the aircraft itself and for aircraft services and support. The C-390 Millennium completed a key milestone in 2017, when Embraer demonstrated its Initial Operating Certificate, or IOC, to the Brazilian Air Force. After making its debut at the Paris Airshow in France, the aircraft subsequently carried out demonstrations in several countries and covered an additional 90,000 km. The aircraft confirmed a high level of capability, achieving 100% availability during all flights in this period.

[Table of Contents](#)

In the fourth quarter of 2018, the C-390 Millennium reached another important milestone when it obtained a Type Certificate from ANAC. This certificate evidences that the project meets the highest standards of quality, which are the same as those used by the international air transport association.

In 2019, Embraer delivered the first two C-390 Millennium multi-mission transport aircraft to the Brazilian Air Force. The aircraft were engaged by the Brazilian Air Force on the pilots and maintenance training program. In addition, the tests campaign focused on military functionalities which have significantly evolved, highlighting the successful test accomplishment of air-to-air refueling and heavy-loads airdrop. By the end of 2019, the test campaign accumulated 2,500 flight hours. In addition, the Portuguese government signed the first export contract of C-390 Millennium aircraft, including the acquisition of five aircraft and one flight simulator, together with a 12-year contract of services to support the fleet. The first delivery is planned for 2023, and the aircraft will be used for military transport.

C-390 Millennium JV

As part of the Transaction, Embraer and Boeing (or their respective subsidiaries) had agreed to form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission airplane, based on jointly identified opportunities and development, manufacture and sales of the C-390 Millennium, in which joint venture Embraer or its subsidiary would hold the majority of the share capital. The Contribution Agreement, dated as of January 24, 2019 (the “Contribution Agreement”), that provided for the creation of such joint venture has been terminated by Boeing.

For additional information on the termination of the Transaction, see the Explanatory Note on page 4 of this annual report.

Light Attack and Training – Super Tucano

Super Tucano is an aircraft equipped for counter-insurgency scenarios, containing integrated sensors, datalink, cockpit protection and multiple weapons configurations. We believe that Super Tucano is the market benchmark in its class, as it combines a rugged and reliable turboprop platform with a delivery system of high-precision weapons. It is the only combat-proven light attack aircraft currently under production. Super Tucano is also a full-fledged advanced trainer due to its handling features, low operational cost and state-of-the-art avionics systems.

In 2017, we sold six Super Tucano aircraft to an undisclosed customer, which were delivered in 2018 to be used for tactical and advanced training as well as light attack missions. In addition, six Super Tucano aircraft were sold to the Philippine Air Force. All aircraft are expected to be delivered in 2019. The Super Tucano was selected as part of the Philippine Air Force’s modernization plan following a public bidding process involving other manufacturers. In the same year, Embraer and Mali’s Air Force entered into a settlement agreement to adjust the scope from six to four Super Tucano, after which four aircraft were delivered in 2016.

Furthermore, in the United States Air Force’s LAS program, three A-29 Super Tucano aircraft were delivered, and six additional aircraft were purchased during 2017, which are scheduled to be delivered in the first half of 2020 to the Air Force of Nigeria. In 2018, a contract was also signed for twelve A-29 Super Tucano aircraft that will be delivered in 2020 and 2021. Jointly with SNC, we have been participating in the Light Attack Aircraft (LAA) program, previously called OA-X. In early 2019, the United States Air Force (USAF) canceled the LAA program. After deciding to proceed with additional LAA experiments, the USAF purchased two A-29 aircraft for use by the Air Force Special Operations Command (AFSOC). The aircraft are expected to be delivered in 2020.

[Table of Contents](#)

In 2019, we sold five A-29 Super Tucano aircraft to an undisclosed customer. The deliveries are planned by 2021 and the aircraft will be used as light attack. Four A-29 Super Tucano aircraft were sold to another undisclosed customer. All aircraft are expected to be delivered in 2020. Additionally, in 2019, an integrated solution was delivered to an undisclosed customer compound of two Super Tucano aircraft, three SABER M60 Radar Units and three SENTIR M20 Radar units.

In 2020, the USAF transferred the LAA mission and associated funds to the U.S. Special Operations Command (SOCOM). SOCOM announced a new program named “Armed Overwatch” to acquire 75 armed aircraft. We have the opportunity to participate in a bidding process along with other manufacturers for the purchase of these aircraft with our reconnaissance aircraft or the A-29 Super Tucano.

Fighter – F-X2 Project

In July 2014, Embraer Defense and Security and Saab entered into a memorandum of understanding to collaborate in a joint management program for the F-X2 Project, pursuant to the selection of the Gripen NG as Brazil’s next generation fighter jet. Under this agreement, we will perform a material role in the overall program, as well as undertake an extensive share of work in systems development, integration, flight testing, final assembly and aircraft deliveries of both the single and two-seat versions of the state-of-the-art Gripen NG aircraft for the Brazilian Air Force. The contract between the companies that establishes the partnership for joint development, industrialization and management of the F-X2 Project for the Brazilian Air Force, became effective in 2015. We participate in the coordination of all development and production activities in Brazil. Furthermore, we and Saab will work together in the development of the two-seat version of the Gripen NG.

By December 2017, a team of more than 120 Embraer engineers and technicians were in Sweden to conduct initial training in maintenance and development work for the Gripen NG. All the technology developed by the joint team will be transferred to Brazil later. A dedicated engineering development center for this program, the Gripen Design Development Network, or the GDDN, was inaugurated at Embraer’s industrial plant in Gavião Peixoto in the State of São Paulo to support the Brazilian Air Force Program. In June 2017, the first Gripen E prototype flight took place in Sweden.

In October 2018, at Vidsel Test Range in the north of Sweden, the Gripen E fighter successfully completed the first tests to verify the ability to release and launch external payloads. The tests conducted by the first test aircraft consisted of discharging an external fuel tank and firing an IRIS-T air-to-air missile.

In August 2019, the Brazilian Fighter Gripen E achieved its first flight, being introduced to the Brazilian Air Force in September of the same year. The flight test campaign started at Saab and, in 2020, will continue at Embraer in Brazil. The prototype used for the first flight included software features developed by Embraer’s engineers. The first Gripen development simulator (S-RIG) was completed in November 2019 at the Embraer facility in Gavião Peixoto.

Special Transportation Aircraft

We have two ongoing programs under an agreement to develop special transportation aircraft. The first special mission program is I-X, entered into between Embraer and the Brazilian Air Force. The agreement started in 2014 with the sale of six Legacy 500 aircraft adapted to flight inspection missions. Due to budgetary constraints of the Brazilian government at the end of 2017, the scope had to be adjusted from six to four aircraft. In 2019, the last aircraft of four Legacy 500 units was delivered to the Special Flight Inspection Group (GEIV).

The second program started at the end of 2018 with the sale of two Phenom 100 aircraft to an undisclosed customer. All deliveries were concluded in 2019.

[Table of Contents](#)

Modernization Programs

We offer military aircraft modernization services and currently have four ongoing programs under contract, of which three are with the Brazilian Air Force and one with the Brazilian Navy. The first program, known as F-5BR, is focused on performing structural and electronics upgrades for F-5 fighter jets. In 2012, we concluded the modernization and delivery of 46 F-5 jets to the Brazilian Air Force. In 2011, a contract to modernize one additional batch of 11 F-5 fighter jets was signed. During 2015, the scope of this contract was reduced from 11 to three aircraft. As of December 31, 2019, two aircraft were delivered.

The second program, known as the A-1M modernization program, focuses on modernizing the AM-X aircraft, which is an aircraft developed and sold by us to the Brazilian Air Force approximately 20 years ago and became technologically outdated overtime. From 2013 to 2014, Defense and Security delivered three A-1M fighter jets to the Brazilian Air Force. Due to Brazilian government budget constraints, the scope was adjusted from 43 to 14 aircraft at the end of 2016. In 2019, we delivered two such aircraft.

The third program relates to the upgrade of A-4 Skyhawk fighter jets (AF-1 Brazilian Navy Designation), aimed at incorporating new technology, including new avionics, radar, power generation and independent oxygen generating systems. In 2019, the scope was adjusted from 12 to 7 aircraft. Until 2019, five modernized AF-1 (AF-1B) fighter jets were delivered to the Brazilian Navy.

The fourth program entered into between Embraer and the Brazilian Air Force relates to the modernization of five EMB 145 Airborne Early Warning and Control aircraft. This related agreement also provides for six mission planning and analysis stations, which will be employed for training and crew improvement. In 2019, Embraer performed the first flight of these modernized aircraft. The deliveries are planned for 2022.

Radars Programs

In 2019, Embraer delivered a modernized SABER M60 Radar unit to an undisclosed customer. The radar will be used as a tactical defense system. During the period, the contract for the acquisition of fourteen SABER M60 Radar mockups was signed between Embraer and the Brazilian Army. The mockups will be used for training. Additionally, in the same year, Embraer sold five anti-aircraft operations centers (*Centro de Operações de Artilharia Antiaéreas* – COAAe) to the Brazilian Army. The operations centers will be used for land surveillance.

Principal Defense and Security Subsidiaries and Joint Ventures

Savis Tecnologia e Sistemas S.A.

Savis Tecnologia e Sistemas S.A., or Savis, our affiliate, is an engineering company dedicated to system integration, and specializes in the development, integration, project management, implementation and life cycle support of border protection projects and of strategic structures defense. Savis is the lead system integrator for Brazilian Army's SISFRON; we believe it is one of the largest ongoing border surveillance projects in the world.

The year 2020 represents an important milestone in the implementation of the first phase of the SISFRON Program. All different solutions and technologies have been tested and validated by the Brazilian Army in operational scenarios, enabling its follow-on application and continued development in the next phases of the program. We expect that the pilot phase will be concluded by 2022.

In 2019, Savis and the Brazilian Army amended the SISFRON agreement to add price escalation clauses, among other provisions. Additionally, in 2019 the Brazilian Army compensated us for currency conversion losses according to the terms of the SISFRON agreement.

[Table of Contents](#)

In December 2019, Savis received a request for a proposal related to phase 2 of the SISFRON Program.

Atech

Atech is a Brazilian company, wholly owned by us since 2013, focused on complex systems for critical missions, developing products and services in the area of command and control, communications, computer and intelligence, cyber defense, air defense and air traffic control for defense, security and other civil applications. Atech has worked in many Brazilian government strategic projects, including a nucleus-electric generation laboratory program, or LABGENE, which aims to develop a protection and control system for the nuclear reactor and the Brazilian air defense systems. Atech is also responsible for the development, implementation and modernization of the Brazilian air traffic control centers.

In 2018, Atech advanced on several fronts, such as contracting with main suppliers for the LABGENE, receiving and accomplishing several tests of acceptance for the control and monitoring sub-systems, as well as the inauguration of the first replica of the control room. In the area of air traffic control in Brazil, Atech completed the upgrade of the aeronautical messaging system (AMHS) and the implementation of the platform for evaluation and simulation of the new aeronautical communications network (ATN-BR). In the defense market, it also successfully concluded tests for the acceptance of the first fixed center for air traffic control and surveillance in a North African country, as well as the delivery of the first mobile air and ground surveillance centers. In the naval helicopter for the Brazilian Navy (H-XBR) program, the final certification of the tactical naval data management system was obtained, concluding the program's development phase with the delivery of two complete sets with the embedded console tactical and mission computers.

In 2019, Atech concluded the LABGENE program with the hiring of the main suppliers of the subsystems of the program and the performance of factory acceptance tests in the control and monitoring subsystems. In the area of air traffic control, the SAGITARIO system was fully implemented in Venezuela, after being implemented in Paraguay. In 2019, Atech has also completed the project relating to the air traffic flow management system (Skyflow) to the Airport Authority of India, meeting all customer requirements. In Brazil, factory acceptance of the project to centralize flight plans for DECEA was completed. In the defense market, in a partnership with Embraer, Atech delivered a simulator for the Gripen BR program. In the same year, Águas Azuis consortium, to which Atech is a party, was selected by the Brazilian Navy for the supply of four Tamandaré class ships. Atech will provide the Integrated Platform Management System (IPMS), which is expected to be delivered, together with the class ships, to the Brazilian Navy in 2025.

Visiona Tecnologia Espacial S.A.

Embraer and Telecomunicações Brasileiras S.A., or Telebras, formed Visiona Tecnologia Espacial S.A., or Visiona, of which Embraer holds a 51% stake and Telebras 49%. Through this agreement between Embraer and Telebras, Visiona became the prime contractor for the Brazilian Strategic and Defense Communications Geostationary Satellite, or SGDC, with responsibility for the system integration.

In December 2016, after a successful phase of environmental and functional tests, Visiona delivered the SGDC satellite that will be operated by Telebras and the Brazilian Ministry of Defense. The ground system's test and validation was also concluded in December 2016.

In 2017, the SGDC X-Band services (6 GHz to 8.5 GHz), which is used for strategic defense communication was launched successfully, and Telebras took over its control. Visiona has also entered into an agreement to support Telebras in its satellite operations.

In 2018, Visiona launched the VCUB nano-satellite program, the first satellite designed by a company in the Brazilian industry, and entered into partnerships with INPE, SENAI-SC/EMBRAPII, Government of Santa Catarina, CEMADEN and EMBRAPA for technological development and evaluation of the products generated by satellite.

[Table of Contents](#)

In 2019, Visiona made substantial progress in the VCUB program, successfully concluding the satellite Preliminary Design Review and, later in the year, all subsystems Critical Design Reviews. Visiona has also entered into cooperation agreements with CPRM, the Brazilian geological survey, and the São José dos Campos municipality, for evaluation of the use of the VCUB in geological survey and city management applications. Additionally, Visiona has entered into an agreement with the Brazilian Army for airborne P-Band radar remote sensing services using technology licensed from Embraer. We expect this opportunity to open a new business unit for Visiona's remote sensing services.

Competition

Our military aircraft faces competition from various manufacturers in different countries in each market segment. The Super Tucano competes in the light attack market with the Textron AT-6 (USA), L3 AT-802L Longsword (USA), Textron Scorpion (USA), Leonardo M-345 (Italy), Aero Vodochody L-159 (Czech Republic), among others. In the flight training market, it competes with the Pilatus PC-21 (Switzerland), Textron T-6A/B (USA), Aero Vodochody L-39NG (Czech Republic), among others.

In the military transportation segment, the C-390 Millennium operates in the medium airlift segment in the class of 20 tons. Accordingly, its main competitor is the Lockheed Martin C-130J (USA). Due to the multi-mission design of the C-390 Millennium, including medical evacuation, search and rescue, firefighting, air-to-air refueling, transport of troops and aerial resupply, we expect specific competition with the Airbus A400M and Kawasaki C-2 with respect to air-to-air refueling missions, Airbus C-295 with respect to search and rescue missions, Leonardo C-27J with respect to passengers aircraft convertible into troop transportation aircraft, Ilyushin IL-76 with respect to firefighting aircraft, as well as C-130J, which is our biggest competitor in all of these categories.

In the VIP transportation segment, which comprises the aircraft that will be used by government officials and authorities, our business jets face competition from the main manufacturers of business jets, such as Bombardier (Canada), Gulfstream (USA), Textron (USA) and Dassault (France).

Services and Support Business Unit

On December 20, 2016, we announced the creation of Embraer Services and Support, a business unit focused on services and customer support, which brings together capabilities that were previously allocated to each business unit, and is responsible for developing solutions in support of current and new products and services, as well as for managing the associated processes and resources. This represents an opportunity to obtain greater operational efficiency and recurring revenues. Currently there are approximately 2,360 Embraer commercial aircraft and over 1,400 Embraer executive jets, as well as more than 600 defense aircraft, in operation. During 2017, the new business unit of Embraer Services and Support consolidated the services and customer support processes previously allocated to each of our business units to identify synergies and quantify our expertise in our Commercial Aviation, Executive Jets and Defense and Security business units regarding services and support. Since the first quarter of 2018, we have reported the Services and Support business unit as a separate segment in our financial statements. For further information, see Note 39.4 to our consolidated financial statements as of and for the year ended December 31, 2019. Our Services and Support business unit accounted for 19.2% of our revenue for the year ended December 31, 2019.

Executive Jets Industry

Our executive jets customer fleet has expanded globally and has a strong presence in major markets. We expect to continue enhancing customer services and support offered to our Executive Jets business unit. Between 2008 and 2010, we added seven wholly owned service centers to support our executive and defense aircraft in Fort Lauderdale, Florida, U.S.; Melbourne, Florida, U.S.; Mesa, Arizona, U.S.; Bradley, Connecticut, U.S.; Le Bourget, France; Gavião Peixoto and Sorocaba, São Paulo, Brazil. At the end of 2019, we had eight service centers to support our executive and defense jets fleet; including OGMA in Lisbon, Portugal, and 62 authorized service centers around the world. In addition, in order to ensure customer satisfaction, we implemented a new spare parts system and planning policy to generate synergies among business units. Our new planning policy will further enhance stock optimization and service levels, offering customers an availability between 92% and 98% for our spare parts items.

We have further developed our customer services and support structure to enhance our customers' satisfaction in operating our Executive Jets business unit. To measure our customers' satisfaction, we conduct a yearly customer experience survey of executive jet customers to develop action plans that will allow us to provide effective responses to our clients. Our Customer Support Contact Center counts on a team of specialists dedicated to support all Embraer Executive Jets and offers complete and timely assistance for their operational, technical and maintenance needs. This Customer Support Contact Center operates 24 hours a day, seven days a week, and is based at Embraer's headquarters in São José dos Campos. Its priority is to minimize downtime from the customer's first contact to final completion, by quickly and efficiently applying appropriate resources to critical needs, assuring that customers have expert assistance anywhere in the world.

Since 2014, our product support has been top-ranked in industry surveys. In 2016, for the first time we were number one in both the AIN and Pro Pilot Product Support Surveys. In 2017, AIN ranked us first for project support. In 2018, we were ranked number one in the Pro Pilot Product Support Survey and number two in AIN's Product Support Survey. In 2019, we were top ranked in the Pro Pilot Product Support Survey and in AIN's Product Support Survey. The positive customer responses evidenced by these surveys demonstrate our efforts in providing excellent customer services and support which are consistent with our business strategy and demonstrate Embraer's commitment in this regard.

In 2019, our four service centers in the United States received for the ninth time the FAA Diamond award, a certificate of excellence related to maintenance technician training.

Defense and Security Industry

The Services and Support business unit provides solutions to several air forces and government entities through our comprehensive portfolio. These solutions are tailored to our customer needs and may include provision of material, training, maintenance, engineering and other aspects that will enhance fleet availability and mission readiness.

Our support services may range from simple transactional sales to integrated support programs. We assess our customer capabilities and requirements in order to define the integrated solution that will keep the fleet operating in the most effective way.

[Table of Contents](#)

The multi-mission C-390 Millennium has a dedicated team to design and implement the most effective entry into service solution. The customer participates directly in the process, alongside the Embraer team, encompassing overall strategy as well as specific details, assuring a reliable and smooth operation from the beginning of the process.

As part of the integrated support program, we also provide services to new and existing customers of our Super Tucano, which is an aircraft used by several air forces around the world.

Additionally, we also provide support aircraft services to passenger carriers from several government organizations. For instance, we have support services designed to fulfill requirements, including sale of spare parts, maintenance, training and technical support, among others, relating to (i) recent aircraft Phenom 100, Phenom 300, Legacy 450; (ii) older aircraft, including Legacy 600 and ERJ-145, and (iii) legacy aircraft, including Bandeirantes (EMB-110) and Brasília (EMB-120). Through the support services we provide to our customers, we can complement commercial or business aircraft with equipment and sensors, thereby making our customers' fleet available for different types of missions.

One of the pillars of the Services and Support business unit is to keep old aircraft in service. We provide engineering solutions to our customers designed to overcome material shortages or technical difficulties of obsolete aircraft by means of incorporation of modern technologies into older aircraft, making their operation reliable, safe and cost-effective.

We provide a full range of services in different countries, often operating together with our customers' teams in their own bases. In order to provide specific activities and comprehensive maintenance solutions, we own and operate maintenance, repair and overhaul, or MRO, service centers as follows:

- Alverca, Portugal, which we refer to as OGMA, which became operational in March 2005 and provides services to our commercial aviation, executive aviation and defense and security customers; and
- Gavião Peixoto, in the State of São Paulo, Brazil, where we have a dedicated service center for defense and security customers.

These MRO service centers are adapting their capabilities for purposes of providing C-390 Millennium maintenance services.

In 2019, as a result of our sales efforts, we entered into new service support agreements in Latin America, Europe, Africa and Asia to support our Defense and Security customers, thus improving the quality of service in order to meet our customers' operational requirements.

Indústria Aeronáutica de Portugal S.A. – OGMA

Indústria Aeronáutica de Portugal S.A.—OGMA, or OGMA, located in Alverca, Portugal, combines the accumulated know-how as an aircraft manufacturer and maintenance service provider. It offers worldwide MRO services, for defense, commercial and executive aviation as well for aircraft engines and components. Furthermore, OGMA plays an important role as a major aerostructures supplier of integrated solutions to OEMs and first tier suppliers. OGMA delivers assemblies and sub-assemblies of both metallic and composite materials. Embraer owns 65% of the voting capital of OGMA and the Portuguese State owns the remaining 35%.

In 2018, OGMA celebrated 100 years of activity in the aeronautical market. Since its formation, OGMA has been investing in the areas of MRO and manufacturing of aerostructures. In 2018, it also entered into an agreement for the maintenance and management of the Brazilian Air Force's C-130 aircraft fleet, strengthening OGMA's position in this market. OGMA further extended the MRO spectrum, obtaining certification for maintenance of the Rolls-Royce AE1107 engine. In addition, it also entered into a pylon manufacturing agreement with one of the largest manufacturers of executive aircraft.

[Table of Contents](#)

Additionally, as of the date of this annual report, OGMA is developing the Supplementary Type Certificate (STCs) to integrate additional functionalities and certify the C-390 Millennium according to NATO requirements in the scope of the agreement entered into with the Portuguese Air Force (FAP) for five C-390. Pursuant to the terms of subcontracting agreement we have with OGMA, OGMA is also responsible to perform the maintenance activities related to the delivery of the C-390 Millennium aircraft to the FAP from March 2023 until March 2027.

Other Related Business Unit

We provide fuel systems, structural parts, and mechanical and hydraulic systems to Sikorsky Aircraft Corporation, a Lockheed Martin Company, for its production of helicopters. We also manufacture general aviation propeller aircraft, also known as light aircraft, such as crop dusters. Our Other Related business unit accounted for 0.2% of our revenue for the year ended December 31, 2019.

We provide Sikorsky Corporation with the development and manufacture of landing gear, fuel systems and fuel tanks for the S-92 and H-92 Helibus helicopters. We also act as a risk-sharing partner for Sikorsky. These contracts were renewed in 2015 and will expire at the end of 2020.

We also have Ipanema in our Other Related business unit pipeline, which is a crop duster aircraft developed pursuant to the specifications of the Brazilian Ministry of Agriculture. These aircraft are produced only on demand. As of December 31, 2019, we have delivered a total of 1,422 of these aircraft, including 15 in 2019.

[Table of Contents](#)

Discontinued Operations – Commercial Aviation Business Unit

In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

We design, develop and manufacture a variety of commercial aircraft. Our Commercial Aviation business unit accounted for 40.9% of our revenue for the year ended December 31, 2019. As a result of our then-pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded our Commercial Aviation business unit and related services in one single line item and the balances of assets and liabilities and the statement of operations were presented as held for sale and discontinued operations. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Termination of Strategic Partnership with Boeing

On January 24, 2019, we entered into the Master Transaction Agreement and certain other transaction documents with Boeing and certain subsidiaries of Embraer or Boeing, pursuant to which a subsidiary of Boeing would acquire a controlling stake in Embraer's Commercial Aviation business unit and Embraer or a subsidiary of Embraer, and Boeing or a subsidiary of Boeing, would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission aircraft. On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing's assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement. We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing's wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us. For additional information on the termination strategic partnership with Boeing, see Explanatory Note on page 4 of this annual report.

For risks relating to the termination of the Transaction, see "Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Legal proceedings pertaining to the now-terminated strategic partnership with Boeing, including arbitration proceedings related to Boeing's termination of and failure to close the MTA and the Contribution Agreement, may adversely impact our business, financial condition and results of operations."

Assets Held for Sale and Discontinued Operations

According to IFRS 5, in light of the approval of the then-pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the

[Table of Contents](#)

statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Products

ERJ Jet Family

We developed the ERJ family, our 37-50-passenger twin jet-powered regional jet, introduced in 1996, to address the growing demand among regional airlines for medium-range, jet-powered aircraft. Until the launch of the EMBRAER 170/190 Jet Family, the ERJ was our most important product, achieving great results and being responsible for consolidating our presence in the United States regional market. As of December 31, 2019, more than 500 ERJ aircraft remained in service around the world.

EMBRAER 170/190 Jet Family

The EMBRAER 170/190 jet family provides our customers four aircraft models in the regional passenger jet range. The EMBRAER 170 is a 66-78 seat jet and the EMBRAER 175 is a 76-88 seat jet, while the EMBRAER 190 is a 98-114 seat jet and the EMBRAER 195 is a 100-124 seat jet. The EMBRAER 170 was certified by the Brazilian Aviation Authority, the FAA, the Joint Aviation Authority of Europe (the former advisory organization that made certification recommendations to non-European Union national authorities), or the JAA, and the EASA in February 2004, and deliveries of the EMBRAER 170 began in March 2004. The EMBRAER 175 was certified by the Brazilian Aviation Authority in December 2004, by the EASA in January 2005 and by the FAA in August 2006. The EMBRAER 190 was certified by the Brazilian Aviation Authority in August 2005, by the FAA in September 2005 and by the EASA in June 2006. The EMBRAER 195 was certified by the Brazilian Aviation Authority in June 2006, by the EASA in July 2006 and by the FAA in June 2007.

We designed the EMBRAER 170/190 jet family to maximize the benefits of commonality. Aircraft in the family share approximately 86% of the same components. The high level of commonality in this jet family lowered our development expenses and shortened our development period. We believe that this commonality leads to significant savings to our customers in the form of easier training, less expensive parts and maintenance and lower operational costs. Due to differences in size and weight, the EMBRAER 170/190 jet family does not share the same wing design. This new regional jet family has engines fixed under its main wings—a design intended to enhance power, improve fuel economy and minimize turnaround times. All of the aircraft models of this family are powered by engines manufactured by General Electric Aircraft Engines and contain state-of-the-art avionics manufactured by Honeywell International Inc. (Aerospace).

The EMBRAER 170/190 jet family's principal features are:

- *Performance.* All four jets in the EMBRAER 170/190 jet family have a maximum cruising speed of Mach .82. The EMBRAER 170 and the EMBRAER 175 with all passengers on board have maximum ranges of 1,800 and 1,750 nautical miles, respectively, and each is available in the advanced-range version, with maximum ranges of 2,150 and 2,250 nautical miles, respectively. The EMBRAER 190 and EMBRAER 195 with all passengers on board have maximum ranges of 1,850 and 1,600 nautical miles, respectively, and each is available in the advanced-range version with maximum ranges of 2,450 and 2,300 nautical miles, respectively.

[Table of Contents](#)

- *Ground servicing.* The underwing engine design and the existence of four doors, two in the front and two in the back, provide for enhanced accessibility and efficiency of ground services.
- *Cabin and cargo space.* We have enhanced passenger safety and comfort in the EMBRAER 170/190 jet family. The aircraft's "double-bubble" design enables a four-abreast cabin, a wide aisle, greater interior space and headroom, and a larger baggage compartment than the regional jets of our competitors, including those regional jets that are in the development stage.

E-Jets E2Family

In June 2013, we launched the second generation of our E-Jets family of commercial aircraft, named the E-Jets E2, comprising three new aircraft, the E175-E2, E190-E2, and E195-E2. The E190-E2 and E195-E2 entered service in April of 2018 and October of 2019, respectively. As of the date of this annual report, the E175-E2 family is engaged in the certification process to ensure compliance with regulatory requirements.

The launch of the E2 advances our vision of offering leading-edge commercial aircraft with a capacity for 70 to 150 seats, seamless mainline comfort and performance for flexible and efficient utilization by regional, low-cost and network carriers. Our strategy is to offer all the benefits of a new design, but with the reliability of an updated platform and commonality with current generation E-Jets. We have continually invested in the E-Jets program, so that our customers can stay competitive with aircraft that have the lowest operating costs and the highest passenger appeal.

In a typical single-class layout, the E175-E2 was extended by a one-seat row, compared to the current generation E175, and will seat up to 90 passengers, while the E190-E2 is the same size as the E190, of up to 114 seats. The E195-E2, compared to the current E195, has grown by three-seat rows and will accommodate up to 132 seats in a typical single class configuration or up to 144 seats in a high-density configuration.

In June 2015, two years after the launch of the program, we began to assemble the first of the E-Jets E2 family, an E190-E2, at our factory in São José dos Campos.

In November 2015, the Pratt & Whitney PW1900G PurePower® Geared Turbofan™ (GTF) engine for the Embraer E190-E2 and E195-E2 aircraft successfully completed its first flight initiating the engine's flight test program.

In February 2016, in a ceremony held at our plant in São José dos Campos, we presented the E190-E2, which made its first flight in May 2016. In March 2017, in a ceremony held at our plant in São José dos Campos, we presented the second model of the E2 generation. In March 2017, we announced that Azul, the largest operator of the current generation E195s in the world, as the launch operator of the E195-E2. Azul has 51 firm orders of the E195-E2. In April 2019, the E195-E2 received simultaneous approval and was certified by ANAC, the FAA and EASA. In September 2019, we delivered the first E195-E2 aircraft to Azul in a ceremony held in the São José dos Campos's facility. The E195-E2 aircraft entered into service in October of 2019.

On February 28, 2018, we received a Type Certificate from the National Civil Aviation Agency, the FAA and EASA for the E190-E2, the first member of the E-Jets E2 family of commercial aircraft. It was the first time that an aircraft program with the level of complexity of the E2 received a type certificate from three major worldwide certification authorities simultaneously.

On April 4, 2018, in a ceremony held in São José dos Campos, we celebrated the delivery of the first aircraft E190-E2 to Widerøe, the largest regional airline of Scandinavia. The aircraft entered into service in the same month and performed a sold-out flight between Bergen and Tromsø in Norway.

[Table of Contents](#)

Customers

We have a diverse, global customer base, and our major operators for commercial aircraft include some of the largest regional, low-cost and mainline airlines in the world. As of December 31, 2019, our largest E-Jet customers by number of aircraft in service are Republic, Skywest, Envoy Air, JetBlue, Mesa, Azul, Aeromexico, KLM Cityhopper, Compass, Tianjin-HNA and Lot Polish. In addition, as of December 31, 2019, 78.9% of our firm orders in backlog for the current EMBRAER 170/190 jet family are from the airlines Republic Airlines, United Airlines, and Skywest. Moreover, our E-Jets E2 family backlog mainly comprises orders from the companies Azul, AerCap, AirCastle and AirPeace, which represent approximately 85% of our E-Jets E2 family orders.

We generally sell our commercial aircraft pursuant to contracts with our customers on a fixed-price basis, adjusted by an escalation formula. Our contracts generally include an option for our customers to purchase additional aircraft at a fixed-price option, subject to the same escalation formula. In addition, our contracts include a product support package to cover the entry into service of our aircraft, as well as a general warranty for such aircraft. Other provisions for specific aircraft performance and design requirements are negotiated with our customers. In addition, some of our contracts contain cancellation provisions and trade-in options and financial and residual value guarantees. See “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Some of our aircraft sales may be subject to financial and residual value guarantees and trade-in options that may require us to make significant cash disbursements” for a more detailed discussion of these provisions.

Sales and Marketing

Our current marketing strategy is based upon our assessments of the worldwide commercial airline market and of the needs of our customers. We actively market our aircraft to international airlines and regional affiliates of major global airlines through our regional offices in the United States, Europe and Asia. Our success depends, to a significant extent, on our ability to discern our customers’ needs, including needs for customer service and product support, and to fill those needs in a timely and efficient manner while maintaining the high quality of our products. Our market and airline analysts focus on the long-term trends of the market, competitive analysis, product-enhancement planning and airline analysis. In terms of direct marketing to our customers, we rely on relationship development, social media and professional networks, as well as participating in air shows and other cost-effective events that enhance customer awareness and brand recognition. Besides São José dos Campos in Brazil, we have regional sales offices in Amsterdam, Holland; Fort Lauderdale, Florida, U.S.A.; Beijing, China; and Singapore.

Production, New Orders and Options

Prior to starting production or development of a new project, we secure letters of intent for future orders of a significant number of aircraft. We typically begin taking orders and building a backlog two years before we begin producing a new aircraft model, aiming to receive a significant number of orders before we deliver the initial aircraft. Once an order is taken, we reserve a place for that order on the production line, ensuring that we will maintain production sufficient to meet demand. Once a place is reserved on the production line, we are able to give customers delivery dates for their orders.

We include an order in backlog once we have received a firm commitment, represented by a signed contract. Our backlog does not include options and letters of intent for which definitive contracts have not been entered into.

Our options generally provide our customers the right to purchase an aircraft at a fixed price and on a specified delivery date, subject to escalation provisions, under a purchase agreement. Once a customer decides to exercise an option, we account for it as a firm order. Occasionally, we have extended the exercise date for our options and renegotiated the delivery schedule of firm orders, as well as allowed customers to convert their firm orders or options for one aircraft into firm orders or options for another aircraft within the same commercial aircraft family.

[Table of Contents](#)

Services and Support

We are working on further developing our portfolio of services for our Commercial Aviation customers, which comprises the following areas:

- field Support, which provides convenient, accessible, on-site or remote assistance for all operational and technical issues in order to maximize customer performance;
- technical Support, which serves technical needs through analytics, engineering expertise, and real-time fleet monitoring;
- flight Operations, which supports the efficiency and safety of airline operations through tailored solutions, consulting, supervision and training resources;
- aircraft Modification, which provides execution and coordination of system upgrades for improved fleet performance and cabin modifications for enhanced onboard amenities;
- materials, which ensures availability and economy in parts and materials management for both scheduled and unscheduled maintenance;
- maintenance, which provides optimized maintenance solutions based on best practices for efficiency, safety and effectiveness;
- training, which prepares crew, maintenance technicians and operations personnel for the highest levels of competence; and
- Digital Solutions, which deploys the internet as the core communication channel for 24 hours a day, seven days a week collaboration and information exchange.

We have a worldwide presence, with five regional units strategically positioned around the globe in order to provide us with greater agility in understanding the needs and desires of our customers and respecting the cultural diversity of the different regions where our customers are based. Our regional units are located as follows:

- Fort Lauderdale, Florida, U.S.A., which supports our customers in North America;
- Amsterdam, Netherlands, and Paris, France, which supports our customers in Europe, Africa, the Middle East and Central Asia;
- Singapore, which supports our customers in the Asia Pacific region;
- Beijing, China, which supports our customers in China; and
- São José dos Campos, Brazil, which supports our customers in Latin America.

All units mentioned above have the following infrastructure:

- a spare parts distribution center;
- technical and material field support teams with field engineers and customer account managers;
- warranty and repair administration offices; and
- services sales managers.

[Table of Contents](#)

In São José dos Campos, we also offer the following services:

- Customer Care Center, providing an integrated solution of technical and spare parts support available 24 hours a day, seven days a week;
- spare parts planning and material engineering;
- technical support;
- flight operations support;
- maintenance support engineering;
- maintenance Repair and Overhaul, or MRO, network management strategy and policy;
- business development support;
- technical publications development; and
- technical services, such as: maintenance training, Digital Solutions, engineering services, pilot services and aircraft modifications.

Beyond parts fulfillment and simple rental plans, we also provide innovative programs for material planning, logistics, and acquisitions, such as our:

- Flight-Hour Pool Program;
- Parts Consignment Program;
- Embraer Collaborative Inventory Plan;
- Embraer Parts Exchange Program; and
- Customer Stock Optimization.

We own a full flight simulator, which is operated by the Embraer Training Center in Johannesburg, South Africa, and supports our fleet growth in the African market.

We own and operate MRO facilities in Nashville, Tennessee, where we have the Embraer Aircraft Maintenance Services, a dedicated service center for commercial aviation, and through Indústria Aeronáutica de Portugal S.A, or OGMA, in Alverca, Portugal and Embraer Service Center in Gavião Peixoto, Brazil we offer dedicated maintenance services to both commercial and defense customers.

The Embraer MRO Network that supports our commercial aviation aircraft fleet is also expanding with our third-party maintenance service centers. As of December 31, 2019, these centers are:

- STAECO, in Jinan, China;
- HNA Technik, in Tianjin, China;
- SIA Engineering Company, in Singapore; and
- Hawker Pacific, in Singapore.

[Table of Contents](#)

Our strategy is to target our services and support leadership position by continuing to provide the best customer support anytime and anywhere in the world, and relying on our strong MRO Network, which satisfies customers' expectations of quality, lead time, affordability, capability and global coverage.

We constantly monitor customer satisfaction levels and keep open communication channels with them to understand customer needs and define the most appropriate actions for the continuous improvement of our customer support. To do so, we use the following tools and forums:

- a customer support satisfaction survey performed annually in order to identify our competitive position;
- specific action plans and commitments with each customer, known as Customer Integrated Action Plans;
- teamwork and systematic identification and integrated action plans to solve problems affecting us, our suppliers and customers;
- periodic dedicated meetings at the customer's headquarters;
- Embraer Operators' Conferences, which are yearly events typically held in regions of the world where we have customer operators;
- Maintenance Cost Workshop, which is typically a yearly event where operators share best maintenance practices and discuss cost reduction initiatives;
- interactive forums for discussions in the web portal FlyEmbraer, fostering the exchange of experiences among customers and Embraer;
- participation in international fairs related to maintenance, technology, customer relationship management and others; and
- an internal program, Embraer Excellence in Customer Experience, which aims to address changes in the Services and Support area of the commercial aviation division, in order to elevate the performance of our Commercial Aviation business unit, covering current and future market needs, with the purpose of obtaining the highest levels of customer satisfaction based on their experience in the commercial aviation industry.

Competition

We generally face competition from major manufacturers in the international aircraft market. Each category of our products faces competition of a different nature and generally from different companies. Some of our competitors have greater financial, marketing and other resources than we do.

We currently face the strongest competition from the following aircraft:

- ATR-72, a 68-seat turboprop produced by ATR Aircraft, or ATR;
- Q-400, a 72-seat turboprop program recently acquired by Viking Air from Bombardier;
- CRJ-700, CRJ-900 and CRJ-1000, 70-seat, 86-seat and 98-seat regional jets, respectively, currently produced by Bombardier, acquisition by Mitsubishi pending regulatory approval;
- A220, former CSeries, 110 to 150-seat jets acquired by Airbus from Bombardier, which entered into service in 2016;
- MRJ, a 76 to 88-seat jet under development by Mitsubishi, which is expected to enter into service by 2021;

[Table of Contents](#)

- ARJ21, a 90-seat regional jet produced by COMAC; and
- SSJ100, a 103-seat regional jet produced by Sukhoi.

We are the leading manufacturer in the market for jets up to 150 seats in the world, with 29% of market share in terms of accumulated deliveries, since 2004.

The key competitive factors in the markets in which we participate include design and technological strength, aircraft operational costs, aircraft price, including financing costs, customer service and manufacturing efficiency. We believe that we will be able to compete favorably based on our aircraft performance, efficiency, low operating costs, product development experience, global customer base, market acceptance, cabin design and aircraft price. In addition, while the competitive landscape has become increasingly aggressive, deals such as the Airbus acquisition of a majority stake in Bombardier's C-Series Program, rebranded as A220, are evidence of the opportunities in the 100-150 seats market. With the Airbus sales team marketing the A220 Program, we believe customers who would not have previously considered the business unit may seek our E190/E195-E2 as a comparable alternative.

Aircraft Operating Lease Activities

In order to provide better financial support to our commercial activities, as well as to manage and reduce financial risks related to the marketing of aircraft, we created ECC Leasing in September 2002. ECC Leasing has been able to remarket aircraft in its portfolio with conditions and at values similar to market conditions and without any guarantee from Embraer. All sale and leasing transactions were entered into based on market rates, helping to sustain the present and future value of our products.

In January 2017, ECC Leasing merged with Embraer Netherlands, with its assets and activities incorporated under Embraer Netherlands. The mission of Embraer Netherlands, as our company responsible for aircraft operating lease activities, is to manage and remarket Embraer's aircraft portfolio, which as a result of contractual obligations, may be acquired by us via trade-in transactions. We also provide remarketing services to third parties looking to sell their Embraer manufactured aircraft.

In 2019, we successfully completed sales campaigns for the E190-E1 and the ERJ145 aircraft, where the acceptance of trade-in aircraft as part of payment was allowed. We have also generated additional revenues through the sale and lease of aircraft received as trade-ins. Since its establishment in 2002 through December 31, 2019, this activity handled 261 aircraft, of which one is under an operating lease, five are available or under sale negotiations, and 196 were sold.

We believe the results of Embraer Netherlands will be largely dependent on market conditions, aircraft availability levels and the demand for jets in the 37 to 50 seat category.

Markets

The following table sets forth our revenues by line of business and geographic region of end users for the periods indicated, considering our continuing and discontinued operations:

	Year ended December 31, ^{(1) (3)}				
	2019	2018 Recast	2017 Recast	2016 Recast	2015 ⁽²⁾ Recast
	(in US\$ millions)				
Commercial Aviation					
North America	1,399.8	1,449.4	1,795.5	2,157.3	2,452.7
Latin America (except Brazil)	17.0	11.9	0.5	63.9	89.8
Asia Pacific	256.9	324.1	670.3	581.6	307.8
Brazil	0.7	0.2	0.9	(6.9)	145.3
Europe	508.2	519.1	200.1	105.1	316.5
Others	51.8	53.6	104.1	15.9	36.6
Total	2,234.4	2,358.3	2,771.4	2,916.9	3,348.7
Executive Jets					

Table of Contents

	Year ended December 31, ^{(1) (3)}				
	2019	2018	2017	2016	2015 ⁽²⁾
		Recast	Recast	Recast	Recast
	<i>(in US\$ millions)</i>				
North America	1,181.6	936.7	1,006.8	1,147.7	1,226.6
Latin America (except Brazil)	21.6	22.5	0.6	102.3	38.7
Asia Pacific	20.3	1.6	94.1	98.4	149.2
Brazil	54.7	16.1	17.1	46.7	72.6
Europe	118.8	127.4	161.7	158.1	218.3
Others	—	—	—	0.1	13.2
Total	1,397.0	1,104.3	1,280.3	1,553.3	1,718.6
Defense and Security					
North America	202.8	145.7	93.3	166.4	177.2
Latin America (except Brazil)	2.7	68.3	5.4	(0.7)	21.7
Asia Pacific	4.3	1.6	13.7	22.2	33.2
Brazil	431.8	258.9	587.1	479.6	479.3
Europe	96.7	122.8	133.5	99.3	84.8
Others	37.0	14.8	20.7	58.7	14.9
Total	775.3	612.1	853.7	825.5	811.1
Services and Support					
North America	560.7	422.2	421.0	416.6	—
Latin America (except Brazil)	35.1	47.3	45.1	45.2	—
Asia Pacific	95.5	104.7	81.4	85.0	—
Brazil	107.6	157.2	133.3	140.6	—
Europe	200.0	196.7	196.3	156.0	—
Others	47.8	52.7	45.1	38.8	—
Total	1,046.7	980.8	922.2	882.2	—
Other Related businesses					
North America	0.7	5.0	21.3	22.7	30.1
Brazil	8.5	10.6	10.5	3.3	12.3
Europe	—	—	—	—	7.3
Total	9.2	15.6	31.8	26.0	49.7

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. We have also recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited.
- (2) The consolidated financial information as of and for the year ended December 31, 2015 has been derived from our historical financial statements but was not restated for the retrospective application of IFRS 9 and IFRS 15 as management cannot provide this financial information without unreasonable effort or expense.

Suppliers and Components; Risk-Sharing Arrangements

We do not manufacture all of the parts and components used in the production of our aircraft. Approximately 65.4% of the production costs in our Executive Jets and Defense and Security business units and approximately 86.8% of the production costs in the Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019) consist of materials and equipment purchased from our risk-sharing partners and other major suppliers. Risk-sharing arrangements with suppliers of key components enable us to focus on our core business: design, development, manufacture and sale of aircraft and systems for the Commercial Aviation, Executive Jets, and Defense and Security business units. Risk-sharing arrangements are those in which suppliers are responsible for the design, development and manufacture of major components or systems of our aircraft. Our risk-sharing partners, therefore, must invest their own money in development and share the risk and success of our products with us.

In our Commercial Aviation, Executive Jets and Defense and Security business units, we rely on risk-sharing partners to supply vital components of our aircraft. We select suppliers on the basis of, among other factors, technical performance and quality of their products, production capacity, prior relationship and financial competitiveness. We have had continuing relationships with most of our major suppliers since production of the Bandeirante aircraft began in 1975.

[Table of Contents](#)

In addition, we have entered into purchase agreements with our major suppliers, which cover our production. These contracts contain pricing formulas that take into consideration the various factors that affect the business of our suppliers and help us mitigate the effects of price volatility (which in some cases can be significant) of the materials, parts and components that are required for our operating activities. We are not obligated to purchase a minimum amount of materials annually under any of these supply contracts. Our ongoing supplier relationships depend on cooperation, performance and the maintenance of competitive pricing. For additional information on our relationship with our suppliers, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—We work with a limited number of key suppliers.”

Executive Jets

The risk-sharing partners for the Phenom 100EV and Phenom 300E jets are Pratt & Whitney Canada, the engines’ supplier, Garmin, the avionics systems’ supplier, and Eaton Corporation, the hydraulic systems’ supplier. The main risk-sharing partners for the Legacy 450/500 jet family, Praetor 500 and Praetor 600 jets are Honeywell, the engines’ supplier, and Rockwell Collins, the avionics systems’ supplier.

Discontinued Operations

EMBRAER 170/190 Jet Family and E-Jets E2 Jet Family

We are continuously improving the EMBRAER 170/190 jet family, together with risk-sharing partners that supply key systems for the aircraft. Our supplier arrangements for the EMBRAER 170/190 jet family differ from the supplier arrangements of the ERJ 145 regional jet family, in which we use fewer suppliers. In the EMBRAER 170/190 jet family, each risk-sharing partner is responsible for the development and production of aircraft systems, including the landing gear, the hydraulic system and the flight control system, rather than individual components, and fewer components are supplied by companies that are not risk-sharing partners. The assumption of responsibility for systems by our risk-sharing partners lowers our capital expenditures, which decreases our development risks and increases our operating efficiency by reducing the number of suppliers per product and cutting production costs. It also shortens development and production time.

In addition, some of the risk-sharing partners for the EMBRAER 170/190 jet family have assumed a broader role in other aspects of the program by providing sales financing and residual guarantees, rather than simply supplying us with aircraft components.

When E-Jets were launched, they were one of the most advanced aircraft in operation. The fly-by-wire system, the integrated avionics and the double-bubble cross-section brought a new level of technology and passenger comfort for the segment. The family success led to 29% of the deliveries share in the up to 150 seats jet segment during 2005 to 2019. Notwithstanding, during the last ten years we have been continually improving the family. New performance packages, maintenance improvements, external noise reduction and fuel burn reduction are examples of improvements developed.

The E-Jets E2 project is another important example of our commitment to keep our market leadership in the segment. The state-of-the-art technology applied on the engines, wings, and avionics make the E2 family a highly efficient tool for airlines. The E2 will bring a new level of aerodynamic efficiency, as applied on the wing with one of the highest aspect ratios of the industry and advanced wing shape, it will also improve the systems and avionics, including fourth generation full fly-by-wire flight controls, and Pratt & Whitney’s PurePower™ Geared Turbofan high by-pass ratio engines (PW1700G on the E175-E2, PW1900G on the E190-E2 and E195-E2). We expect that all of those improvements will result in double-digit reductions of fuel burn, emissions, noise and maintenance costs. Cockpit commonality with current generation E-Jets is a key driver in the design of the E-Jets E2, in order to enable a smooth transition for the E-Jets pilots. Honeywell’s Primus Epic™ 2 advanced integrated avionics system with large landscape displays and

- 52 -

[Table of Contents](#)

advanced graphics capabilities, and Honeywell's Next Generation Flight Management System (NGFMS), already in development with current-generation E-Jets, will provide exceptional pilot situational awareness and flexibility for continuous innovation on the flight deck. E-Jets E2 has the additional objective of increasing revenue opportunities, as the family is designed to provide better aircraft availability and to increase ancillary revenue for operators.

Known for its comfortable and roomy cabins, with no middle seats, the E-Jets passenger experience will be further enhanced in the E2 generation. The U.K. design firm Priestmangoode was contracted to develop the aircraft cabin jointly with Embraer. The interiors will establish a new benchmark in cabin design, improve the passenger experience, and deliver a more comfortable and improved environment tailored to passengers' needs, while maximizing airlines' operational efficiency.

Other suppliers and partners for the E-Jets E2 have been announced: Liebherr (control systems for flaps and slats), Moog (fly-by-wire), Rockwell Collins (horizontal stabilizer control system), UTC Aerospace Systems (wheels, brakes, APU, electrical system), Intertechnique (engine and APU fuel feed, pressure refueling, fuel transfer, fuel tank inerting and ventilation, and fuel gauging and control), Crane Aerospace & Electronics (electronic control module for landing gear, brake control systems and proximity sensors), Triumph (fuselage segments, rudder and elevators) and Aernnova Aerospace (vertical and horizontal stabilizers).

We also announced that we have selected new IFEC's systems suppliers for the E-Jets E2. Meggitt Polymers & Composites will design and produce a redone high-performance assembly for in-flight connectivity, while we selected KID-Systeme to provide the SKYfi Club, a wireless streaming onboard platform.

Aircraft Financing Arrangements

Commercial aircraft customers may request financing support for aircraft acquisition. This support usually includes providing assistance to customers in obtaining financing arrangements from different sources, including ECAs, leasing companies, commercial banks and capital markets. Financing support may exceptionally include providing assurance that financing will be available for the acquisition.

Additionally, customers may sometimes require short-term bridge financing prior to arranging long-term debt financing, as long-term funding may not be available for them at the time of delivery. On a case-by-case basis, we have provided interim financing, above market rates, to customers who already have their financing arrangement structured or who are in the process of negotiating such arrangements.

Government Regulation and Aircraft Certification

We are subject to regulation by regulatory aviation agencies, both in Brazil and abroad. These agencies principally regulate the aircraft design, manufacturing and operation. Besides certification in Brazil, we must obtain certification in each jurisdiction in which our aircraft is registered and operated. The certifying authority in Brazil is the National Civil Aviation Agency (*Agência Nacional de Aviação Civil*), or the Brazilian Aviation Authority, a special organization with the status of a regulatory agency related to the Ministry of Infrastructure of the Presidency of the Federative Republic of Brazil, which supervises and certifies aircraft, aircraft parts, manufacturers and operations. We are also subject to the regulation of aviation authorities in other countries, including the FAA in the United States and the EASA for the European Union. Once an aircraft is certified by the Brazilian National Civil Aviation Agency and validated by the FAA and/or the EASA, some authorities, including those in Australia and Mexico, may opt to ratify the product certification instead of running a full domestic validation process. Other countries, such as Canada, require compliance with their own specific national requirements before certification. Some countries simply validate and complement original certification of the Brazilian National Civil Aviation Agency or of the FAA or the EASA, in accordance with their own rules. The Brazilian National Civil Aviation Agency has a bilateral certification agreement with several aviation authorities, including the FAA and EASA. This cooperation among regulatory authorities leads to faster certification by the foreign authorities.

[Table of Contents](#)

Aircraft certification is a continuous process. The Brazilian Aviation Authority must approve any change in the design of any of our aircraft. Significant changes to aircraft design may require a separate validation/certification by other authorities as specified in their regulations and bilateral agreements. Changes in aircraft certification requirements do not require a new certification or a new validation of a previously certified aircraft, but significant safety improvements may otherwise be required by the authorities acting through operational rules or airworthiness directives.

Our defense products must comply with the certification guidelines defined in each contract with the customer. Unlike our civil aircraft, our defense products are not subject to regulatory obligations. Some contracts, including those for civil aircraft modified for military purposes, require civil certification (e.g. India, SIVAM, etc.). Other contracts, including those for LAS and C-390 Millennium, require approval from the Military Certification Authority.

Seasonality

We have historically experienced seasonality in our results of operations and cash flow generation. This is mainly due to a traditionally higher number of deliveries in the fourth quarter, particularly in our Executive Jets business unit, which is in line with overall executive jet industry seasonality. Deliveries of executive jets in the fourth quarter generally constitute at least 35% to 45% of annual deliveries in our Executive Jets business unit, and we expect this trend to continue.

4C. Organizational Structure

Our operations are conducted by Embraer S.A. as the controlling and principal operating company. We have a number of direct and indirect subsidiaries, none of which is considered significant. A complete list of our subsidiaries is filed as Exhibit 8.1 to this annual report, and a description of our joint ventures and project subsidiaries and strategic alliances is included in the annual report in Item 3 above.

4D. Property, Plant and Equipment

For information on our property, plant and equipment, see Note 2.2.12 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

For a discussion of our capital expenditures relating to property, plant and equipment, see “Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Capital Expenditures.”

Production

The manufacture of an aircraft consists of three principal stages: production of primary parts, assembly of major components and final assembly. Primary parts include metal sheets and plates (produced from die-cast molds, stretch forming or various chemical treatments), parts produced using computerized and non-computerized machines, and prefabricated parts. The primary parts are then assembled, or mated, with one another to produce the aircraft’s major components, which are in turn joined to create the aircraft’s basic structure. In the final assembly stage, the aircraft’s various operating systems (including wiring and electronics) are installed into the structure and tested.

In São José dos Campos, State of São Paulo, Brazil we have production facilities for commercial aircraft. In our Defense and Security business unit we have production facilities located in the Gavião Peixoto plant, which is near the city of Araraquara, located in the central region of the State of São Paulo, Brazil. For the final assembly Embraer has two facilities in Florida, in the United States, one for executive jets in Melbourne and one for defense and security aircraft in Jacksonville.

We have the flexibility to increase or decrease production as a response to adjust demand.

[Table of Contents](#)

Executive Jets

Executive jets have been produced since 2011 in São José dos Campos, and are also produced in Melbourne, Florida in the United States. The Melbourne facility is a final assembly plant with a Customer Center and an Engineering Office. In 2014, we announced an expansion plan to assemble the Legacy 450/500 in this facility, to improve our production capacity. We have been increasing the number of executive jets produced in Melbourne since 2016. In 2019, we transferred Praetor production from São José dos Campos to the Gavião Peixoto facility.

Defense and Security

The Gavião Peixoto facility includes flight-testing capabilities for all Embraer aircraft and a final assembly line for our defense aircraft. This facility has been operational since November 2002. In May 2014, we inaugurated the final assembly line of the new military transport and aerial refueling jet, the C-390 Millennium, and in February 2015, it successfully performed its first flight. Embraer is currently conducting flight tests for the C-390 Millennium. In the fourth quarter of 2018, we received the Type Certificate from the Brazilian Aviation Authority for the multi-mission airlift C-390 Millennium and delivered the first aircraft in 2019.

We have a final assembly facility in Jacksonville, Florida for Defense and Security where we initiated the final assembly line for the A-29 Super Tucano for the U.S. Air Force's LAS Program in 2013.

In 2016, we launched the GDDN in Gavião Peixoto. It is the hub for the Gripen NG technology development in Brazil for Saab and Embraer together with the Brazilian partner industries and institutions. The GDDN includes the development environment and simulators required to undertake the fighter development work. In addition, the GDDN is connected to Saab in Sweden and the industrial partners in Brazil, securing both technology transfer and efficient development.

Other

In September 2012, we opened two facilities in Évora, Portugal, one for the manufacture and assembly of metal components and one for the manufacture and assembly of composite material components. The start-up of these facilities went as planned, and they made their first deliveries in November 2012. In 2015 Évora's production plan included major components for the Legacy 450/500, Praetor 500/600, E-Jets, E-Jets E2 and C-390 Millennium.

We manufacture aerospace systems and components in ELEB, which is an Embraer subsidiary located in São José dos Campos, and its main products are landing gear systems, hydraulics and electro-mechanical sub-assemblies, such as actuators, valves, accumulators and pylons.

EZ Air Interior Limited, our subsidiary for the production of interior parts for our Commercial Aviation business unit in Mexican factories, began production and shipping of parts to Brazil in 2013. It achieved full production capacity in January 2015.

In 2015, we completed the acquisition of a new subsidiary, Embraer Aero Seating Technologies. We progressively acquired its ownership stake in the company, headquartered in Irwindale, California, which provides luxury seating solutions for the aviation industry and for Embraer product lines. In 2016, we opened a new state of the art manufacturing facility located in Titusville, Florida.

Discontinued Operations

Commercial Jets

In July 2009, in line with our initiatives to improve production efficiency pursuant to the Business Efficiency Strategy (*Frente Eficiência Empresarial*), we converted the final assembly for the E-Jets E1 family to a line concept in São José dos Campos, which resulted in a significant reduction in the cycle of production time. In 2015, we started the prototype production for the new E-Jets E2 family of jets, with the first delivery and production certification in 2018.

[Table of Contents](#)

Environmental Matters

We have all material permits required to operate our business in all Embraer sites around the world. The terms of these operating permits are reviewed every year and, as of December 31, 2019, we were in compliance with all of them. In addition, our Environmental and Occupational Health and Safety Management System was established in 2001, allowing us to maintain ISO 14001 certification since 2002. ISO 14001 is an internationally recognized standard of environmental management system efficiency for businesses and organizations, which was reviewed in 2015 and has included items concerning environmental risks and life cycle analysis. Embraer was already prepared for this new version even before it was required by the ISO. Certified environmental management systems have been progressively implemented across our manufacturing sites, with over 84% of our employees operating under an ISO 14001.

Work procedures and instructions are set up in order to ensure that the activities that cause environmental impacts are carried out in order to minimize or mitigate any environmental damage, and we perform studies of environmental aspects and impacts and we implement actions to eliminate or reduce them, including infrastructure works.

Embraer established a corporate procedure for performing environmental diagnoses and detailed investigations for finding the presence of contaminants in soil and water due to past activities. This procedure is applied to the areas where Embraer has production and/or maintenance facilities, as well as to new areas being acquired. Currently, all industrial operations in Brazil and abroad have already mapped their soil and water. The evaluation results are reported to the CCRA (Committee for Environmental Risk and Control), our board and shareholders.

Embraer takes into account environmental and safety requirements to enter into agreements with third parties. Embraer is committed to hire suppliers, service providers and contractors who respect the environment, health and safety through their practices and processes, and Embraer has a systematic procedure for their continual evaluation and monitoring.

We encourage not only the environmental certification but also the development of a full life cycle orientation for products and services, as this remains the most cost-efficient and practical way to effectively reduce environmental impacts. The environmental management system attempts to create economic value by reducing environmental costs and exposure at each stage of the product life, from design to operations and to end of life. Integrated development of environmentally sustainable products, through the design for environment methodology, aims to incorporate environmental requirements into product development throughout the various stages of production.

The implementation of further innovative and eco-efficient technologies and processes is a key factor in ensuring our sustainability, increasing the attractiveness of our products and our overall competitiveness. We continuously pursue eco-efficiency, seeking responsible business opportunities by developing breakthrough technologies, products and services, as well as by reducing the environmental impact of our activities and products throughout their life cycle, and, more generally, by integrating environmental concerns into our daily business. We recognize that environmental requirements, such as reduction of greenhouse gas emissions, are becoming one of the main drivers of airline fleet decisions and are already influencing aircraft developments. In 2012 at the Air Transport Action Group Aviation and Environment summit, Embraer, Boeing and Airbus signed a memorandum of understanding to collaborate with development of drop-in, affordable aviation biofuels as an effort to reduce the aircraft industry's greenhouse gas emissions by 50% by 2050 based on 2005 levels.

Special focus is dedicated to the European Registration, Evaluation and Authorization of Chemicals, or REACH, regulation (EU No. 2007/1906), which came into force on June 1, 2007. REACH aims to improve the protection of human health and the environment through more strict regulation of chemical use in the

[Table of Contents](#)

aviation industry; it replaces the preexisting European Union, or EU, regulatory framework on chemicals. REACH introduces a range of new obligations over a period of 11 years which are intended to reduce the risks of harm that the 30,000 most frequently used chemicals may cause. The regulation establishes progressive withdrawal of some of the substances that are considered to be of very high concern for human health and the environment.

The regulation requires that any company which produces, imports, uses or prepares chemical substances, preparations or other items on the EU market be responsible for ensuring that the item complies with REACH. We are affected by the regulation because our products can be exported, not only to the countries of the EU, but also to all countries in which compliance with REACH is required. We have a facility in Évora that must comply with all REACH requirements. As of December 31, 2019, we have not suffered any penalties in connection with REACH.

Over the past few years, we have worked to fulfill our responsibilities under REACH. We have substituted substances used in our production processes that are harmful to the environment and employee health with less harmful alternatives. Several materials have already been replaced in accordance with REACH restrictions, and we are studying the feasibility of replacing more substances widely used in the aviation industry. We also participate in working groups with other firms in the aviation industry, including the International Aerospace Environmental Group and the Aerospace Industries Association, to develop solutions for REACH compliance and other environmental laws. We are working with our supply chain on several initiatives to avoid supply chain disruptions and provide support to customers, including the REACH questionnaire on the risk assessment of suppliers.

Insurance

We maintain insurance at levels deemed to meet all risks associated with our operations and legislation. The insurance covers potential damages to our property, inventories, working process, cargo and aircraft hulls for our own fleet. In addition, we maintain a comprehensive aviation products liability policy, for claims arising out of our legal liability as manufacturers, repairers, suppliers or servicers. We also possess natural disaster and business interruption insurance.

4E. UNRESOLVED STAFF COMMENTS

We have no unresolved staff comments.

Item 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

This discussion should be read in conjunction with our audited consolidated financial statements and notes thereto and other financial information included elsewhere in this annual report. This annual report contains forward-looking statements that involve risks and uncertainties. Our actual results may differ materially from those discussed in the forward-looking statements as a result of various factors, including, without limitation, those set forth in “Item 3. Key Information—3D. Risk Factors” and the matters set forth in this annual report generally.

Except as otherwise indicated, all consolidated financial information in this annual report has been prepared in accordance with IFRS as issued by IASB and presented in U.S. dollars, while, for local purposes, our consolidated financial statements are also prepared in IFRS but are presented in *reais*. For certain purposes, including providing reports to our shareholders located in Brazil, filing financial statements with the CVM and determining dividend payments and other distributions and tax liabilities in Brazil, we have prepared and will continue to be required to prepare parent company financial statements in accordance with IFRS, presented in *reais*.

[Table of Contents](#)

5A. Operating Results

Current Conditions and Trends in our Industry

The following discussion is based largely upon our current expectations about future events and trends affecting our business. Actual results for our industry and performance could differ substantially. For additional information related to our forward-looking statements, see “Introduction—Special Note Regarding Forward-Looking Statements” and for a description of certain factors that could affect our industry in the future and our own future performance, see “Item 3. Key Information—3D. Risk Factors.”

Termination of Strategic Partnership with Boeing

On January 24, 2019, we entered into the Master Transaction Agreement and certain other Transaction documents with Boeing and certain subsidiaries of Embraer or Boeing, pursuant to which a subsidiary of Boeing would acquire a controlling stake in Embraer’s Commercial Aviation business unit, and Embraer, or a subsidiary of Embraer and Boeing or a subsidiary of Boeing, would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission aircraft. On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing’s assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement. We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing’s wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us. For additional information on the termination of the strategic partnership with Boeing, see Explanatory Note on page 4 of this annual report.

For risks relating to the termination of the Transaction, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Legal proceedings pertaining to the now-terminated strategic partnership with Boeing, including arbitration proceedings related to Boeing’s termination of and failure to close the MTA and/or the Contribution Agreement, may adversely impact our business, financial condition and results of operations.”

COVID-19

The outbreak of the novel coronavirus, known as COVID-19, was first identified in December 2019 in Wuhan, China, and has since spread globally. The COVID-19 outbreak has compelled governments around the world to adopt measures to contain the spread of COVID-19 by means such as lockdowns of cities, restrictions on travel and public transportation, business and store closures, and emergency quarantines, among others, and responses by businesses and individuals to reduce the risk of exposure to infection, including reduced travel, cancellation of meetings and events, and implementation of work-at-home policies, among others, which has caused significant disruptions to the global economy and normal business operations across a growing list of sectors and countries.

We have been monitoring the COVID-19 pandemic situation and its impacts on our employees, operations, the global economy, the supply and the demand for our products and services. Our committee monitors on a daily basis the development of the pandemic situation and it has implemented contingency plans to act as quickly as necessary as the current situation continues to unfold.

As a result of the COVID-19 pandemic, on March 17, 2020, our Brazilian corporate employees responsible for critical functions started to work from home and, on March 22, 2020, we decided to put our Brazilian employees that could not work remotely on paid leave until March 31, 2020. Until March 31, 2020, we were only carrying out essential activities at our facilities, including customer support, aircraft

[Table of Contents](#)

maintenance and manufacturing. On March 30, 2020, we further decided to put our Brazilian employees responsible for non-critical functions on collective vacation from April 1 to April 9, 2020. During this temporary shutdown of our facilities, we implemented safety measures to adapt our facilities to the WHO guidelines. On April 10, 2020, we implemented a job preservation plan that included temporary furloughs, reduction in working hours and pay cuts to certain of our employees, as a means of guaranteeing their employment upon completion of the plan. This plan started on April 13, 2020 and will last between 60 and 90 days. On April 13, 2020, all of our Brazilian employees that could not work remotely and were not included in the job preservation plan returned to work at our adapted facilities. Our or other companies' operations may be suspended again or remain suspended for a longer time.

Due to the uncertainty related to the spread of COVID-19, on March 26, 2020, we also suspended the projections relating to our expected results for 2020, dated as of November 12, 2019. We will issue updated projections for 2020 when we conclude the assessment of the effects that the COVID-19 pandemic will cause to our business.

During the COVID-19 crisis, we are working in partnership with companies and research centers on technologies aiming at increasing the availability of equipment and solutions to fight the COVID-19 pandemic. We are manufacturing parts of ventilators and biological air filter systems, and our subsidiary Embraer Aero Seating Technologies is manufacturing masks to support continued operations in Florida.

We expect that 2020 will be a distinct year in terms of orders and deliveries due to the impacts of the COVID-19 pandemic. The airline business has been adversely affected due to COVID-19, and we will have to continue reviewing our production chain in order to reflect the new and uncertain demand scenario.

As a result of COVID-19, on April 6, 2020, Standard & Poor's downgraded our rating by one notch to BBB- with a negative outlook, due to expectations that many airlines will delay new deliveries at least until the end of the third quarter of 2020. On April 28, 2020, Fitch also downgraded our rating from BBB- to BB+ as a result of the negative expectations relating to the commercial aviation industry due to the COVID-19 pandemic. On April 29, 2020, Moody's also downgraded our rating from Ba1 to Ba2 with a negative outlook.

In the Defense and Security business unit, as of the date of this annual report, we cannot fully predict the impact that the COVID-19 outbreak will have on our Defense and Security business unit. However, we are facing difficulties to deliver products to international customers due to border and quarantine controls.

In the Executive Jets business unit, restrictions on travel and emergency quarantine have posed some challenges for aircraft deliveries to international customers. As of the date of this annual report, production lines of our business aviation products are abreast for attending planned supply levels, with no major supply shortages. We are supervising the risks and controlling the supply chain and postponements in demand in order to prevent obstacles that may arise from this global crisis. As a result of COVID-19, as of the date of this annual report, one of our executive jets customers cancelled its firm orders and some of our executive jets customers postponed their scheduled aircraft deliveries. Although we cannot predict the full impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that some of our customers will continue to postpone their scheduled aircraft deliveries and to cancel their orders.

In the Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019), due to extensive traffic disruption affecting our customer's operations throughout the world, as a result of COVID-19, it is reasonable to expect a material impact on our 2020 deliveries. According to Cirium, a data analytics and consulting company, as of May 2020, 60% of the global fleet has been placed into storage, and the International Air Transport Association—IATA projects a decline of 50% in commercial traffic for 2020 in year-over-year terms. As a result of COVID-19, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. The recovery pace is difficult to predict since this outbreak has no precedent in history. Although we cannot yet determine the impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that customers will continue to postpone their scheduled aircraft deliveries and will cancel their orders.

As a result of COVID-19, as of the date of this annual report we have taken measures to preserve our cash flow, including (i) reductions in working hours and pay cuts; (ii) extension of payment terms relating to our suppliers; (iii) extension of tax payment deadlines; (iv) negotiation of new credit lines; and (v) adjustment of our production chain.

[Table of Contents](#)

As of March 31, 2020, we recognized the following impacts on profit or loss as a result of the COVID-19 pandemic:

- Negative changes in the fair value of Republic Airways shares held as financial investments impacting our 2020 operating results in the amount of US\$22.2 million. For additional information on our financial investments, see Note 7 to our 2019 audited consolidated financial statements included elsewhere in this annual report.
- Additional provision for expected credit losses over trade accounts receivable, contract assets and customer financing as a result of increase in credit risks of our customers during the COVID-19 pandemic in the amount of US\$33.4 million.

As of March 31, 2020, we had a trigger event related to the impairment of assets in our Executive Aviation and Defense and Security business units due to the impacts of the COVID-19 pandemic and its impact on our market capitalization devaluation in the first quarter of 2020. Based on our best estimate using certain assumptions for short-to-medium term impacts on deliveries of the Executive Aviation and Defense and Security business units, we have not identified additional impairment charges to be recognized in addition to the impairment losses we identified and recognized in our 2019 audited consolidated financial statements. The Brazilian *real* lost 29% of its value against the U.S. dollar in the same period causing a positive impact in our future cash flows on March 31, 2020, as a result of the reduction of cash outflows indexed in Brazilian *reais* (costs of goods sold and general expenses). However, an improvement in the currency exchange rate in the future may result in a future impairment charge. For additional information on the impairment losses we recognized in 2019, see Note 19 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

For information on the risks related to COVID-19, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—The outbreak of communicable diseases around the world, including COVID-19, may lead to higher volatility in the global capital markets and recessionary pressure on the global economy,” “—A downturn in our key markets may reduce our sales and revenue, and, consequently, our profitability,” and “—Our Commercial Aviation business unit depends on key customers.” For additional information on the impacts of the COVID-19 pandemic, see Note 40.2 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Executive Aviation

During 2019, the business aviation industry experienced positive, double-digit year-over-year growth stimulated by the entry into service of new jet models, with new technology, better performance and cabin comfort features, such as the Embraer Praetor series. However, after the unprecedented COVID-19 crisis, industry indicators such as increasing pre-owned inventory for sale and lower flight activity, along with aggressive price deals and increased competition, will continue to create a challenging environment.

Defense and Security

In general terms, we expect an increase in defense spending globally. In light of continuous instability in the Middle East and the growing security concerns relating to insurgent groups, military budgets in the region should also increase. Regional conflict and tensions should also drive investment in defense materials in Africa and Europe.

We expect increased demand for proposals of customized solutions, creating opportunities for our Defense and Security portfolio and for those of our subsidiaries, especially in the areas of critical software, communications, sensors and platforms.

[Table of Contents](#)

On the other hand, due to the Brazilian economic environment, we do not expect that new investment projects in the defense sector will be implemented by the Brazilian government. We also expect that the Brazilian government budget restrictions may require us to reschedule deliveries, pursuant to the terms of existing contracts. Additionally, we believe that new opportunities will be on a smaller scale and will require the accommodation of constraints related to available resources.

Assets Held for Sale and Discontinued Operations

According to IFRS 5, in light of the approval of the then-pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Commercial Aviation

Due to extensive traffic disruption affecting our customer's operations throughout the world as a result of the COVID-19 pandemic, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. Additionally, the workforce reduction, as a result of the COVID-19 pandemic, has slowed down the pace of certification activities for the E175-E2 aircraft.

Impairment Losses

Starting on April 25, 2020 and as a result of the unexpected and wrongful termination of the strategic partnership by Boeing on such date, assets and liabilities related to our Commercial Aviation business unit previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations.

The change in designation requires the remeasurement of the long-lived assets held for sale (fixed assets, intangibles, and rights-of-use) for the lower value between the book value and the recoverable value. The book value is adjusted according to the accumulated depreciation and amortization in the amount of US\$83.5 million, not recognized while classified as held for sale, which will be recorded in the second quarter of 2020. The recoverable value, on the other hand, is determined by the highest amount between the value-in-use of these assets and the fair value *minus* the expenses that would be incurred as a result of the sale. Since the initial designation of the Commercial Aviation business unit assets as "held for sale" until April 25, 2020, the long-lived assets held for sale were listed at the recoverable value by the lesser value between the book value and the fair value based on the purchase price set forth in the Master Transaction Agreement, *minus* the incremental costs incurred to close the Transaction.

According to our impairment test practices, the recoverable value of these assets will be measured based on the approach of value-in-use using the discounted cash flow method, which is not substantially different from fair value under current market conditions. For information on our impairment test practices, see Note 19 to our 2019 audited consolidated financial statements included elsewhere in this annual report. The discount rate applied in this case is based on the rate of the weighted average cost of capital, reconciled with the estimated discount rate before taxes of 10.6%. That discount rate differs from the discount rate applied on the December 31, 2019 calculation due to our increased risk diversification and to our increased funding costs as a result of not concluding the Transaction.

[Table of Contents](#)

We used our best estimate to calculate the future cash flows used in the determination of the value-in-use account for significant economic environment impacts resulting from the COVID-19 pandemic on the commercial aviation market.

As a result of the measurement of the recoverable value of the assets of the Commercial Aviation business unit (including fixed assets, intangibles and rights-of-use), we expect to recognize losses due to the impairment charges relating to these assets in the second quarter of 2020, which will impact our operating results for 2020. Based on our preliminary calculations, we estimate that these losses may vary from US\$153.0 million to US\$526.0 million taking into account our estimates of potential projected scenarios of future deliveries of commercial jets and market share development in the coming years following the COVID-19 pandemic, according to currently available information. The estimated losses were calculated based on carrying amounts of cash-generating units, or CGUs, and the foreign exchange rate as of March 31, 2020. The amount to be recorded as of June 30, 2020 is subject to revision and update based on certain assumptions and factors that are subject to change, including without limitation the foreign exchange rate and discount rate on June 30, 2020, and may vary materially from the estimates above. Since a substantial portion of the cost of goods sold is indexed in Brazilian *reais*, positive or negative fluctuations of 10% in the *real* to U.S. dollar foreign exchange rate may impact the mid-range of estimated impairment charges by approximately US\$163.0 million and US\$201.0 million, respectively.

For additional information on the impairment losses related to our Commercial Aviation business unit, see Note 40.3 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Brazilian Economic Environment

The Brazilian government has frequently intervened in the Brazilian economy and occasionally made drastic changes in policy and regulations. The Brazilian government's actions to control inflation and affect other policies and regulations have often involved, among other measures, increases in interest rates, changes in tax policies and incentives, price controls, currency devaluations, capital controls and limits on imports. Changes in Brazil's monetary, credit, tariff and other policies could adversely affect our business, as could inflation, currency and interest-rate fluctuations, social instability and other political, economic or diplomatic developments in Brazil, as well as the Brazilian government's response to these developments.

Rapid changes in Brazilian political and economic conditions that have occurred and may occur require continued assessment of the risks associated with our activities and the adjustment of our business and operating strategy accordingly. Developments in Brazilian government policies, including changes in the current policy and incentives adopted for financing exports of Brazilian goods, or in the Brazilian economy, over which we have no control, may have a material adverse effect on our business.

The following table shows data for real GDP growth, inflation, interest rates and the U.S. dollar exchange rate for and as of the periods indicated.

	December 31,				
	2019	2018	2017	2016	2015
Real growth in gross domestic product	1.1%	1.3%	1.3%	(3.3)%	(3.5)%
Inflation (IGP-M)(1)	7.3%	7.6%	(0.5)%	7.2%	10.5%
Inflation (IPCA)(2)	4.3%	3.8%	3.0%	6.3%	10.7%
CDI rate(3)	5.9%	6.4%	9.9%	14.0%	13.2%
LIBOR rate(4)	1.9%	2.8%	1.7%	1.0%	0.6%
Depreciation of the <i>real</i> vs. U.S. dollar	4.0%	17.1%	1.5%	(16.5)%	41.8%
Period-end exchange rate—US\$1.00	R\$4.031	R\$3.875	R\$3.308	R\$3.259	R\$3.905
Average exchange rate—US\$1.00(5)	R\$3.944	R\$3.680	R\$3.203	R\$3.450	R\$3.388

[Table of Contents](#)

Sources: *Fundação Getúlio Vargas*, or FGV, and the Central Bank and Bloomberg.

- (1) Inflation (IGP-M) is the general market price index measured by FGV.
- (2) Inflation (IPCA) is a broad consumer price index measured by the *Instituto Brasileiro de Geografia e Estatística*.
- (3) The CDI rate is average of inter-bank overnight rates in Brazil (as of the last date of the respective period).
- (4) Three-month U.S. dollar LIBOR rate as of the last date of the period. The LIBOR rate is the London inter-bank offer rate.
- (5) Represents the average of the exchange rates on the last day of each month during the period.

Inflation and exchange rate variations have had, and may continue to have, substantial effects on our financial condition and results of operations. Inflation and exchange rate variations affect our monetary assets and liabilities denominated in *reais*. The value of these assets and liabilities as expressed in U.S. dollars declines when the *real* devalues against the U.S. dollar and increases when the *real* appreciates. In periods of devaluation of the *real*, we report (i) a remeasurement loss on *real*-denominated monetary assets and (ii) a remeasurement gain on *real*-denominated monetary liabilities. For additional information on the effects of exchange rate variations on our financial condition and results of operations, see “Item 11. Quantitative and Qualitative Disclosures about Market Risk—Foreign Exchange Rate Risk.”

For additional information on the impact of macro-economic factors on our financial position, see Note 28 of our 2019 audited consolidated financial statements.

Tax Incentives

Similar to other Brazilian companies across multiple industries, we benefit from certain tax and other government-granted incentives, including those related to our export and research and development activities. For the effective tax reconciliation, see Note 24 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Tax Incentives for Companies in Research and Development

Brazilian Law 11,196/05, also known as *Lei do Bem*, grants tax benefits to entities involved in research and development activities for technological innovation.

To take advantage of the tax benefits, a beneficiary must (i) assess its income tax according to the real profit (*lucro real*) measurement, (ii) record taxable profits, (iii) be current with all of its fiscal obligations, which consists of being able to obtain a certification from the government demonstrating that there are no outstanding debts with tax authorities, and (iv) have investments in research and development.

Technological innovation is deemed to be the development of a new product or manufacturing procedure, as well as the addition of new features or characteristics to an existing product or manufacturing procedure, which entails incremental improvements and gains in quality or productivity, therefore resulting in greater market competitiveness.

We and other Brazilian companies across multiple industries benefit from these tax incentives with respect to the income tax (*Imposto de Renda Pessoa Jurídica*), or IRPJ, and the social contribution on net income tax (*Contribuição Social sobre o Lucro Líquido*), or CSLL. These benefits allow us to deduct from our taxable net income an amount between 60% to 80% of our expenditures related to research and development activities for technological innovation during a fiscal year. For additional information, see Note 24 of our 2019 audited consolidated financial statements.

Tax Incentives and Payroll Exemptions for Exporting Companies

Brazilian Law 12,546/11 established the tax incentives for exporting companies and created the Special Regime for the Reintegration of Taxes of Exporting Companies (*Regime Especial de Reintegração de Valores Tributários para as Empresas Exportadoras*), or REINTEGRA, to stimulate and facilitate exports. The goal of REINTEGRA is to recover, in whole or in part, the residual tax costs from the production chain

[Table of Contents](#)

of exported goods, thereby reducing the tax burden. The exporting entity may receive tax credits according to a percentage, which may vary from 0.1% to 3%, established by decree of the Brazilian Finance Ministry and applied to the revenue earned from the export of the goods abroad. As a result of decree 9,393/2018 of the Brazilian Finance Ministry, which became effective on May 31, 2018, the tax incentive percentage was lowered to 0.1%.

To take advantage of the tax benefits, (i) an exporting entity must manufacture the exported product in Brazil, (ii) the product must be codified in the TIPI, which is a list issued by Brazilian fiscal authorities under the Tax on Manufactured Products (*Imposto Sobre Produtos Industrializados*), or IPI, and (iii) the cost of imported materials used in the exported product may not exceed certain limits prescribed by law, expressed as a percentage of the export price.

Brazilian Law 12,546/11 also aimed to increase production through the establishment of a payroll exemption. Until September 1, 2018, we benefited from this payroll exemption with the substitution of the employer social security contribution of 20% of INSS on payroll for an alternative tax called the Social Security Contribution Over Gross Revenues (*Contribuição Previdenciária Sobre a Receita Bruta*) to be levied on the revenues of certain products and services, excluding revenues from exports. Payroll exemption rates varied from 2.0% to 4.5% of gross revenues, depending on the business sector. Brazilian law 13,670/2018 canceled the payroll exemption as of September 1, 2018, and we filed a lawsuit requesting the applicability of the payroll exemption to us for the entire year of 2018. The court ruled in our favor. There was no payroll exemption in 2019.

Brexit

The United Kingdom stopped being a member of the European Union on January 31, 2020. Negotiations relating to the implementation period are ongoing and future relationships after the United Kingdom's exit remain unclear. The United Kingdom has the largest aviation industry in Europe and a key geographical position in the network. Changes to the relationship between the United Kingdom and the European Union could potentially have considerable implications for all European carriers, and consequently for Embraer.

In Europe, the risk that our industry might face is related to the possibility of an economic downturn caused by the departure of the United Kingdom from the European Union, or Brexit. In the long term, we believe there will be a gradual Eurozone economic recovery that, combined with low yields due to the highly competitive open aviation area and high regulatory costs, would put pressure on the revenue environment.

Republic Airways Chapter 11 Filing

In February 2016, Republic Airways Holdings, which currently operates a fleet of 230 Embraer Commercial Aviation aircraft (of which 50 are of the ERJ145 family and 180 are E170/E175 models), filed for a Chapter 11 bankruptcy. As a result, we have provisioned a total of US\$100.9 million to account for expected expenses related to obligations from financial guarantees offered to the main financing agent of the ERJ 140/145 aircraft, acquired by and delivered to this customer. In November 2016, we signed a firm sale for 24 E175 jets with United Airlines. This order represents a transfer of 24 E175 jets previously placed with Republic Airways Holdings, which were canceled. As of December 31, 2019, the obligations assumed in accounts were fully settled. As of December 31, 2018 and 2017, the obligations assumed in accounts payable were US\$15.1 million and US\$30.8 million, respectively.

Critical Accounting Estimates

Preparation of financial statements in accordance with IFRS requires us to use estimates and assumptions that affect the reported assets and liabilities, revenues and expenses and our disclosures. In the preparation of the financial statements included in this annual report, we believe that certain variables and assumptions derived from past experience and various other factors were reasonable and relevant. These estimates and assumptions are reviewed, and relevant adjustments are recorded in our audited consolidated financial statements in our ordinary course of business.

[Table of Contents](#)

The most significant accounting policies, including the variables and assumptions used in the estimates, and the sensitivity of these assessments to the different variables and conditions are described below:

Revenue from Contracts with Customers

In the Defense and Security business unit, a significant portion of revenue is derived from long-term development contracts with the Brazilian and foreign governments, recognized over time by the cost incurred method, using the ratio of actual cumulative costs incurred divided by total estimated costs at completion for progress measurement. During the course of the contract, the Company assesses the costs incurred, adjusting total estimated costs at completion if necessary, to reflect variations in costs in relation to the projections, changes in circumstances and/or new events, such as contract modification. Any resulting increase or decrease in estimated revenues or costs at completion is recognized as catch-up adjustment in the consolidated statements of income in the reporting period in which the circumstances that give rise to the revision become known by management. If we have a 10% increase or decrease over our projections of total estimated costs at completion of long-term contracts in progress during 2019, our revenue in the year would be lower by US\$462.7 million or would increase by US\$309.4 million, respectively.

Residual Value Guarantees

The residual value guarantees granted on aircraft sales can be exercised at the end of a financing contract between a financial agent and the customer/operator of the aircraft. The guarantees are initially measured by fair value and are revised quarterly to reflect any losses in relation to the fair value of these commitments. The residual value guarantees may be exercised if the quoted market value is lower than the future fair value guaranteed. The future fair value is estimated in accordance with third-party evaluation of the aircraft, including information from sale or leasing of similar aircraft on the secondary market. For additional information on the residual value guarantees, see “Item 5. Operating and Financial Review and Prospects—5E. Off-Balance Sheet Agreements.”

Impairment

The impairment test considers our medium- and long-term strategic plan cash flows, brought to present value at an appropriate discount rate compatible with the market and that reflects the shareholders’ expectations of return. In preparing or using this information, we use estimates, as follows:

- a) Gross expected cash flow: management projects in-flows and outflows based on past performance taking into account its business strategy and market development expectations. These projections also take into account the efficiency gains planned for the product cycle;
- b) Growth rate: the growth rates were reflected in the revenue flow budgeted by us, consistent with the forecasts included in industry reports; and
- c) Discount rate: an appropriate discount rate is used that reflects the expected return of investors at the time the calculation is made. This rate is also compared with the market to confirm its consistency.

Impairment of aircraft held in our property, plant and equipment available for leasing to third parties is measured at the fair value less cost to sell or value-in-use. Assessment of the recoverable value of that aircraft takes into account assessment of their fair value in an active market and recognition of impairment if their carrying value is higher than the fair value.

[Table of Contents](#)

We performed an impairment analysis of the carrying amount of each CGU based on the value in use of the group of CGUs with goodwill allocated and for the CGUs with indicators of impairment, including CGUs with intangible assets still under development and not yet producing internally. Value in use was estimated using a discounted cash flow model for the CGUs. Estimated future cash flows were discounted using the weighted average capital cost rate, which is reconciled to an estimated discount pre-tax rate of 11.3% and 11.4% in 2019 and 2018, respectively.

The process of estimating the value in use involves assumptions, judgments and estimates for future cash flows, which represent the estimate approved by our management. The underlying critical assumptions and their sensitivity are presented in Note 19 to our 2019 audited consolidated financial statements included elsewhere in this annual report. In 2019, we recognized impairment losses in the amount of US\$71.6 million relating to the Legacy/Praetor platform and in the years ended December 31, 2018 and 2017, we recognized impairment losses in the amount of US\$61.3 million and US\$62.0 million, respectively, relating to Lineage 1000 and Legacy 650 (Executive Jets business unit) and monitoring, sensing and radar (Defense and Security business unit) CGUs, respectively.

As of December 31, 2019, except for the CGU of the Legacy/Praetor platform, there are no other CGUs with impairment losses recognized or at relevant risk of impairment losses. The remaining CGUs have headrooms in the range of 45% to 500%, comparing their value-in-use against their carrying amount.

Since the initial designation of the Commercial Aviation business unit assets as held for sale until April 25, 2020, the depreciation of property, plant and equipment, and amortization of intangible assets and right of use that is part of the Commercial Aviation business unit were ceased and no longer recognized as profit or loss due to the past expectation of assets realization through sale instead of continuous use. If these assets had not been classified as held for sale in 2019, the amount of depreciation and amortization expenses that would have been recognized in profit or loss for the year is US\$83.5 million.

Additionally, the long-lived assets held for sale were measured at the lower of their carrying amount and fair value less incremental costs directly attributable to the conclusion of the now-terminated Transaction with Boeing. Starting on April 25, 2020, those long-lived assets previously held for sale will be subject to impairment test and measured at the lower of their carrying amount and recoverable amount, which is determined at the higher between their value in use and fair value less cost to sell. For additional information on impairment losses related to our Commercial Aviation business unit, see Note 40.3 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Assets Held for Sale and Discontinued Operations

Overview

A discontinued operation is a company's business component that comprises operations and cash flows that may be clearly distinct and:

- that represents a separate major line of business or geographic area of operations;
- that is part of a coordinated single plan for the sale of a separate major line of business or geographic area of operations; or
- that is a subsidiary acquired exclusively with a view to resale.

The classification of a company's operation as discontinued operation is achieved through its disposal, or at the time the transaction meets the criteria of IFRS 5 to have its assets and liabilities classified as held for sale, whichever occurs earlier.

[Table of Contents](#)

An asset or group of assets and liabilities is held for sale when it is expected that its carrying amount will be recovered mainly from the sale transaction rather than continuous use. This occurs if the asset is available for immediate sale under its current conditions, subject only to customary and usual terms for the conclusion of the transaction, when the sale transaction is defined as “highly probable” under the accounting standard.

Commercial Aviation Business Unit

According to IFRS 5, in light of the approval of the then-pending strategic partnership with Boeing, our financial statements as of and for the year ended December 31, 2019 were prepared considering the designation, measurement and presentation of the assets, liabilities and results of the Commercial Aviation business unit and related services as assets held for sale and discontinued operations, pursuant to the terms of the Master Transaction Agreement. Accordingly, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position.

Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. The balances of assets and liabilities held for sale as of December 31, 2019, was US\$5,174.6 million and US\$4,984.0 million, respectively. The results of discontinued operations for the years ended December 31, 2019, 2018 and 2017 was a loss of US\$111.8 million, a profit of US\$90.1 million and a profit of US\$403.3 million, respectively.

In addition, for comparative purposes of the financial data presented in Item 3 of this annual report, we have recast the statement of operations for the years ended December 31, 2016 and 2015 to account for the discontinued operations in all comparative periods. The recast financial data for the years ended December 31, 2016 and 2015 included herein are unaudited.

On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Since the initial designation of the Commercial Aviation business unit assets as held for sale until April 25, 2020, the depreciation of property, plant and equipment, and amortization of intangible assets and right of use that is part of the Commercial Aviation business unit were ceased and no longer recognized as profit or loss due to the past expectation of assets realization through sale instead of continuous use. If these assets had not been classified as held for sale in 2019, the depreciation and amortization expenses that would have been recognized in profit or loss for the year were US\$83.5 million. In addition, the long-lived assets held for sale were measured at the lower of their carrying amount and fair value less incremental costs directly attributable to the conclusion of now-terminated sale transaction with Boeing. Starting on April 25, 2020, those long-lived assets previously held for sale will be subject to impairment test and measured at the lower of their carrying amount and recoverable amount, which is determined at the higher between their value in use and fair value less cost to sell.

The reduction in the demand for travel combined with government-imposed travel restrictions is adversely affecting the aerospace industry, causing some airlines to suspend, cancel or reduce flights. As a consequence, demand for new aircraft has declined as airlines are wary of the COVID-19 air travel restrictions and its consequences. Our customers are now, due to COVID-19, focused on preserving capital and avoiding purchasing aircraft, which will adversely affect us.

[Table of Contents](#)

Accordingly, we expect that 2020 will be a distinct year in terms of orders and deliveries due to the impacts of the COVID-19 pandemic. The airline business has been adversely affected, and we will have to review our production chain in order to reflect the new and uncertain demand scenario. We have already implemented employee furloughs and workload reduction measures and, accordingly, we had to make adjustments to our production capacity. As a result of COVID-19, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. Although we cannot predict the full impact of the COVID-19 pandemic in the short-to-medium term to our business, we expect that customers will continue to postpone their scheduled aircraft deliveries and will cancel their orders.

As a result of the now-terminated Transaction, we also expect that our results of operations and financial condition may be affected by costs and expenses associated with the creation, maintenance and potential termination of the Commercial Aviation NewCo. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Principal Operating Data and Components of Our Statement of Income

Operating Data

Revenue

We generate revenues from the sale of aircraft and spare parts as well as from providing maintenance and repair, training and other product support services. In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Accordingly, in 2019, we presented revenues from our continuing operations as revenues from our Executive Jets, Defense and Security, Support and Services and Other Related business units, and revenues from our discontinued operations as revenues from our Commercial Aviation business unit.

Of our total revenues from our continuing operations, 53.4% and 18.8% were generated through executive and defense and security aircraft deliveries, respectively. In addition, we generate revenue from our Other Related business unit, which include single-source supply of structural parts and mechanical and hydraulic systems to other aircraft manufacturers, and general aviation propeller aircraft, including crop dusters, which are also referred to as light aircraft.

Of our total revenues, including our continuing and discontinued operations, in 2019, 66.5% were generated through commercial and executive aircraft deliveries. Revenue arising from the sale of commercial and executive aircraft is denominated in U.S. dollars. In 2019, total defense and security revenue of our continuing operations included 57.7% of revenue denominated in foreign currency, predominantly in U.S. dollars, and 42.3% denominated in Brazilian *reais*.

On December 20, 2016, we announced the creation of Embraer Services and Support, a business unit focused on services and customer support, which brings together capabilities that were previously allocated to each business area, and is responsible for developing solutions in support of current and new products and services, as well as for managing the associated processes and resources. This represents an opportunity to obtain greater operational efficiency and recurring revenues. Currently there are approximately 2,360 Embraer commercial aircraft and over 1,400 Embraer executive jets, as well as more than 600 defense aircraft, in operation. During 2017, the new Services and Support business unit consolidated the services and customer support processes previously allocated to each of our business areas, to identify synergies and quantify our expertise in our Commercial Aviation, Executive Jets and Defense and Security business units regarding services and support. Since the first quarter of 2018, we have reported the Services and Support, as a separate business unit in our financial statement. Our Services and Support business unit accounted for 19.2% of our revenue for the year ended December 31, 2019. For additional information see Note 39.4 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

[Table of Contents](#)

For the sales of our aircraft, we receive an initial deposit upon the execution of the purchase agreement, progress payments prior to the delivery of each aircraft and a final payment upon delivery. The final payment typically represents the majority of the sale price. The deposits and the progress payments are for the most part nonrefundable in the event orders are canceled, except in the case of the Defense and Security business unit. Payments in advance of delivery are recorded under advances from customers as a liability on our statement of financial position and, when we deliver the aircraft, these payments are recognized as revenue and recorded against trade account receivables of the aircraft. We generally receive monetary deposits for each option to purchase an executive or commercial jet. For additional information on our operating revenues, see “—Operating Results—Critical Accounting Estimates—Revenue from Contracts with Customers.”

Our sales contracts in U.S. dollars with our Executive Jets business unit customers generally include adjustments for inflation as measured by the U.S. Consumer Price Index for Urban Wage Earners and Clerical Workers, when deliveries are not in the same calendar year of the sale except when fixed prices are pre-determined considering the estimated inflation and strategic price positioning planning of a given aircraft model, in line with Embraer’s strategic planning. Our sales contracts with our Commercial Aviation and generally Defense and Security business unit customers include adjustments to the purchase price of the aircraft based on an escalation formula, which is based on a mix of indexes related to raw material, transportation equipment and labor costs. Specific to Defense and Security sales contracts with Brazilian customers, national indexes are used to adjust the prices of the relevant contract. The deposits, progress payments and advance payment are nonrefundable, and a bank guarantee is issued in favor of the customer, except for a few Executive Jet business unit sales. Once a customer decides to exercise an option, we account for it as a firm order, and we begin to receive the respective progress payments and recognize revenue upon delivery of the aircraft or the contractual milestone.

A significant part of our defense contracts, including the contracted research and development for specific programs, meet the criteria for revenue recognition by overtime. For the contracts that do not meet the criteria for overtime we recognize revenue at a point of time, on the moment the product is delivered, or the service is rendered. Certain contracts contain provisions for the redetermination of price based upon future economic conditions. Our defense customers continue to provide customer advances, which are converted into revenue as we fulfill pre-determined stages of completion of the project, including conception, development and design, and engineering, systems integration and customization. These installments are nonrefundable for the most part.

Cost of Sales and Services

Cost of sales and services consists of the cost of the aircraft, spare parts and services rendered, comprising:

- *Raw materials.* Substantially all materials costs are covered by contracts with suppliers. Prices under these contracts are generally adjusted based on an escalation formula which reflects, in part, inflation in the United States.
- *Labor.* These costs comprise salaries and related charges primarily in Brazilian *reais*.
- *Depreciation.* Property, plant and equipment are depreciated over their useful lives, ranging from five to 48 years, on a straight-line basis. Depreciation of aircraft under operating leases is recorded in cost of sales and services from the beginning of the lease term using the straight-line method over the estimated useful life and considering a residual value at the end of the lease term. For additional information on depreciation, see Note 17 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

[Table of Contents](#)

- *Amortization.* Internally generated intangible assets are amortized in accordance with the estimated sales of the series of aircraft. Intangible assets acquired from third parties are amortized on straight-line bases over the estimated useful lives of the assets.

In accordance with the accounting standard for contingencies, we accrue a liability for the obligations associated with product warranties at the aircraft delivery date, which is estimated based on historical experience and recorded in cost of sales and services.

We enter into transactions that represent multiple-element arrangements, including training, technical assistance, spare parts and other concessions. These costs are recognized when the product or service is provided to the customer.

Results of Operations of our Continuing Operations

The following table presents statement of income data by business unit for the periods indicated:

	2019	2018	2017
		Recast	Recast
		Elimination of Discontinued Operations ⁽¹⁾	
		(in US\$ millions)	
Revenue			
Executive jets	1,397.0	1,104.3	1,280.3
Defense and security	775.3	612.1	853.7
Services and Support	437.2	399.8	398.3
Other	8.6	11.5	14.2
Total	2,618.1	2,127.7	2,546.5
Cost of sales and services			
Executive jets	(1,211.2)	(914.0)	(1,126.4)
Defense and security	(711.4)	(702.3)	(792.9)
Services and Support	(325.8)	(299.6)	(314.0)
Other	(11.5)	(13.7)	(15.3)
Total	(2,259.9)	(1,929.6)	(2,248.6)
Gross profit			
Executive jets	185.8	190.3	153.9
Defense and security	63.9	(90.2)	60.8
Services and Support	111.4	100.2	84.3
Other	(2.9)	(2.2)	(1.1)
Total	358.2	198.1	297.9
Operating income (expenses)			
Executive jets	(235.2)	(235.0)	(206.0)
Defense and security	(110.4)	(93.0)	(109.5)
Services and Support	(75.4)	(69.0)	(75.7)
Other	(18.1)	(6.9)	(13.9)
Corporate expenses ⁽³⁾	(81.5)	(77.3)	(72.1)
Unallocated operating expenses ⁽²⁾	—	—	(16.5)
Total	(520.6)	(481.2)	(493.7)
Operating profit before finance income	(162.4)	(283.1)	(195.8)

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

Table of Contents

- (2) Represents expenses with the Final Agreements with the DOJ and SEC and the TCAC with the MPF and CVM and our voluntary dismissal program in 2016 and in 2017.
- (3) Represents expenses with central overheads and corporate projects that were previously allocated to the Commercial Aviation and part of related Service and Support business units on a pro rata basis, using revenue of each operating business unit as an allocation factor, and fully reported as results of continuing operations.

The following table sets forth statement of income information, and this information as a percentage of our revenue, for the periods indicated:

Consolidated Statements of Income	2019 ⁽¹⁾		2018		2017	
			Recast ⁽¹⁾		Recast ⁽¹⁾	
	Elimination of Discontinued Operations ⁽¹⁾					
	(in US\$ millions, except percentages presented in absolute values)					
Revenue	2,618.1	100.0%	2,127.7	100.0%	2,546.5	100.0%
Cost of sales and services	(2,259.9)	86.3%	(1,929.6)	(90.7)%	(2,248.6)	88.3%
Gross profit	358.2	13.7%	198.1	9.3%	297.9	11.7%
Operating income (expense)	(520.6)	19.9%	(481.2)	(22.6)%	493.7	19.4%
Administrative	(136.7)	5.2%	(136.1)	(6.4)%	(138.9)	5.5%
Selling	(148.2)	5.7%	(151.4)	(7.1)%	(169.9)	6.7%
Research	(19.7)	0.8%	(19.5)	(0.9)%	(22.2)	0.9%
Other operating income (expense), net	(215.8)	8.2%	(173.8)	(8.2)%	(163.9)	6.4%
Equity in income (losses) of associates	(0.2)	0.0%	(0.4)	0.0%	1.2	0.0%
Operating loss before financial result	(162.4)	6.2%	(283.1)	13.3%	(195.8)	7.7%
Financial income, net	61.5	2.3%	6.1	0.3%	95.0	3.7%
Foreign exchange gain (loss), net	(0.3)	0.0%	(5.0)	0.2%	5.7	0.2%
Loss Before Income Tax	(101.2)	3.9%	(282.0)	13.3%	(95.1)	3.7%
Income taxes expense	(103.5)	4.0%	20.7	1.0%	(28.2)	1.1%
Loss of the continuing operations	(204.7)	7.8%	(261.3)	12.3%	(123.3)	4.8%
Net income (loss) of the discontinued operations	(111.8)	4.3%	90.1	4.2%	403.3	15.8%
Net Income (loss) for the period	(316.5)	12.1%	(171.2)	8.0%	280.0	11.0%
Attributable to:						
Owners of Embraer	(322.3)	12.3%	(178.2)	8.4%	264.0	10.4%
Non-Controlling Interest	5.8	0.2%	7.0	0.3%	16.0	0.6%

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

2019 Compared with 2018

Revenue

Revenue increased 23.0%, from US\$2,127.7 million in 2018 to US\$2,618.1 million in 2019. Executive Jets business unit revenue increased 26.5%, from US\$1,104.3 million in 2018 to US\$1,397.0 million in 2019. Defense and Security business unit revenue increased 26.7%, from US\$612.1 million in 2018 to US\$775.3 million in 2019. Services and Support business unit revenue increased 9.4%, from US\$399.8 million in 2018 to US\$437.2 million in 2019. Other Related business unit revenue decreased 25.2%, from US\$11.5 million in 2018 to US\$8.6 million in 2019.

The increase of 26.5% in Executive Jets revenue in 2019 was primarily due to higher deliveries in the period, which was 19.8% higher than in 2018, from 91 total executive jet deliveries in 2018 to 109 total executive jet deliveries in 2019. The increase in business unit revenues was higher than the increase in deliveries largely due to a more favorable mix of jet deliveries in 2019 as compared to 2018. In 2019, deliveries of large jets in 2019 represented 43.1% of the total jets delivered compared to 30% in 2018. Large jets are more expensive than light jets.

A significant part of our Defense and Security business unit revenues are accounted for under the overtime method, and we continued to enter into agreements with the Brazilian government, including the C-390 Millennium program, SISFRON, deliveries of special mission aircraft, and others. Additionally, we continued to deliver Super Tucano aircraft to several countries. Our Defense and Security business unit revenues

[Table of Contents](#)

increased 26.7%, from US\$612.1 million in 2018 to US\$775.3 million in 2019, largely due to a lower number of negative cost base revisions (which negatively impact revenue recognition under the overtime method) on the C-390 Millennium development contract in 2019. Defense and Security revenues were negatively impacted in 2018 by a cost base revision for the C-390 Millennium development contract recognized in the second quarter, resulting from the runway excursion incident involving aircraft prototype 001.

Our Services and Support business unit, which was reported as a separate business unit for the first time in 2018, increased 9.4% from US\$399.8 million in 2018 to US\$437.2 million in 2019, primarily due to growth in the spare parts business relating to the executive aviation customers, the continued growth in our global fleet in operation and expiration of the warranties of a growing number of executive jets.

Cost of Sales and Services

Cost of sales and services increased 17.1%, from US\$1,929.6 million in 2018 to US\$2,259.9 million in 2019. The increase in cost of sales was lower than the 23.0% increase in revenues in 2019, thus driving a decrease in cost of sales and services as a percentage of revenue, from 90.7% in 2018 to 86.3% in 2019. This decrease in cost of sales as a percentage of revenue was driven by an improvement in our Defense and Security business unit in 2019. Gross margin increased from 9.3% in 2018 to 13.7% in 2019.

Cost of sales and services in our Executive Jets business unit increased 32.5%, from US\$914.0 million in 2018 to US\$1,211.2 million in 2019. Cost of sales and services increased more than revenues in the business unit during 2019, primarily due to deliveries of Legacy 450 (15 jet deliveries) and Legacy 500 (11 jet deliveries) models during the period at discounted prices following the introduction of the Praetor 500 and Praetor 600 business jets in 2019, which offer better range and other capabilities in the same mid-size and super mid-size segments of the market. Gross margin in our Executive Jets business unit decreased from 17.2% in 2018 to 13.3% in 2019.

Cost of sales and services in the Defense and Security business unit increased 1.3%, from US\$702.3 million in 2018 to US\$711.4 million in 2019. The increase in cost of sales and services was lower than the 26.7% increase in revenues in the business unit during the period, and the lower rate of growth is primarily due to lower negative cost base revisions on the C-390 Millennium development contract in 2019 as compared to 2018. The cost base revision relates to the runway excursion incident involving aircraft prototype 001 in 2018. As a result, the gross margin of our Defense and Security business unit increased from a negative 14.7% in 2018 to 8.2% in 2019.

Cost of sales and services in our Services and Support business unit increased 8.7%, from US\$299.6 million in 2018 to US\$325.8 million in 2019. The lower increase in cost of sales and services when compared to the 9.4% revenue growth during the period is largely due to improved profitability in the portion of the business related to providing services and support to our executive jet customers. Gross margin in the Services and Support business unit increased from 25.1% in 2018 to 25.5% in 2019.

Cost of sales and services in the Other Related business unit decreased 16.1% from US\$13.7 million in 2018 to US\$11.5 million in 2019, while revenues for this business unit decreased 25.2% in 2019.

Gross Profit

As a result of the aforementioned factors, our gross profit increased 80.8% to US\$358.2 million in 2019 from US\$198.1 million in 2018. Our gross margin improved to 13.7% in 2019 from 9.3% in 2018.

Operating Income (Expenses)

As further discussed below, total operating expenses increased 8.2% to US\$520.6 million in 2019, from US\$481.2 million in 2018. Total operating expenses as a percentage of revenues declined to 19.9% in 2019 as compared to 22.6% in 2018, largely due to the impact of higher revenues on fixed cost absorption as well as continued efficiency efforts across the business units. Special items recognized in 2018 expenses included a total of US\$61.3 million of impairment charges in the Executive Jets business unit, while in 2019 special items included a total of US\$71.6 million of impairment charges in the Executive Jets business unit.

[Table of Contents](#)

Excluding the impact of the special items recognized in our results in both periods, our total operating expenses in 2019 would have been US\$449.0 million compared to US\$419.9 million in 2018; and, as a percentage of revenues, our total operating expenses would have been 17.1% and 19.7% of our total revenues in 2019 and 2018, respectively. This variation was primarily due to our management strategies to control selling, general and administrative expenses and better fixed cost absorption that led to operating expense growth at a lower rate than revenue growth during the period.

Administrative. Administrative expenses increased 0.4%, from US\$136.1 million in 2018 to US\$136.7 million in 2019. The majority of our administrative expenses are fixed and do not vary significantly according to changes in our revenues.

Selling. Selling expenses decreased 2.2%, from US\$151.4 million in 2018 to US\$148.2 million in 2019. The decline in selling expenses was largely due to cost reduction and better management strategies to control expenses in 2019 compared to 2018.

Research. Research expenses were relatively stable at US\$19.7 million in 2019 versus the US\$19.5 million reported in 2018.

Other operating income (expense), net. Other operating (expense) income, net was an expense of US\$215.8 million in 2019, compared to an expense of US\$173.8 million in 2018. The increase in other operating expenses is largely due to the increase in the recognition of impairment charges in the Executive Jets business unit from US\$61.3 million in 2018 to US\$71.6 million in 2019, as well as higher consulting and corporate project expenditures in 2019 versus 2018. For additional information, see Note 2.2.14 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

The table below sets forth the special item recognized in other operating (expense) income, net for the periods indicated:

<u>Special item</u>	<u>2019</u>	<u>2018</u>
	<i>(in US\$ millions)</i>	
Impairment loss Executive Jet business	71.6	61.3
Total	<u>71.6</u>	<u>61.3</u>

Excluding the impact of this special item recognized in our results, our other operating (expense) income, net would have been US\$144.2 million in 2019 and US\$112.5 million in 2018, as a result of the increase in other operating expense in 2019, primarily due to higher expenditures on corporate projects as well as higher costs with consulting services during the year.

Equity in Income (Losses) of Associates

Equity in income (losses) of associates decreased from a loss of US\$0.4 million in 2018 to a loss of US\$0.2 million in 2019.

Operating Loss Before Financial Result

As a result of the aforementioned factors, our consolidated operating profit (loss) before financial income decreased from an operating loss of US\$283.1 million in 2018 to an operating loss of US\$162.4 million in 2019, primarily due to the US\$127.2 million negative cost base revision, recognized in the second quarter of 2018, on the C-390 Millennium development contract related to the runway excursion incident involving prototype 001. Our operating margin increased from a negative 13.3% in 2018 to a negative 6.2% in 2019.

[Table of Contents](#)

Operating profit (loss) before financial income (expense) by business unit for 2019 for the Executive Jets, Defense and Security, Services and Support, and Other Related business units was an expense of US\$49.4 million, an expense of US\$46.5 million, an income of US\$36.0 million, and an expense of US\$21.0 million, respectively. In 2018, operating profit (loss) before financial income (expense) for these business units was an expense of US\$44.7 million, and expense of US\$183.2 million, an income of US\$31.2 million, and an expense of US\$9.1 million, respectively. For additional information on operating profit by business unit, see Note 39 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Excluding the aforementioned special items provisions as explained above, our operating profit (loss) in 2019 would have been a loss of US\$90.8 million. Excluding the special items as well as an adjustment for the US\$127.2 million cost base revision on the C-390 Millennium development contract relating to the runway excursion, our operating profit (loss) would have been a loss of US\$94.6 million in 2018. Our operating margins adjustment for these special items would have been a negative 3.5% in 2019 and a negative 4.4% in 2018.

In addition, excluding the aforementioned special items provisions, other expenses, and the Defense and Security cost base revision explained above, our operating profit (loss) by business unit for 2019 for the Executive Jets, Defense and Security, Services and Support, and Other Related business unit would have been a profit of US\$22.2 million, a loss of US\$46.5 million, a profit of US\$36.0 million, and a loss of US\$21.0 million, respectively; and in 2018, our operating profit (loss) for these business units would have been a profit of US\$16.6 million, a loss of US\$56.0 million, a profit of US\$31.2 million, and a loss of US\$9.1 million, respectively.

Financial Income, Net

Financial income, net increased from US\$6.1 million in 2018 to US\$61.5 million in 2019, primarily due to an increase in interest on receivables from US\$3.6 million in 2018 to US\$36.8 million in 2019, and a decrease in interest on loans and financing from US\$39.7 million in 2018 to US\$9.5 million in 2019.

Foreign Exchange Gain (Loss), Net

Foreign exchange gain (loss), net represented a loss of US\$0.3 million, compared to a loss of US\$5.0 million in 2018.

Loss Before Income Tax

As a result of the aforementioned factors, profit (loss) before taxes on income decreased from a loss of US\$283.1 million in 2018 to a loss of US\$162.4 million in 2019.

Income Tax Expense

Income tax expense increased from an income of US\$20.7 million in 2018 to an expense of US\$103.5 million in 2019, primarily due to (i) increased taxes on profits of overseas subsidiaries from an income tax expense of US\$33.2 million in 2018 to US\$72.3 million in 2019, and (ii) increased income tax expenses relating to differences between IFRS and fiscal basis, from an income tax credit of US\$27.0 million to an income tax expense of US\$99.9 million in 2019. For additional information, see our tax reconciliation in Note 24 of our 2019 audited consolidated financial statements.

Our effective tax rate was an expense of 102.3% in 2019 and a benefit of 7.3% in 2018.

Loss of the Continuing Operations

Loss of the continuing operations period decreased 21.7%, from a loss of US\$261.3 million in 2018 to a loss of US\$204.7 million in 2019, primarily due to the aforementioned factors that led to a lower operating loss in the period, partially offset by an increase in income tax expenses in 2019 as compared to 2018.

[Table of Contents](#)

Net Income (Loss) of the Discontinued Operation

Loss for the period of discontinued operations decreased from an income for the period of discontinued operations of US\$90.1 million in 2018 to a loss of US\$111.8 million in 2019, primarily due to the impact of the separation of costs related to the segregation of assets and liabilities of the Commercial Aviation business unit and its related services in connection with the then-pending Transaction and secondarily due to a decrease in operating profitability in 2019 when compared to 2018. For additional information on the termination our strategic partnership with Boeing, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing.”

Net Income (Loss) for the Period

As a consequence of the aforementioned factors, our consolidated net loss after taxes, excluding non-controlling interest, increased from a loss of US\$171.2 million in 2018 to a loss of US\$316.5 million in 2019. As a percentage of revenue, net profit margin after taxes declined from a loss of 8.0% in 2018 to a loss of 12.1% in 2019.

2018 Compared with 2017

Revenue

Revenue decreased 16.4%, from US\$2,546.5 million in 2017 to US\$2,127.7 million in 2018. Executive Jets revenue decreased 13.7%, from US\$1,280.3 million in 2017 to US\$1,104.3 million in 2018. Defense and Security revenue decreased 28.3%, from US\$853.7 million in 2017 to US\$612.1 million in 2018. Services and Support revenue increased 0.4%, from US\$398.3 million in 2017 to US\$399.8 million in 2018. Other related business unit revenue decreased 19.0%, from US\$14.2 million in 2017 to US\$11.5 million in 2018.

The revenue of the Executive Jets business unit decreased 13.7% in 2018, primarily due to lower jet deliveries, which declined 16.5%, from 109 total executive jet deliveries in 2017 to 91 total executive jet deliveries in 2018. The decrease in revenues was lower than the decline in deliveries, primarily due to better average deal prices for executive jet deliveries in 2018 as compared to 2017 despite a higher percentage of light jet deliveries compared to large jet deliveries in 2018, from 66.1% of light jet deliveries in 2017 to 70.3% light jet deliveries in 2018. Light jets are usually less expensive than large jets.

A significant part of our Defense and Security business unit revenues are accounted for under the percentage of completion method, and we continued to enter into agreements with the Brazilian government, including the C-390 Millennium program, SISFRON, deliveries of Special Mission Legacy 500 aircraft and others. Additionally, we continued to deliver Super Tucano aircraft to several countries. Our Defense and Security revenues declined 28.3%, representing US\$612.1 million in 2018, largely due to (i) the cost base revision for the C-390 Millennium development contract recognized in the second quarter of 2018, as a result of the runway excursion incident involving prototype 001, and (ii) a 14.5% appreciation of the average U.S. dollar/*real* exchange rate from 2017 to 2018, which caused a decrease in the value of our Defense and Security revenues denominated in *reais* translated to dollars.

Our Services and Support business unit (which was reported as a separate business unit for the first time in 2018), revenues increased 0.4%, from US\$398.3 million in 2017 to US\$399.8 million in 2018.

Cost of Sales and Services

Cost of sales and services decreased 14.2%, from US\$2,248.6 million in 2017 to US\$1,929.6 million in 2018. The decrease in cost of sales was lower than the 16.4% decline in revenues in 2018, and, as a result, our cost of sales and services as a percentage of revenue increased from 88.3% in 2017 to 90.7% in 2018, primarily due to our Defense and Security business unit.

[Table of Contents](#)

Cost of sales and services in our Executive Jets business unit decreased 18.9%, from US\$1,126.4 million in 2017 to US\$914.0 million in 2018. Cost of sales and services declined more than revenues in the business unit during 2018, primarily due to better average deal prices in 2018 as compared to 2017 and efforts to increase production efficiencies in the period. Gross margin in our Executive Jets business unit increased from 12.0% in 2017 to 17.2% in 2018.

Cost of sales and services in the Defense and Security business unit decreased 11.4%, from US\$792.9 million in 2017 to US\$702.3 million in 2018. The decline in cost of sales and services was lower than the 28.3% decrease in revenues in the business unit during the period, primarily due to (i) cost base revisions on the C-390 Millennium development contract as a result of the incident involving prototype 001 in the second quarter of 2018, (ii) devaluation of the Brazilian *real* versus the U.S. dollar, and (iii) certain other cost overruns related to the development project. As a result, gross margin in the Defense and Security business unit decreased from 7.1% in 2017 to a negative 14.7% in 2018.

Cost of sales and services in our Services and Support business unit decreased 4.6%, from US\$314.0 million in 2017 to US\$299.6 million in 2018, primarily due to the improvement in parts and services profitability related to executive jets customers. Gross margin in the Services and Support business unit increased from 21.2% in 2017 to 25.1% in 2018.

Cost of sales and services in the Other Related business unit decreased 10.5% from US\$15.3 million in 2017 to US\$13.7 million in 2018, while revenues for this business unit decreased 19.0% in 2018.

Gross Profit

As a result of the aforementioned factors, our gross profit decreased 33.5%, from US\$297.9 million in 2017 to US\$198.1 million in 2018. Our gross margin decreased from 11.7% in 2017 to 9.3% in 2018.

Operating Income (Expenses)

As further discussed below, total operating expenses decreased 2.5%, from US\$493.7 million in 2017 to US\$481.2 million in 2018. Total operating expenses as a percentage of revenues increased to 22.6% in 2018 compared to 19.4% in 2017, primarily due to (i) lower fixed cost absorption caused by lower revenues in 2018, and (ii) lower special items recognized in 2018 as compared to 2017. Special items recognized as operating expenses amounted to total net provisions and expenses of US\$61.3 million and US\$79.4 million in 2018 and 2017, respectively.

Excluding the impact of these special items recognized in our results, our total operating expenses would have been US\$419.9 million in 2018 and US\$414.3 million in 2017; and, as a percentage of revenues, our total operating expenses would have been 19.7% and 16.3% of our total revenues in 2018 and 2017, respectively.

Administrative. Administrative expenses decreased 2.0%, from US\$138.9 million in 2017 to US\$136.1 million in 2018. The majority of our administrative expenses are fixed and do not vary significantly according to changes in our revenues.

Selling. Selling expenses decreased 10.9%, from US\$169.9 million in 2017 to US\$151.4 million in 2018, primarily due to (i) management strategies to control sales and marketing expenses in 2018, and (ii) a 14.5% appreciation of the average U.S. dollar/*real* exchange rate, decreasing the value of *real* denominated selling expenses.

Research. Research expenses decreased 12.2%, from US\$22.2 million in 2017 to US\$19.5 million in 2018.

[Table of Contents](#)

Other operating income (expense), net. Other operating (expense) income, net increased from an expense of US\$163.9 million in 2017 to an expense of US\$173.8 million in 2018, primarily due to increased expenses relating to consulting services and corporate projects, as a result of (i) an impairment charge in the Executive Jets business unit of US\$61.3 million in 2018, (ii) expenses of US\$10.1 million in 2017 related to the conclusion of the negotiations and payments made in connection with the FCPA investigation, (iii) total provisions of US\$6.4 million related to our voluntary dismissal program for employees in our Brazilian operations in 2017, (iv) US\$8.7 million in impairments in the Defense and Security business unit in 2017, and (v) US\$54.2 million in impairments in the Executive Jets business unit in 2017, as discussed below. For additional information on our impairment charges, see Note 2.2.14 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

The table below sets forth the special items recognized in other operating (expense) income, net for the periods indicated:

<u>Special items</u>	<u>2018</u>	<u>2017</u>
	<i>(in US\$ millions)</i>	
Provisions from voluntary dismissal program (Unallocated)	—	6.4
Payments related to FCPA investigation (Unallocated)	—	10.1
Impairment loss Defense and Security business	—	8.7
Impairment loss Executive Jet business	61.3	54.2
Total	61.3	79.4

Excluding the impact of these special items recognized in our results, our other operating (expense) income, net would have been US\$112.5 million in 2018 and US\$84.5 million in 2017, with the increase in expense driven by the aforementioned factors.

Equity in Income (Losses) of Associates

Equity in income (losses) of associates decreased from an income of US\$1.2 million in 2017 to a loss of US\$0.4 million in 2018.

Operating Loss Before Financial Result

As a result of the aforementioned factors, our consolidated operating profit (loss) before financial income (expense) increased from an operating loss of US\$195.8 million in 2017 to a loss of US\$283.1 million in 2018, primarily due to the US\$127.2 million in cost base revisions on the C-390 Millennium development contract as a result of the incident involving prototype 001. Our operating margin decreased from a negative 7.7% in 2017 to a negative 13.3% in 2018.

Operating loss before financial result by business unit for 2018 for the Executive Jets, Defense and Security, Services and Support, and Other Related business units was a loss of US\$44.7 million, a loss of US\$183.2 million, a profit of US\$31.2 million, and a loss of US\$9.1 million, respectively. In 2017, operating profit (loss) before financial income (expense) for these business units was a loss of US\$52.1 million, a loss of US\$48.7 million, a loss of US\$8.6 million, and a loss of US\$15.0 million, respectively. For information on our operating profit by business unit, see Note 39 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Excluding the aforementioned special items provisions and other expenses explained above, as well as an adjustment for the US\$127.2 million cost base revision on the C-390 Millennium development contract as a result of the runway excursion incident involving prototype 001, our operating profit (loss) would have been a loss of US\$94.6 million in 2018 and a loss of US\$116.4 million in 2017, and our operating margins would have been negative 4.4% in 2018 and negative 4.6% in 2017.

[Table of Contents](#)

In addition, excluding the aforementioned special items provisions, other expenses, and the Defense and Security business unit cost base revision explained above, our operating profit (loss) by business unit for 2018 for the Executive Jets, Defense and Security, Services and Support, and Other Related business units would have been a profit of US\$16.6 million, a loss of US\$56.0 million, a profit of US\$31.2 million, and a loss of US\$9.1 million, respectively; and in 2017, our operating profit (loss) for these business units would have been a profit of US\$2.1 million, a loss of US\$40.0 million, a profit of US\$8.6 million, and a loss of US\$15.0 million, respectively.

Financial Income, Net

Financial expense, net decreased from US\$95.0 million in 2017 to US\$6.1 million in 2018, primarily due to a decrease in interest on cash and cash equivalents and financial investments from US\$122.6 million in 2017 to US\$80.3 million in 2018, and a decrease in interest on receivables from US\$24.5 million in 2017 to US\$3.6 million in 2018. For additional information, see Note 35 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Foreign Exchange Gain (Loss), Net

Foreign exchange gain (loss), net was a loss of US\$5.0 million in 2018, compared to a gain of US\$5.7 million in 2017.

Loss Before Income Taxes

As a result of the aforementioned factors, profit (loss) before taxes on income decreased from a loss of US\$95.1 million in 2017 to a loss of US\$282.0 million in 2018.

Income Tax Expense

Income tax benefit increased from an income tax expense of US\$28.2 million in 2017 to a credit of US\$20.7 million in 2018, primarily due to more favorable differences between IFRS and fiscal basis in 2018 from an expense of US\$28.2 million in 2017 to a credit of US\$20.7 million in 2018. For additional information, see Note 24 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Our effective tax rate was a benefit of 7.3% in 2018 and an expense of 29.7% in 2017.

Loss of the Continuing Operations

As a result of the above, loss of the continuing operations period increased 111.9% from a loss of US\$123.3 million in 2017 to a loss of US\$261.3 million in 2018, primarily due to lower operating income and lower financial income in 2018 as compared to 2017.

Net Income (Loss) of the Discontinued Operation

Income for the period of discontinued operations decreased 77.7% from US\$403.3 million in 2017 to US\$90.1 million in 2018, primarily due to lower operating profitability in 2018 as compared to 2017 as a result of lower commercial aircraft deliveries and a less favorable mix of deliveries in 2018. For additional information on our discontinued operations as of December 31, 2019, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing—Assets Held for Sale and Discontinued Operations.”

Net Income (Loss) for the Period

As a consequence of the aforementioned factors, our consolidated net income (loss) after taxes, excluding non-controlling interest, decreased from a loss of US\$280.0 million in 2017 to a loss of US\$171.2 million in 2018. As a percentage of revenue, net income (loss) after taxes declined to a loss of 8.0% in 2018 compared to a net income of 11.0% in 2017.

[Table of Contents](#)

Results of Operations of our Discontinued Operations

The following table sets forth statement of income information, and this information as a percentage of our revenue, for the periods indicated:

Discontinued Operations Statements of Income

Discontinued Operations Statements of Income	2019 (1)		2018		2017	
			Recast (1)		Recast (1)	
	(in US\$ millions, except percentages presented in absolute values)					
Discontinued Operation						
Revenue	2,844.5	100.0%	2,943.4	100.0%	3,312.9	100.0%
Cost of sales and services	(2,407.2)	84.6%	(2,373.6)	80.6%	(2,515.5)	75.9%
Gross profit	437.3	15.4%	569.8	19.4%	797.4	24.1%
Operating income (expense)	(352.0)	12.4%	(251.5)	8.5%	(259.7)	7.8%
Administrative	(53.5)	1.9%	(46.5)	1.6%	(40.2)	1.2%
Selling	(137.7)	4.8%	(152.8)	5.2%	(146.0)	4.4%
Research	(29.8)	1.0%	(26.6)	0.9%	(27.0)	0.8%
Other operating income (expense), net	(131.0)	4.6%	(25.6)	0.9%	(46.5)	1.4%
Operating profit before financial result	85.3	3.0%	318.3	10.8%	537.7	16.2%
Financial income, net	(177.5)	6.2%	(177.7)	6.0%	(135.6)	4.1%
Foreign exchange gain (loss), net	7.2	0.3%	5.1	0.2%	0.9	0.0%
Profit (loss) before taxes on income	(85.0)	3.0%	145.7	5.0%	403.0	12.2%
Income taxes expense	(26.8)	0.9%	(55.6)	1.9%	0.3	0.0%
Net Income (loss) of discontinued operations year	(111.8)	3.9%	90.1	3.1%	403.3	12.2%

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

2019 Compared with 2018

Revenue

Revenues from our Commercial Aviation business unit decreased 3.4%, from US\$2,943.4 million in 2018 by US\$2,844.5 million in 2019, primarily due to a decrease of 1.1% in commercial aircraft deliveries, from 90 in 2018 to 89 in 2019 and a less favorable mix of commercial aircraft deliveries in 2019 as compared to 2018.

Cost of Sales and Services

Cost of sales and services in our Commercial Aviation business unit increased 1.4%, from US\$2,373.6 million in 2018 to US\$2,407.2 million in 2019, primarily due to the impact of the ramp-up of production of the E2 E-Jets program, in which early units tend to have higher production costs than later units in the program.

Gross Profit

As a result of the aforementioned factors, our gross profit decreased 23.3% to US\$437.3 million in 2019 from US\$569.8 million in 2018. Our gross margin decreased to 15.4% in 2019 from 19.4% in 2018.

Operating Income (Expenses)

As further discussed below, total operating expenses increased 40.0% from US\$251.5 million in 2018 to US\$352.0 million in 2019. Total operating expenses as a percentage of revenues increased from 8.5% in 2018 to 12.4% in 2019, primarily due to the impact of the separation of costs related to the segregation of assets and liabilities of the Commercial Aviation business unit and its related services as a preparation for the now-terminated Transaction. For additional information on the now-terminated Transaction, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing—Assets Held for Sale and Discontinued Operations.” There were no special items recognized in 2019 or 2018 operating expenses.

[Table of Contents](#)

Administrative. Administrative expenses increased 15.1% to US\$53.5 million in 2019, compared to US\$46.5 million in 2018.

Selling. Selling expenses decreased 9.9% to US\$137.7 million in 2019, from US\$152.8 million in 2018, primarily due to cost reductions and management strategies to control expenses in 2019 compared to 2018.

Research. Research expenses increased 12.0% to US\$29.8 million in 2019, from US\$26.6 million in 2018.

Other operating income (expense), net. Other operating income (expense), net increased from an expense of US\$25.6 million in 2018 to an expense of US\$131.0 million in 2019, primarily due to an increase in separation costs related to the segregation of assets and liabilities of the Commercial Aviation business unit and its related services in preparation for the now-terminated Transaction. For additional information on the now-terminated Transaction, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing—Assets Held for Sale and Discontinued Operations.” There were no special items recorded in 2019 or 2018 operating expenses.

Operating Profit (Loss) Before Financial Result

As a result of the aforementioned factors, our consolidated operating profit (loss) before financial income (expense) decreased 73.2%, from US\$318.3 million in 2018 to US\$85.3 million in 2019, primarily due to an increase in separation costs related to the segregation of assets and liabilities of the Commercial Aviation business unit and its related services in preparation for the now-terminated Transaction and secondarily due to lower profitability of our Commercial Aviation business unit deliveries in 2019 as compared to 2018. For additional information on the now-terminated Transaction, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing—Assets Held for Sale and Discontinued Operations.” Our operating margin decreased from 10.8% in 2018 to 3.0% in 2019.

Financial Income (Expense), Net

Financial income, net decreased from US\$177.7 million in 2018 to US\$177.5 million in 2019, primarily due to a slight decrease in indebtedness due to the payment of certain financial obligations.

Foreign Exchange Gain (Loss), Net

Foreign exchange gain (loss), net increased from a gain of US\$5.1 million in 2018 to a gain of US\$7.2 million in 2019.

Profit (Loss) Before Taxes on Income

As a result of the aforementioned factors, profit (loss) before taxes on income decreased from pre-tax income of US\$145.7 million in 2018 to pre-tax loss of US\$85.0 million in 2019.

Income Tax Expense

Income tax expense decreased 51.8%, from an expense of US\$55.6 million in 2018 to an expense of US\$26.8 million in 2019. For additional information, see Note 24 to our 2019 consolidated financial statements included elsewhere in this annual report.

Our effective tax rate was an expense of 31.5% in 2019 and of 38.2% in 2018.

[Table of Contents](#)

Profit (Loss) of the Discontinued Operations

As a consequence of the aforementioned factors, our net income (loss) after taxes of discontinued operations decreased from a net income of US\$90.1 million in 2018 to a net loss of US\$111.8 million in 2019. As a percentage of revenue, net income after taxes declined to a loss of 3.9% in 2019 compared to an income of 3.1% in 2018.

2018 Compared with 2017

Revenue

Revenues from our Commercial Aviation business unit decreased 11.2%, from US\$3,312.9 million in 2017 to US\$2,943.4 million in 2018, primarily due to (i) a 10.9% decrease in commercial aircraft deliveries, from 101 in 2017 to 90 in 2018, and (ii) lower average pricing on the commercial aircraft deliveries in 2018 compared to 2017.

Cost of Sales and Services

Cost of sales and services in our Commercial Aviation business unit decreased 5.6%, from US\$2,515.5 million in 2017 to US\$2,373.6 million in 2018, primarily due to the decreased number of aircraft deliveries in the period. Cost of sales and services declined lower than the 11.2% revenue decline in 2018 primarily due to lower average pricing for deliveries in 2018 as compared to 2017.

Gross Profit

As a result of the aforementioned factors, our gross profit decreased 28.5%, from US\$797.4 million in 2017 to US\$569.8 million in 2018. Our gross margin declined from 24.1% in 2017 to 19.4% in 2018.

Operating Expenses

As further discussed below, total operating expenses decreased 3.2%, from US\$259.7 million in 2017 to US\$251.5 million in 2018. Total operating expenses as a percentage of revenues increased to 8.5% in 2018 compared to 7.8% in 2017, primarily due to the special items recognized in 2017, which positively impacted our results. Special items recognized in our operating expenses in 2017 included total net provision reversals and other credits of US\$23.2 million related to favorable developments in ongoing negotiations related to the Chapter 11 bankruptcy proceedings of Republic Airways Holdings, while the operating expenses in 2018 did not contain special items.

Excluding the impact of these special items recognized in our results, our total operating expenses would have been US\$251.5 million in 2018 and US\$282.9 million in 2017; and, as a percentage of revenues, our total operating expenses would have been 8.5% of our total revenues in 2018 and 8.5% of our total revenues in 2017.

Administrative. Administrative expenses increased 15.7%, from US\$40.2 million in 2017 to US\$46.5 million in 2018.

Selling. Selling expenses increased 4.7%, from US\$146.0 million in 2017 to US\$152.8 million in 2018.

Research. Research expenses decreased 1.5% to US\$26.6 million in 2018, from US\$27.0 million in 2017.

Other operating income (expense), net. Other operating (expense) income, net decreased from an expense of US\$46.5 million in 2017 to an expense of US\$25.6 million in 2018, primarily due to lower level of impairments on the used aircraft portfolio of the Commercial Aviation business unit in 2018 when compared to 2017.

[Table of Contents](#)

The table below sets forth the special items recognized in other operating income (expense), net for the periods indicated:

Special items	2018	2017
	(in US\$ millions)	
Special items related to Republic Airways (Commercial Aviation business)	—	(23.2)
Total	—	(23.2)

Excluding the impact of these special items recognized in our results, our other operating (expense) income, net would have been an expense of US\$25.6 million in 2018 and an expense of US\$69.7 million in 2017.

Operating Profit Before Financial Result

As a result of the aforementioned factors, our consolidated operating profit (loss) before financial result decreased 40.8%, from US\$537.7 million in 2017 to US\$318.3 million in 2018, primarily due to the decrease in gross profit from 2017 to 2018, as previously explained. Our operating margin decreased to 10.8% in 2018 from 16.2% in 2017.

Financial Income, Net

Financial expense, net increased from US\$135.6 million in 2017 to US\$177.7 million in 2018, primarily due to the devaluation of the residual value guarantees portfolio and higher interest expenses over loans and financing.

Foreign Exchange Gain (Loss), Net

Foreign exchange gain (loss), net increased from a loss of US\$0.9 million in 2017 to a gain of US\$5.1 million in 2018.

Profit (Loss) Before Taxes on Income

As a result of the aforementioned factors, profit (loss) before taxes on income decreased from US\$403.0 million in 2017 to US\$145.7 million in 2018.

Income Tax Expense

Income tax expense, allocated to our discontinued operations, changed from an income tax credit of US\$0.3 million in 2017 to an income tax expense of US\$55.6 million in 2018, due to (i) higher taxes on profits in Brazil, as a result of the aforementioned factors, and (ii) higher tax expenses accrued from overseas subsidiaries, which became part of our Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019).

Our effective tax rate was an expense of 38.2% in 2018 and a benefit of 0.1% in 2017.

Profit (Loss) of the Discontinued Operations Year

As a consequence of the aforementioned factors, our net income (loss) after taxes of discontinued operations decreased from US\$403.3 million in 2017 to US\$90.1 million in 2018. As a percentage of revenue, net income after taxes decreased 3.1% in 2018 compared to 12.2% in 2017.

[Table of Contents](#)

Accounting Standards

Standards and amendments to existing standards mentioned in this section have been published and implemented for the year ended December 31, 2019. On January 1, 2019, the Company started adopting the IFRS 16 in the financial statements included elsewhere in this annual report.

Below is a summary of the accounting standards presented below are a summary of the accounting standards we implemented in 2019. For additional information on the accounting standards, see Note 2.2.1 consolidated financial statements as of and for the year ended December 31, 2019.

- **IFRS 16 – Leases:** brings new concepts from the lessee's point of view. In the model proposed by the new standard, the lessee shall recognize all leases as part of the statements of financial position in the caption of property, plant and equipment "right of use," against a liability account. The initial recognition must be measured as at present value, considering a discount rate that is appropriate to the local reality of each entity. In the model proposed by the new standard, there are no significant changes in the accounting recognition to be made by the lessor. In adopting the standard, the Company has used two practical expedients: (1) transactions below US\$5,000 will be outside the scope of this standard, and (2) all contracts with less than 12 months will not be considered for the purposes of IFRS 16. Embraer and its subsidiaries are analyzing the new accounting standard as well as the application in existing transactions and considering whether there is an impact in the consolidated financial statements, implying an increase in assets and liabilities, a reduction in the value of operating expenses and an increase in financial expenses. We started applying this standard as of January 1, 2019 using the simplified transition approach, did not restate comparative amounts for the year prior to first adoption and the assets were measured at the amount of the lease liability on adoption (adjusted for any prepaid or accrued lease expenses). We identified applicable contracts within the scope of IFRS 16 for leases of land and buildings, facilities, machinery, vehicles and other equipment, subject to the practical expedients applied. For the contracts identified, we recognized: (a) lease liability in the total amount of US\$57.6 million for the Company related to the lease payments according to the cash flows of each contract, discounted to present value at lease liabilities on January 1, 2019, was 6.3%; (b) the right-of-use assets representing the right to use the underlying assets of these contracts were measured in an amount corresponding to the lease liability.
- **IFRIC 23 – Uncertainty over income tax treatments:** This is an interpretation of the IAS 12 – Income Tax standard, which initial application was effective as of January 1, 2019. According to our management, there were no significant impacts arising from this interpretation, as all procedures adopted for calculation and payment of income taxes are supported by the prevailing legislation and case law of administrative and judicial courts.
- **IFRS 9 – Hedge Accounting.** We changed the accounting policy to the annual financial statements for the year ended December 31, 2018 to adopt the requirements of IFRS 9 – Financial Instruments, to supersede IAS 39 – Financial Instruments: Recognition and Measurement, when accounting for hedge instruments designated for hedge accounting beginning on January 1, 2019. The adoption impacts are detailed in the topics below:
 - (a) **Fair Value Hedge:** we applied the fair value hedge accounting to hedge against the risk of changes in borrowing and financing interest rates, by contracting swaps. Interest rate swaps existing on January 1, 2019 qualify as fair value hedge accounting for purposes of IFRS 9. Our risk management strategies and hedge documentation are aligned with the requirements of IFRS 9 for designation of transactions. Changes in the fair value of derivatives designated and qualified as fair value hedge accounting continue to be recorded in profit or loss for the year, in financial income (expense), net, including the changes in the fair value of hedged asset or liability (hedged item) attributable to the hedged risk. There were no changes from the adoption of IFRS 9.

[Table of Contents](#)

- (b) *Cash Flow Hedge*: we apply the cash flow hedge accounting to hedge against the cash flow volatility attributable to a risk of foreign exchange fluctuation associated with a highly likely transaction that will affect profit or loss for the year, through currency purchase and sale options (zero-cost collar) related to payroll expenses incurred on transactions in Brazil and settled in Reais. For instruments designated as cash flow hedge accounting, we started to account for changes in the fair value of the timing element of the options, previously recognized in financial income (expense) according to IAS 39, in other comprehensive income as hedge cost in the cash flow hedge line. Hedge costs are reclassified together with the intrinsic value of the options by adjusting the initial value of the hedge item (payroll). On January 1, 2019, the amount of US\$1.3 million was reclassified from earnings reserve to the financial instrument reserve in valuation adjustments to equity in equity related to the time value of the options effective on the first-time adoption date. We did not reclassify the time value of outstanding options on January 1, 2018.

Other accounting standards have been amended or are in the process of amendment and will come into effect in the coming years; however, these are not mentioned, as the Company does not expect them to have a significant impact.

5B. Liquidity and Capital Resources

Overview

Our liquidity needs arise mainly from working capital requirements, research and development, principal and interest payments on our debt, capital expenditures and distributions to shareholders. To meet these needs, we generally rely on funds provided by operations, borrowings under our credit arrangements, cash contributions from risk-sharing partners, advance payments from customers and, to a lesser extent, issuance of debt and equity securities in the capital markets. For additional information on our working capital requirements and our capital sources, see “Item 4. Information on the Company—4B. Business Overview—Suppliers and Components; Risk-Sharing Arrangements” and “Item 4. Information on the Company—4B. Business Overview—Discontinued Operations—Commercial Aviation Business Unit—Production, New Orders and Options” and “—Credit Facilities and Lines of Credit.”

As of the date of this annual report, we believe that our traditional sources of funds are sufficient to meet our foreseeable working capital requirements, including to (i) make other planned capital expenditures and (ii) pay dividends and interest on shareholders’ equity. Our access to liquidity sources has not been materially impacted in 2019, and we expect that this access may be impacted in the near future, including as a result of the COVID-19 pandemic. However, there can be no assurance that our traditional sources of funds, or that the cost or availability of our credit facilities or future borrowing sources, will not be materially impacted by market disruptions.

As a result of the COVID-19 pandemic, as of the date of this annual report, we have experienced certain delays in our supply chain, production operations and material impacts on the demand for our products, as well as cancellation of firm orders of our Executive Jets business unit and reschedules of our Commercial Aviation and Executive Jets business units aircraft deliveries. We expect that our customers will continue to reschedule deliveries, fail to exercise options or continue to cancel firm orders as a result of potential economic downturns, including as a result of the COVID-19 pandemic, or financial volatility in the commercial airline industry. In addition, our risk-sharing partners’ cash contributions are refundable under certain limited circumstances and we may need to find replacement sources of capital.

As a result of COVID-19, as of the date of this annual report we have taken measures to preserve our cash flow, including (i) reductions in working hours and pay cuts; (ii) extension of payments terms relating to our suppliers; (iii) extension of tax payment deadlines; (iv) negotiation of new credit lines; and (v) adjustment of our production chain.

[Table of Contents](#)

Net Cash Generated (Used) by Operating Activities and Adjusted Working Capital

According to IFRS 5, in light of the approval of the then-pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. Our consolidated statements of cash flows continued to set forth our cash flows from continuing and discontinued operations on a single statement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the net cash flows arising from assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Net cash is presented on a total basis including our continuing and discontinued operations. The balance sheet assets and liabilities are also presented on a total basis, including our continuing operations and assets held for sale.

2019 Compared with 2018

In 2019, net cash generated by operating activities decreased 19.3%, from net cash generated in the amount of US\$1,107.6 million in 2018, of which US\$466.4 million refers to our discontinued operations, net cash generated in the amount of US\$893.8 million in 2019, of which US\$301.9 million refers to our discontinued operations, primarily a result of (i) higher losses for the period, including discontinued operations, which included higher separation costs related to the segregation of assets and liabilities of the Commercial Aviation business unit and its related services in connection with the Transaction, and (ii) an increase in contract assets, as well as a decrease in trade accounts payable in 2019 compared to 2018.

Our adjusted working capital (defined as total current assets *less* cash and equivalents and financial investment *minus* total current liabilities *less* loans and financing, including assets and liabilities held for sale) decreased from US\$1,197.4 million as of December 31, 2018 to US\$935.3 million as of December 31, 2019, primarily as a result of lower inventories and higher contract liabilities in 2019 compared to 2018.

2018 Compared with 2017

In 2018, net cash generated by operating activities increased 47.1%, from net cash generated in the amount of US\$753.0 million in 2017, of which US\$710.3 million refers to our discontinued operations, to net cash generated in the amount of US\$1,107.6 million in 2018, of which US\$466.4 million refers to our discontinued operations, primarily a result of decreased financial investments and contract assets, and increases in trade accounts payable and contract liabilities, partially offset by lower net income and increases in inventories in 2018 compared to 2017.

Our adjusted working capital (defined as total current assets *less* cash and equivalents and financial investment *minus* total current liabilities *less* loans and financing, including assets and liabilities held for sale) increased from US\$1,028.4 million in 2017 to US\$1,197.4 million in 2018, 2018 primarily as a result of higher inventories at the end of 2018 compared to 2017.

Net Cash Used in Investing Activities

2019 Compared with 2018

Net cash generated in investing activities increased from a net cash used in investing activities of US\$523.1 million in 2018, of which US\$295.5 million refers to our discontinued operations, to a net cash generated of US\$407.7 million in 2019, of which US\$239.8 million refers to net cash used from our discontinued operations. Net cash generated was derived from investing activities in 2019 as compared to those from investing activities in 2018, primarily due to a US\$977.8 million in-flow from financial investments in the period as a result of changes in cash management strategies.

[Table of Contents](#)

2018 Compared with 2017

In 2018, net cash used in investing activities decreased 52.1%, from net cash used of US\$1,092.6 million in 2017, of which US\$401.3 million refers to our discontinued operations, to net cash used of US\$523.1 million in 2018, of which US\$295.5 million refers to our discontinued operations, primarily due to (i) decreased investments on property, plant, and equipment and intangibles in 2018 compared to 2017, (ii) the implementation of efficiencies in the E-Jet E-2 development program and the entry into service of the first jet in the family, the E90-E2, which helped to reduce total development costs. In addition, lower investments in held to maturity securities in 2018 as compared to 2017 was a factor in the lower net cash used in investing activities in 2018.

Net Cash Generated (Used) by Financing Activities and Total Debt

2019 Compared with 2018

In 2019, net cash used by financing activities decreased 48.9%, from net cash used by financing activities of US\$503.4 million in 2018, of which US\$212.5 million refers to our discontinued operations, to net cash used by financing activities of US\$257.0 million in 2019, of which US\$19.1 million refers to our discontinued operations. The higher use of cash in financing activities in 2019 as compared to 2018 is primarily due to lower proceeds from new borrowings and higher repayment of borrowing in 2019.

On December 31, 2019, we had total debt (composed of loans and financing) of US\$3,392.3 million under our financing arrangements, (including liabilities held for sale of US\$3,301.3 million), 2.2% of which was long-term debt and 97.8% of which consisted of short-term debt. On the other hand, we had total debt of US\$3,647.6 million as of December 31, 2018, 95.1% of which consisted of long-term debt and 4.9% of which consisted of short-term debt.

2018 Compared with 2017

Net cash used by financing activities varied from a net cash generated in the amount of US\$369.5 million in 2017, of which US\$555.7 million refers to our discontinued operations, to a net cash used in the amount of US\$503.4 million in 2018, of which US\$212.5 million refers to discontinued operations, primarily due to lower issuance of debt in 2018 as compared to 2017, and higher cash outflows for debt repayment. The decrease in borrowing during 2018 was primarily due to the absence of any bond issuances during the period, as we issued US\$750.0 million of 10-year bonds in 2017. Additionally, we repaid US\$596.3 million of borrowings during 2018 as compared to repayment of US\$540.2 million in 2017. In 2018, we distributed US\$40.6 million in dividends and interest on own capital compared to US\$54.1 million in 2017. In 2018, we did not acquire any of own shares during the period, while in 2017 we spent US\$15.0 million on share repurchases.

On December 31, 2018, we had total debt (consisting of loans and financing) of US\$3,647.6 million under our financing arrangements, 95.1% of which was long-term debt and 4.9% of which consisted of short-term debt. On December 31, 2017, we had total debt of US\$4,198.3 million, 90.7% of which consisted of long-term debt and 9.3% of which consisted of short-term debt.

Credit Facilities and Lines of Credit

As a result of our then-pending strategic partnership with Boeing, on January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã of the net assets comprising assets, liabilities, properties, rights and

[Table of Contents](#)

obligations (subject to certain exceptions) related to our Commercial Aviation business unit. In this context, we amended the indentures governing our senior unsecured notes due 2020, 2022, 2023, 2025 and 2027 in order to (i) substitute us for Yaborã as the issuer of the notes due 2022; and (ii) have Yaborã substitute us as guarantor of the notes due 2020, 2023, 2025 and 2027 (the “Substitution”). At the same time, the issuers of the notes due 2020, 2023, 2025 and 2027 became a wholly owned subsidiary of Yaborã.

On March 10, 2020:

- we and Yaborã further amended the indentures governing the notes due 2022, 2023, 2025 and 2027, without the consent of the holders of these notes, to reflect that, from such date, we irrevocably and unconditionally guarantee the full and punctual payment of the principal, premium, interest, additional amounts and all other amounts that may become due and payable under the relevant notes and indentures (the “New Embraer Guarantees”). The terms of the supplemental indentures provide, among other things, that the New Embraer Guarantees shall automatically terminate on the date that we cease to own 100% of the share capital of Yaborã; and
- Yaborã issued a press release announcing the launch of a consent solicitation process to seek consent from holders of the notes due 2022, 2023, 2025 and 2027 to amend certain provisions of the indentures governing these notes (“Consent Solicitation Process”). These consent solicitation process related to the (i) delisting of the notes due 2022, 2025 and 2027 from the New York Stock Exchange (“NYSE”) and (ii) the suspension of Yaborã’s SEC reporting obligations under the Exchange Act.

On March 17, 2020, Yaborã announced that it obtained the relevant consents of the holders of the notes due 2022, 2023, 2025 and 2027 and, accordingly, further amended the indentures under which the notes due 2022, 2023, 2025 and 2027 were issued. These amendments became effective upon satisfaction of the conditions precedent provided in the terms of the Consent Solicitation Process, which occurred on March 19, 2020. Therefore, on March 30, 2020, a Form 25 was filed with the SEC to delist the notes due 2022, 2025 and 2027 from the NYSE (which delisting occurred on April 13, 2020), and on April 13, 2020, a Form 15 was filed in order to deregister the notes due 2022, 2025 and 2027, and to suspend Yaborã’s SEC reporting obligations that arose as a result of the Substitution. With effect from April 13, 2020, Yaborã was relieved of its SEC periodic reporting requirement and, with effect from July 12, 2020, Yaborã will be relieved of all SEC reporting requirements (subject to annual testing of the relevant registered holder threshold on January 1 of each year to confirm that Yaborã continues to be eligible to suspend its SEC reporting obligations).

All of the long-term facilities described below that were outstanding as of December 31, 2019 were transferred and migrated to Yaborã as of January 1, 2020, in a total amount of US\$3.3 billion.

For additional information on our now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Long-term Facilities

In October 2006, our wholly owned finance subsidiary, Embraer Overseas Ltd., or Embraer Overseas, issued 6.375% US\$400.0 million guaranteed notes due 2017. The notes were unconditionally guaranteed by us. As described below, in September 2013, we completed an exchange offer in which US\$146.4 million in principal amount of our guaranteed notes due 2017 were exchanged for our guaranteed notes due 2023.

In October 2009, Embraer Overseas issued 6.375% US\$500.0 million guaranteed notes due 2020. The notes were unconditionally guaranteed by us. As described below, in September 2013 we completed an exchange offer in which US\$337.2 million in principal amount of our guaranteed notes due 2020 were exchanged for our guaranteed notes due 2023. In connection with the exchange offer, we received the

[Table of Contents](#)

requisite consents from holders of our guaranteed notes due 2020 to eliminate substantially all the restrictive covenants, certain events of default and related provisions contained in the indenture under which the notes were issued, and we delisted our guaranteed notes due 2020 from the New York Stock Exchange.

In June 2012, we issued 5.150% US\$500.0 million notes due 2022 and, as of December 31, 2019, US\$500.1 million was outstanding (US\$1.1 million in the short-term), including principal and accrued interest. Interest is paid semiannually. The notes are our unsecured and unsubordinated obligations. The notes were registered with the SEC and listed on the New York Stock Exchange. The indenture under which the notes were issued contains customary covenants and restrictions, including limitation on liens, consolidation, merger or transfer of assets. As a result of our now-terminated strategic partnership with Boeing, in 2020, the indenture under which the notes due 2022 were issued was amended by means of supplemental indentures in order to assign these notes to Yaborã and to have us as a guarantor under the respective indenture. In 2020, after receiving the requisite consents from holders of our notes due 2022, started the process to deregister our notes due 2022 with the SEC and delist the same notes from the NYSE.

In September 2013, we completed an exchange offer in which (i) US\$146.4 million in principal amount of our guaranteed notes with maturity in 2017 and (ii) US\$337.2 million in principal amount of our guaranteed notes with maturity in 2020 were exchanged for approximately US\$540.5 million in principal amount of notes issued by Embraer Overseas at a rate of 5.696%, maturing in 2023. The notes due in 2023 were issued pursuant to exemptions from SEC registration pursuant to Regulation S and Rule 144A under the Securities Act. The notes due in 2023 are subject to a registration rights agreement, pursuant to which we have agreed to (i) exchange the notes within 270 days of their issuance for notes with the same terms and conditions which are registered with the SEC or (ii) file a resale shelf registration statement with the SEC on Form F-3. In June 2014, we filed a resale shelf registration statement accordingly. As of December 31, 2019, a total of US\$522.3 million under our notes due 2023 was outstanding, of which US\$8.9 million was due in the short-term, including principal and accrued interest. As a result of our strategic partnership with Boeing, in 2020 the indenture under which the notes due 2023 were issued was amended by means of supplemental indentures in order to have Yaborã substitute us as guarantor and, afterwards, to add us as an additional guarantor under the respective indenture.

In June 2015, Embraer Netherlands Finance issued 5.05% US\$1.0 billion guaranteed notes due 2025 and, as of December 31, 2019, US\$997.7 million was outstanding (US\$2.1 million in the short-term), including principal and accrued interest. Interest is paid semiannually. The notes were registered with the SEC and were listed on the New York Stock Exchange. As a result of our strategic partnership with Boeing, in 2020, the indenture under which the notes due 2025 were issued was amended by means of supplemental indentures in order to have Yaborã substitute us as guarantor and, afterwards, to add us as an unconditional guarantor under the respective indenture. In 2020, after receiving the requisite consents from holders of our notes due 2025, we started the process to deregister our notes due 2025 with the SEC and delist the same notes from the NYSE.

In February 2017, Embraer Netherlands Finance issued 5.40% US\$750.0 million guaranteed notes due 2027 and as of December 31, 2019, US\$764.6 million was outstanding (US\$16.9 million in the short-term), including principal and accrued interest. Interest is paid semiannually. The notes were registered with the SEC and listed on the New York Stock Exchange. As a result of our strategic partnership with Boeing, in 2020 the indenture under which the notes due 2027 were issued was amended by means of supplemental indentures in order to have Yaborã substitute us as guarantor and, afterwards, to add us as an unconditional guarantor under the respective indenture. In 2020, after receiving the requisite consents from holders of our notes due 2027, we started the process to deregister our notes due 2027 with the SEC and delist the same notes from the NYSE.

On March 10, 2020, Embraer Aviation Netherlands B.V. entered into a credit and guaranty agreement with Citibank, N.A., J.P. Morgan Chase Bank, N.A. and Banco Santander, S.A. and borrowed an aggregate principal amount of US\$600.0 million on March 13, 2020, accruing interest at three-month LIBOR *plus* 1.5% per year, maturing on December 15, 2020. On May 18, 2020, the credit and guaranty agreement was amended to, among other things, modify the maturity date to November 6, 2020.

[Table of Contents](#)

We may from time to time seek to retire or purchase our outstanding debt, including our guaranteed notes due 2020, 2022, 2023, 2025 and 2027, through cash purchases, tender offers and/or exchanges for other securities, in open market purchases, privately negotiated transactions or otherwise. The repurchases or exchanges, if any, will depend on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors. The amounts involved may be material, and notes repurchased may be canceled or resold, but will only be resold in compliance with applicable requirements or exemptions under the relevant securities laws.

We have various other long-term loans and credit agreements with aggregate outstanding borrowings of US\$442.4 million as of December 31, 2019. For additional information on these financing arrangements, see Note 21 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

As of December 31, 2019, US\$43.1 million of our total debt was secured by a bank standby letter of credit.

For additional information on our loans and financings, including currency and maturity breakdowns and breakdowns between fixed and floating rate debt, see Note 21 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Recourse and Non-Recourse Debt

Total debt excludes non-recourse and recourse debt associated with customer financing arrangements transacted through special purpose entities, or SPEs. In structured financings, an SPE purchases an aircraft from us, pays us the full purchase price on delivery or at the conclusion of the sales financing structure, and leases the related aircraft to the ultimate customer. A third-party financial institution facilitates the financing of an aircraft purchase through an SPE, and a portion of the credit risk remains with that third party. We may provide financial guarantees and/or residual value guarantees in favor of the financial institution, as well as act as the equity participant in the financial structuring process.

Our 2019 audited consolidated financial statements contain balances related to recourse and non-recourse debt associated with customer financing arrangements of US\$17.6 million and collateralized accounts receivable of US\$17.6 million. Of this debt, US\$7.0 million is non-recourse for which we have no obligation as a debtor or guarantor, other than potential obligations under existing financial guarantees for the financed aircraft. The remaining US\$10.6 million of debt is recourse to us as a result of pending equity contributions and is partially secured by a pledge of a deposit with a financial institution. Our non-recourse and recourse debt is collateralized by the collateralized accounts receivables and by the financed aircraft and, as a result, we do not anticipate a net cash outflow related to our non-recourse debt in the future. These financing transactions do not materially affect our income statement and cash flow data since the terms of the leases and the loans are substantially the same.

Subsequent Events

Commercial Aviation Business Unit

As a result of our now-terminated strategic partnership with Boeing, on January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã of the net assets comprising assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. For additional information on our now-terminated strategic partnership with Boeing, see “Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing.”

[Table of Contents](#)

Credit and Guaranty Agreement

On March 10, 2020, Embraer Aviation Netherlands B.V. entered into a credit and guaranty agreement with Citibank, N.A., J.P. Morgan Chase Bank, N.A. and Banco Santander, S.A. and borrowed an aggregate principal amount of US\$600.0 million on March 13, 2020, accruing interest at three-month LIBOR plus 1.5% per year, maturing on December 15, 2020. On May 18, 2020, the credit and guaranty agreement was amended to, among other things, modify the maturity date to November 6, 2020.

Termination of the Strategic Partnership with Boeing

On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing's wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us.

Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see "Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing" and Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Impairment Losses

For information on the impairment losses related to our Commercial Aviation business unit, see "Item 8. Financial Information—8B. Significant Changes—Impairment Losses" and Note 40.3 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Impacts of the COVID-19 Pandemic

For information on the impacts of the Covid-19 pandemic, see "Item 8. Financial Information—8B. Significant Changes—Impacts of the COVID-19 Pandemic" and Note 40.2 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

5C. Research and Development, Patents and Licenses, etc.

Research and Development

Our research and development activities are driven by our corporate strategic planning in the short, medium, and long terms. We refer to research activities as technological development and to development activities as integrated product development.

Based on our work defining the Company's product and services strategies, including innovation, growth, and business prospects, we carry out projects that include the production and commercialization of new aircraft, systems, and aerospace services.

With a focus on our internal business plans and continuous monitoring of the global technology environment, we define a technological development plan which aims to research and develop solutions to the main challenges the Company will face in the medium and long terms, in order to remain competitive in our business segments.

[Table of Contents](#)

In an effort to reduce development risk and optimize financial results of our projects, our development strategy and teams have the essential skills to manage and execute multi-disciplinary projects, maintaining and coordinating a global network of development partners and integrating diverse groups such as universities, research and development institutes, companies, and startups. As a result, application of advanced technologies allows for the evolution of products, including lighter, quieter, more comfortable and energy efficient aircraft, in addition to improvements in design and production cycles and optimization of company resources.

Following the results of the Company's internal technological development planning, the new product and services design phase begins. In this phase our efforts are coordinated in an integrated manner with advanced project engineering and our business units, which work in collaboration with future customers and potential partners to conclude the design of new products and services. Once the design is approved, the product development program is created. In this capital-intensive phase, our development, product, process and services groups work together with strategic partners, suppliers and regulatory agencies, to begin the detailed development of the product, its production, systems and associated services, until the effective entry into service of the product.

The Company has the majority of its research and development activities concentrated in Brazil, but also maintains internal initiatives and partnerships in several locations around the world.

Capital Expenditures

We capitalize our expenditures related to product development projects as non-current intangible assets on our statement of financial position when it is probable that the relevant projects will generate future benefits, taking into account their commercial and technological feasibility and availability of technological and financial resources and only if their cost can be reliably measured. We amortize the assets in the form of charges to cost of sales and services on our statements of income, based on the total estimated number of aircraft to be delivered for each new product development project. We also capitalize expenditures related to property, plant and equipment as non-current assets on our statement of financial position and depreciate the assets in the form of charges to cost of sales and services on our statements of income. For additional information on how we amortize our intangible assets and depreciate our property, plant and equipment, see "Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Principal Operating Data and Components of Our Statement of Income—Cost of Sales and Services."

Executive Jets

In our Executive Jets business unit, we include our investments in development and property, plant and equipment as part of our capital expenditures. Development costs in the Executive Jets business unit are capitalized from the date of board approval for the relevant project until the final certification.

Most of our development expenditures are associated with the development of new products either for the Executive Jets business unit. For additional information on our development expenditures, see "Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Research."

Our disbursements in capital expenditures were related to property, plant and equipment, thereby composing our additions in the period except for the exchange pool program assets and aircraft under lease or available for lease. These investments are related mainly to (i) construction of new facilities and (ii) improvements and modifications to our plants and production facilities for the production of new aircraft models.

Our capital expenditures are generally financed by funds provided by operations, borrowings under our credit arrangements, cash contributions from risk-sharing partners, advance payments from customers and, to a lesser extent, capital increases to meet these needs. See "Item 5. Operating and Financial Review and Prospects—5B. Liquidity and Capital Resources—Overview" and "Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Research."

[Table of Contents](#)

Defense and Security

We incur expenditures for defense and security programs under both development and production contracts; however, the customers involved in these programs, which in our case mainly consists of the Brazilian government, fund these programs. A significant part of these contracts are defined as construction contracts and the revenue associated with these contracts is realized on an “over time” basis, as contract milestones are achieved.

Discontinued Operations

According to IFRS 5, in light of the approval of the then-pending strategic partnership with Boeing, in our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

In our Commercial Aviation business unit, we include our investments in development and property, plant and equipment as part of our capital expenditures. Development costs in the Commercial Aviation business unit are capitalized from the date of board approval for the relevant project until the final certification.

Most of our development expenditures are associated with the development of new products either for the Commercial Aviation business unit. For additional information on our development expenditures, see “Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Research.”

Our main ongoing project is the development of the E175-E2, the third member of the E-Jets E2 family, which also comprises the E190-E2 and E195-E2 aircraft.

Our disbursements in capital expenditures related to property, plant and equipment, composing our additions in the period except for the exchange pool program assets and aircraft under lease or available for lease. These investments are related mainly to (i) construction of new facilities and (ii) improvements and modifications to our plants and production facilities for the production of new aircraft models.

Our capital expenditures are generally financed by funds provided by operations, borrowings under our credit arrangements, cash contributions from risk-sharing partners, advance payments from customers and, to a lesser extent, capital increases to meet these needs. See “Item 5. Operating and Financial Review and Prospects—5B. Liquidity and Capital Resources—Overview” and “Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Research.”

[Table of Contents](#)

Research

We incur research expenses related to the creation of new technologies that may be applied to our aircraft. These expenses are not associated with any particular aircraft and include the implementation of quality assurance initiatives, improvements to the productivity of production lines and studies to determine the latest developments in technology and quality standards. Under IFRS, research costs are expensed as incurred in the research line item of our statement of income.

For information on our capital expenditures, comprising investments in development and property, plant and equipment, see “Item 5. Operating and Financial Review and Prospects—5C. Research and Development, Patents and Licenses, etc.—Capital Expenditures.”

Intellectual Property

Our intellectual property, which includes utility patents, design patents, trade secrets, know-how and trademarks, is important to our business. We hold trademarks over our name and symbol and the names of our products, some of which are registered and some of which are in the process of registration in a number of countries, including, but not limited to, Brazil, the United States, Canada, Singapore, Hong Kong, China, the European Union and Japan. As of December 31, 2019, we had approximately 415 trademarks registered or in the process of registration. Our trademarks are generally renewed at the end of their validity period, which usually runs for ten years from the date of application for registration. We do not believe that the loss of any of our trademarks would have a material impact on our business or results of operations.

We develop our intellectual property in our research, development and production process. Under the agreements we have with some of our suppliers and risk-sharing partners, we are granted access to information and technology necessary to better develop, manufacture and market our products. We aim to protect our intellectual property rights resulting from investments in technical research and development. We hold granted patents and patent applications relating to our technologies. Currently, we hold granted patents and patent applications from the appropriate registries in Brazil, the United States, the European Union, Russia, Japan, India and China in connection with the various technologies of our products. We require that our suppliers and risk-sharing partners respect the intellectual property rights of third parties, and we believe that we have the necessary intellectual property rights to conduct our business and operations.

Considering our utility and design patent portfolios, as of December 31, 2019, we had filed 798 patent applications and had been granted 507 patents.

Innovation

We seek to remain in the technological vanguard by constantly reinventing ourselves as we search for opportunities to transform our business, products, services and markets.

We believe innovation is key to the competitiveness and sustainability of our business. For this reason, we created the position of Vice-President for Strategy, Innovation and Digital Transformation in 2017.

In 2018, we created Embraer X, in Melbourne, Florida with outpost offices in Palo Alto, California and Boston, Massachusetts as an innovation and knowledge management area to reinforce our initiatives. The Embraer X focuses on the promotion of innovative ideas aimed at the development of new businesses, products, technologies, services and processes.

Also, in 2018, we implemented the Innovation Verticals, which are the strategic priority focuses for innovation. They orchestrate and integrate the efforts across all business units, Embraer X and Technology development. The verticals are: Autonomous Flight, Electrification, Platform Based Services, Urban Air Mobility, Artificial Intelligence and Data Science, Passenger Experience, Airframe Efficiency, Advanced Design and Manufacturing, Cybersecurity.

[Table of Contents](#)

Our Innova Program is another tool that aims to strengthen the innovation culture within Embraer in order to generate new ideas and promote employee recognition. The Innova Program manages the Green Light, Innova Challenge and Innovation People Recognition processes. The Green Light process evaluates innovative proposals presented voluntarily by employees and provides time, technical/business mentor and resources to them in order to carry out the idea until its technical and economic feasibility is proven. More than 617 ideas proposed and nine innovative projects have been implemented since the creation of this process in 2012, including the launch of FIP Aerospacial, new robots, AI among others. In 2019, 63 innovative projects were under development. The Green Light process applies to any type of innovation: process, product, technology, services, marketing, management or new business. The Innova Challenge is an internal crowdsourcing mechanism that stimulates ideas to resolve issues globally from different departments of the company, and any employee in the world may participate in this process. In 2017, we changed the focus of Innova Challenge with the goal of improving strategic issues. By 2019, we had launched three challenges with more than 65 ideas from different challenges for employees. Cultural events like the Innovation Day had the participation of around 6,460 employees.

Innovations related to programs from our continuing and discontinued operations which entered into service in the last five years accounted for approximately 30.8% of our net revenues in 2019.

5D. Trend Information

General Information

Our total firm order backlog as of December 31, 2019, considering our continuing and discontinued operations, was US\$16.8 billion, of which US\$9.0 billion was from the Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019), US\$1.4 billion was from the Executive Jets business unit, US\$4.1 billion was from the Defense and Security business unit and US\$2.2 billion was from the Services and Support business unit.

Economic uncertainty, mainly related to the COVID-19 outbreak, will continue to play a role in investment attitude and philosophy of the private and public sectors. Business jet prospective buyers around the globe are reviewing their cash flows and capital expenditures in order to preserve capital, which is affecting market growth fundamentals and perspectives.

As a result of the COVID-19 outbreak, we expect the global economy will remain in an uncertainty scenario affecting the decision making process of companies' boards of directors and investors, and their willing to allocate resources in executive transportation alternatives, mainly when deciding on discretionary assets acquisitions, such as purchasing new business jet.

In the Executive Jets business unit, despite the recent growth of high net worth individuals, we expect that the inventory level and the lower price of pre-owned aircraft, when compared to a new one, will continue to lower the demand for brand new aircraft and will delay recovery of this business unit. On the other hand, we also expect that our new product offerings, namely the Praetor 500 midsize jet and Praetor 600 super midsize jet, and the upgrades made on Phenom 300E, will partially offset the effects of COVID-19 and help us to be in a better position in the business jet market. As a result of COVID-19, as of the date of this annual report, one of our executive jets customers cancelled its firm orders and some of our executive jets customers postponed their scheduled aircraft deliveries. Although we cannot predict the full impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that some customers will postpone their scheduled aircraft deliveries and will continue to cancel their orders.

With respect to our Defense and Security business unit, we expect to make progress on the execution of existing programs, including the C-390 Millennium, SISFRON and LABGENE programs, as well as continue to deliver the Super Tucano aircraft to various governments around the world. However, since a portion of the revenues of our Defense and Security business unit is denominated in *reais*, we expect that the volatility of the *real* against the U.S. dollar will continue to affect our financial statements as they are reported in U.S. dollars.

[Table of Contents](#)

In the Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019), due to extensive traffic disruption affecting our customers' operations throughout the world, as a result of COVID-19, it is reasonable to expect a material impact on our 2020 deliveries. According to Cirium, a data analytics and consulting company, as of May 2020, 60% of the global fleet has been placed into storage, and the International Air Transport Association—IATA projects a decline of 50% in commercial traffic for 2020 in year-over-year terms. As a result of COVID-19, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. The recovery pace is difficult to predict since this outbreak has no precedent in history. Although we cannot yet determine the impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that customers will continue to postpone their scheduled aircraft deliveries and will cancel their orders.

As a result of the now-terminated Transaction, we also expect that our results of operations and financial condition may be affected by costs and expenses associated with the creation, maintenance and potential termination of the Commercial Aviation NewCo.

Due to the uncertainty related to the spread of COVID-19, we suspended the projections relating to our expected results for 2020, last updated on November 12, 2019. We will issue updated projections for 2020 when we conclude the assessment of the effects that the COVID-19 pandemic will cause to our business. For additional information on the risks related to COVID-19, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—The outbreak of communicable diseases around the world, including COVID-19, may lead to higher volatility in the global capital markets and recessionary pressure on the global economy,” “—A downturn in our key markets may reduce our sales and revenue, and, consequently, our profitability,” and “—Our Commercial Aviation business unit depends on key customers.”

Discontinued Operations

In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. For additional information on the now-terminated strategic partnership with Boeing and on the assets and held for sale and discontinued operations, see Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

For additional information on the risks relating to the now-terminated Transaction, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Legal proceedings pertaining to the now-terminated strategic partnership with Boeing, including arbitration proceedings related to Boeing’s termination of and failure to close the MTA and/or the Contribution Agreement, may adversely impact our business, financial condition and “results of operations.”

The following table summarizes our order book for our Commercial Aviation business unit as of December 31, 2019:

Commercial Aviation(1)	Firm Orders	Options	Deliveries	Firm Order Backlog
EMB 120 Brasília	352	—	352	—
ERJ 135	108	—	108	—
ERJ 140	74	—	74	—
ERJ 145	708	—	708	—
EMBRAER 170	191	—	191	—
EMBRAER 175	815	308	634	181
EMBRAER 190	568	—	564	4

[Table of Contents](#)

Commercial Aviation⁽¹⁾	Firm Orders	Options	Deliveries	Firm Order Backlog
EMBRAER 195	172	1	172	—
EMBRAER 190 – E2	27	61	11	16
EMBRAER 195 – E2	144	47	7	137

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

The following tables set forth our Commercial Aviation order book as of December 31, 2019 by aircraft type, customer and country.

EMBRAER 170(1):

Customer	Firm Orders	Delivered	Firm Order Backlog
Airnorth (Australia)	1	1	—
Alitalia (Italy)	6	6	—
BA CityFlyer (UK)	6	6	—
Cirrus (Germany)	1	1	—
ECC Leasing (Ireland)	6	6	—
EgyptAir (Egypt)	12	12	—
Finnair (Finland)	10	10	—
GECAS (USA)	9	9	—
JAL (Japan)	18	18	—
NAC / Jetscape (USA)	6	6	—
LOT Polish (Poland)	1	1	—
Petro Air (Libya)	2	2	—
Regional (France)	10	10	—
Republic Airlines (USA)	48	48	—
Satena (Colombia)	1	1	—
Saudi Arabian Airlines (Saudi Arabia)	15	15	—
Sirte Oil (Libya)	1	1	—
Suzuyo (Japan)	2	2	—
TAME (Equator)	2	2	—
US Airways (USA)	28	28	—
Virgin Australia (Australia)	6	6	—
Total	191	191	—

EMBRAER 175(1):

Customer	Firm Orders	Delivered	Firm Order Backlog
Air Canada (Canada)	15	15	—
Air Lease (USA)	8	8	—
Alitalia (Italy)	2	2	—
American Airlines (USA)	104	90	14
Belavia (Belarus)	1	1	—
CIT (USA)	4	4	—
Congo Airways (Congo)	2	—	2
ECC Leasing (Ireland) ⁽¹⁾	1	1	—
Flybe (UK)	11	11	—

[Table of Contents](#)

Customer	Firm Orders	Delivered	Firm Order Backlog
Fuji Dream (Japan)	2	2	—
GECAS (USA)	5	5	—
Horizon Air / Alaska (USA)	33	30	3
KLM (The Netherlands)	17	17	—
LOT Polish (Poland)	12	12	—
Mauritania Airlines (Mauritania)	2	2	—
Mesa (USA)	7	7	—
NAC / Aldus (Ireland)	2	1	1
NAC / Jetscape (USA)	4	4	—
Northwest (USA)	36	36	—
Oman Air (Oman)	5	5	—
Republic Airlines (USA)	217	117	100
Royal Jordanian (Jordan)	2	2	—
Skywest (USA)	182	156	26
Suzuyo (Japan)	11	11	—
TRIP (Brazil)	5	5	—
Undisclosed	15	—	15
United Airlines (USA)	110	90	20
Total	815	634	181

(1) Aircraft delivered by ECC Leasing to Air Caraibes.

EMBRAER 190(1):

Customer	Firm Orders	Delivered	Firm Order Backlog
Aero Republica (Colombia)	5	5	—
Aeromexico (Mexico)	12	12	—
Air Astana (Kazakhstan)	2	2	—
Air Canada (Canada)	45	45	—
Air Caraibes (Guadalupe)	1	1	—
Air Lease (USA)	23	23	—
Air Moldova (Moldavia)	1	1	—
Augsburg (Germany)	2	2	—
Austral (Argentina)	22	22	—
AZAL (Azerbaijan)	4	4	—
Azul (Brazil)	5	5	—
BA CityFlyer (UK)	9	9	—
BOC Aviation (Singapore)	14	14	—
China Southern (China)	20	20	—
CIAF (Egypt)	3	—	3
CIT (USA)	7	7	—
Conviasa (Venezuela)	16	16	—
Copa (Panama)	15	15	—
Dniproavia (Ukraine)	5	5	—
ECC Leasing (Ireland)	1	1	—
Finnair (Finland)	12	12	—
GECAS (USA)	27	27	—
Guizhou / Colorful (China)	9	9	—
Hainan (China)	50	50	—
Hebei (China)	6	6	—
JAL (Japan)	14	14	—

[Table of Contents](#)

Customer	Firm Orders	Delivered	Firm Order Backlog
JetBlue (USA)	64	64	—
Kenya Airways (Kenya)	10	10	—
KLM (The Netherlands)	26	26	—
KunPeng (China)	5	5	—
LAM (Mozambique)	2	2	—
Lufthansa (Germany)	9	9	—
M1 Travel (Lebanon)	8	8	—
NAC / Aldus (Ireland)	21	20	1
NAC / Jetscape (USA)	9	9	—
NAS Air (Saudi Arabia)	3	3	—
NIKI (Austria)	7	7	—
Regional (France)	10	10	—
Republic (USA)	2	2	—
Taca (El Salvador)	11	11	—
TAME (Ecuador)	3	3	—
TRIP (Brazil)	3	3	—
US Airways (USA)	25	25	—
Virgin Australia (Australia)	18	18	—
Virgin Nigeria (Nigeria)	2	2	—
Total	568	564	4

EMBRAER 195(1):

Customer	Firm Orders	Delivered	Firm Order Backlog
Arkia (Israel)	1	1	—
Aurigny (Guernsey)	1	1	—
Azul (Brazil)	59	59	—
Belavia (Belarus)	4	4	—
BOC Aviation (Singapore)	1	1	—
Flybe (UK)	14	14	—
GECAS (USA)	12	12	—
Globalia (Spain)	12	12	—
Hainan (China)	20	20	—
LOT Polish (Poland)	4	4	—
Lufthansa (Germany)	34	34	—
Montenegro (Montenegro)	1	1	—
NAC / Aldus (Ireland)	4	4	—
NAC / Jetscape (USA)	2	2	—
Royal Jordanian (Jordan)	2	2	—
Trip (Brazil)	1	1	—
Total	172	172	—

EMBRAER 190 – E2(1):

Customer	Firm Orders	Delivered	Firm Order Backlog
AerCap (Ireland)	5	5	—
Air Kiribati (Kiribati)	2	1	1
Aircastle (USA)	5	—	5
Helvetic (Switzerland)	12	2	10
Wideroe (Norway)	3	3	—
Total	27	11	16

[Table of Contents](#)**EMBRAER 195 – E2(1):**

Customer	Firm Orders	Delivered	Firm Order Backlog
Aercap (Ireland)	45	4	41
Air Peace (Nigeria)	13	—	13
Aircastle (USA)	20	—	20
Azul (Brazil)	51	—	51
Binter Canarias (Spain)	5	3	2
ICBC (China)	10	—	10
Total	144	7	137

- (1) In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events.

For additional information on trends in our business, see “Item 4. Information on the Company—4B. Business Overview—Business Strategies” and “Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Current Conditions and Trends in our Industry.” For additional information on risks affecting our business, see “Item 3. Key Information—3D. Risk Factors.”

Termination of Strategic Partnership with Boeing

On January 24, 2019, we entered into the Master Transaction Agreement and certain other Transaction documents with Boeing and certain subsidiaries of Embraer and Boeing, pursuant to which a subsidiary of Boeing would acquire a controlling stake in Embraer’s Commercial Aviation business unit and Embraer or a subsidiary of Embraer, and Boeing or a subsidiary of Boeing, would form a joint venture for promotion and development. On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing’s assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement. We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing’s wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us. For additional information on the termination of the strategic partnership with Boeing, see Explanatory Note on page 4 of this annual report.

5E. Off-Balance Sheet Arrangements

In the normal course of our business, we enter into certain off-balance sheet arrangements, including financial and residual value guarantees, trade-in obligations, product warranty commitments and operating leases. We also have a number of swap transactions that are described in “Item 11. Quantitative and Qualitative Disclosures about Market Risk.” For a detailed description of our derivative instruments, see Note 9 to our 2019 audited consolidated financial statements. See also Note 37.2 to our 2019 audited consolidated financial statements for additional information on our off-balance sheet arrangements. In addition, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Some of our aircraft sales may be subject to financial and residual value guarantees and trade-in options that may require us to make significant cash disbursements.”

[Table of Contents](#)

Financial and Residual Value Guarantees

Residual value guarantees provide a third party with a specific guaranteed asset value at the end of a financing agreement and typically ensure that, at the exercise date (between six and 19 years after the aircraft delivery date), the relevant aircraft will have a residual market value of a percentage of the original sale price. Most of our residual value guarantees are subject to a limitation (a “cap”) and, therefore, on average our guaranteed residual value is 11% of the original sale price. In the event of a decrease in the market value of the underlying aircraft and an exercise by the purchaser of the residual value guarantee, we bear the difference, if any, between the guaranteed residual value and the market value of the aircraft at the time of exercise, limited to a cap. Our exposure is mitigated by the fact that the guaranteed party, in order to benefit from the guarantee, must make the aircraft meet specific return conditions.

As of December 31, 2018 and 2017, we had US\$25.3 million and US\$60.8 million, respectively, deposited in an escrow account (guarantee deposits on sales structure guarantees) as collateral for the financing of certain aircraft sold where we serve as secondary guarantor. As of December 31, 2019, the obligation was settled, and the funds released. For additional information, see Note 11 to our 2019 audited consolidated financial statements.

Assuming all customers supported by financial guarantees defaulted on their aircraft financing arrangements, and also assuming we were required to pay the full aggregate amount of outstanding financial and residual value guarantees and were not able to remarket any of the aircraft to offset our obligations, our maximum unrecorded exposure under these guarantees (less provisions and liabilities) would have been US\$87.4 million as of December 31, 2019. For additional discussion of these off-balance sheet arrangements, see Note 37.2 to our 2019 audited consolidated financial statements.

We allocated the deposits from the escrow account to 15-year structured notes with the depository bank in order to earn a better interest rate. This yield enhancement was obtained through a credit default swap transaction, which provides the right of early redemption of the note in case of a credit event by us. Upon a credit event, the note may be redeemed by the holder at the greater of the note’s market value or its original face amount, which would result in a loss to us of all interest accrued on such note to date. Credit events include obligation and payment defaults under the terms of the guarantees above specified thresholds, events related to the restructuring of the obligations above a specified threshold, bankruptcy and a repudiation of and/or moratorium on the obligations above a specified threshold. In December 2018, the total of the structured notes were released as collateral and are now recorded as a financial investment. For additional information on the escrow accounts, see Notes 7 and 11 to our 2019 audited consolidated financial statements.

We continuously re-evaluate our risk under our guarantees and trade-in obligations based on a number of factors, including the estimated future market value of our aircraft based on third-party appraisals, including information developed from the sale or lease of similar aircraft in the secondary market, and the credit rating of customers.

The following table provides quantitative data regarding guarantees we render to third parties in the Commercial Aviation business unit, which is classified as discontinued operations in our 2019 audited consolidated financial statements included elsewhere in this annual report. For additional information on our discontinued operations, see “Explanatory Note—Assets Held for Sale and Discontinued Operations.” The maximum potential payments represent the worst-case scenario and do not necessarily reflect the results expected by us. Estimated proceeds from performance guarantees and underlying assets represent the anticipated values of assets we could liquidate or receive from other parties to offset our payments under guarantees.

Table of Contents

Description	As of December 31,		
	2019	2018	2017
Maximum financial guarantees	35.9	66.6	107.7
Maximum residual value guarantees	204.3	253.1	267.4
Mutually exclusive exposure ⁽¹⁾	(12.5)	(26.9)	(29.0)
Provisions and liabilities recorded ⁽²⁾	(140.3)	(137.0)	(126.0)
Off-balance sheet exposure	87.4	155.8	220.1
Estimated proceeds from performance guarantees and underlying assets	86.9	177.6	266.9

(1) When an underlying asset is covered by mutually exclusive financial and residual value guarantees, the residual value guarantee may only be exercised if the financial guarantee has expired without having been exercised. On the other hand, if the financial guarantee is exercised, the residual value guarantee is automatically terminated. After a financial guarantee expires without being exercised, there is an average three-month period in which a guaranteed party may exercise the residual value guarantee. This means that our exposure to mutually exclusive financial and residual value guarantees covering a single underlying asset cannot be cumulative. Therefore, the maximum exposure shown in this line item is not an aggregate amount of the combined value of mutually exclusive financial and residual value guarantees covering a single underlying asset.

(2) Represents the sum of our financial and residual value guarantees. For additional information on our provisions recorded and liabilities, see Note 26 to our 2019 audited consolidated financial statements.

Because of a reorganization solicitation (Chapter 11) of the customer Republic Airways Holding, filed on February 25, 2016 with the United States of America, we made a provision of US\$100.9 million, considering the best estimates at that time based on the information contained in the reorganization filing document, to cover losses related to obligations with financial guarantees offered to the main financing agent of the ERJ 140/145 aircraft, acquired by this customer. In November 2016, we signed a firm sale for 24 E175 jets with United Airlines. This order represents a transfer of 24 E175 jets previously placed with Republic, which were canceled. During 2016, the reorganization process developed, and we assumed the responsibility of buying back the ERJ 140/145 operated by Republic Airways until then. The provision made in 2015 was sufficient to cover Embraer's losses with Republic Airways reorganization in a total amount of US\$94.7 million related to guarantees and ERJ 140/145 aircraft repurchase. The differences between the US\$100.9 million provisioned in 2015 and the losses described above were reverted. Republic Airways was also subject to liquidated damages for contract settlements and accounts receivable within Embraer's MRO business. To compensate Embraer, Republic Airways issued unsecured pre-petition claims in a total of US\$106.0 million, losses on receivables (US\$7 million), liquidated damages (US\$12 million) and financial guarantees (US\$87 million). The values described are the face value of the unsecured pre-petition claims, however, their market price may be lower than those figures, considering our best estimates. On December 31, 2018, these claims were recognized at approximately 56 cents on each US\$1.00 (total of US\$59.7 million recognized). As of December 31, 2019, the obligations were settled.

Trade-in Obligations

We sometimes provide trade-in options to our customers in purchase agreements for new aircraft. These options provide customers with the right to trade in aircraft upon the purchase and acceptance of a new aircraft. The trade-in price for commercial aircraft is determined in the manner discussed under "Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Critical Accounting Estimates." In 2019, we accepted 17 aircraft, of which one was from our Commercial Aviation business unit and 16 were from our Executive Jet business unit, with a total invoiced value of US\$84.9 million for trade-in pursuant to trade-in options. The trade-in price is determined based on the new aircraft sold, as well as other factors, including a market value assessment performed by independent third-party appraisers.

We continue to monitor all trade-in commitments to anticipate any adverse economic impact they may have on our financial condition. We may be required to accept trade-ins at prices that are slightly above the then-market price of the aircraft, which would result in financial loss for us when we resell the aircraft. Based on our current evaluation and on third-parties' appraisals, we believe that any aircraft accepted in connection with trade-in commitments may be sold or leased in the market without significant profits or losses. For additional information on our guarantees, see "Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Critical Accounting Estimates—Residual Value Guarantees."

[Table of Contents](#)

5F. Tabular Disclosure of Contractual Obligations

The following table and discussion provide additional disclosures regarding our material contractual obligations and commercial commitments from our continuing operations as of December 31, 2019:

Contractual Obligations	Total	Less than 1 year	1 – 3 years	3 – 5 years	More than 5 years
		<i>(in US\$ millions)</i>			
Loans and financing(1)	148.5	45.8	58.5	10.5	33.7
Lease(2)	40.4	8.7	12.8	5.0	13.9
Recourse and non-recourse debt	17.6	4.0	7.9	4.4	1.3
Customer advances	615.3	586.5	28.8	—	—
Suppliers	358.0	358.0	—	—	—
Other liabilities	128.1	3.2	52.8	70.4	1.7
Total	1,307.9	1,006.2	160.8	90.3	50.6

- (1) As of December 31, 2019, our liabilities held for sale include loans and financing which the undiscounted total amount is US\$4,141.3 million, of which (i) US\$330.8 million are due in less than 1 year, (ii) US\$1,012.5 million are due between one and three years, (iii) US\$781.4 million are due between three and five years, and (iv) US\$2,016.6 million are due in more than five years. For additional information on the loans and financing classified as held for sale, see Note 21 to our 2019 audited consolidated financial statements included elsewhere in this annual report.
- (2) Includes future cash flows of lease liabilities and short-term and low-value leases.

The above table shows the sum of the outstanding principal and anticipated interest due at maturity date. For fixed rate loans, the interest expenses were calculated based on the rate established in each debt contract. For floating rate loans, the interest expenses were calculated based on a market forecast for each period (LIBOR 6m – 12m), dated December 31, 2019. This floating rate exposure is managed through derivatives operations. For additional information on our derivative instruments, see “Item 11. Quantitative and Qualitative Disclosures About Market Risk.”

The above table does not reflect contractual commitments related to trade-in options and financial and residual value guarantees discussed in “Item 5E. Off-Balance Sheet Arrangements” above. For additional information on risks related to our guarantees, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Some of our aircraft sales may be subject to financial and residual value guarantees and trade-in options that may require us to make significant cash disbursements.” Also, the table does not reflect our sponsorship in the defined contribution pension plan for our employees, participation in which is optional, and our participation, recognized as expense, is expected to be around US\$20.9 million per year.

Other liabilities include taxes and payroll charges payable in the total amount of US\$12.7 million as of December 31, 2019. The above table does not reflect any information related to our derivative instruments, which are discussed more fully in “Item 11. Quantitative and Qualitative Disclosures About Market Risk.”

5G. Safe Harbor

See “Special Note Regarding Forward-Looking Statements.”

Item 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

6A. Directors and Senior Management

We are managed by our board of directors (*conselho de administração*), composed of a minimum of nine and a maximum of 11 members, and our board of executive officers (*diretoria*), composed of no less than four and no more than 11 members (each an executive officer). We have a permanent fiscal council (*conselho fiscal*), which is composed of at least three and no more than five members and an equal number of alternates.

[Table of Contents](#)

There are no family relationships among the members of our board of directors and/or our board of executive officers.

Board of Directors

Our board of directors meets ordinarily eight times a year and extraordinarily when called by the chairman. It is responsible for, among other things, establishing our general business policies and electing our executive officers and supervising management.

Our board of directors is appointed by our shareholders for a two-year term, reelection is permitted, and there are three reserved seats as follows: (i) one effective and one alternate member to be appointed by the Brazilian government, as holder of the “golden share,” and (ii) two effective and two alternate members to be appointed by our employees. The remaining eight effective directors are elected in accordance with the slate voting, or cumulative voting, rules according to our bylaws. For additional information on the rules and procedures regarding the nomination and election of our board members, see “Item 10. Additional Information—10B. Memorandum and Articles of Association—Board of Directors—Election of Board of Directors.” There is no mandatory retirement age for our directors.

According to the rules of the *Novo Mercado*, the members of our board of directors agreed to comply with the *Novo Mercado* listing rules and with the rules of the B3 Arbitration Chamber before taking office. In order to take office, the members of the board of directors must execute a term of investiture (*termo de posse*).

Set forth below are the names, ages, positions, the year first elected and brief biographical descriptions of the members of our board of directors, as of the date of this annual report:

Name	Age	Position	Year First Elected to Board
Alexandre Gonçalves Silva	75	Chairman of the Board of Directors	2011
Raul Calfat	67	Vice-President of the Board of Directors	2017 ⁽¹⁾
Alexandre Magalhães Filho	67	Member of the Board of Directors	2015
Dan Ioschpe	55	Member of the Board of Directors	2020
Edmilson Saes	58	Member of the Board of Directors	2019
Jeferson Domingues de Freitas	60	Member of the Board of Directors	2020 ⁽²⁾
João Cox Neto	57	Member of the Board of Directors	2011
Márcio de Souza	54	Member of the Board of Directors	2015
Maria Leticia de Freitas Costa	60	Member of the Board of Directors	2017
Pedro Wongtschowski	74	Member of the Board of Directors	2015
Sergio Guillinet Fajerman	48	Member of the Board of Directors	2020

(1) Appointed as the vice-president of our board of directors on May 18, 2020.

(2) Elected as an alternate member for Mr. José Magno Resende de Araujo.

Alexandre Gonçalves Silva. Mr. Silva holds a Bachelor of Science degree in mechanical engineering from *Pontifícia Universidade Católica do Rio de Janeiro* (PUC Rio de Janeiro). In his 40-year career, he has occupied positions in several areas, including 22 years as a CEO. Mr. Silva was the CEO of General Electric (GE) in Brazil from 2001 to 2007 and since then, he has occupied positions on boards of directors of various companies. Mr. Silva is the chairman and an independent member of our board of directors and an independent member of the board of directors of Votorantim Cimentos, Ultrapar, Nitroquímica and Iochpe-Maxion. Since 2003, Mr. Silva is also a pro bono board member of the American Chamber of Commerce.

Raul Calfat. Mr. Calfat holds a degree in business administration from *Fundação Getúlio Vargas* (FGV). Mr. Calfat (i) was the CEO of Votorantim S.A. until December 2013, and the chairman of the board of directors of Votorantim S.A. from January 2014 until April 2019; (ii) has been the chairman of the board of directors of Aché Laboratórios Farmacêuticos since September 2018; (iii) has been an independent board member of

Table of Contents

Duratex S.A. since 2015; (iv) has been a member of the board of directors of the Sirio-Libanês Hospital since August 2015; and (v) is a senior advisor at RGE Pte Ltd (Singapore), Macquarie Serviços Agrícolas Participações Ltda and at Bracell SP Cellulose Ltda. Mr. Calfat is an independent member of our board of directors, and also acts as the coordinator of our strategy committee and as a member of our audit, risks and ethics committee.

Alexandre Magalhães Filho. Mr. Magalhães Filho holds a degree in accounting sciences from *Faculdade de Ciências Econômicas e Administrativas Professor Ulisses Vieira*, class of 1975, with a specialization in budget analysis. He has been an employee of Embraer since 1986, holding the following positions: (i) budget supervisor, from 1986 to 2008; (ii) assistant controllership officer; (iii) pricing and economic planning manager, from 2008 to 2010; and (iv) costs manager. Mr. Magalhães Filho is a member of our board and also acts as a financial process manager in charge of cost, accounting and tax procedures, including products and services costing, accounting for 29 companies, controllership and IFRS accounting consolidation for 50 companies in the Embraer group, and tax operations. Mr. Magalhães Filho was a member of the fiscal council of (i) Banco do Brasil Previdência Privada (BBPREV) from 1997 to 2009; (ii) Embraer Prev – Sociedade de Previdência Complementar from 2010 to 2012, and reelected for two terms from 2015 to 2018 and from 2018 to 2021; and (iii) Cooperativa dos Empregados da Embraer (Cooperemb), from 2009 to 2011, and was also elected to their board of directors from 2015 to 2017. He is also a member of the fiscal council of Instituto Embraer de Educação e Pesquisas, since 2001. Mr. Magalhães Filho was an alternate director for the representative of the Embraer Employees Investment Club (CIEMB) on our board of directors from 2013 to 2015, was elected as an effective director for three consecutive terms, from 2015 to 2017, 2017 to 2019 and 2019 to 2021, as appointed by Embraer's employees.

Dan Ioschpe. Mr. Ioschpe holds a bachelor's degree in journalism from *Universidade Federal do Rio Grande do Sul (UFRS)*, class of 1986, with a specialization in marketing from *Escola Superior de Propaganda e Marketing (ESPM São Paulo)*, class of 1988, and an MBA degree from the Amos Tuck School at Dartmouth College, class of 1991. Since May 2020, Mr. Ioschpe is an independent member of our board of directors, and also a member of our strategy committee. He is the chairman of the board of directors of Iochpe-Maxion S.A., an independent member of the board of directors of Cosan S.A., Profarma S.A., WEG S.A., Marcopolo S.A. and BRF S.A., a chairman of the board of directors of Sindipeças and IEDI, and a chairman of FET/CNI (CNI Transnational Business Forum). Mr. Ioschpe held several positions in Iochpe-Maxion S.A., among them the chairman of AGCO do Brasil and the chairman of Iochpe-Maxion S.A.

Edmilson Saes. Mr. Saes holds a bachelor's degree in civil engineering from the *Universidade do Vale do Paraíba (Univap)*, class of 1986, with a postgraduate degree in strategic business management from *Instituto Nacional de Pós Graduação (INPG)*, class of 2000, and also did an aircraft design course at the University of Kansas in 2001. Mr. Saes was elected in April 2019 as an effective member of our board of directors, by the non-shareholder employees of Embraer. He has also been an employee of Embraer since March 1982, working in several positions, including his current position as a product development/systems engineer.

Jeferson Domingues de Freitas. Mr. Domingues de Freitas is an alternate member of our board of directors, and was appointed by the Brazilian Federal Government as the holder of our "golden share." Since July 2017, he is a lieutenant air brigadier of the Brazilian Air Forces, holding the position of general director of the Department of Aerospace Control (*Departamento de Controle do Espaço Aéreo*), and was declared "Aspirante-a-Oficial Aviador" in December 1981. He has served in several positions in the military field. Mr. Domingues de Freitas completed a number of academic courses, including the official airmen training course at the Brazilian Air Force Academy (*Academia da Força Aérea*), officer improvement course at the School of Officers' Improvement (*Escola de Aperfeiçoamento de Oficiais*), command and staff training at the Command and General Staff School (*Escola de Comando e Estado-Maior*), aerospace policy and strategy course at the Command and General Staff School, and management of outsourcing contracts course at the *Escola de Administração Fazendária (ESAF)*. He also holds an MBA degree in strategic management from the *Universidade Federal Fluminense*. Mr. Domingues received several awards, among them, the Order of Merit of Defense – Official Grand Degree, the Aeronautical Order of Merit – Grand Cross Degree, the Order of Naval Merit – Official Grand Degree, the Order of Military Merit – Official Grand Degree, the Order of Military Judicial Merit, and the Order of Merit Military Public Ministry.

Table of Contents

João Cox Neto. Mr. Cox holds a bachelor's degree in economics from *Universidade Federal da Bahia* (UFBA) and postgraduate degrees in economics from *Université du Québec à Montreal* and from the College of Petroleum and Energy Studies of Oxford University. Mr. Cox is the chairman of the board of directors of Vivara S.A., a member of the boards of directors of Petrobras S.A., Embraer S.A., Braskem S.A. and Linx S.A., as well as the coordinator of our audit, risks and ethics committee and a member of our personnel and governance committee. He is the founding partner and managing director of Cox Investments & Advisory. Between 2006 and 2010, Mr. Cox served as CEO and vice-chairman of Claro. In 2005, he was the vice-chairman of the board of directors of Cellcom Israel. He served as CFO and investor relations officer of Telemig Celular Participações and Tele Norte Celular Participações from April 1999 to August 2004 and also as CEO of Telemig Celular and Amazonia Celular from August 2002 to August 2004. Additionally, Mr. Cox has served as a member of the boards of directors of certain companies in Brazil, Argentina, the Netherlands and Israel, including Qualicorp S.A., National Financial System Appeals Council (CRSFN), ABRASCA (Brazilian Association of Publicly-Held Companies) and IBRI (Brazilian Institute of Investor Relations).

Maria Leticia de Freitas Costa. Mrs. Costa holds a Bachelor of Science degree in industrial engineering from the Polytechnical School of the *Universidade de São Paulo*, class of 1982, and an MBA degree from the Samuel Curtis Johnson School of Business at Cornell University, class of 1986. Mrs. Costa is an independent member of our board of directors, also acting as the coordinator of our personnel and governance committee and as a member of our strategy committee. Mrs. Costa is also a partner at Prada Assessoria Empresarial Ltda. since 2010; member of the board of directors of Localiza S.A. since 2009; member of the Board of Directors of BrasilSeg and Mapfre Holding since 2015; member of the board of directors of Martins S.A. since 2014; a member of the board of directors of Totvs S.A. since 2017; a member of the board of directors of Mapfre S.A. since 2015; and a member of the strategy committee of Votorantim Cimentos since 2018. She was also a member of the board of directors of RBS Mídia from 2016 to 2018; member of the audit committee of Votorantim Cimentos from 2015 to 2018; member of the audit committee of Votorantim Metais (VMH and CBA) from 2015 to 2017; post-graduation director of the Insper Institute of Education and Research from 2011 to 2015; member of the board of directors of Marcopolo from 2012 to 2016; member of the board of directors of Gafisa S.A. from 2011 to 2012; member of the audit committee of Votorantim Industrial from 2012 to 2014; and a member of the strategy committee of Bematech S.A. from 2014 to 2015.

Márcio de Souza. Mr. Souza holds a bachelor's degree in law from the *Universidade Católica de Petrópolis*, class of 1989; an MBA degree in project management from *Fundação Getúlio Vargas*, class of 2009. He has also concluded specialization courses in writ of mandamus at the *Universidade Católica de Petrópolis* in 1993; executive development at *Insper* in 2017; obtained a certification in CPA-20 in 2014; and pension funds manager certification – ICSS in 2016. Mr. Souza is an independent member of our board of directors, a member of our audit, risks and ethics committee and a management director of Previ – *Caixa de Previdência dos Funcionários do Banco do Brasil*. At Previ he is responsible for the departments of administrative support, people management, information technology, accounting, financial control, process mapping and controlling, as well as managing the daily operation of the entity. Mr. Souza has had an extensive career at Banco do Brasil and at Previ, working in several positions since 1981.

Pedro Wongtschowski. Mr. Wongtschowski holds a bachelor's degree in chemical engineering and master and PhD degrees in engineering from the Polytechnical School of the University of São Paulo (*Universidade de São Paulo*), classes of 1970, 1978 and 1998, respectively. He was the general manager of Oxiten S.A. from 1992 to 2006. From January 2007 to December 2012, he was the president of ULTRAPAR Participações S.A., a public company doing business in the fields of fuel distribution (*Ipiranga*), LPG distribution (*Ultragaz*), bulk liquid logistics (*Ultracargo*), and specialty chemicals manufacturing (Oxiten). Mr. Wongtschowski is a member of the board of directors of Ultrapar Participações S.A., an independent director of Embraer S.A., Votorantim S.A. and Centro de Tecnologia Canavieira S.A., as well as a member of our strategy committee.

Sergio Guillinet Fajerman. Mr. Fajerman holds a Bachelor of Science degree in economics from *Universidade do Rio de Janeiro* (UFRJ) in 1998, an MBA degree in corporate finance from IBMEC in 2020 and an MBA degree from INSEAD in Fontainebleau, France in 2004. Since May 2020, Mr. Fajerman is a member of our board of directors, also acting as a member of our personnel and governance committee, and a partner and executive director of personnel at Itaú Unibanco since 2017.

[Table of Contents](#)

Committees

Three committees were formed to assist the board of directors in its duties and responsibilities:

- *Strategies Committee.* This committee has no executive power and its members are appointed by our board of directors. The majority of its members shall be independent members of our board of directors, and the remaining members can be external members, pursuant to paragraph 1 of Section 34 and paragraph 3 of Section 37 of our bylaws. The primary purpose of our strategies committee is to assist the board of directors. The strategies committee's responsibilities include assisting the board of directors in the performance of its duties, focused on the following areas: (i) strategic objectives and macro-projects relating to our strategic plan and action plan, and (ii) potential opportunities in the assessment of new business. As of the date of this annual report, the members of our strategies committee are the following: Raul Calfat (coordinator and independent director), Dan Ioschpe (independent director), Maria Leticia de Freitas Costa (independent director), Pedro Wongtschowski (independent director), and Israel Vainboim (external member).
- *Audit, Risk and Ethics Committee.* See "Item 6C. Board Practices—Audit, Risks and Ethics Committee" below.
- *Personnel and Governance Committee.* This committee has no executive power and its members are appointed by our board of directors. The majority of its members shall be independent members of our board of directors, and the remaining members can be external members, pursuant to paragraph 1 of Section 34 and paragraph 3 of Section 37 of our bylaws. The purpose of this committee is to assist the board of directors with matters related to human resources issues, including appointment of executive officers and removal of executive officers from office and designation of their duties according to our bylaws, compensation and human relations policy and transfer of our resources to employee associations, charity and recreational entities, to the private security fund and foundation. Additionally, this committee also assists our board of directors with corporate governance matters. As of the date of this annual report, the members of the personnel and governance committee are the following: Maria Leticia de Freitas Costa (coordinator and independent director), João Cox Neto (independent director) and Sergio Guillinet Fajerman (independent director).
- *Conselho Fiscal.* See "—Item 6C. Board Practices—Audit, Risks and Ethics Committee—Conselho Fiscal" below.

Executive Officers

Our executive officers are responsible for our day-to-day management. The board of executive officers has responsibilities established by our bylaws and by the board of directors.

The terms of office for our executive officers are two years and reelection is allowed.

The vote of at least seven members of our board of directors is necessary to remove an executive officer.

Our bylaws prohibit any executive officer from also serving simultaneously as a member of our board of directors.

According to the rules of the *Novo Mercado*, the members of our board of directors agreed to comply with the *Novo Mercado* listing rules and with the rules of the B3 Arbitration Chamber before taking office. In order to take office, the members of the board of directors must execute a term of investiture (*termo de posse*).

[Table of Contents](#)

Our chief executive officer's tenure will end on April 2021, at our annual and special general shareholders' meetings. We expect to announce our new president and chief executive officer on or before this date.

Set forth below are the names, ages, positions, the year first elected and brief biographical descriptions of our current executive officers, as of the date of this annual report:

<u>Name</u>	<u>Age</u>	<u>Position</u>	<u>Year First Elected</u>
Francisco Gomes Neto	62	President and Chief Executive Officer	2019
Antonio Carlos Garcia	55	Executive Vice President – Chief Financial and Investor Relations Officer	2020
Daniel Moczydlower	44	Executive Vice President – Engineering and Technology	2019
Fabiana Klajner Leschziner	48	Executive Vice President – General Counsel & Chief Compliance Officer	2016
Jackson Medeiros de F. Schneider	55	Executive Vice President – Defense and Security	2014
Nelson Krahenbuhl Salgado	59	Executive Vice President of Operations	2018

Francisco Gomes Neto. Mr. Gomes Neto holds a degree in electrical engineering from *Universidade de Mogi das Cruzes* (UMC), class of 1981, and an MBA degree in controlling and finance from *Universidade de São Paulo* (USP), class of 2001. He has also concluded specialization courses in business administration at *Fundação Getúlio Vargas* (FGV) in 2000, finance and risk management at St. John's University in 2002, executive education programs at University of Michigan in 2002 and at *Instituto Brasileiro de Governança* (IBGC) in 2018. Mr. Gomes Neto is our president and chief executive officer since May 2019. He has extensive experience in management positions, including CEO positions for approximately 20 years, in the transportation sector in Brazil and abroad. Mr. Gomes Neto was the CEO of Marcopolo Group, one of the leading bus body manufacturers in the world, when he led the company transformation process, generating strong sales growth and market value for the business. He was also the CEO Americas of the company Mann+Hummel and was the president of Knorr Bremse, a leading company in commercial vehicle control systems.

Antonio Carlos Garcia. Mr. Garcia holds a degree in accounting from *Faculdades Integradas Campos Salles*, class of 1989, and an MBA degree in business administration from Pontifícia Universidade Católica de São Paulo (PUC – São Paulo), class of 1999. Mr. Garcia is our executive vice president, financial and investor relations officer since January 1, 2020. Mr. Garcia worked at ThyssenKrupp where he served as global CFO of the forged technologies business unit in Germany. Previously, he worked for six years at the ZF Group in Brazil and over eighteen years at the Siemens Group, where he worked in several business segments.

Daniel Moczydlower. Mr. Moczydlower holds a *magna cum laude* degree in chemical engineering from the *Universidade Federal do Rio de Janeiro* (UFRJ), and a masters of modeling, simulation, and process control from COPPE at UFRJ. He is our executive vice president, engineering and technology, since 2019. Mr. Moczydlower has been a member of the consulting board of Project Management Institute Rio de Janeiro (PMI-Rio de Janeiro), since 2010, serving as a chairman since 2016. He began his career as a process engineer at Chemtech, where he successively held various management positions until he became CEO in 2010. He worked with clients such as Petrobras and Vale in Brazil, and ExxonMobil in Asia and the Americas. Mr. Moczydlower joined Embraer in 2013 as president and CEO of the Embraer Systems business unit, with the mission of structuring the business in line with the diversification and growth strategy of Embraer. Mr. Moczydlower is also a board member at Atech. In 2017, Mr. Moczydlower was promoted to vice president, technology development for the entire Embraer Group.

[Table of Contents](#)

Fabiana Klajner Leschziner. Mrs. Leschziner holds a law degree from the *Universidade de São Paulo* (USP) School of Law, class of 1993, and an LL.M. degree from Cornell Law School. She specializes in corporate law, corporate finance, capital markets, antitrust and international trade. Mrs. Leschziner is our executive vice president, general counsel and chief compliance officer since June 2016. She worked at DuPont in Brazil from September 2002 to December 2015 as the legal and government affairs director for Brazil and from January 2016 to June 2016 as legal director for Brazil and the Andean Region, responsible for the legal aspects of all business of DuPont in Brazil, Colombia, Venezuela, Peru, Ecuador and Bolivia. She was also an associate at Davis Polk & Wardwell in New York from July 1998 to December 2001.

Jackson Schneider. Mr. Schneider holds a law degree from the *Universidade de Brasília* (UNB) and an MBA from the Business School of São Paulo (BSP). Mr. Schneider is our executive vice president, defense and security, and formerly held the position of vice president of personnel, institutional relations and sustainability at Embraer S.A. He is also a member of the advisory council of Mercedes-Benz do Brasil and of the advisory board of directors of Estacio Participações S.A., and also serves as a board member of the Biennial Foundation of São Paulo, the Association to Support Disabled Children (AACD) and the Museum of Art of São Paulo Assis Chateaubriand (MASP). He is also a member of the advisory council of *Instituto Serzedello Corrêa* (ISC) from *Tribunal de Contas da União* (TCU). He began his career within the Ministry of Justice. In the private sector, he has worked at Unilever in the area of corporate affairs and at Mercedes-Benz do Brasil in areas of human resources, legal relations and corporate affairs. Additionally, Mr. Schneider was the president of ANFAVEA, the Brazilian Association of Motor Vehicle Manufacturers, and ABIPLA, the Brazilian industry association of cleaning products. He was a board member of the Council for Social and Economic Development (CDES).

Nelson Krahenbuhl Salgado. Mr. Salgado holds a master's degree in engineering from *Universidade de São Paulo* (USP); a PhD in computational mechanics from Wessex Institute of Technology; and an MBA degree from *Fundação Getúlio Vargas* (FGV—São Paulo). Mr. Salgado was a visiting professor at the Aeronautical Engineering Division of the *Instituto Tecnológico de Aeronáutica* (ITA). Mr. Salgado is our executive vice president of operations since January 1, 2020. He has been working with Embraer since 1987, having spent the first 10 years in the engineering department. He held executive positions and assumed corporate functions in our strategic, economic and financial planning and mergers and acquisitions departments. From 2012 until 2014, he was the CEO of *Visiona Tecnologia Espacial*, a joint venture company formed by Embraer and Telebras. In February 2014, Mr. Salgado rejoined Embraer S.A. as vice president of institutional relations and sustainability, and later became responsible for Embraer's strategy. From April 2018 to December 2019, he served as Embraer's executive vice president and chief financial and investor relations officer.

6B. Compensation

Overview

Our executive officers, board of directors and fiscal council members are entitled to fixed compensation. In addition, our executive officers are eligible to participate in our executive profit-sharing plan, which provides them with variable compensation that is based on their and our performance and is limited to a percentage of our net income for the year.

For the fiscal year ended December 31, 2019, the aggregate compensation (including benefits in kind granted) that we paid to members of the board of directors, the audit, risks and ethics committee, the fiscal council and the executive officers for services in all capacities was US\$14.3 million: US\$3.4 million to members of the board of directors, US\$0.9 million to members of the fiscal council and US\$10.1 million to the executive officers.

For the fiscal year ended December 31, 2019, members of our committees of the board of directors, including our audit, risks and ethics committee, received an aggregate additional compensation of US\$0.7 million, which is included in the US\$14.3 million compensation mentioned above.

In addition, in 2019, we contributed US\$0.1 million for the payment of pension benefits to our executive officers. Members of our board of directors and fiscal council do not receive these benefits. The board of directors' members, fiscal council members and executive officers did not receive any compensation (including benefits in kind) from any of our subsidiaries. As of December 31, 2019, none of the board of

[Table of Contents](#)

directors' members, fiscal council members or executive officers had any financial or other interests in any transaction involving us which was not in the ordinary course of our business. For additional information on our executive compensation, see Notes 15.6 and 30 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Stock Option Plan

At a special shareholders' meeting held on April 19, 2010, our shareholders approved a second stock option plan for management and employees, including those of our subsidiaries, subject to their continuous employment with us for at least two years. Our board of directors may choose employees and members of management who will be eligible to receive stock options, which are to be awarded free of charge. Nevertheless, in extraordinary circumstances our board of directors may grant stock options to persons employed with us for less than two years to hire and retain strategic personnel. Our board of directors may also determine the terms of the stock option contracts. This second stock option plan has an indefinite period of duration and may be terminated at any time by our board of directors, after which no new options may be granted. However, options granted prior to the termination of the plan will not be affected and may be exercised subject to the terms and conditions of the plan and respective stock option contract. Under the terms of this second stock option plan, we are authorized to grant options to purchase of up to 1.5% of our common shares, and the options vest as follows: 20% after one year following the date the options were granted; 30% after two years following the date the options were granted; and 50% after three years following the date the options were granted.

At a special shareholders' meeting held on January 10, 2012, the aforementioned second stock option plan was amended to provide for a revised vesting schedule, and options granted after January 10, 2012 vest as follows: 33% after three years following the date the options were granted; 33% after four years following the date the options were granted; and 34% after five years following the date the options were granted. The exercise price of each option is to be set on the grant date as the weighted average trading price of the last 60 trading days and can be adjusted by up to 30% to counteract any speculative activity in the market. Each option holder has up to seven years from the date of grant to exercise options received after 2011. Option holders may only exercise options during the term of their employment with Embraer. This amendment does not affect the accounting for grants existing prior to this plan.

On March 20, 2013, 4,494,000 options, representing 4,494,000 common shares, were granted at an exercise price of R\$15.71 per share. As of December 31, 2019, the options granted on March 20, 2013 were outstanding. Out of the total 4,494,000 options that were granted, 1,315,910 were canceled and 2,882,882 were exercised, the remaining 295,208 options, representing 295,208 common shares, were outstanding, and of this total, 201,928 options were not exercised and expired on March 20, 2020 and 93,280 options were exercised between January 1 and March 20, 2020.

Phantom Shares Plan

In February 2014, we adopted a new model of long-term incentive plan aligned with our remuneration policy. The new model is based on the granting of virtual shares to officers and management and has as its objective of attracting and retaining highly qualified staff to ensure continuity of management and align the interest of officers and key personnel of the Company with that of shareholders. Participants in the plan are entitled to receive two classes of virtual shares, 50% in the form of virtual restricted shares and 50% in the form of virtual performance shares linked to performance indicator target. We pay the amount of the long-term incentive converting the virtual shares into *reais* by the average price of the Company's shares in the ten trading sessions preceding the relevant determination date and three, four and five years after the grant of the virtual shares, respectively. On February 25, 2014, we approved a total benefit of R\$30.3 million under the plan, equivalent to 1,570,698 virtual shares which were fully paid on February of 2019. On March 3, 2015 we approved the second grant with a total benefit of R\$30.2 million under the plan, equivalent to 1,237,090 virtual shares with a fair value of R\$12.3 million as of December 31, 2019, equivalent to 650,178 virtual shares. On March 10, 2016, we approved the third grant with a total benefit of R\$31.1 million under the plan, equivalent to 1,095,720 virtual shares with a fair value of R\$13.0 million as of December 31, 2019, equivalent to 685,272 virtual shares. On June 9, 2016, we approved the fourth grant with

[Table of Contents](#)

a total benefit of R\$1.1 million under the plan, equivalent to 55,994 virtual shares with a fair value of R\$0.8 million as of December 31, 2019, equivalent to 43,325 virtual shares. On August 25, 2016, we approved the fifth grant with a total benefit of R\$1.1 million under the plan, equivalent to 70,978 virtual shares with a fair value of R\$1.1 million as of December 31, 2019, equivalent to 59,172 virtual shares. On August 24, 2017 we approved the sixth grant with a total benefit of R\$30.5 million under the plan, equivalent to 1,930,350 virtual shares with a fair value of R\$29.1 million as of December 31, 2019, equivalent to 1,535,154 virtual shares. In 2018, we approved the seventh grant with a total benefit of R\$35.2 million under the plan, equivalent to 1,622,986 virtual shares with a fair value of R\$15.0 million as of December 31, 2019, equivalent to 794,616 virtual shares. In 2019, we approved the eighth grant with a total benefit of R\$18.6 million under the plan, equivalent to 964,198 virtual shares with a fair value of R\$4.4 million as of December 31, 2019, equivalent to 234,598 virtual shares. In March 2020, we approved the ninth grant with a total benefit of R\$19.9 million under the plan, equivalent to 1,176,870 virtual shares. For additional information on this plan, see Note 30.2 to our 2019 audited consolidated financial statements.

Long-Term Incentive Plan

The objectives of our Long-Term Incentive Plan are the recruitment and retention of highly qualified personnel and to allow those who can contribute to our performance the opportunity to participate in our profits. Incentives under the plan are intended to promote continuity among our management and alignment of the interests between our executives and shareholders. Amounts distributed are defined with reference to the market, under the conditions described in our Long-Term Incentive Plan.

Short-Term Variable Compensation Policy

Our Short-Term Variable Compensation Policy is designed to promote the retention of executives and alignment of their interests with those of shareholders. Goals with greater impact and importance for our company are given greater weight. We distribute short-term variable compensation to our eligible executives which is equal to a percentage of our operating profits.

Employee Profit-Sharing Plan

We first implemented a profit-sharing plan in 1998 that linked employee profit sharing to dividend payments. In December 2008, the board of directors approved changes to the methodology for calculating the employee profit sharing. The new program, as amended in 2008 by our board of directors, is now tied to our net income, calculated in accordance with IFRS, and to individual and business unit performance targets. Of the total amount reserved for the profit-sharing program, 50% is distributed in equal parts to all employees, while 50% is distributed proportionally to the employee's salary.

For the 2019, 2018, 2017, 2016, and 2015 fiscal years, we distributed US\$18.6 million, US\$37.7 million, US\$21.4 million, US\$23.6 million, US\$37.9 million and US\$47.8 million, respectively, to our employees under our profit-sharing plan.

Defined Contribution Pension Plan

We sponsor a defined contribution pension plan for employees and the participation in this plan is optional. The plan is managed by EMBRAER PREV – *Sociedade de Previdência Complementar*. Contributions made by us to this plan in the years ended December 31, 2019, 2018, 2017, 2016, and 2015 were US\$19.0 million, US\$14.1 million, US\$22.2 million, US\$23.2 million, and US\$22.6 million, respectively. For additional information on our post-retirement benefits, see Note 27 to our 2019 audited consolidated financial statements.

Risk management studies are performed annually to identify the future exposure to be recorded as a provision. The provision recorded of medical benefits plan in Brazil was US\$9.0 million as of December 31, 2019, US\$27.9 million as of December 31, 2018, and US\$31.8 million as of December 31, 2017.

[Table of Contents](#)

The actuarial methods used comply with the generally accepted actuarial methods in force, in accordance with the projected unit credit method.

D&O Insurance

We maintain directors' and officers' liability insurance in an amount of US\$100.0 million. This insurance covers liabilities resulting from wrongful acts, including any act or omission committed or attempted by any officer or director acting in his or her capacity as officer or director or any matter claimed against an officer or director solely due to his or her serving in such capacity.

6C. Board Practices

Our board of directors is appointed for a two-year term. See “—Item 6A. Directors and Senior Management—Board of Directors.”

The executive officers are elected by the board of directors, with a term of office lasting until the meeting of our board of directors held following the annual general meeting of our shareholders in April 2021 to approve our financial statements for the fiscal year ended December 31, 2020. The members of our board of directors and our executive officers have a uniform two-year term and are eligible for reelection. A vote of at least seven members of our board of directors is necessary to remove an executive officer. See “—Item 6A. Directors and Senior Management—Executive Officers.”

None of our directors is party to an employment agreement providing for benefits upon termination of term. All of our executive officers are party to a service agreement setting forth the rights and obligations of the executive officers.

Audit, Risks and Ethics Committee

Our Audit, Risk and Ethics Committee has no executive power and must have at least three and up to five members, of which (i) the majority of its members must be independent members of the board of directors, (ii) at least one must be an external member, pursuant to our bylaws, (iii) at least one must have acknowledged experience in corporate accounting matters, and (iv) one member must be an independent member of the board of directors with acknowledged experience in corporate accounting matters, or an external member with acknowledged experience in corporate accounting matters. The primary purpose of the Audit Risks and Ethics Committee is to assist the board of directors. The Audit Risks and Ethics Committee's responsibilities include validation and submission to the board of directors of guidelines for risk policy, verification of risk management policy compliance, supervision of activities performed by our independent auditors and monitoring the quality and integrity of internal controls and financial statements. Our Audit, Risk and Ethics Committee is currently composed of three independent members of our board of directors and two external members.

Foreign private issuers are subject to local legislation which may prohibit the board of directors from delegating certain responsibilities to the audit committee, pursuant to Rule 10A-3 of the Exchange Act. Audit committees of foreign private issuers may be granted responsibilities, including advisory powers, with respect to certain matters to the extent permitted by law. Due to certain restrictions imposed by the Brazilian Corporate Law, our Audit Risks and Ethics Committee, unlike a U.S. audit committee, only has an “advisory” role and may only make recommendations for adoption by the full board of directors, which is responsible for the ultimate vote and final decision. For example, our Audit, Risks and Ethics Committee makes recommendations regarding the appointment of auditing firms, which are subject to a vote by the board of directors. Our Audit, Risks and Ethics Committee complies with Brazilian legal requirements (including for “independent directors,” as defined by Brazilian law).

[Table of Contents](#)

Set forth below are the names, ages, position and the year first elected of the members of our Audit, Risks and Ethics Committee:

<u>Name</u>	<u>Age</u>	<u>Position</u>	<u>Year First Elected</u>
João Cox Neto	57	Coordinator and Effective member	2015(1)
Márcio de Souza	54	Effective member	2019
Raul Calfat	67	Effective member	2020
Sergio Eraldo de Salles Pinto	55	External member	2011(2)
Vanessa Claro Lopes	44	External member	2019(3)

- (1) Mr. João Cox Neto was also a member of this committee from April 2011 through April 2013.
- (2) Mr. Sergio Eraldo de Salles Pinto was elected in May, 2020 as an external member of the Audit, Risks and Ethics Committee, according to our bylaws, after resigning as an effective member of our board of directors.
- (3) Ms. Vanessa Claro Lopes was elected in July 16, 2019 as an external member of the Audit, Risks and Ethics Committee, according to our bylaws.

Fiscal Council (*Conselho Fiscal*)

Under the Brazilian Corporate Law, the fiscal council is a corporate body independent of management and a company's external auditors. The fiscal council has not typically been equivalent to or comparable with a U.S. audit committee. The primary responsibility of the fiscal council has been to monitor management's activities, review the financial statements, and report its findings to the shareholders. In our case, our statutory audit, risks and ethics committee, established in accordance with the *Novo Mercado* Listing Rules, will serve as the equivalent of a U.S. audit committee. For additional information on our committees, see "—Item 6A. Directors and Senior Management—Committees."

Under the Brazilian Corporate Law, the fiscal council may not have members who are members of the board of directors or the executive committee, or who are our employees or employees of a controlled company or of a company of this group, or a spouse or relative of any member of our management. In addition, the Brazilian Corporate Law requires that fiscal council members receive a remuneration of at least 10% of the average amount paid to each executive officer. The Brazilian Corporate Law requires a fiscal council to be composed of a minimum of three and a maximum of five members and their respective alternates.

Our fiscal council is composed of three to five members who are elected at the annual shareholders' meeting, with terms lasting until the next annual shareholders' meeting after their election. Under the Brazilian Corporate Law, if a company acquires control of another company, minority shareholders that in the aggregate hold at least 10% of the voting shares also have the right to elect separately one member of the fiscal council. This provision will not be applicable to us as long as we are subject to widespread control. Set forth below are the names, ages, the year first elected and positions of the members of our fiscal council and respective alternates, elected at our annual shareholders' meeting held on April 29, 2020.

The following table sets forth the name and year of election of each of the members of our fiscal council as of the date of this annual report.

<u>Name</u>	<u>Age</u>	<u>Position</u>	<u>Year First Elected</u>
Ivan Mendes do Carmo(1)	57	Effective member	2008
Tarcisio Luiz Silva Fontenele	57	Alternate	2001
José Mauro Laxe Vilela(2)	72	Effective member	2011
Wanderley Fernandes da Silva	47	Alternate	2011
Mauricio Rocha Alves de Carvalho	58	Effective member	2016
Mario Ernesto Vampré Humberg	56	Alternate	2020
João Manoel Pinho de Mello	46	Effective member	2018
Pedro Jucá Maciel	39	Alternate	2018

- (1) President of the fiscal council.
- (2) Vice-President of the fiscal council.

[Table of Contents](#)

6D. Employees

The table below sets forth the number of our employees by category at the dates indicated, and includes the employees of our wholly owned subsidiaries. The total consolidated employees refers to employees at all of our subsidiaries and joint ventures, including Yaborã, OGMA, ECTS, and Visiona, considering our continuing and discontinued operations:

	As of December 31,				
	2019	2018	2017	2016	2015
Production Process	6,537	6,645	6,695	6,613	6,442
Research and Development	5,371	5,369	5,462	5,645	6,069
Customer Support	2,348	2,274	2,178	2,000	2,209
Administrative—Production Support	1,632	1,456	1,476	1,615	2,115
Administrative—Corporate	2,846	2,776	2,622	2,633	2,538
Total (including only wholly owned subsidiaries of Embraer S.A)	18,734	18,520	18,433	18,506	19,373
Total Consolidated Employees	21,271	20,530	20,320	20,348	23,050

Approximately 85% of our workforce is employed in Brazil. Most of our technical staff is trained at leading Brazilian engineering schools, including ITA, located in the city of São José dos Campos.

Embraer fully supports the choice of union association of its employees. In Brazil, 3.1% of the our employees are unionized, and, according to Brazilian labor laws, salary readjustments and other clauses negotiated in collective bargaining agreements extend to the entire category, resulting in 100% employees covered by clauses negotiated in these agreements.

We actively support the training and professional development of our employees. We have established a program at our facility in the city of São José dos Campos to provide newly graduated engineers with specialized training in aerospace engineering.

6E. Share Ownership

As of December 31, 2019, our board members owned 1,200 of our common shares, each fiscal council member owned one of our common shares and our executive officers did not own any of our common shares. None of our directors individually owns more than 1% of the outstanding common shares.

For a description of our stock option plan terminated on March 2020 that was applicable to our executive officers and employees in 2019, including those of our subsidiaries, see “Item 6B. Compensation—Stock Option Plan.”

Item 7. MAJOR SHAREHOLDERS AND RELATED-PARTY TRANSACTIONS

7A. Major Shareholders

Shareholders

As of the date of this annual report, we have a total authorized capital of 1,000,000,000 shares, of which 740,465,044 common shares were issued, including one special “golden share” held by the Brazilian government. The golden share provides the Brazilian government with veto rights in certain specific circumstances. In addition, non-Brazilian shareholders may have their voting rights restricted in certain specific circumstances. For additional information on the voting rights of our common shares, see “Item 10. Additional Information—10B. Memorandum and Articles of Association—Description of Capital Stock—Voting Rights of Shares.”

[Table of Contents](#)

The table below sets forth information related to the number of shares held by our significant shareholders, as of March 31, 2020, in accordance with the most recent shareholder position information provided to us:

	Common Shares	
	Shares(1)	(%)
Brandes Investment Partners, L.P.(2)	112,071,399	15.14
BNDES Participações S.A.—BNDESPAR(3)	39,762,489	5.37
HOTCHKIS & WILEY Capital Management, LLC(4)	37,305,800	5.04
Blackrock INC(5)	37,176,992	5.02
União Federal/Brazilian government(6)	1	0.00
Shares in company treasury	4,291,938	0.58
Others	509,856,426	68.86
Total	740,465,044	100.00

- (1) The number of shares includes our ADS.
- (2) Brandes Investment Partners, L.P. is a 100% employee-owned independent investment advisory firm founded and co-owned by Charles Howard Brandes. The firm manages the Brandes series of mutual funds in addition to other funds and caters to individuals and institutions.
- (3) BNDESPAR is a wholly owned subsidiary of *Banco Nacional de Desenvolvimento Econômico e Social* – BNDES, the government-owned national development bank of Brazil.
- (4) HOTCHKIS & WILEY Capital Management, LLC founded in 1980, has been managing value portfolios for institutional and individual investors and offers value equity strategies across the market capitalization spectrum as well as strategies that emphasize income generation; its clients include public plans, corporations, foundations, endowments, unions, sovereign wealth funds, and sub-advisory relationships.
- (5) Blackrock Inc. is an American global investment management corporation based in New York City. Founded in 1988 initially as a risk management and fixed income institutional asset manager, BlackRock is the world's largest asset manager.
- (6) The Brazilian government holds our “golden share.”

There have been no significant changes in percentage ownership by any major shareholder in the past three years. On March 31, 2020, we had approximately 62,634 holders of common shares, including common shares in the form of ADSs. On March 31, 2020, an aggregate of 88,064,869 common shares in the form of ADSs were held by 143 record holders, including DTC in the United States.

7B. Related-Party Transactions

The Brazilian Government

The Brazilian government, through its direct and indirect stakes in us and its ownership of our “golden share,” is one of our major shareholders. The issuance of the “golden share” was a requirement of the regulations governing our privatization in 1994 and grants the Brazilian government veto rights over certain military-related programs and corporate actions (including transfers of control and changes in our name, logo and corporate purpose). For additional information on the voting rights of our golden share, see “Item 10. Additional Information—10B. Memorandum and Articles of Association—Description of Capital Stock—Voting Rights of Shares—Golden Share.” As of December 31, 2019, in addition to the “golden share,” the Brazilian government owned an indirect 5.37% stake in us through BNDESPAR, a wholly owned subsidiary of BNDES, which, in turn, is controlled by the Brazilian government. As a result, for the purposes of this annual report’s disclosure requirements, we consider transactions between Embraer and the Brazilian government or its agencies as falling within the definition of “related-party transactions.”

The Brazilian government plays an important role in our business activities, including as:

- a major customer of our defense products, through the Brazilian Air Force;

[Table of Contents](#)

- a source for research debt financing through technology development institutions, including FINEP and BNDES;
- an export credit agency, through BNDES; and
- a source of short-term and long-term financing and a provider of asset management and commercial banking services, through Banco do Brasil.

For additional information on the role of the Brazilian government in our business activities, see “Item 5. Operating and Financial Review and Prospects—5B. Liquidity and Capital Resources—Credit Facilities and Lines of Credit,” “Item 4. Information on the Company—4B. Business Overview—Aircraft Financing Arrangements,” “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Any decrease in Brazilian government-sponsored customer financing, or increase in government-sponsored financing that benefits our competitors, may decrease the cost competitiveness of our aircraft” and “Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Any decrease in Brazilian government-sponsored customer financing, or increases in government sponsored financing that benefits our competitors, may decrease the competitiveness of our aircraft.” For additional information regarding our related-party transactions, see Note 15 to our 2019 audited consolidated financial statements.

A Major Customer (Brazilian Government)

The Brazilian government, mainly through the Brazilian Air Force, has been a significant customer of Embraer since its inception. For the year ended December 31, 2019, the Brazilian government, again mainly through the Brazilian Air Force, accounted for 54.4% or US\$421.8 million of the revenue of our Defense and Security business. In addition, as of December 31, 2019, the Brazilian Air Force owed us US\$364.4 million in trade account receivables and had a credit against us of US\$226.9 million in customer advances. We expect to continue to be the primary source of new aircraft and spare parts and services for the Brazilian government. For a description of our transactions with the Brazilian government, see “Item 4. Information on the Company—4B. Business Overview—Defense and Security Business.”

Financing Source

FINEP

We maintain credit facilities with FINEP, which as of December 31, 2019, had a total outstanding balance of US\$43.4 million. These loans were extended to us primarily to fund research and development expenses of the Phenom 100 and 300 aircraft and the Legacy 500 aircraft. For additional information on the amounts, maturity dates and interest rates of the principal loans we have with FINEP, see “Item 5. Operating and Financial Review and Prospects—5B. Liquidity and Capital Resources—Credit Facilities and Lines of Credit.”

Customer Financing by BNDES

The Brazilian government has been an important source of export financing for our customers through the BNDES-Exim program, managed by BNDES. For additional information on our aircraft financing arrangements, see “Item 4. Information on the Company—4B. Business Overview—Aircraft Financing Arrangements.”

A Service Provider (Banco do Brasil)

As of December 31, 2019, we maintained cash and cash equivalents of US\$75.3 million with Banco do Brasil and several of its affiliates. Banco do Brasil has been a provider of regular commercial banking and asset management services to us for many decades and is one of the banks responsible for the payment of our payroll expense. These services include maintaining our checking account.

[Table of Contents](#)

As of December 31, 2019, approximately 5.07% of our cash, cash equivalents and financial investments were indexed to the variation of the CDI rate.

7C. Interests of Experts and Counsel

Not applicable.

Item 8. FINANCIAL INFORMATION

8A. Consolidated Statements and Other Financial Information

See “Item 3. Key Information—3A. Selected Financial Data and Other Data.”

Legal Proceedings

Labor Lawsuits. We are defendants in individual labor lawsuits, for which we are awaiting the decision of the Brazilian labor courts. Due to the immaterial amount involved in these legal proceedings, we do not believe that any liabilities related to these individual labor lawsuits would have a material adverse effect on our financial condition or results of operations. For a further discussion of our labor lawsuits, see Note 26 to our 2019 audited consolidated financial statements.

Tax Matters. We have challenged the constitutionality of certain Brazilian taxes and payroll charges, as well as modifications to and increases in the rates and basis of calculation of those taxes and charges and have obtained *writs of mandamus* or injunctions to avoid their payment or recover past payments. In 2007, we also received a tax assessment notice (*autos de infração*) relating to the taxation of profits received from our foreign subsidiaries, which is still under discussion. For a further discussion of our tax lawsuits, see Notes 23 and 26 to our 2019 audited consolidated financial statements.

Interest on the total amount of unpaid taxes and payroll charges accrues monthly based on the SELIC rate, which is the key lending rate of the Central Bank, and, accordingly, we make an accrual to the interest income (expenses), net line item on our statements of income. As of December 31, 2019, there was a US\$66.0 million provision recorded as a liability (taxes and labor related) on our statement of financial position in connection with litigation contingencies that we classify as representing probable losses to us. For a further discussion of these challenges, see Notes 23 and 26 to our 2019 audited consolidated financial statements.

Arbitration Proceedings. On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the Master Transaction Agreement, based on Boeing’s assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement. Embraer strongly believes that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement and Boeing wrongfully terminated the MTA and the Contribution Agreement. Such dispute with respect to the termination of the MTA and/or the Contribution Agreement has been submitted by each of Boeing and Embraer to separate arbitration proceedings that are currently ongoing.

SEC/DOJ and Brazilian Public Prosecutor’s Investigations

On October 24, 2016 we entered into the Final Agreements with the DOJ and the SEC for the resolution of criminal and civil violations of the FCPA. We also finalized the TCAC with the MPF and the CVM for the resolution of violations of certain Brazilian laws.

Under the Final Agreements with the DOJ and the SEC:

- We agreed to pay approximately US\$98.2 million to the SEC (of which US\$20.0 million was due to the MPF and the CVM under the TCAC, as described below), in the form of disgorgement of profits and pre-judgment interest.

Table of Contents

- We agreed to pay approximately US\$107.3 million to the DOJ, as penalty for one count of conspiracy to violate the anti-bribery and books and records provisions of the FCPA and one count of violating the internal controls provisions of the FCPA.
- In a deferred prosecution agreement (DPA), the DOJ agreed to defer prosecution of the charges for three years, after which period the charges will be dismissed if we complied with the terms of the DPA.
- We agreed with the DOJ and the SEC to retain an external and independent anti-corruption monitorship for a period of approximately three years. In February 2020, we agreed to extend the term of the external and independent monitorship for an additional 90 days in order to allow the monitor to complete his work.
- On April 13, 2020, the monitor delivered his final report to the DOJ and to the SEC, finding that Embraer's compliance program is reasonably designed and implemented to detect and prevent violations of the anti-corruption laws. On May 22, 2020, the monitorship term expired. Under both the DPA and the SEC Consent, there remain certain additional steps that the Company must take to complete the requirements of the DPA and the SEC Consent.

Simultaneously with the Final Agreements, we finalized a TCAC with the MPF and the CVM to settle any potential claims that could be brought in court (*ação civil pública*) or through administrative proceedings (*processo administrativo sancionador*) in Brazil. The TCAC has also been approved by the relevant authorities and is fully effective.

Under the TCAC, we acknowledged violations of certain Brazilian laws between 2007 and 2011 and agreed to:

- Pay a total equivalent to US\$20.0 million to a Brazilian federal fund (*Fundo de Defesa dos Direitos Difusos*), as disgorgement of illegal profits, damages, and as a deterrent against similar practices. The amount payable under the TCAC was deducted from the amount payable under the Final Agreements.
- Cooperate with the MPF and the CVM in lawsuits and administrative proceedings against individuals arising out of the acts acknowledged in the TCAC.

Under the TCAC, the MPF and the CVM acknowledged that (i) we voluntarily conducted a broad internal investigation, which assisted in uncovering facts that were the subject of criminal and administrative investigations, and (ii) we approached the Brazilian authorities pro-actively and in good faith, and they agreed that:

- The MPF will not file suit (*ação civil pública* and *ação de improbidade administrativa*) against us arising out of the acts we have acknowledged and will terminate proceedings now underway.
- The CVM will end an ongoing administrative proceeding arising out of the acts we have acknowledged.
- The MPF and the CVM will inform other Brazilian federal agencies of the terms of the TCAC and cooperate with us in seeking that these agencies take the TCAC into consideration should other proceedings regarding the acknowledged acts be brought forth.

The Final Agreements and the TCAC represent the conclusion of the internal investigation of allegations of noncompliance with the FCPA and certain Brazilian laws in four aircraft sales outside Brazil between 2007 and 2011.

Related proceedings and developments are ongoing and could result in additional fines and possibly other sanctions and adverse consequences, which may be substantial. We believe that there is no adequate basis at this time for estimating accruals or quantifying any contingency with respect to these matters.

[Table of Contents](#)

We will continue to cooperate with governmental authorities, as circumstances may require. In this regard, on February 23, 2017 we entered into an Exoneratory Agreement with the Mozambican authorities for collaboration with the investigations in that country and under which there are no financial obligations for Embraer. In July 2018, we entered into a collaboration agreement with the Attorney General's Office of the Dominican Republic in exchange for our cooperation with ongoing investigations in that country and paid US\$7.0 million to the Dominican Republic.

Since the beginning of the internal investigation in 2011, we embarked on a comprehensive effort to improve and expand our compliance program worldwide. This multi-year task involved reexamining our compliance systems, and where appropriate, redesigning or adding to them. Some of the key enhancements include the creation of a Compliance Department; the appointment of a Chief Compliance Officer who is currently also our general counsel, which, for these compliance matters, reports directly to the Risk, Audit and Ethics Committee of the board of directors; the development of a program to monitor engagement of and payments to third parties; improvements to compliance policies, procedures and controls; the enhancement of anonymous and other reporting channels; and the development of a comprehensive training and education program designed to maintain and reinforce a strong compliance culture at all levels of Embraer globally. We will continue to promote enhancements and update this compliance program.

Other Proceedings

In addition, we are involved in other legal proceedings, all of which are in the ordinary course of business.

Our management does not believe that any of our proceedings, if adversely determined, would materially or adversely affect our business, financial condition or results of operations. For additional information on our legal proceedings, see Notes 23 and 26 to our 2019 audited consolidated financial statements.

Dividends and Dividend Policy

Amounts Available for Distribution

At each annual shareholders' meeting, the board of directors is required to recommend how net profits for the preceding fiscal year are to be allocated. For purposes of the Brazilian Corporate Law, net profits are defined as net income after income taxes and social contribution taxes for the fiscal year, net of any accumulated losses from prior fiscal years and any amounts allocated to employees' and management's participation in our profits, determined under IFRS. In accordance with the Brazilian Corporate Law and our bylaws, the amounts available for dividend distribution are the amounts determined under IFRS in our parent company financial statements. The amount for distribution is equal to our net income after taxes less (or plus):

- any amounts allocated from the net income after taxes to the legal reserve, and
- any amounts allocated from the net income after taxes to a contingency reserve for anticipated losses or the reversion of the reserve constituted on previous fiscal years.

For additional information on amounts available for distributions, see Note 29 to our 2019 audited consolidated financial statements.

We are required to maintain a legal reserve to which we must allocate 5% of net profits for each fiscal year until the amount of the legal reserve equals 20% of our capital stock. However, we are not required to make any allocations to our legal reserve in respect of any fiscal year in which the legal reserve, when added to our other established capital reserves, exceeds 30% of our capital stock. Net losses, if any, may be charged against the legal reserve. The balance of our legal reserve was US\$204.4 million, which was equal to 13.2% of our capital stock as of December 31, 2019.

[Table of Contents](#)

The Brazilian Corporate Law also provides for two additional, discretionary allocations of net profits that are subject to approval by the shareholders at the annual meeting. First, a percentage of net profits may be allocated to a contingency reserve for anticipated losses that are deemed probable in future years. Any amount so allocated in a prior year must be either reversed in the fiscal year for which the anticipated loss was forecast if the loss does not in fact occur, or written off in the event that the anticipated loss occurs. Second, the amount for distribution may be limited to the fiscal year's net profit already realized, and the difference between the amounts shall be allocated to an unrealized revenue reserve. Under the Brazilian Corporate Law, unrealized revenue is defined as the sum of:

- price-level restatement of statement of financial position accounts;
- the share of equity earnings of affiliated companies; and
- profits from installment sales to be received after the end of the next succeeding fiscal year.

According to our bylaws and subject to shareholder approval, our board of directors may allocate to an investment and working capital reserve up to 75% of our parent company adjusted net income after taxes under IFRS. The reserve may not exceed 80% of our capital stock. The purpose of the investment and working capital reserve is to make investments in fixed assets or increase our working capital. The balance of the investment and working capital reserve may be used:

- in the deduction of accumulated losses, whenever necessary;
- in the distribution of dividends, at any time;
- in the redemption, withdrawal, purchase or open market repurchase of shares, as authorized by law; and
- to increase our capital, including by means of an issuance of new shares.

We may also grant a participation in our net income to our management and employees. However, the allocation to the investment and working capital reserve or the participation of our management and employees cannot reduce the mandatory distributable amount, as discussed below.

Otherwise, the reserved amounts, except for the contingency reserve and the unrealized revenue reserve that exceeds our capital stock, must be used to increase our capital or be distributed as a cash dividend.

The amounts available for distribution may be further increased by a reversion of the contingency reserve for anticipated losses constituted in prior years but not realized, or further increased or reduced as a result of the allocations of revenues to or from the unrealized revenue reserve. The amounts available for distribution are determined on the basis of financial statements prepared in accordance with the Brazilian Corporate Law method. We have not established a contingency reserve.

As of December 31, 2019, unappropriated retained earnings of US\$1,856.7 million were recorded in our statutory parent company books under IFRS. As of December 31, 2019, the amounts are net of minimum dividends and interest on shareholders' equity paid or payable, as determined by the Brazilian Corporate Law.

For additional information, see Note 29 to our 2019 audited consolidated financial statements.

Mandatory Distribution

The Brazilian Corporate Law generally requires that the bylaws of each Brazilian corporation specify a minimum percentage of the amounts available for distribution by the corporation for each fiscal year that dividends must be distributed to shareholders, also known as the mandatory distributable amount. Under our bylaws, the mandatory distribution is based on a percentage of adjusted net income, not lower than 25%, and

[Table of Contents](#)

not on a fixed monetary amount per share. The Brazilian Corporate Law, however, permits a publicly held company to suspend the mandatory distribution of dividends if the board of directors and fiscal council report presented at the shareholders' meeting indicate that the distribution would be inadvisable in view of Embraer's financial condition. This suspension is subject to approval of holders of common shares. In this case, the board of directors shall file a justification for the suspension with the CVM. Profits not distributed by virtue of the suspension will be attributed to a special reserve and, if not absorbed by subsequent losses, will be paid as dividends as soon as the financial condition of the corporation permits the payments.

Payment of Dividends

We are required by the Brazilian Corporate Law and by our bylaws to hold an annual shareholders' meeting by the end of the fourth month after the end of each fiscal year at which, among other things, the shareholders have to decide on the payment of an annual dividend. The payment of annual dividends is based on our parent company financial statements prepared under IFRS for the relevant fiscal year. Brazilian companies, including us, are permitted to make a special distribution to shareholders referred to as interest on shareholders' equity, which may be distributed cumulatively or *in lieu* of dividends as part of the mandatory distributable amount. Payments of interest on shareholders' equity are treated as a tax-deductible expense for IRPJ and CSLL purposes. Under the Brazilian Corporate Law, dividends generally are required to be paid within 60 days following the date the dividend was declared, unless a shareholders' resolution sets forth another date of payment, which, in either case, must occur prior to the end of the fiscal year in which the dividend was declared. A shareholder has a three-year period from the dividend payment date to claim dividends (or payments of interest on shareholders' equity) in respect of its shares, after which the amount of the unclaimed dividends reverts to the Company.

The Brazilian Corporate Law allows a company to pay interim dividends out of preexisting and accumulated profits determined under IFRS for the preceding fiscal year or semester, based on financial statements approved by its shareholders. According to our bylaws, the shareholders may declare, at any time, interim dividends based on the preexisting and accumulated profits, provided that the mandatory dividend has already been distributed to the shareholders. Our bylaws also permit us to prepare financial statements semiannually and for shorter periods. Our board of directors may approve the distribution of dividends calculated with reference to those financial statements, even before they have been approved by the shareholders. However, the dividends cannot exceed the amount of capital reserves.

In general, shareholders who are not residents of Brazil must register with the Central Bank to have dividends, sales proceeds or other amounts with respect to their shares eligible to be remitted outside of Brazil. The common shares underlying our ADSs will be held in Brazil by Banco Itaú S.A., also known as the custodian, as agent for the depositary, which will be the registered owner on the records of the registrar for our shares. Our current registrar is Itaú Corretora de Valores S.A. The depositary electronically registers the common shares underlying our ADSs with the Central Bank and, therefore, is able to have dividends, sales proceeds or other amounts with respect to these shares eligible to be remitted outside Brazil.

Payments of cash dividends and distributions, if any, will be made in Brazilian currency to the custodian on behalf of the depositary, which will then convert the proceeds into U.S. dollars and will cause the U.S. dollars to be delivered to the depositary for distribution to holders of ADSs. Under current Brazilian law, dividends paid to shareholders who are not Brazilian residents, including the holders of ADSs, will not be subject to Brazilian withholding income tax, except for dividends declared based on profits generated prior to December 31, 1995. For additional information on Brazilian taxes, see "Item 10. Additional Information—10E. Taxation—Material Brazilian Tax Consequences."

History of Dividend and Interest on Shareholders' Equity Payments and Dividend Policy

Law No. 9,249, dated December 26, 1995, as amended, provides for distribution of interest on shareholders' equity as an alternative form of payment to shareholders and treats those payments as a deductible expense for purposes of calculating Brazilian corporate income tax and social contribution on net profits. These distributions may be paid in cash. The interest is limited to the daily pro rata variation of the TJLP (long term interest rate) and cannot exceed the greater of:

- 50% of net income (after the deduction of social contribution on net profits, but before taking into account the provision for corporate income tax and the amounts attributable to shareholders as net interest on shareholders' equity) for the period in respect of which the payment is made; or

[Table of Contents](#)

- 50% of the sum of retained profits and profit reserves as of the beginning of the period in respect of which the payment is made.

Any payment of interest on shareholders' equity to holders of ADSs or common shares, whether or not they are Brazilian residents, is subject to Brazilian withholding income tax at the rate of 15% or 25% if the beneficiary is resident in a tax haven jurisdiction, that is, a country or location that does not impose any income tax or which imposes the tax at a maximum rate of less than 20%, or in which the domestic legislation imposes restrictions on the disclosure of the shareholding composition or the ownership of the investment. For additional information on Brazilian taxes, see "Item 10. Additional Information—10E. Taxation—Material Brazilian Tax Consequences." The amount paid to shareholders as interest on shareholders' equity, net of any withholding tax, may be included as part of any mandatory distributable amount.

Under Brazilian law, we are obligated to distribute to shareholders an amount sufficient to ensure that the net amount received by them, after payment by us of applicable Brazilian withholding taxes in respect of the distribution of interest on shareholders' equity, plus the amount of declared dividends, is at least equal to the mandatory distributable amount. When we distribute interest on shareholders' equity, and that distribution is not accounted for as part of the mandatory distribution, Brazilian withholding tax will apply. All payments to date were accounted for as part of the mandatory distribution.

The following table sets forth the historical payments of dividends and historical payments of interest on shareholders' equity we have made to our shareholders:

Date of Approval	Period in which Profits were Generated	Total Amount of Distribution	
		<i>(in R\$ millions)</i>	<i>(in US\$ millions)⁽¹⁾</i>
March 03, 2015(2)	First quarter of 2015	29.4	9.2
June 11, 2015(2)	Second quarter of 2015	29.4	9.5
August 06, 2015(2)	Third quarter of 2015	29.4	8.3
December 10, 2015(2)(4)	Fourth quarter of 2015	29.5	7.6
March 10, 2016(2)	First quarter of 2016	29.5	8.3
June 9, 2016(2)	Second quarter of 2016	29.4	9.2
September 15, 2016(2)	Third quarter of 2016	14.7	4.5
March 8, 2017(2)	First quarter of 2017	29.4	9.3
April 12, 2017(3)	Full year of 2016	75.0	23.4
June 2, 2017(2)	Second quarter of 2017	29.4	8.9
September 6, 2017(2)	Third quarter of 2017	29.3	9.2
December 14, 2017(2)(5)	Fourth quarter of 2017	66.0	19.9
March 5, 2018(2)	First quarter of 2018	14.7	4.4
June 14, 2018(2)	Second quarter of 2018	14.7	3.8
September 13, 2018(3)	Full year of 2018	7.3	1.8
December 14, 2018(3)(6)	Full year of 2018	7.4	1.9

- (1) Translated from nominal *reais* into U.S. dollars at the selling exchange rates in effect on the last date of the month in which the dividends were approved.
- (2) Represents interest on shareholders' equity.
- (3) Represents dividend payments.
- (4) Amount declared in 2015 but paid in 2016.
- (5) Amount declared in 2017 but paid in 2018.
- (6) Amount declared in 2018 but paid in 2019.

[Table of Contents](#)

No dividends nor interest on shareholders' equity were approved for 2019. In 2019, we did not distribute interest on shareholders' equity and interim dividends. In 2018, we distributed US\$11.9 million in interest on shareholders' equity and interim dividends approved by Statutory Board of Directors in connection with shareholders' equity reserves. In 2017, we distributed US\$47.3 million in interest on shareholders' equity in connection with profits generated in the year ended December 31, 2017. For additional information on mandatory distribution of dividends, see "Item 8. Financial Information—8A. Dividends and Dividend Policy—Mandatory Distribution."

We intend to declare and pay dividends and/or interest on shareholders' equity, as required by the Brazilian Corporate Law and our bylaws. Our board of directors may approve the distribution of dividends and/or interest on shareholders' equity, calculated based on our semiannual or quarterly financial statements. The declaration of annual dividends, including dividends in excess of the mandatory distribution, requires approval by the vote of the majority of the holders of our common shares. The amount of any distributions will depend on many factors, including our results of operations, financial condition, cash requirements, prospects and other factors deemed relevant by our board of directors and shareholders. Within the context of our tax planning, we may in the future continue to determine that it is in our benefit to distribute interest on shareholders' equity.

8B. Significant Changes

Commercial Aviation Business Unit

As a result of our now-terminated strategic partnership with Boeing, on January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã of the net assets comprising assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. For additional information on our now-terminated strategic partnership with Boeing, see "Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing."

Credit and Guaranty Agreement

On March 10, 2020, Embraer Aviation Netherlands B.V. entered into a credit and guaranty agreement with Citibank, N.A., J.P. Morgan Chase Bank, N.A. and Banco Santander, S.A. and borrowed an aggregate principal amount of US\$600.0 million on March 13, 2020, accruing interest at three-month LIBOR *plus* 1.5% per year, maturing on December 15, 2020. On May 18, 2020, the credit and guaranty agreement was amended to, among other things, modify the maturity date to November 6, 2020.

Deregistration and Delisting of the Notes due 2022, 2025 and 2027 from the SEC and NYSE and Suspension of Yaborã's SEC Reporting Obligations

As a result of our now-terminated strategic partnership with Boeing, on January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã of the net assets comprising assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. On March 17, 2020, Yaborã announced that it obtained the relevant consents of the holders of the notes due 2022, 2023, 2025 and 2027 and, accordingly, further amended the indentures under which the notes due 2022, 2023, 2025 and 2027 were issued. These amendments became effective upon satisfaction of the conditions precedent provided in the terms of the Consent Solicitation Process, which occurred on March 19, 2020. As a consequence, on March 30, 2020, a Form 25 was filed with the SEC to delist the notes due 2022, 2025 and 2027 from the NYSE (which delisting occurred on April 13, 2020), and on April 13, 2020, a Form 15 was filed in order to deregister the notes due 2022, 2025 and 2027, and to suspend Yaborã's SEC reporting obligations that arose as a result of the substitution. With effect from April 13, 2020, Yaborã was relieved of its SEC periodic reporting requirement and, with effect from July 12, 2020, Yaborã will be relieved of all SEC reporting requirements (subject to annual testing of the relevant registered holder threshold on January 1 of each year to confirm that Yaborã continues to be eligible to suspend its SEC reporting obligations). For additional information, see "Item 5. Operating and Financial Review and Prospects—5B. Liquidity and Capital Resource—Credit Facilities and Lines of Credit."

[Table of Contents](#)

Termination of the Strategic Partnership with Boeing

On April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement providing for the strategic partnership. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft. Embraer strongly believes that Boeing wrongfully terminated the Master Transaction Agreement and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing's wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us. Starting on April 25, 2020 and as a result of the above, assets and liabilities previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations. For additional information on the now-terminated strategic partnership with Boeing and on the assets held for sale and discontinued operations as of December 31, 2019, see "Item 4. Information on the Company—4A. History and Development of the Company—Termination of Strategic Partnership with Boeing" and Notes 4 and 40 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Impairment Losses

Starting on April 25, 2020 and as a result of the unexpected and wrongful termination of the strategic partnership by Boeing on such date, assets and liabilities related to our Commercial Aviation business unit previously presented as held for sale will be reclassified and measured as held for continuous use, as well as the results of operations previously reported as discontinued operations will be reported as continuing operations.

The change in designation requires the remeasurement of the long-lived assets held for sale (fixed assets, intangibles, and rights-of-use) for the lower value between the book value and the recoverable value. The book value is adjusted according to the accumulated depreciation and amortization in the amount of US\$83.5 million, not recognized while classified as held for sale, which will be recorded in the second quarter of 2020. The recoverable value, on the other hand, is determined by the highest amount between the value-in-use of these assets and the fair value *minus* the expenses that would be incurred as a result of the sale. Since the initial designation of the Commercial Aviation business unit assets as "held for sale" until April 25, 2020, the long-lived assets held for sale were listed at the recoverable value by the lesser value between the book value and the fair value based on the purchase price set forth in the Master Transaction Agreement, *minus* the incremental costs incurred to close the Transaction.

According to our impairment test practices, the recoverable value of these assets will be measured based on the approach of value-in-use using the discounted cash flow method, which is not substantially different from fair value under current market conditions. For information on our impairment test practices, see Note 19 to our 2019 audited consolidated financial statements included elsewhere in this annual report. The discount rate applied in this case is based on the rate of the weighted average cost of capital, reconciled with the estimated discount rate before taxes of 10.6%. That discount rate differs from the discount rate applied on the December 31, 2019 calculation due to our increased risk diversification and to our increased funding costs as a result of not concluding the Transaction.

We used our best estimate to calculate the future cash flows used in the determination of the value-in-use account for significant economic environment impacts resulting from the COVID-19 pandemic on the commercial aviation market.

[Table of Contents](#)

As a result of the measurement of the recoverable value of the assets of the Commercial Aviation business unit (including fixed assets, intangibles and rights-of-use), we expect to recognize losses due to the impairment charges relating to these assets in the second quarter of 2020, which will impact our operating results for 2020. Based on our preliminary calculations, we estimate that these losses may vary from US\$153.0 million to US\$526.0 million taking into account our estimates of potential projected scenarios of future deliveries of commercial jets and market share development in the coming years following the COVID-19 pandemic, according to currently available information. The estimated losses were calculated based on carrying amounts of CGUs and the foreign exchange rate as of March 31, 2020. The amount to be recorded as of June 30, 2020 is subject to revision and update based on certain assumptions and factors that are subject to change, including without limitation the foreign exchange rate and discount rate on June 30, 2020, and may vary materially from the estimates above. Since a substantial portion of the cost of goods sold is indexed in Brazilian *reais*, positive or negative fluctuations of 10% in the *real* to U.S. dollar foreign exchange rate may impact the mid-range of estimated impairment charges by approximately US\$163.0 million and US\$201.0 million, respectively.

For additional information on the impairment losses related to our Commercial Aviation business unit, see Note 40.3 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Impacts of the COVID-19 Pandemic

We have been monitoring the COVID-19 pandemic situation and its impacts on our employees, operations, the global economy, the supply and the demand for our products and services. Our committee monitors on a daily basis the development of the pandemic situation and it has implemented contingency plans to act as quickly as necessary as the current situation continues to unfold.

As a result of the COVID-19 pandemic, on March 17, 2020, our Brazilian corporate employees responsible for critical functions started to work from home and, on March 22, 2020, we decided to put our Brazilian employees that could not work remotely on paid leave until March 31, 2020. Until March 31, 2020, we were only carrying out essential activities at our facilities, including customer support, aircraft maintenance and manufacturing. On March 30, 2020, we further decided to put our Brazilian employees responsible for non-critical functions on collective vacation from April 1 to April 9, 2020. During this temporary shutdown of our facilities, we implemented safety measures to adapt our facilities to the WHO guidelines. On April 10, 2020, we implemented a job preservation plan that included temporary furloughs, reduction in working hours and pay cuts to certain of our employees, as a means of guaranteeing their employment upon completion of the plan. This plan started on April 13, 2020 and will last between 60 and 90 days. On April 13, 2020, all of our Brazilian employees that could not work remotely and were not included in the job preservation plan returned to work at our adapted facilities. Our or other companies' operations may be suspended again or remain suspended for a longer time.

Due to the uncertainty related to the spread of COVID-19, on March 26, 2020, we also suspended the projections relating to our expected results for 2020, dated as of November 12, 2019. We will issue updated projections for 2020 when we conclude the assessment of the effects that the COVID-19 pandemic will cause to our business. For additional information on COVID-19, see "Item 5. Operating and Financial Review and Prospects—5A. Operating Results—Current Conditions and Trends in our Industry—COVID-19."

As of March 31, 2020, we recognized the following impacts on profit or loss as a result of the COVID-19 pandemic:

- Negative changes in the fair value of Republic Airways shares held as financial investments impacting our 2020 operating results in the amount of US\$22.2 million. For additional information on our financial investments, see Note 7 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

[Table of Contents](#)

- Additional provision for expected credit losses over trade accounts receivable, contract assets and customer financing as a result of increase in credit risks of our customers during the COVID-19 pandemic in the amount of US\$33.4 million.

As of March 31, 2020, we had a trigger event related to the impairment of assets in our Executive Aviation and Defense and Security business units due to the impacts of the COVID-19 pandemic and its impact on our market capitalization devaluation in the first quarter of 2020. Based on our best estimate using certain assumptions for short-to-medium term impacts on deliveries of the Executive Aviation and Defense and Security business units, we have not identified additional impairment charges to be recognized in addition to the impairment losses we identified and recognized in our 2019 audited consolidated financial statements. The Brazilian *real* lost 29% of its value against the U.S. dollar in the same period causing a positive impact in our future cash flows on March 31, 2020, as a result of the reduction of cash outflows indexed in Brazilian *reais* (costs of goods sold and general expenses). However, an improvement in the currency exchange rate in the future may result in a future impairment charge. For additional information on the impairment losses we recognized in 2019, see Note 19 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

For additional information on the impacts of the COVID-19 pandemic, see Note 40.2 to our 2019 audited consolidated financial statements included elsewhere in this annual report.

Item 9. THE OFFER AND LISTING

9A. Offer and Listing Details

Our ADSs are listed on the New York Stock Exchange, or NYSE, under the symbol “ERJ.” In addition, our common shares are traded on the B3 under the symbol “EMBR3.” Each ADS represents four common shares.

Our ADSs began trading on the NYSE on June 5, 2006, with each ADS representing four common shares issued by us. The ADSs are issued under a deposit agreement and JPMorgan Chase Bank N.A., or JP Morgan, serves as depositary under that agreement.

9B. Plan of Distribution

Not applicable.

9C. Markets

Trading on the B3

In 2000, the São Paulo Stock Exchange, currently called the B3, was reorganized through the execution of memoranda of understanding by the Brazilian stock exchanges. Under the memoranda, all securities are now traded only on the B3, with the exception of electronically traded public debt securities and privatization auctions, which are traded on the Rio de Janeiro Stock Exchange.

Our common shares are listed and traded on the *Novo Mercado* segment of the B3. Trades in our common shares on the B3 settle in three business days after the trade date. Delivery of and payment for shares is made through the facilities of the *CBLC – Companhia Brasileira de Liquidação e Custódia* (clearinghouse for the B3), which maintains accounts for member brokerage firms.

In order to better control volatility, the B3 adopted a “circuit breaker” system pursuant to which trading sessions may be suspended for a period of 30 minutes or one hour whenever the indices of this stock exchange fall below the limit of 10% and 15%, respectively, in relation to the closing value of the index registered in the previous trading session.

[Table of Contents](#)

The B3 is less liquid than the NYSE and other major exchanges in the world. As of December 31, 2019, the B3 had an aggregate market capitalization of approximately R\$4.8 trillion, equivalent to US\$1.2billion. In comparison, the NYSE had a market capitalization of approximately US\$23.3 trillion on the same date. Although any of the outstanding shares of a listed company may trade on the B3, in most cases less than one-half of the listed shares are actually available for trading by the public, the remainder being held by small groups of controlling persons, by governmental entities or by one principal shareholder. As of December 31, 2019, we accounted for approximately 0.3% of the market capitalization of all listed companies on the B3.

There is also significantly greater concentration in the Brazilian securities markets than in the NYSE or other major exchanges. During the one-year period ended December 31, 2019, the ten largest companies listed on the B3 represented approximately 39.5% of the total market capitalization of all listed companies.

Trading on the B3 by non-residents of Brazil is subject to limitations under Brazilian foreign investment legislation.

Novo Mercado Corporate Governance Practices

In 2000, the B3 introduced three special listing segments, known as Levels 1 and 2 of Differentiated Corporate Governance Practices and the *Novo Mercado*, aiming at fostering a secondary market for securities issued by Brazilian companies with securities listed on the B3, by prompting these companies to follow good practices of corporate governance. The listing segments were designed for the trading of shares issued by companies voluntarily undertaking to abide by corporate governance practices and disclosure requirements in addition to those already imposed by Brazilian law. These rules generally increase shareholders' rights and enhance the quality of information provided to shareholders.

To become a Level 1 (*Nível 1*) company, in addition to the obligations imposed by current Brazilian law, an issuer must agree to (i) ensure that shares of the issuer representing 25% of its total capital are effectively available for trading, (ii) adopt offering procedures that favor widespread ownership of shares whenever making a public offering, (iii) comply with minimum quarterly disclosure standards, (iv) follow stricter disclosure policies with regards to contracts with related parties, material contracts and transactions made by controlling shareholders, directors and officers involving securities issued by the issuer, (v) submit any existing shareholders' agreements and stock option plans to the B3 and (vi) make a schedule of corporate events available to shareholders.

To become a Level 2 (*Nível 2*) company, in addition to the obligations imposed by current Brazilian law, an issuer must agree to (i) comply with all of the listing requirements for Level 1 companies, (ii) grant tag-along rights for all shareholders in connection with a transfer of control of the company, offering the same price paid per share for controlling block, (iii) grant voting rights to holders of common shares in connection with certain corporate restructurings and related-party transactions, including (1) any transformation of the company into another corporate form, (2) any merger, consolidation or spin-off of the company, (3) approval of any transactions between the company and its controlling shareholder, including parties related to the controlling shareholder, (4) approval of any valuation of assets to be delivered to the company in payment for shares issued in a capital increase, (5) appointment of an expert firm to ascertain the fair value of the company in connection with any deregistration and delisting tender offer, and (6) any changes to these voting rights, (iv) have a board of directors composed of at least five members, of which 20% must be independent directors, with a term limited to two years, (v) prepare annual financial statements in English, including cash flow statements, in accordance with international accounting standards, such as U.S. GAAP or IFRS, (vi) if it elects to delist from the Level 2 segment, hold a tender offer by the company's controlling shareholder (the minimum price of the shares to be offered will be determined by an appraisal process), and (vii) adhere exclusively to the rules of the B3 Arbitration Chamber for resolution of disputes between the company and its investors.

To be listed on the *Novo Mercado*, an issuer must meet all of the requirements described above, in addition to (i) issuing only voting shares, (ii) have at least two, or the equivalent of 20% of the board members, whichever is bigger, independent members on the board of directors, with a term limited to two

[Table of Contents](#)

years, (iii) follow stricter disclosure policies with regards to the company's policies, the internal rules of procedures, the code of business conduct and periodic reports of the audit committee, and (iv) adopt stricter compliance procedures, including an audit committee, an internal audit and other risk management controls. Regarding the obligation to ensure that shares of the issuer representing 25% of its total capital are effectively available for trading, for the companies listed on the *Novo Mercado*, the threshold might be reduced to 15% of its capital stock, provided its average daily trading volume remains equal to or greater than R\$25.0 million, taking into account the trades performed during the previous 12 months. Our shares are listed on the *Novo Mercado* segment.

Regulation of Brazilian Securities Markets

The Brazilian securities markets are regulated by the CVM (the Brazilian Securities and Exchange Commission), which has regulatory authority over stock exchanges and the securities markets generally, and by the Central Bank, which has, among other powers, licensing authority over brokerage firms and regulates foreign investment and foreign exchange transactions.

Under the Brazilian Corporate Law, a corporation is either public (*companhia aberta*), like us, or closely held (*companhia fechada*). All public companies, including us, are registered with the CVM and are subject to reporting requirements. Our shares are listed and traded on the *Novo Mercado* segment of the B3 and may be traded privately subject to limitations.

We have the option of asking for the trading of our securities on the B3 to be suspended in anticipation of a material announcement. Trading may also be suspended on the initiative of the B3 or the CVM, among other reasons, based on or due to a belief that the company has provided inadequate information regarding a material event or has provided inadequate responses to the inquiries by the CVM or the B3.

Trading on the B3 by non-residents of Brazil is subject to limitations under Brazilian foreign investment and tax legislation. The Brazilian custodian for our common shares and the depositary for our ADSs have obtained an electronic certificate of registration from the Central Bank to remit U.S. dollars abroad for payments of dividends, any other cash distributions, or upon the disposition of the shares and sales proceeds thereto. Pursuant to CMN Resolution No. 4,373, in order for an investor to surrender ADSs for the purpose of withdrawing the shares represented thereby, the investor is required to appoint a Brazilian financial institution duly authorized by the Central Bank and the CVM to act as its legal representative, who shall be responsible, among other things, for keeping and updating the investors' certificates of registrations with the Central Bank, which entitles registered foreign investors to trade the underlying shares directly on the B3.

Disclosure Requirements

Pursuant to CVM Rule No. 358, of January 3, 2002, the CVM revised and consolidated the requirements regarding the disclosure and use of information related to material facts and acts of publicly held companies, including the disclosure of information on the trading and acquisition of securities issued by publicly held companies.

These requirements include provisions that:

- establish the concept of a material fact that gives rise to reporting requirements. Material facts include decisions made by the controlling shareholders, resolutions of the general meeting of shareholders and of management of the company, or any other facts related to the company's business (whether occurring within the company or otherwise somehow related thereto) that may influence the price of its publicly traded securities, or the decision of investors to trade those securities or to exercise any of those securities' underlying rights;
- specify examples of facts that are considered to be material, which include, among others, the execution of shareholders' agreements providing for the transfer of control, the entry or withdrawal of shareholders that maintain any managing, financial, technological or administrative function with or contribution to the company, and any corporate restructuring undertaken among related companies;

[Table of Contents](#)

- oblige the investor relations officer, controlling shareholders, other officers, directors, members of the audit committee and other advisory boards to disclose material facts;
- require simultaneous disclosure of material facts to all markets in which the corporation's securities are admitted for trading;
- require the acquirer of a controlling stake in a corporation to publish material facts, including its intentions as to whether or not to de-list the corporation's shares, within one year;
- establish rules regarding disclosure requirements in the acquisition and disposal of a material stockholding stake; and
- restrict the use of insider information.

9D. Selling Shareholders

Not applicable.

9E. Dilution

Not applicable.

9F. Expenses of the Issue

Not applicable.

Item 10. ADDITIONAL INFORMATION

10A. Share Capital

Not applicable.

10B. Memorandum and Articles of Association

Set forth below is certain information concerning our capital stock, and a brief summary of certain significant provisions of our bylaws, the Brazilian Corporate Law, the relevant rules and regulations of the CVM, and the relevant rules of the *Novo Mercado* applicable to our capital stock. This description does not purport to be complete and is qualified by reference to our bylaws and to Brazilian law.

Corporate Purpose

We are a corporation duly incorporated with a principal place of business and jurisdiction in the city of São José dos Campos, São Paulo, Brazil, governed mainly by our bylaws and the Brazilian Corporate Law. According to article I of our bylaws, our corporate purpose is to (i) design, build and market aircraft and aerospace materials and related accessories, components and equipment, according to the highest standards of technology and quality, (ii) perform and carry out technical activities related to the manufacturing and servicing of aerospace materials, (iii) contribute to the training of technical personnel as necessary for the aerospace industry, (iv) engage in other technological, manufacturing and business activities in connection with the aerospace industry, and to provide services therefor, (v) design, build and trade equipment, materials, systems, software, accessories and components for the defense, security and power industries, as well as to perform and carry out technical activities related to the manufacturing and maintenance activities, according to the highest standards of technology and quality, and (vi) conduct other technological, manufacturing and trade activities and services related to the defense, security and power industries.

[Table of Contents](#)

Description of Capital Stock

General

As of December 31, 2019, our capital stock consisted of a total of 740,465,044 issued common shares, without par value, including 4,385,218 common shares held in treasury and one special class of common shares known as the “golden share,” held by the Brazilian government. Our bylaws authorize the board of directors to increase the capital stock up to 1,000,000,000 common shares, irrespective of any amendment to our bylaws and of shareholder approval. As of March 31, 2020, we had 736,171,905 outstanding common shares, which were fully paid. Our shareholders must approve at a shareholders’ meeting any capital increase that exceeds the above-referenced authorized capital stock. Our shareholders are not liable for further capital calls. Their liability is limited to the amount of any portion of our capital stock which they have subscribed but have not fully paid in.

Share Buyback

Pursuant to our bylaws, our board of directors approved on December 7, 2007 a share buyback program for our common shares, in compliance with *Instrução* CVM No. 10/80, for the purpose of adding value to our shareholders through the management of our capital structure. We were authorized to buy back up to an aggregate of 16,800,000 common shares, representing approximately 2.3% of our outstanding capital, which totaled 740,465,044 outstanding common shares. The acquisition of the shares was made on the B3 and the common shares bought back were kept in treasury form, and the treasury shares did not have any political or economic rights. The program was terminated on March 31, 2008. A total of 16,800,000 shares were purchased at an average price of R\$19.06 per share. See “Item 16. Reserved—16E. Purchases of Equity Securities by the Issuer and Affiliated Purchasers.”

On March 10, 2016, our board of directors approved a new share buyback program for our common shares, in compliance with *Instrução* CVM No. 10/80. We were authorized to buy back up to an aggregate of 3,000,000 common shares, representing approximately 0.4% of our outstanding capital, which totaled 737,439,054 common shares outstanding on March 10, 2016. A total of 3,000,000 common shares were repurchased at an average price of R\$20.00 per share from March 17 through June 30, 2016.

On June 2, 2017, our board of directors approved a new share buyback program for our common shares, in compliance with *Instrução* CVM No. 10/80. We were authorized to buy back up to an aggregate of 3,000,000 common shares, representing approximately 0.4% of our outstanding capital, which totaled 735,752,704 common shares outstanding on June 2, 2017. A total of 3,000,000 common shares were repurchased at an average price of R\$16.13 per share from June 6 through August 29, 2017.

In 2018 and 2019, we did not approve a share buyback program.

Common Shares

Each common share is generally empowered with one vote at our shareholders’ meetings. Pursuant to our bylaws and the B3 listing agreement in connection with the listing of our shares on the *Novo Mercado*, we cannot issue shares without voting rights or with restricted voting rights.

Changes to rights granted to common shares under our bylaws would generally require an amendment to our bylaws. Under the Brazilian Corporate Law, an amendment to our bylaws requires shareholder approval in a shareholders’ meeting. Changes to our bylaws would generally require approval by a simple majority vote of holders of common shares, except for matters that require the approval of shareholders representing at least one-half of the issued and outstanding voting shares or for matters subject to the approval of our golden share. For additional information on qualified quorum matters and on voting rights relating to the golden share, see “—Voting Rights of Shares—Qualified Quorum Matters” and “—Voting Rights of Shares—Golden Share,” respectively.

[Table of Contents](#)

The Brazilian Corporate Law and our bylaws require that all our shareholders' meetings be called by publication of a notice in the *Diário Oficial do Estado de São Paulo* (official government publication of the State of São Paulo), and in a newspaper of general circulation in the city where our headquarters are located, currently the *O Vale* in São José dos Campos, at least 30 days prior to the meeting, and in another newspaper of general circulation in São Paulo, where the São Paulo Stock Exchange is located, currently the *Valor Econômico*. The quorum to hold shareholders' meetings at first call is the presence of shareholders representing 25% of the common shares (except for meetings convened to amend our bylaws or to waive the public tender offer required for delisting from *Novo Mercado*, which require a quorum of at least two-thirds of the common shares at first call); and at second call the meeting can be held with the presence of any number of shareholders.

According to our bylaws, in order to attend a shareholders' meeting, a shareholder must show the ownership of the shares it intends to vote by showing an identification document and a proof of share ownership. Our shareholders may be represented at shareholders' meetings by a proxy, issued within a one-year period prior to the meeting to (1) one of our directors or officers, (2) a lawyer or (3) a financial institution. Notwithstanding the above, the CVM decided on November 4, 2014 that shareholders that are legal entities may be represented at shareholders' meetings by their legal representatives or by a duly appointed attorney-in-fact, pursuant to the bylaws and related corporate instruments of the legal entities and pursuant to the Brazilian Civil Code. Investment funds must be represented by their administrator.

Alternatively, the shareholders might participate in a shareholders' meetings through a remote voting mechanism, which is regulated by CVM Rule No. 561, as amended, and aims to facilitate the participation of shareholders in general meetings either through the vote or through the submission of proposals and candidates for the election of members of the board of directors or fiscal council. For this purpose, this regulation provided the following:

- the creation of a remote voting bulletin through which shareholders may exercise their right to vote prior to the date the shareholders' meeting is held;
- the possibility of inclusion of candidates and proposals of deliberation of minority shareholders in that bulletin, with due observance of certain percentages of equity interest, in order to facilitate shareholders' participation in shareholders' meetings; and
- the deadlines, procedures and ways of sending this bulletin, which may be forwarded by the shareholder: (a) to the custodian (if the shares held by the shareholder are kept at a centralized deposit) or; (b) to the book-entry agent of the shares issued by the company (if such shares are not kept at a centralized deposit); or (c) directly to the company.

According to the Brazilian Corporate Law, the common shares are entitled to dividends in proportion to their share of the amount available for distribution. For additional information on payment of dividends on our shares, see "Item 8. Financial Information—8A. Consolidated Statements and Other Financial Information—Dividends and Dividend Policy." In addition, upon any liquidation of the company, the common shares are entitled to return of capital in proportion to their share of our shareholders' equity.

According to the Brazilian Corporate Law, neither our bylaws nor actions taken at a shareholders' meeting may deprive a shareholder of the following rights:

- the right to participate in the distribution of profits;
- the right to participate equally and proportionally in any remaining residual assets in the event of liquidation of the company;

[Table of Contents](#)

- preemptive rights in the event of issuance of shares, convertible debentures or warrants, except in some specific circumstances under Brazilian law described in “—Preemptive Rights;”
- the right to supervise our management in accordance with Article 109 of the Brazilian Corporate Law; and
- the right to appraisal rights in the cases specified in the Brazilian Corporate Law, which are described in “—Redemption and Right of Withdrawal.”

Golden Share

The golden share is held by the Federative Republic of Brazil. For a discussion of the rights to which the golden share is entitled, see “—Voting Rights of Shares—Golden Share.”

Voting Rights of Shares

Each common share is generally empowered with one vote at the general shareholders’ meeting. Pursuant to our bylaws and the B3 listing agreement in connection with the listing of our shares on the *Novo Mercado* listing segment of B3, we cannot issue shares without voting rights or with restricted voting rights.

Qualified Quorum Matters

Under the Brazilian Corporate Law, the approval of shareholders representing at least one-half of the issued and outstanding voting shares is required for the matters described below:

- reducing the mandatory distribution of dividends;
- changing our corporate purpose;
- merging into or consolidating with another company, subject to the conditions set forth in the Brazilian Corporate Law;
- transferring all of our shares to another company or receiving shares of another company in order to make the company whose shares were transferred a wholly owned subsidiary of the other company, known as a merger of shares (*incorporação de ações*);
- participating in a centralized group of companies as defined under the Brazilian Corporate Law and subject to the conditions set forth therein;
- conducting a spin-off;
- dissolving or liquidating us;
- canceling any ongoing liquidation of us; or
- creating preferred shares with greater privileges than the existing shares or changing a priority, preference, privilege or condition of redemption or amortization of preferred shares.

In the event of the last item described above, the approval of shareholders representing the majority of issued and outstanding shares of the affected class would also be required. Our bylaws currently provide that our capital stock shall be divided exclusively into common shares and the only special class is our golden share. For additional information on the golden share, see “—Golden Share.”

[Table of Contents](#)

Limitations on the Voting Rights of Certain Holders of Common Shares

Our bylaws provide that, at any shareholders' meeting, no shareholder or group of shareholders, including brokers acting on behalf of one or more holders of ADSs, may exercise votes representing more than 5% of the quantity of shares into which our capital stock is divided. Votes that exceed this 5% threshold will not be considered.

For purposes of our bylaws, two or more of our shareholders are considered to be a "group of shareholders" if:

- they are parties to a voting agreement;
- one of them is, directly or indirectly, a controlling shareholder or controlling parent company of the other, or the others;
- they are companies directly or indirectly controlled by the same person/entity, or group of persons/entities, which may or may not be shareholders; or
- they are companies, associations, foundations, cooperatives and trusts, investment funds or portfolios, universalities of rights or any other forms of organization or undertaking (i) with the same administrators or managers, or further (ii) whose administrators or managers are companies that are directly or indirectly controlled by the same person/entity, or group of persons/entities, which may or may not be shareholders.

In the case of investment funds having a common administrator, only funds with policies of investment and of exercise of voting rights at shareholders' meetings that fall under the responsibility of the administrator on a discretionary basis will be considered to be a group of shareholders.

In addition, shareholders represented by the same proxy, administrator or representative on any account at any shareholders' meeting will be considered to be a group of shareholders, except for holders of our ADSs when represented by the relevant depositary. All signatories to a shareholders' agreement that addresses the exercise of voting rights will also be considered to be a group of shareholders for purposes of the foregoing limitation.

This limitation on the voting rights of certain holders of common shares is illustrated in the following table:

Equity Interest of Shareholder or Group of Shareholders	Voting Rights as a Percentage of our Capital Stock
1%	1%
2%	2%
3%	3%
4%	4%
5%	5%
> 5%	5%

Limitations on the Voting Rights of Non-Brazilian Shareholders

In accordance with the *edital* (invitation to bid) issued by the Brazilian government in connection with the privatization of Embraer in 1994, voting participation of non-Brazilian holders of Embraer common shares was limited to 40% of Embraer common shares votes at shareholders' meeting.

Our bylaws provide that, at any shareholders' meeting, non-Brazilian shareholders and groups of non-Brazilian shareholders may not exercise voting rights representing more than two-thirds of the total votes of all of the Brazilian shareholders present at the meeting. The total number of votes that may be exercised by Brazilian shareholders and by non-Brazilian shareholders will be assessed after giving effect to the 5% voting limitation described above in "—Limitations on the Voting Rights of Certain Holders of Common Shares."

[Table of Contents](#)

Votes of non-Brazilian shareholders that exceed this two-thirds threshold will not be considered. If the total vote of non-Brazilian shareholders at any shareholders' meeting exceeds two-thirds of the votes that may be exercised by the Brazilian shareholders present at such meeting, the number of votes of each non-Brazilian shareholder will be proportionately reduced so that the total vote of non-Brazilian shareholders does not exceed two-thirds of the total votes that can be exercised by Brazilian shareholders present at the shareholders' meeting.

The fraction of two-thirds effectively limits the voting rights of non-Brazilian shareholders and groups of non-Brazilian shareholders to 40% of share capital represented at the shareholders' meeting. The objective of this limitation is to ensure that Brazilian shareholders constitute a majority of the total votes cast at any shareholders' meeting. This limitation will effectively prevent our takeover by non-Brazilian shareholders and limit the ability of non-Brazilian shareholders to control us.

For purposes of our bylaws, the following are considered to be "Brazilian shareholders":

- Brazilian individuals, whether native or naturalized, resident in Brazil or abroad;
- legal private entities organized under the laws of Brazil that have their administrative head offices in Brazil and (i) do not have a foreign controlling parent company, unless the parent company meets the requirements of clause (ii) of this item, and (ii) are controlled, directly or indirectly, by one or more Brazilian individuals, whether native or naturalized, resident in Brazil or abroad; and
- investment funds or clubs organized under the laws of Brazil that have their administrative head office in Brazil and whose managers and/or investors holding the majority of their equity interests are persons/entities referred to above.

A Brazilian shareholder will be required to provide evidence to us and the depositary agent for the book-entry registry that such shareholder satisfies the foregoing requirements and only after this evidence is given will the shareholder be included in the records of Brazilian shareholders.

For purposes of our bylaws, "non-Brazilian shareholders" are any individuals, legal entities, investment funds or clubs and any other organizations that are not considered Brazilian shareholders and that cannot evidence that they satisfy the requirements to for registration as Brazilian shareholders, according to our bylaws.

A "group of shareholders," as defined above, will be considered to be non-Brazilian whenever one or more of its members is a non-Brazilian shareholder.

The effect of this limitation on the voting rights of non-Brazilian shareholders (*i.e.*, their participation) is illustrated in the following table, where the column "Non-Brazilian Shareholder Participation" indicates the maximum percentage of votes a non-Brazilian shareholder may cast:

<u>Brazilian Shareholder Participation</u>	<u>Non-Brazilian Shareholder Participation</u>	<u>Non-Brazilian Shareholder Participation(1)</u>
<i>(% of capital stock)</i>	<i>(% of capital stock)</i>	<i>(%)</i>
90	10	10.00
80	20	20.00
70	30	30.00
60	40	40.00
59	41	39.33
50	50	33.33
40	60	26.67
30	70	20.00
20	80	13.33
10	90	6.67

(1) Number of votes calculated based on two-thirds of the Brazilian shareholders' votes.

[Table of Contents](#)

The tables below illustrate, in different situations, the voting system that will apply at our shareholders' meetings.

Example 1

All Brazilian shareholders hold less than 5% and non-Brazilian shareholders hold a total of 40%, but without any individual holdings higher than 5%. This example shows a situation where the general restriction for non-Brazilian shareholders does not affect the voting ratio.

Shareholder	% Shares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/Share)
Brazilian A	5	5	5	5	1.00
Brazilian B	5	5	5	5	1.00
Brazilian C	5	5	5	5	1.00
Brazilian D	5	5	5	5	1.00
Brazilian E	5	5	5	5	1.00
Brazilian F	5	5	5	5	1.00
Brazilian G	5	5	5	5	1.00
Brazilian H	5	5	5	5	1.00
Brazilian I	5	5	5	5	1.00
Brazilian J	5	5	5	5	1.00
Brazilian K	5	5	5	5	1.00
Brazilian L	5	5	5	5	1.00
Total Brazilians	60	60	60	60	1.00
Non-Brazilians(1)	40	40	40	40(2)	1.00
Total	100	100	100	100	1.00

- (1) Assumes that no individual non-Brazilian shareholder holds more than 5% of our capital. If a non-Brazilian shareholder holds more than 5% of our capital, this shareholder will also be subject to the 5% voting restriction on such holding.
- (2) Two-thirds of 60 (total votes of the Brazilian shareholders after application of the 5% voting restriction) equals 40 votes.

Example 2

One Brazilian shareholder holds more than 5% of our capital, the other Brazilian shareholders hold 5% and non-Brazilian shareholders hold a total of 50%, but without any individual holdings higher than 5%.

Shareholder	% Shares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/ Share)
Brazilian A	20	5	5.0	8.57	0.25
Brazilian B	5	5	5.0	8.57	1.00
Brazilian C	5	5	5.0	8.57	1.00
Brazilian D	5	5	5.0	8.57	1.00
Brazilian E	5	5	5.0	8.57	1.00
Brazilian F	5	5	5.0	8.57	1.00
Brazilian G	5	5	5.0	8.57	1.00
Total Brazilians	50	35	35.0	59.99	1.00
Non-Brazilians(1)	50	50	23.3(2)	40.00	0.47

[Table of Contents](#)

Shareholder	% Shares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/ Share)
Total	100	85	58.3⁽²⁾	100.00	0.58

- (1) Assumes that no individual non-Brazilian shareholder holds more than 5% of our capital. If a non-Brazilian shareholder holds more than 5% of our capital, this shareholder will also be subject to the 5% voting restriction on the holding.
- (2) Two-thirds of 35 (total votes of the Brazilian shareholders after application of the 5% voting restriction) equals 23 votes.

Example 3

No Brazilian shareholders hold more than 5% of our capital, a non-Brazilian shareholder holds 30% and other non-Brazilian shareholders hold a total of 40%, but without any individual holdings higher than 5%.

Shareholder	% Shares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/ Share)
Brazilian A	5	5	5.0	10.0	1.00
Brazilian B	5	5	5.0	10.0	1.00
Brazilian C	5	5	5.0	10.0	1.00
Brazilian D	5	5	5.0	10.0	1.00
Brazilian E	5	5	5.0	10.0	1.00
Brazilian F	5	5	5.0	10.0	1.00
Total Brazilians	30	30	30.0	60.0	1.00
Non-Brazilians A	30	5	2.2 ⁽²⁾	4.4	0.07
Non-Brazilians ⁽¹⁾	40	40	17.8 ⁽²⁾	35.6	0.44
Total	100	75	50.0	100.0	0.50

- (1) Assumes that no individual non-Brazilian shareholder (except Non-Brazilian A) holds more than 5% of our capital. If a non-Brazilian shareholder holds more than 5% of our capital, this shareholder will also be subject to the 5% voting restriction on the holding.
- (2) Two-thirds of 30 (total votes of the Brazilian shareholders after application of the 5% voting restriction) equals 20 votes, proportionally divided between Non-Brazilian A and the other non-Brazilians.

Example 4

Two Brazilian shareholders holding more than 5% of our capital, three Brazilian shareholders holding 5% and non-Brazilian shareholders holding a total of 30%, but without individual holdings higher than 5%.

Shareholder	% Shares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/ Share)
Brazilian A	30	5	5.0	12	0.17
Brazilian B	25	5	5.0	12	0.20
Brazilian C	5	5	5.0	12	1.00
Brazilian D	5	5	5.0	12	1.00
Brazilian E	5	5	5.0	12	1.00
Total Brazilians	70	25	25.0	60	1.00

[Table of Contents](#)

Shareholder	% hares Attending	Effective % of Votes After 5% Vote Restriction	Effective % of Votes After Non- Brazilian Restriction	% of Valid Votes	Vote Ratio (Votes/ Share)
Non-Brazilians(1)	30	30	16.7(2)	40	0.56
Total	100	55	41.7	100	0.42

- (1) Assumes that no individual non-Brazilian shareholder (except Non-Brazilian A) holds more than 5% of our capital. If a non-Brazilian shareholder holds more than 5% of our capital, this shareholder will also be subject to the 5% voting restriction on the holding.
- (2) Two-thirds of 25 (total votes of the Brazilian shareholders after application of the 5% voting restriction) equals 16.7 votes.

Shareholders' Agreement

Our bylaws prohibit any shareholder or group of shareholders from exercising voting control over us.

Golden Share

The golden share is held by the Federative Republic of Brazil. The golden share is entitled to the same voting rights as the holders of common shares. In addition, the golden share entitles the holder thereof to veto rights over the following corporate actions:

- change of our name and corporate purpose;
- modification and/or application of our logo;
- creation and/or alteration of military programs (whether or not involving Brazil);
- development of third-party skills in technology for military programs;
- discontinuance of the supply of spare parts and replacement parts for military aircraft;
- transfer of our control;
- any amendments to the list of corporate actions over which the golden share carries veto rights, including the right of the Brazilian government to appoint one acting member to our board of directors and the right of our employees to appoint two acting members to our board of directors and to the rights conferred to the golden share; and
- changes to certain provisions of our bylaws pertaining to voting restrictions, rights of the golden share and the mandatory tender offer requirements applicable to holders of 35% or more of our outstanding shares.

The matters listed above are subject to prior approval by our board of directors, followed by prior notices to the Brazilian government and to the Brazilian Ministry of Finance. Within 30 days from the notice, the Brazilian government, as holder of the golden share, may exercise its veto rights. After such period or the pronouncement from the Brazilian government, the board of directors shall meet. In case of rejection of the Brazilian government, the board of directors shall reconsider the previous resolution. In case of approval or in the absence of a response from the Brazilian government within the 30-day period, the previous resolution will be ratified and will be deemed to have been approved by our board of directors. In certain cases, pursuant to our bylaws or applicable law, the matter must be subject to approval at a shareholders' meeting, and the Brazilian government shall also be entitled to exercise its veto rights related to that matter.

[Table of Contents](#)

Disclosure of Significant Interest

Brazilian Requirements

Brazilian law provides that all shareholders or groups of shareholders will be required to disclose, through notice to us and to the stock exchanges on which our securities are traded, the negotiation of securities that results in the shareholder surpassing or decreasing the thresholds of 5%, 10%, 15%, and so on, of participation in a certain class or type of share representative of a company's capital stock. In addition, our bylaws provide that all shareholders or groups of shareholders will be required to disclose, through notice to us and to the stock exchanges on which our securities are traded, the acquisition of shares that, together with those already held by them, exceed 5% of our capital stock. A violation of these disclosure obligations could result in the suspension of rights, including voting rights, by a resolution of shareholders at a shareholders' meeting.

Certain U.S. Legal Requirements

In addition, the U.S. Exchange Act imposes reporting requirements on shareholders or groups of shareholders who acquire beneficial ownership (as this term is defined under Rule 13d-3 of the U.S. Exchange Act) of more than 5% of our common shares. In general, shareholders must file, within ten days after the acquisition, a report of beneficial ownership with the SEC containing the information prescribed by the regulations under the U.S. Exchange Act. This information is also required to be sent to us and to each U.S. securities exchange on which our common shares are traded. Shareholders should consult with their own legal advisor regarding their reporting obligations under the U.S. Exchange Act.

Form and Transfer

As our shares are in registered book-entry form, the transfer of shares is governed by the rules of Article 35 of the Brazilian Corporate Law. This Article provides that a transfer of shares is effected by an entry made by Banco Itaú S.A., also known as the registrar, in its books, by debiting the share account of the transferor and crediting the share account of the transferee. Banco Itaú S.A. also performs all the services of safe-keeping and transfer of shares and related services for us.

Transfers of shares by a non-Brazilian shareholder are made in the same way and entered into by that shareholder's local agent on the shareholder's behalf except that if the original investment was registered with the Central Bank pursuant to Resolution No. 4,373, the foreign investor must also seek amendment, if necessary, through its local agent, of the electronic registration to reflect the new ownership.

The B3 operates as a central clearing system. A holder of our shares may choose, in its discretion, to participate in this system and all shares elected to be put into this system will be deposited in the custody of the B3 (through a Brazilian institution duly authorized to operate by the Central Bank and having a clearing account with the B3). The fact that those shares are held in the custody of the B3 will be reflected in our register of shareholders. Each participating shareholder will, in turn, be registered in our register of beneficial shareholders maintained by the B3 and will be treated in the same way as registered shareholders.

Board of Directors

According to the Brazilian Corporate Law, our officers and directors are prohibited from voting on, or acting in, matters in which their interests conflict with ours.

Our bylaws provide that the shareholders are responsible for determining the global remuneration of the members of our management bodies. Our board of directors is responsible for dividing the remuneration among the members of management. There are no specific provisions regarding the directors' power to vote on their compensation in the absence of an independent quorum.

[Table of Contents](#)

With respect to the borrowing powers of the board of directors, the board of directors has the power to authorize the borrowing of funds, either in the form of bonds, notes, commercial papers or other instruments of regular use in the market. Other financing arrangements, including bank loans, may be entered into by us upon the joint signatures of (i) two executive officers, (ii) one officer and one attorney-in-fact or (iii) two attorneys-in-fact.

There is no requirement under the Brazilian Corporate Law or our bylaws that directors retire upon reaching a certain age. In addition, our bylaws do not provide for the re-election of directors at staggered intervals.

For additional information on our board of directors, see “Item 6. Directors, Senior Management and Employees—6A. Directors and Senior Management—Board of Directors” and “Item 6. Directors, Senior Management and Employees—6C. Board Practices.”

Election of Board of Directors

The election of members of our board of directors, absent a request to adopt a cumulative voting system, will be conducted under a system of slate voting whereby voting will be based on a slate of directors and no voting will be allowed on individual candidates. Our board of directors is appointed by our shareholders for a two-year term and three reserved seats as follows: (i) one acting member (and his or her alternate) to be appointed by the Brazilian government, as holder of the “golden share” and (ii) two acting members (and his or her alternate) to be appointed by our employees. The remaining eight acting directors are elected in accordance with the slate voting or cumulative voting rules contained in our bylaws. A person may participate in two or more different slates. Each shareholder may only vote on one slate and the slate that receives the highest number of votes shall be declared elected.

Any shareholder or group of shareholders has a right to propose and submit a slate of members for election to the board of directors different than the slate provided according to our bylaws (*i.e.* proposed by the board of directors). The same shareholder or group of shareholders may not submit more than one slate. Our bylaws also contain a provision whereby a shareholder that intends to appoint an alternative slate must send written notice at least ten days prior to the general meeting at which the members of the board of directors will be elected, providing us with the name and other particulars and professional resume of the candidates. In case we receive this notice, we must publish a press release to our shareholders, which also must be available on our website within at least eight days before the date of the general meeting, informing shareholders how to obtain a copy of the proposed slate.

Alternatively, the election of members of the board of directors may be conducted under a system of cumulative voting. According to the regulations of the CVM and to our bylaws, adoption of a resolution for cumulative voting depends on a written request by shareholders representing at least 5% of our capital stock, submitted at least 48 hours in advance of the time for which the general shareholders’ meeting has been called. Under the cumulative voting system, each share is entitled to the same number of votes as the number of board members to be elected (subject to the restriction on shareholders holding greater than 5% of the common shares and restrictions on non-Brazilian shareholders as per our by-laws), and each shareholder is entitled to concentrate votes in just one member or to distribute the votes among more than one or all of the members. Any vacant offices not filled due to a tie in the voting will be subject to a new vote, under the same process.

Preemptive Rights

Each of our shareholders has a general preemptive right to subscribe for shares in the event of any capital increase, or securities convertible into shares, in proportion to its shareholding, except in the event of the grant and exercise of any option to acquire shares of our capital stock. A period of at least 30 days following the publication of notice of the issuance of shares or securities convertible into shares is allowed for exercise of the right, and the right is negotiable. According to the Brazilian Corporate Law and our bylaws, the board of directors may, in its discretion, eliminate the preemptive rights of the shareholders in the event that we issue shares, debentures convertible into shares, or subscription warrants that will be offered either through a stock exchange or in a public offering, or through an exchange of shares in a public offering, the purpose of which is to acquire control of another company, as established by law.

[Table of Contents](#)

In the event of a capital increase by means of the issuance of new shares, holders of ADSs, or of common shares, would, except under the circumstances described above, have preemptive rights to subscribe to any class of our newly issued shares. However, a holder may not be able to exercise the preemptive rights relating to the common shares underlying the ADSs unless a registration statement under the Securities Act is effective with respect to those shares to which the rights relate or an exemption from the registration requirements of the Securities Act is available. For additional information on the risks related to our preemptive rights, see “Item 3. Key Information—3D. Risk Factors—Risks Relating to Our Common Shares and ADSs—Holders of our ADSs might be unable to exercise preemptive rights with respect to the common shares.

Redemption and Right of Withdrawal

The Brazilian Corporate Law provides that, under limited circumstances, a shareholder has the right to withdraw from the company and to receive payment for his shares. This right of withdrawal may be exercised by dissenting shareholders if at least half of voting shares outstanding authorize us to:

- reduce the mandatory distribution of dividends;
- change our corporate purpose;
- merge into or consolidate with another company, subject to the conditions set forth in the Brazilian Corporate Law;
- transfer all of our shares to another company or receive shares of another company in order to make the company whose shares were transferred a wholly owned subsidiary of the other company, known as a merger of shares (*incorporação de ações*);
- acquire control of another company at a price which exceeds the limits set forth in the Brazilian Corporate Law;
- participate in a centralized group of companies as defined under the Brazilian Corporate Law and subject to the conditions set forth therein; or
- conduct a spin-off that results in (i) a change of our corporate purposes, except if the assets and liabilities of the spun-off company are contributed to a company that is engaged in substantially the same activities, (ii) a reduction in the mandatory dividend or (iii) any participation in a centralized group of companies, as defined under the Brazilian Corporate Law.

In addition, if the entity resulting from a merger, merger of shares (*incorporação de ações*), as described above, or a consolidation or a spin-off of a listed company fails to become a listed company within 120 days of the shareholders’ meeting at which this decision was taken, the dissenting shareholders may also exercise their right of withdrawal.

The dissenting shareholders may exercise the right of withdrawal only in relation to the shares held on the date that is the earliest between the date of the publication of the first call notice for the shareholders’ meeting that approved the resolution giving rise to the right of withdrawal, or on the date of publication of the material fact in relation to such resolution.

The Brazilian Corporate Law contains provisions that restrict withdrawal rights and allow companies to redeem their shares at their economic value, subject to certain requirements. As our bylaws currently do not provide that our shares would be redeemable at their economic value, our shares would be redeemable at their book value, determined on the basis of the last statement of financial position approved by the shareholders. If the shareholders’ meeting giving rise to withdrawal rights occurs more than 60 days after the date of the last approved statement of financial position, a shareholder may demand that its shares be valued on the basis of a new statement of financial position that is as of a date within 60 days of such shareholders’ meeting.

[Table of Contents](#)

According to the Brazilian Corporate Law, in events of consolidation, merger, merger of shares (*incorporação de ações*), participation in a group of companies, and acquisition of control of another company, the right to withdraw does not apply if the shares in question meet certain tests relating to market liquidity and float. Shareholders would not be entitled to withdraw their shares if the shares are a component of a general stock index and shares held by persons unaffiliated with the controlling shareholder represent more than half of the outstanding shares of the relevant type or class. According to CVM Instruction 565, the applicable general stock index is the Bovespa index, or Ibovespa, of which we are a component.

Mechanism to Promote Dispersed Ownership of Our Shares

Our bylaws contain provisions that have the effect of avoiding concentration of our shares in the hands of an investor or a small group of investors in order to promote more dispersed ownership of our shares. To this end, these provisions place certain obligations on a shareholder or group of shareholders that becomes a holder of 35% or more of our total capital stock, or an Acquiring Shareholder. Not later than 15 days after a shareholder becomes an Acquiring Shareholder, this shareholder must submit a request to the Brazilian government, through the Ministry of Finance, to make a public tender offer to acquire all of our capital stock. The Brazilian government will have full discretion to accept or deny this request. The Acquiring Shareholder may not purchase any additional shares until the Brazilian government provides its opinion on the public offer. If the request is accepted by the Brazilian government, the Acquiring Shareholder must make a public offer for all shares within 60 days of acceptance. The offer must be made in accordance with the CVM and the B3 regulations and the provisions of our bylaws. If the request is denied by the Brazilian government, the Acquiring Shareholder must sell all shares the Acquiring Shareholder owns in excess of 35% of our total capital stock within 30 days. Failure to comply with these provisions will subject the Acquiring Shareholder to the potential suspension of all voting rights inherent to the shares the Acquiring Shareholder holds, if a resolution to this effect is approved at a general meeting of our shareholders called by our management. These provisions are not applicable to shareholders who become holders of 35% or more of our total capital stock in certain transactions specified in our bylaws as, for example, cancellation of our common shares held in treasury.

The public tender offer must be (i) directed to all of our shareholders, (ii) made through an auction to take place on the B3, (iii) launched at a set price calculated in accordance with the procedure set forth below, (iv) paid upfront, in *reais*, (v) made so as to assure equal treatment to all shareholders, (vi) irrevocable and not subject to any changes after publication of the bidding offer and (vii) based on a valuation report to be prepared in accordance with the rules set forth in our bylaws and in applicable CVM rules and regulations.

The price to be offered for the shares in the public tender offer will be calculated as follows:

- $\text{Tender Offer Price} = \text{Value of the Share} + \text{Premium}$,

where:

- “Tender Offer Price” corresponds to the acquisition price for each share issued by us in the public offering of shares provided hereunder.
- “Value of the Share” corresponds to the greater of:
 - (i) the highest unit quotation obtained for the shares issued by us during the 12-month period prior to the tender offer among values recorded on any stock exchange on which the shares were traded;

[Table of Contents](#)

- (ii) the highest price paid by the Acquiring Shareholder, during the 36-month period prior to the tender offer, for a share or tranche of shares issued by us;
 - (iii) the amount equivalent to 14.5 times our Consolidated Average EBITDA, as defined below, reduced by our net consolidated indebtedness, divided by the total number of shares issued by us; or
 - (iv) the amount equivalent to 0.6 times the amount of our firm backlog orders, according to the last information disclosed by the latter, reduced by our net consolidated indebtedness, divided by the total number of shares issued by us.
- “Premium” corresponds to 50% of the Value of the Share.
 - “Consolidated EBITDA” is our consolidated operating profit before net financial expenses, income tax and social contribution, depreciation, depletion and amortization, as assessed based on the audited statements for our most recent complete fiscal year.
 - “Average Consolidated EBITDA” is the arithmetic average of our consolidated EBITDA for the two most recent complete fiscal years.

The launch of a public tender offer does not preclude us or any of our shareholders from launching a competing public tender offer, in accordance with applicable regulations.

Arbitration

Any disputes or controversies relating to the regulations of the *Novo Mercado*, our bylaws, the Brazilian Corporate Law, the rules published by the CMN, the Central Bank, the CVM, and other rules applicable to the Brazilian capital markets in general, must be submitted to arbitration conducted in accordance with the rules of the B3 Arbitration Chamber (“Rules”).

According to item 1.4 of the Rules, unless otherwise agreed by the Parties, the parties should be bound by the Rules in force on the date of the request for arbitration. Any shareholder that becomes a holder of shares representing our control agrees to comply with the rules of the B3 Arbitration Chamber. These provisions will not apply, however, in the event of a dispute or controversy related to our golden share.

Going Private Process

If our shareholders determine to take us private and at that time we are controlled by a shareholder, or a group of shareholders, the controlling shareholder or group of shareholders is responsible for conducting a public tender offer for the acquisition of our shares. If our shareholders determine to take us private and at that time we are subject to widespread control, we must conduct the public tender offer, within the limits imposed by applicable law. In this case, we may only purchase shares from shareholders that have voted in favor of our Company becoming a private company after purchasing all shares from the other shareholders that did not vote in favor of the “going private” decision and that have accepted the public tender offer.

Thus, we may become a private company only if we or our controlling shareholders, as the case may be, conduct a public tender offer to acquire all of our outstanding shares (taking into account, for this purpose, the shares held by the shareholders that expressly agree with the ‘going private’ decision or sign up for the public tender offer), subject to prior approval of the public tender offer by the Brazilian government, as holder of the golden share, and in accordance with the rules and regulations of Brazilian Corporate Law and the CVM regulations and rules of the *Novo Mercado*, as applicable.

The public tender offer must be made at a fair price based on a valuation report of the Company, which means that the offer for the purchase of the totality of shares must be equivalent to at least the value of the Company as appraised. According to our bylaws, the price per share shall be equivalent to, at least, the

[Table of Contents](#)

economic value of those shares as determined in a valuation report prepared by a specialized and independent company of recognized experience, which will be chosen at a shareholders' meeting from a list of three institutions presented by our board of directors, by an absolute majority of the votes of the shareholders of our outstanding shares present at the meeting (excluding, for this purpose, the shares held by any controlling shareholder or group of shareholders at the time, if any, his/her partners and dependents as described in his/her income tax statement, if the controlling shareholder is an individual; treasury shares; shares held by our affiliates and by other companies that are a part of our economic group, as well as blank votes). All the expenses and costs incurred in connection with the preparation of the valuation report must be borne by the offeror.

Shareholders holding at least 10% of our outstanding shares (taking into account, for this purpose, all the Company's shares, except for the shares held by the controlling shareholder; shares held by our affiliates and by other companies that are a part of our economic group; shares held by our officers and directors; and treasury shares) may require our management to call a special shareholders' meeting to determine whether to perform another valuation using the same or a different valuation method. This request must be made within 15 days following the disclosure of the price to be paid for the shares in the public tender offer. The shareholders who make the request, as well as those who vote in its favor, must reimburse us for any costs involved in preparing the new valuation, if the new valuation price is not higher than the original valuation price. If the new valuation price is higher than the original valuation price, the public tender offer must be made at the higher price.

Delisting from the *Novo Mercado*

Our delisting from the *Novo Mercado*, either by voluntary or compulsory action or by virtue of corporate restructuring, shall observe the rules contained in the Regulation of the *Novo Mercado*. At any time, we may delist our shares from the *Novo Mercado*, provided that a public tender offer for the acquisition of our outstanding shares is carried out.

If we are controlled by a shareholder, or a group of shareholders, at the time of our delisting from the *Novo Mercado*, either for our shares to be traded outside the *Novo Mercado* or as a result of a corporate reorganization, the controlling shareholder or group of shareholders is responsible for conducting the public tender offer for the acquisition of our shares. If we are subject to widespread control at the time of our delisting from the *Novo Mercado*, either for our shares to be traded outside the *Novo Mercado* or as a result of a corporate reorganization, the shareholders present at meeting may determine the persons responsible for carrying out the tender offer or decide to waive the tender offer.

If the public tender offer is carried out our delisting is conditioned to shareholders representing more than 1/3 (one third) of our outstanding shares having (i) expressly agreed with the delisting decision or (ii) accepted the public tender offer (taking into account, for this purpose, the shares held by the shareholders that expressly agree with the delisting decision or sign up for the public tender offer). The decision of the shareholders must specify if the delisting will occur because the securities will no longer be traded on the *Novo Mercado*, or because we are going private. Our delisting from the *Novo Mercado* will not result in the loss of our registration as a public company on the São Paulo Stock Exchange.

According to our bylaws, the price per share for the public tender offer shall be equivalent to, at least, the economic value of those shares as determined in a valuation report prepared by a specialized and independent company of recognized experience, which will be chosen at a shareholders' meeting from a list of three institutions presented by our board of directors, by an absolute majority of the votes of the shareholders of our outstanding shares present at the meeting (excluding, for this purpose, the shares held by any controlling shareholder or group of shareholders at the time, if any, his/her partners and dependents as described in his/her income tax statement, if the controlling shareholder is an individual; treasury shares; shares held by our affiliates and by other companies that are a part of our economic group, as well as blank votes). In addition, the *Novo Mercado* regulation establishes that the offer for the purchase of the totality of shares must be equivalent to at least the fair value of the Company as appraised. All the expenses and costs incurred in connection with the preparation of the valuation report must be paid by the offeror.

[Table of Contents](#)

A voluntary delisting from the *Novo Mercado* may occur regardless of the completion of the tender offer mentioned above in the event of a waiver approved at a general shareholders' meeting, which must observe the rules and conditions of the Regulation of the *Novo Mercado*.

Pursuant to our bylaws, we may also be delisted if the São Paulo Stock Exchange decides to suspend trading of our shares on the *Novo Mercado* due to our non-compliance with the *Novo Mercado* regulations. In this case, the chairman of the board of directors must call a shareholders' meeting, within two days of the determination by the São Paulo Stock Exchange, in order to replace all members of our board of directors. If the chairman of the board of directors does not call the shareholders' meeting, any shareholder may do so. The new board of directors will be responsible for the compliance with the requirements that resulted in the delisting.

Additionally, if we are delisted from the *Novo Mercado* (1) because a decision taken at a general shareholders' meeting resulted in non-compliance with the *Novo Mercado* regulations, the public tender offer must be conducted by the shareholders that voted in favor of the decision, or (2) as a result of our non-compliance with the *Novo Mercado* regulations resulting from acts of our management, we must conduct the public tender offer in order to become a private company, within the limits imposed by law, if the Company is not controlled by a controlling shareholder or group of shareholders. Otherwise, the controlling shareholder or group of shareholders is responsible for conducting a public tender offer for the acquisition of the shares.

According to the *Novo Mercado* regulations, in the event of a transfer of our shareholding control within 12 months following our delisting from the *Novo Mercado*, the selling controlling shareholders and the acquirer must offer to acquire the remaining shares for the same price and terms offered to the selling controlling shareholders, adjusted for inflation, or the surplus, if there is any, between the price per share offered at the public tender offer, adjusted for inflation, and the price per share received by the selling controlling shareholders due to the transfer of control.

Sarbanes Oxley Act of 2002

We maintain controls and procedures designed to ensure that we are able to collect the information required to disclose in the report we file with the SEC, and to process, summarize and disclose the information within the periods specified in the rules of the SEC. We have filed the relevant officer certifications under Section 404 of the U.S. Sarbanes Oxley Act of 2002 regarding internal controls over financial reporting as Exhibits 12.1 and 12.2 to this annual report.

10C. Material Contracts

On January 24, 2019, Embraer and Boeing and certain of their subsidiaries entered into the MTA and certain other transaction agreements, pursuant to which, subject to certain approvals and other conditions precedent, a Brazilian subsidiary of Boeing would acquire a controlling stake in Embraer's Commercial Aviation business unit and Embraer and Boeing or their respective subsidiaries would form a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission aircraft.

Subject to the conditions in the MTA, upon consummation of the Transaction, Boeing Brazil would acquire 80% of the issued and outstanding common shares and redeemable preferred shares of the Commercial Aviation NewCo, through the subscription of new shares to be issued by the Commercial Aviation NewCo and the acquisition directly from Embraer of existing shares issued by the Commercial Aviation NewCo, at an aggregate value of approximately US\$4.2 billion, subject to adjustments customary for transactions of the same nature.

On February 26, 2019, the shareholders of Embraer approved the terms and conditions of the Transaction at an annual and special general shareholders' meeting. On January 1, 2020, we implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of the Commercial Aviation NewCo of the net assets comprising assets, liabilities, properties, rights and obligations (subject to certain exceptions) related to our Commercial Aviation business unit. In exchange for the contribution, the Commercial Aviation NewCo issued common shares and redeemable preferred shares to Embraer. The Commercial Aviation NewCo's redeemable preferred shares have a liquidation preference, a right to receive an annual fixed cumulative dividend payable at a 3.3% rate, a right to be redeemed after two years from the date of issuance, and no voting rights.

[Table of Contents](#)

The foregoing description is only a summary of certain provisions of the Master Transaction Agreement and is qualified in its entirety by reference to the copy of the executed Master Transaction Agreement which is filed as an exhibit to this annual report.

In addition, as part of the Transaction, Embraer and Boeing (or any of their respective subsidiaries) had agreed to form a joint venture for the promotion and development of new markets and applications for the multi-mission airplane C-390 Millennium, based on jointly identified opportunities, and development, manufacture and sales of the C-390 Millennium, in which joint venture Embraer or its subsidiary would hold the majority of the share capital.

The C-390 Millennium NewCo would be EB Defense, LLC, a Delaware limited liability company incorporated by the Embraer Member Entity and in which the Embraer Member Entity is currently the sole member. Embraer or Embraer Member Entity would hold 51% and Boeing or the Boeing Member Entity would hold 49% of the membership interests of EB Defense, LLC, in accordance with the Amended and Restated Limited Liability Company Agreement, which would be entered into and become effective upon the closing of the Transaction.

The foregoing description is only a summary of certain provisions of the Contribution Agreement and is qualified in its entirety by reference to the copy of the executed Contribution Agreement which is filed as an exhibit to this annual report.

On April 25, 2020, we received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing's assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement.

We strongly believe that Boeing wrongfully terminated the MTA and the Contribution Agreement and that it had a continuing obligation to abide by the terms thereof. Embraer strongly believes that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement. We are pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing's wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and/or the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to the arbitration that Boeing has commenced against us.

For risks relating to the termination of the Transaction, see "Item 3. Key Information—3D. Risk Factors—Risks Relating to Embraer—Legal proceedings pertaining to the now-terminated strategic partnership with Boeing, including arbitration proceedings related to Boeing's termination of and failure to close the MTA and/or the Contribution Agreement, may adversely impact our business, financial condition and results of operations."

10D. Exchange Controls

There are no restrictions on ownership of our common shares by individuals or legal entities domiciled or headquartered outside Brazil. However, the registration of this investment with the Brazilian Central Bank is required and the right to convert dividend payments and proceeds from the sale of common shares into foreign currency and to remit such amounts outside Brazil is subject to restrictions under foreign investment legislation.

Pursuant to Brazilian law, investors may invest in common shares under Resolution No. 4,373, of September 29, 2014, issued by the CVM, governmental authority responsible for formulating the Brazilian monetary and credit policies. The rules of Resolution No. 4,373 allow foreign investors to invest in almost all financial assets and to engage in almost all transactions available in the Brazilian financial and capital markets, provided that certain requirements are fulfilled. In accordance with Resolution No. 4,373, the definition of foreign investor includes individuals, legal entities, mutual funds and other collective investment entities domiciled or headquartered abroad.

[Table of Contents](#)

Pursuant to the Resolution No. 4,373, foreign investors must: (i) appoint at least one representative in Brazil with powers to perform actions related to the foreign investment; (ii) provide all required information that shall be sent by the representative to CVM through CVM's website; (iii) be registered as a foreign investor with the CVM and the Brazilian tax authorities; and (iv) register the foreign investment with the Central Bank.

Securities and other financial assets held by foreign investors pursuant to Resolution No. 4,373 must be registered or maintained in deposit accounts or under the custody of an entity duly licensed by the Brazilian Central Bank or the CVM. In addition, securities trading for these investors is restricted to transactions carried out in the stock exchanges or organized over-the-counter markets licensed by the CVM.

Under Resolution No. 4,373, foreign investors registered with the CVM may buy and sell securities on Brazilian stock exchanges or organized over-the-counter markets without obtaining a separate certificate of registration for each transaction. Investors under these regulations are also generally entitled to favorable tax treatment.

Annex II to Resolution No. 4,373 provides for the issuance of depositary receipts in foreign markets in respect of Brazilian issuers' securities.

In connection with equity offerings of our common shares, an electronic registration was issued in the name of the depositary with respect to the ADSs and is maintained by the custodian on behalf of the depositary. This electronic registration was carried out through the Brazilian Central Bank Information System. Pursuant to the registration, the custodian and the depositary are able to convert dividends and other distributions with respect to the common shares represented by ADSs into foreign currency and remit the proceeds outside Brazil, to the holder of ADSs. In the event that a holder of ADSs exchanges the ADSs for common shares, the custodian must update the registry of the investment with the Brazilian Central Bank within five business days after the exchange. In order to receive the common shares, the investor must have a registration with the Central Bank and the CVM pursuant to Resolution 4,373. Until this registration has been obtained, the holder will not be able to receive the common shares.

In addition, if the foreign investor resides in a "tax haven" jurisdiction or is not an investor registered under Resolution No. 4,373, the investor will be subject to less favorable Brazilian tax treatment than a holder of ADSs.

For additional information on Brazilian taxes, see "Item 3. Key Information—3D. Risk Factors—Risks Relating to our Common Shares and ADSs—If holders of our ADSs exchange the ADSs for common shares, they risk losing the ability to remit foreign currency abroad and Brazilian tax advantages" and "Item 10. Additional Information—10E. Taxation—Material Brazilian Tax Consequences."

10E. Taxation

The following discussion, subject to the limitations set forth below, summarizes certain Brazilian and United States tax considerations relating to the ownership of our common shares or ADSs. This discussion does not purport to be a complete analysis of all tax considerations in those countries and does not address tax treatment of shareholders under the laws of other countries. Shareholders that are resident in countries other than Brazil and the United States, along with shareholders that are resident in those two countries, are urged to consult with their own tax advisors as to which countries' tax laws could be relevant to them. This summary is based upon the tax laws of Brazil and the United States as in effect on the date of this annual report, which are subject to change, possibly with retroactive effect, and to differing interpretations. Any change in the law may change the consequences described below.

[Table of Contents](#)

Although there presently is no income tax treaty between Brazil and the United States, the tax authorities of the two countries have had discussions that may result in this treaty. No assurance can be given, however, as to if or when a treaty will enter into force or how it will affect the U.S. holders of common shares or ADSs.

Material Brazilian Tax Consequences

General. The following discussion summarizes the principal Brazilian tax consequences of the acquisition, ownership and disposition of common shares or ADSs, as the case may be, by a holder that is not considered domiciled in Brazil, or a Non-Brazilian Holder, for purposes of Brazilian taxation.

This discussion is not a comprehensive discussion of all the tax considerations that may be relevant to a decision to purchase our common shares or ADSs and is not applicable to all categories of investors, some of which may be subject to special rules, and does not specifically address all of the Brazilian federal income tax considerations applicable to any particular holder. It is based on the tax laws of Brazil in effect on the date of this report, which are subject to change, possibly with retroactive effect, and to differing interpretations. Each prospective purchaser is urged to consult his own tax advisor about the particular Brazilian federal income tax consequences of an investment in our common shares or ADSs.

Taxation of Dividends. Dividends, including stock dividends and other dividends paid in kind, paid by us to the depositary in respect of the ADSs, or to a Non-Brazilian Holder in respect of the common shares, are currently not subject to withholding tax, provided that they are paid out of profits generated as of January 1, 1996. Dividends paid from profits generated before January 1, 1996 may be subject to Brazilian withholding income tax at variable rates, according to the tax legislation applicable to each corresponding year.

Taxation of Gains. According to Law No. 10,833, enacted on December 29, 2003, capital gains realized on the sale or disposition of assets located in Brazil by a Non-Brazilian Holder, regardless of whether the sale or the disposition is made to another non-Brazilian resident or to a Brazilian resident, is subject to taxation in Brazil. Accordingly, on the disposition of the common shares, which are considered assets located in Brazil, the Non-Brazilian Holder will be subject to income tax on the gains assessed, following the rules described below, regardless of whether the transactions are conducted in Brazil or abroad and with a Brazilian resident or not. Regarding the ADSs, although the matter is not free from doubt, arguably the gains realized by a Non-Brazilian Holder on the disposition of ADSs are not taxed in Brazil, based on the argument that ADSs would not constitute assets located in Brazil for purposes of Law No. 10,833/03. However, we cannot assure how Brazilian courts would interpret the definition of assets located in Brazil in connection with the taxation of gains realized by a Non-Brazilian Holder on the disposition of ADSs. Thus, the gain on a disposition of ADSs by a Non-Brazilian Holder may be subject to income tax in Brazil according to the rules described below for ADSs or those applicable to the disposition of common shares, when applicable. It is important to clarify that, for purposes of Brazilian taxation, the income tax rules on gains related to disposition of common shares or ADSs can vary depending on the domicile of the Non-Brazilian Holder, the form by which the Non-Brazilian holder has registered its investment with the Central Bank and/or how the disposition is carried out, as described below.

The deposit of common shares in exchange for ADSs may be subject to Brazilian income tax on capital gains at rates ranging from 15% to 22.5%, or 25% in case of a Non-Brazilian Holder located in a Low or Nil Tax Jurisdiction (as defined below), if the acquisition cost of the common shares is lower than (i) the average price per common share on a Brazilian stock exchange on which the greatest number of these shares were sold on the day of deposit or (ii) if no common shares were sold on that day, the average price on the Brazilian stock exchange on which the greatest number of common shares were sold in the 15 trading sessions immediately preceding such deposit. In this case, the positive difference between the average price of the common shares, calculated as above, and the corresponding acquisition cost, may be considered a capital gain. In some circumstances, there may be arguments to support that such tax treatment is not applicable in case of Non-Brazilian Holders registered under Resolution No. 4,373/14 from the Brazilian Central Bank, or the 4,373 Holder, that are not resident in a Low or Nil Tax Jurisdiction (as defined below). Prospective holders of common shares should consult their own tax advisors as to the tax consequences of the deposit in exchange for ADSs. The withdrawal of ADSs in exchange for common shares should not be considered as giving rise to a capital gain subject to Brazilian income tax, as far as the regulatory rules in respect to the registration of the investment before the Central Bank are duly observed.

[Table of Contents](#)

Gains assessed on the disposition of common shares carried out on the Brazilian stock exchange (which includes the transactions carried out on the organized over-the-counter market) are:

- exempt from income tax when assessed by a Non-Brazilian Holder that (i) is a 4,373 Holder and (ii) is not resident in a Low or Nil Tax Jurisdiction (as defined below); or
- subject to income tax at a rate of up to 25% in any other case, including the gains assessed by a Non-Brazilian Holder that (i) is not a 4,373 Holder and/or (ii) is a 4,373 Holder resident in a Low or Nil Tax Jurisdiction (as defined below). In these cases, a withholding income tax of 0.005% of the sale value shall be applicable and can be later offset with the eventual income tax due on the capital gain. Day trade transactions are subject to the rate of 1%.

Any other gains assessed on a disposition of the common shares that is not carried out on Brazilian stock exchanges are subject to income tax at rates of up to 22.5%, except for a resident of a Low or Nil Tax Jurisdiction (as defined below) which, in this case, is subject to income tax at a rate of up to 25%. In case the gains are related to transactions conducted on the Brazilian non-organized over-the-counter market with intermediation, the withholding income tax of 0.005% on the sale value shall also be applicable and can be offset with the eventual income tax due on the capital gain. In the case of a redemption of common shares or ADSs or a capital reduction by a Brazilian corporation, the positive difference between the amount effectively received by the Non-Brazilian Holder and the proportional acquisition cost of the common shares or ADSs redeemed is treated as capital gain derived from sale or exchange of common shares not carried out in a Brazilian stock exchange market and is therefore subject to income tax at rates of up to 25%, as the case may be. As a general rule, the gains realized as a result of a disposition transaction of common shares or ADSs are determined by the difference between the amount realized on the sale or exchange of the shares or ADSs and their acquisition cost.

There can be no assurance that the current preferential tax treatment for Non-Brazilian Holders of ADSs and 4,373 Holder of common shares will continue.

Any exercise of preemptive rights relating to the common shares or ADSs will not be subject to Brazilian income tax. Any gain on the sale or assignment of preemptive rights relating to our common shares or the ADSs by a Non-Brazilian Holder of common shares will be subject to Brazilian income taxation according to the same rules applicable to the sale or disposition of these shares.

Taxation on Interest on Shareholders' Equity. For additional information on taxation on interest on shareholders' equity, see "Item 8. Financial Information—8A. Consolidated Statements and Other Financial Information—Dividends and Dividend Policy—History of Dividend and Interest on Shareholders' Equity Payments and Dividend Policy."

In accordance with Law No. 9,249, dated December 26, 1995, as amended, Brazilian corporations may make payments to shareholders characterized as distributions of interest on the company's shareholders' equity on top of or as an alternative to making dividend distributions. This interest is calculated by multiplying the TJLP as determined by the Central Bank from time to time by the sum of determined Brazilian company's net equity accounts. Interest on Shareholders' Equity are deductible for purposes of calculating the Brazilian corporate income tax and social contribution on net profits, as long as the following limits are observed:

- 50% of net profits (after the social contribution on net profits but before taking such distribution and the provision for corporate income tax into account) related to the period for which the payment is made; and

[Table of Contents](#)

- 50% of the sum of retained profits and profit reserves as of the date of the beginning of the period for which the payment is made.

The Brazilian Corporate Law establishes that interest attributed to shareholders' equity in respect of the common shares paid to shareholders who are Non-Brazilian holders, including Non-Brazilian holders of ADSs, are subject to Brazilian withholding income tax at the rate of 15%, 25% in case of a resident of a Low or Nil Tax Jurisdiction (as defined below) or where applicable local laws impose restrictions on the disclosure of the shareholding composition or the ownership of investments or the ultimate beneficiary of the income derived from transactions carried out and attributable to a Non-Brazilian holder. The distribution of interest on shareholders' equity may be determined by our board of directors. We cannot assure you that our board of directors will not determine that future distributions of profits may be made by means of interest on shareholders' equity instead of by means of dividends.

The amounts paid as distribution of interest on shareholders' equity to a Non-Resident Holder located in a country that has a tax treaty with Brazil may be classified as (i) interest, (ii) dividends or (iii) other revenues. The classification will depend on the actual wording of the treaty.

Low or Nil Taxation Jurisdictions. On June 4, 2010, Brazilian tax authorities enacted Normative Ruling No. 1,037 listing (i) the countries and jurisdictions considered as Low or Nil Taxation Jurisdiction or where the local legislation does not allow access to information related to the shareholding composition of legal entities, to their ownership or to the identity of the effective beneficiary of the income attributed to non-residents (Tax Favorable Jurisdictions) and (ii) the privileged tax regimes, or PTR, which definition is provided by Law No. 9,430, of 27 December, 1996. Brazilian tax authorities periodically update the list of countries/jurisdictions and regimes that shall be treated as Tax Favorable Jurisdiction and PTR.

The concept of PTR, encompasses the countries and jurisdictions that: (i) do not tax income or tax it at a maximum rate lower than 20%; (ii) grant tax benefits to non-residents (1) with no requirement to carry out substantial economic activity within the territory or (2) on the condition that they do not carry out substantial economic activity within the territory; (iii) do not tax income from outside its territory, or taxes it at less than 20%; or (iv) do not disclose certain information on the ownership and beneficial ownership of assets or on transactions within its territory, or imposes restrictions on disclosure of that information

On November 28, 2014 the Brazilian Revenue Service issued Rule 488 reducing the concept of Tax Favorable Jurisdictions and of PTR to those that tax the income below the rate of 17% (the previous concept adopted a 20% maximum rate for that purpose).

We believe that the best interpretation of the current tax legislation leads to the conclusion that the above-mentioned PTR concept should apply solely for purposes of Brazilian transfer pricing and thin capitalization rules. Currently, the understanding of the Brazilian tax authorities is in the sense that payment of interest to beneficiaries resident in PTRs are not subject to the same treatment applicable to beneficiaries in Tax Favorable Jurisdictions (Answer to Advance Tax Ruling Request COSIT n. 575, of December 20, 2017). Nevertheless, we cannot assure you that subsequent legislation or interpretations by the Brazilian tax authorities regarding the definition of a PTR provided by Law No. 9,430, of December 27, 1996 altered by Law No. 11,727 will also apply to a Non-Brazilian Holder on payments of interest on shareholders' equity. Notwithstanding the above, we recommend that you consult your own tax advisors regarding the consequences of the implementation of Law No. 11,727, Normative Ruling No. 1,037 and Rule 488.

Taxation on Foreign Exchange Transactions, or IOF/Exchange. Pursuant to Decree No. 6,306/07, the conversion into foreign currency or the conversion into Brazilian currency of the proceeds received or remitted by a Brazilian entity from a foreign investment in the Brazilian securities market, including those in connection with the investment by a Non-Brazilian Holder in the common shares and ADSs may be subject to the Tax on Foreign Exchange Transactions, or IOF/Exchange. Currently applicable rate for most foreign currency exchange transactions is 0.38%.

[Table of Contents](#)

However, currency exchange transactions carried out for the in-flow of resources into Brazil by a 4,373 Holder are subject to IOF/Exchange at (i) 0% rate in case of variable income transactions carried out on the Brazilian stock, futures and commodities exchanges, as well as in the acquisitions of shares of Brazilian publicly held companies in public offerings or subscription of shares related to capital contributions, provided that the issuer company has registered its shares for trading in the stock exchange, and (ii) 0% for the outflow of resources from Brazil related to these type of investments, including payments of dividends and interest on shareholders' equity and the repatriation of funds invested in the Brazilian market. Furthermore, the IOF/Exchange is currently levied at a 0% rate on the withdrawal of ADSs into shares.

In any case, the Brazilian government may increase the rate at any time, up to 25.0%. However, any increase in rates may only apply to future transactions.

Tax on Transactions Involving Bonds and Securities, or IOF/Bonds. Pursuant to Decree 6,306/07 the IOF/Bonds may be imposed on any transactions involving bonds and securities, even if the transactions are carried out on a Brazilian stock exchange. The rate of IOF/Bonds applicable to transactions involving common shares and ADS is currently zero. In particular, the IOF/Bond also levies at a zero percent rate on the transfer of shares traded on the Brazilian stock exchange with the purpose of the issuance of depositary receipts to be traded outside Brazil. The Brazilian government may increase the rate of the IOF/Bonds at any time by up to 1.5% per day of the transaction amount, but only in respect of future transactions.

Other Brazilian Taxes. There are no Brazilian federal inheritance, gift or succession taxes applicable to the ownership, transfer or disposition of common shares or ADSs by a Non-Brazilian Holder. Gift and inheritance taxes, however, may be levied by some states of Brazil on gifts made or inheritances bestowed by Non-Brazilian Holders to individuals or entities resident or domiciled within those states in Brazil. There are no Brazilian stamp, issue, registration or similar taxes or duties payable by holders of common shares or ADSs.

Material U.S. Federal Income Tax Consequences

The following discussion, subject to the limitations and conditions set forth herein, summarizes certain U.S. federal income tax consequences of the purchase, ownership and disposition of Embraer common shares and ADSs. This discussion only applies to beneficial owners of Embraer common shares or ADSs that are "U.S. Holders" (as defined below) that hold common shares or ADSs of Embraer as capital assets (generally for investment purposes). This discussion does not address all aspects of U.S. federal income taxation that may be applicable to a U.S. Holder, including, gift, estate, alternative minimum and Medicare contribution tax consequences, or the tax consequences to U.S. Holders subject to special treatment under U.S. federal income tax law, including:

- partnerships and other entities classified as partnerships for U.S. federal income tax purposes;
- tax-exempt entities;
- dealers and traders in securities or foreign currencies;
- insurance companies;
- certain financial institutions;
- persons who own Embraer common shares or ADSs as part of an integrated investment, including a straddle, hedging or conversion transaction, comprising the Embraer common shares or ADSs and one or more other positions for tax purposes;
- certain taxpayers who file applicable financial statements required to recognize income for U.S. federal income tax purposes no later than when the associated revenue is reflected on such financial statements;

Table of Contents

- U.S. Holders whose functional currency is not the U.S. dollar for U.S. federal income tax purposes;
- persons who actually or constructively own 10% or more of Embraer's total combined vote or value of its outstanding common shares or ADSs;
- persons subject to special tax accounting rules under Section 451(b) of the Code;
- persons who acquired Embraer common shares or ADSs pursuant to the exercise of any employee stock option or otherwise as compensation; and
- persons holding Embraer common shares or ADSs in connection with a trade or business conducted outside the United States.

In addition, there is no discussion of state, local, or non-U.S. tax considerations of the purchase, ownership and disposition of Embraer common shares or ADSs. The discussion is based upon the provisions of the Internal Revenue Code of 1986, as amended, or Code, its legislative history, existing final, temporary, and proposed U.S. Treasury regulations, rulings and other pronouncements of the U.S. Internal Revenue Service, or IRS, and judicial decisions as of the date of this annual report. Such authorities may be repealed, revoked or modified (with possible retroactive effect) so as to result in U.S. federal income tax consequences different from those discussed below.

This discussion is also based in part on the representations of the depository and the assumption that each obligation in the deposit agreement and any related agreement will be performed in accordance with its terms.

Shareholders are urged to consult their own independent tax advisors concerning the U.S. federal income tax consequences of the ownership of Embraer common shares and ADSs in light of their particular situations, as well as any consequences arising under the laws of any other taxing jurisdiction.

As used herein, the term "U.S. Holder" means a beneficial owner of Embraer common shares or ADSs representing Embraer common shares that is (i) an individual who is a citizen or resident of the United States, (ii) a corporation, or other entity taxable as a corporation, created or organized in or under the laws of the United States, any state or the District of Columbia, (iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source or (iv) a trust (1) that is subject to the supervision of a court within the United States and the control of one or more U.S. persons as described in Section 7701(a)(30) of the Code or (2) that has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person. Except where specifically described below, this discussion assumes that we are not a controlled foreign corporation or a passive foreign investment company, or PFIC, in either case, for U.S. federal income tax purposes.

If a partnership (or an entity treated as a partnership for U.S. federal income tax purposes) holds Embraer common shares or ADSs, the tax treatment of such partnership and each partner will generally depend upon the status of the partner in such partnership and upon the activities of the partnership. Partnerships that hold Embraer common shares or ADSs, and partners of a partnership holding such common shares or ADSs, are urged to consult their own tax advisors regarding the consequences of the purchase, ownership and disposition of Embraer common shares or ADSs.

In general, for U.S. federal income tax purposes, a U.S. Holder who is a beneficial owner of an ADS will be treated as the owner of the underlying Embraer common shares that are represented by such ADS. The U.S. Treasury has expressed concerns that parties to whom ADSs are pre-released before shares are delivered to the depository, or intermediaries in the chain of ownership between holders of ADSs and the issuer of the security underlying the ADSs, may be taking actions that are inconsistent with the claiming of foreign tax credits by holders of ADSs. Accordingly, the creditability of any Brazilian taxes could be affected by actions taken by such parties or intermediaries.

[Table of Contents](#)

Distributions on Embraer Common Shares or ADSs

For U.S. federal income tax purposes, the gross amount of any distributions (including distributions of notional interest charges attributed to shareholders' equity) paid to U.S. Holders of Embraer common shares or ADSs (including Brazilian withholding taxes imposed on such distributions) will be treated as a dividend, to the extent paid out of current or accumulated earnings and profits of Embraer as determined under U.S. federal income tax principles. Such a dividend will be includable in the gross income of a U.S. Holder as ordinary income on the date received or accrued by the U.S. Holder. To the extent that the amount of any distribution exceeds Embraer's current and accumulated earnings and profits for a taxable year (as determined under U.S. federal income tax principles), the distribution will first be treated as a tax-free return of capital to the extent of a U.S. Holder's adjusted tax basis in the Embraer common shares or ADSs, and thereafter as capital gain. We do not expect to maintain calculations of earnings and profits in accordance with U.S. federal income tax principles, and unless and until such calculations are made, U.S. Holders should assume that a distribution is paid out of earnings and profits and will be treated as a dividend for U.S. federal income tax purposes.

Dividends paid by Embraer will not be eligible for the dividends-received deduction allowed to domestic corporations under the Code.

The amount of any cash distribution paid in *reais* will be included in a U.S. Holder's gross income in an amount equal to the U.S. dollar value of the *reais* calculated by reference to the exchange rate in effect on the date the dividend is received or accrued by the U.S. Holder, in the case of Embraer common shares, and by the depositary, in the case of ADSs, regardless of whether the *reais* are converted into U.S. dollars. If the *reais* received as a dividend are not converted into U.S. dollars on the date of receipt, a U.S. Holder will have a tax basis in the *reais* equal to their U.S. dollar value on the date of receipt. Any gain or loss realized on a subsequent conversion or other disposition of the *reais* will be treated as U.S. source ordinary income or loss for U.S. federal income tax purposes.

Subject to the discussion above regarding concerns expressed by the U.S. Treasury and a number of other complex limitations and conditions (including a limit on credits that may be claimed with respect to qualified dividend income (as defined below)), a U.S. Holder will generally be entitled to claim a U.S. foreign tax credit in respect of any Brazilian withholding taxes imposed on dividends received on Embraer's common shares or ADSs. U.S. Holders who do not elect to claim a credit for foreign taxes may instead claim a deduction in respect of such Brazilian withholding taxes. Dividends received with respect to the Embraer common shares or ADSs will be treated as foreign source income for U.S. federal income tax purposes, and will be "passive category income" for purposes of calculating foreign tax credits in most cases, subject to various limitations. The rules relating to computing foreign tax credits or deducting foreign income taxes are extremely complex, and U.S. Holders are urged to consult their own independent tax advisors regarding the availability of foreign tax credits with respect to any Brazilian withholding taxes in regards of dividends paid on Embraer's common shares or ADSs.

Subject to certain exceptions for short-term and hedged positions, the amount of dividends received by certain non-corporate U.S. holders (including individuals) with respect to the Embraer common shares or ADSs may be eligible for a reduced rate of taxation if the dividends represent "qualified dividend income." Dividends paid on the Embraer common shares or ADSs will be treated as qualified dividend income if (i) the Embraer common shares or ADSs are readily tradable on an established securities market in the United States, (ii) the U.S. Holder meets the holding period requirement for the common shares or ADSs (generally more than 60 days during the 121-day period that begins 60 days before the ex-dividend date) and (iii) Embraer was not in the year prior to the year in which the dividend was paid (with respect to a U.S. Holder that held Embraer common shares or ADSs), and is not in the year in which the dividend is paid, a PFIC. Under guidance issued by the IRS, the ADSs of Embraer should qualify as readily tradable on an established securities market in the United States so long as they are listed on the NYSE. In the case of Embraer common shares held directly by U.S. Holders and not through an ADS, it is not clear whether dividends paid with respect to such shares will represent "qualified dividend income." U.S. Holders holding Embraer common shares directly and not through an ADS are urged to consult their own independent tax advisors.

[Table of Contents](#)

Based on its audited financial statements as well as relevant market and shareholder data, Embraer believes that it was not a PFIC for U.S. federal income tax purposes with respect to its 2019 taxable year. However, Embraer cannot assure you it will not become a PFIC in 2020 or future years. See “—Passive Foreign Investment Company Rules.”

Sale, Exchange or Other Taxable Disposition of Embraer Common Shares or ADSs

A U.S. Holder will recognize a taxable gain or loss on any sale, exchange or other taxable disposition of Embraer common shares or ADSs in an amount equal to the difference between the amount realized on the sale, exchange or other taxable disposition and the U.S. Holder's adjusted tax basis (determined in U.S. dollars) in the Embraer common shares or ADSs. Such gain or loss will generally be capital gain or loss and will be long-term capital gain or loss if the Embraer common shares or ADSs have a holding period of more than one year. Certain non-corporate U.S. Holders (including individuals) may be eligible for preferential rates of U.S. federal income tax in respect of long-term capital gains. The deductibility of capital losses is subject to limitations under the Code.

Any gain or loss recognized by a U.S. Holder from the sale, exchange or taxable disposition of Embraer common shares or ADSs generally will be gain or loss from U.S. sources for U.S. foreign tax credit purposes. Consequently, if a Brazilian withholding tax or capital gains tax is imposed pursuant to a sale of Embraer common shares or ADSs, U.S. Holders who do not have sufficient foreign source income might not be able to derive effective U.S. foreign tax credit benefit in respect of such Brazilian withholding tax or capital gains tax. The rules relating to foreign tax credits, including the amount of foreign income taxes that may be claimed as a credit in any given year, are extremely complex and subject to limitations. U.S. Holders are urged to consult their own independent tax advisor regarding the application of the foreign tax credit rules to their particular circumstances.

Deposits and withdrawals of Embraer common shares in exchange for ADSs will not result in the realization of gain or loss for U.S. federal income tax purposes.

Passive Foreign Investment Company Rules

If, during any taxable year of a non-U.S. corporation, 75% or more of the corporation's gross income consists of certain types of “passive” income, or the average value during a taxable year of the “passive assets” of the corporation (generally, assets that generate or are held to generate passive income) is 50% or more of the average value of all the corporation's assets, the corporation will be treated as a PFIC under U.S. federal income tax law. For this purpose, passive income generally includes, among other things, dividends, interest, rents, royalties and gains from the disposition of investment assets, subject to various exceptions. If the non-U.S. corporation owns at least 25% (by value) of the stock of another corporation, it will be treated, for purposes of the PFIC tests, as owning its proportionate share of the other corporation's gross assets and receiving its proportionate share of the other corporation's gross income. However, if the non-U.S. corporation owns less than 25% (by value) of the stock of another corporation, that stock may be treated as a passive asset.

If a corporation is treated as a PFIC, a U.S. Holder may be subject to increased tax liability upon the sale of its stock, or upon the receipt of certain dividends, unless such U.S. Holder makes an election to be taxed currently on its *pro rata* portion of the corporation's income, whether or not such income is distributed in the form of dividends, or otherwise makes a “mark-to-market” election with respect to the corporation's stock as permitted by the Code. Currently, a U.S. Holder who owns common shares or ADSs in any year that Embraer is a PFIC in excess of certain *de minimis* amounts and fails to qualify for certain other exemptions would be required to file IRS Form 8621 to report such holdings. In addition, as discussed above, a U.S. Holder would not be entitled to (if otherwise eligible for) the preferential reduced rate of tax payable on certain dividend income.

As stated above, although no assurances can be given, based on Embraer's operations, projections and business plans and the other items discussed above, Embraer does not believe that it (or its predecessor) was a PFIC for 2019 or in prior years. Although Embraer is not aware that it will be a PFIC in 2020 or future years, this will depend on the nature, amount and value of Embraer's operations, activities, assets and income as of the relevant time of determination. Accordingly, there can be no assurance that Embraer will not become a PFIC for 2020 or a future year.

[Table of Contents](#)

U.S. Holders are urged to consult their own independent tax advisors regarding the potential application of the PFIC rules and related reporting requirements to the common shares or ADSs and the availability and advisability of making an election to avoid the adverse tax consequences of the PFIC rules should Embraer be considered a PFIC for any taxable year.

U.S. Tax Reform – Tax Cuts and Jobs Act of 2017

On December 22, 2017 Public Law 115-97, informally referred to as the Tax Cuts and Jobs Act (the Act), was enacted and includes several provisions that affect Embraer. The Act introduced tax reform that reduced the current corporate federal income tax rate from 35% to 21%, enacted a more restrictive policy in terms of the deductibility of interest, allows full expensing of certain qualified property including short-lived capital investments for five years and introduced a base erosion and anti-abuse tax (the BEAT), among other provisions.

For the year ended December 31, 2019, Embraer recorded an immediate write-off of capital investments in the amount of US\$13.3 million corresponding to qualified property placed in service in 2019. For the year ended December 31, 2018, Embraer recorded an immediate write-off of capital investments in the gross amount of US\$21.6 million corresponding to qualified property placed in service in 2018.

Effective for tax years beginning after December 31, 2017, the Act allows domestic corporations a new tax deduction in the amount of 37.5% of foreign derived intangible income (FDII). For the years ended December 31, 2018 and 2019, Embraer's estimated FDII deduction is approximately US\$9.1 million and US\$4.8 million, respectively.

For the year ended December 31, 2017, Embraer determined that the Act required a revaluation of its deferred tax assets and liabilities considering that these are measured using the enacted tax rates expected to apply to taxable income in years in which the related temporary differences are expected to be recovered or settled. For the year ended December 31, 2017, Embraer recorded a net reduction of approximately US\$9.5 million in the value of its deferred tax liabilities that is affected by the rate change, which was recorded as a reduction to income tax expense in Embraer's consolidated statement of income. There were no subsequent revaluations of Embraer's deferred tax assets and liabilities due to the rate change for the year ended December 31, 2019.

Effective January 1, 2018, the BEAT is applicable to certain corporate taxpayers that make payments to foreign related parties for which a deduction is otherwise allowable, or for payments made in connection with acquisition of depreciable property. Payments for items which are a component of cost of sales are treated as a reduction of gross receipts and are excluded from the scope of the provision. The vast majority of payments made by Embraer and its subsidiaries to foreign related parties are for procurement of aircraft parts. Most of these payments are recorded as a component of cost of sales and therefore are excluded from the BEAT base. In addition, the Act contains significant new limitations on the ability of a taxpayer to deduct business interest paid or accrued on debt properly allocable to a trade or business. Embraer is performing an assessment of the impact of BEAT as well as the interest expense limitation rules and believes that these provisions should not have a significant adverse impact on Embraer for the year ended December 31, 2019.

Information Reporting and Backup Withholding

In general, payments of dividends on Embraer common shares or ADSs, and payments of the proceeds of the sale, exchange or other disposition of Embraer common shares or ADSs, paid within the United States or through certain U.S.-related financial intermediaries to a U.S. Holder are subject to information reporting and may be subject to backup withholding at a current maximum rate of 24% unless the U.S. Holder (i) is a corporation or other exempt recipient or (ii) in the case of backup withholding, provides

[Table of Contents](#)

an accurate taxpayer identification number and certifies that no loss of exemption from backup withholding has occurred. Backup withholding is not an additional tax. The amount of any backup withholding from a payment to a U.S. Holder will be allowed as a credit against the U.S. Holder's U.S. federal income tax liability, provided the required information is timely provided to the IRS. A U.S. Holder generally may obtain a refund of any amounts withheld under the backup withholding rules that exceed its U.S. federal income tax liability by filing a timely refund claim with the IRS.

In addition, certain U.S. Holders are required to report to the IRS information relating to an interest in the common shares or ADSs, subject to exceptions (including an exception for common shares or ADSs held in accounts maintained by certain financial institutions), by attaching a complete IRS Form 8938, Statement of Specified Foreign Financial Assets, with their tax returns for each year in which they held an interest in the common shares or ADSs. U.S. Holders are urged to consult their own tax advisors regarding the effect, if any, of this information reporting requirement on their acquisition, ownership and disposition of the common shares or ADSs.

10F. Dividends and Paying Agents

Not applicable.

10G. Statements by Experts

Not applicable.

10H. Documents on Display

We are subject to the periodic reporting and other informational requirements of the Exchange Act. Accordingly, we are required to file reports and other information with the SEC. You may inspect and obtain copies, at prescribed rates, of reports and other information filed by us with the SEC at its Public Reference Room maintained at 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC in the United States at 1-800-SEC-0330. You may also inspect and copy this material at the offices of the New York Stock Exchange, Inc., 20 Broad Street, New York, New York 10005.

We file our annual report on Form 20-F, including our financial statements, and other reports, including our reports on Form 6-K, electronically with the SEC. These filings are available at www.sec.gov. We also file financial statements and other periodic reports electronically with the CVM at its website, www.cvm.gov.br. Copies of our annual reports on Form 20-F and documents referred to in this annual report and our bylaws will be available for inspection upon request at our headquarters at Avenida das Nações Unidas, 8501, 30th floor, Eldorado Business Tower, 05425-070, Pinheiros, São Paulo, SP, Brazil.

10I. Subsidiary Information

Not required.

Item 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to various market risks, primarily related to potential loss arising from adverse changes in interest rates and foreign currency exchange rates. We have established policies and procedures to manage sensitivity to interest rate and foreign currency exchange rate risk. These procedures include the monitoring of our levels of exposure to each market risk, including an analysis based on forecast of future cash flows, the funding of variable rate assets with variable rate liabilities, and limiting the amount of fixed rate assets which may be funded with floating rate liabilities. We may also use derivative financial instruments to mitigate the effects of interest rate fluctuations and to reduce our exposure to exchange rate risk. The following sections address the significant market risks associated with our financial activities.

[Table of Contents](#)

Interest Rate Risk

In our financial statements as of and for the year ended December 31, 2019, we recorded and presented our Commercial Aviation business unit and related services in a single line item as discontinued operations in the statements of operations, and the balances of assets and liabilities were presented as held for sale in the statement of financial position. Our 2019 audited consolidated statement of operations retroactively presented this information for the years ended 2018 and 2017 for comparative purposes to account for the aforementioned events. The below analysis considers our continuing and discontinued operations.

Our exposure to market risk for interest rate fluctuations principally relates to changes in the market interest rates of our U.S. dollar-denominated and real-denominated monetary assets and liabilities, principally our short- and long-term debt obligations. Increases and decreases in prevailing interest rates generally translate into increases and decreases in interest expense. Additionally, the fair values of interest rate-sensitive instruments are also affected by general market conditions.

Our short- and long-term debt obligations totaled US\$3,392.3 million as of December 31, 2019 and were denominated in U.S. dollars, Brazilian *reais* and Euros. Of the total amount of debt denominated in U.S. dollars (i.e., US\$3,328.4 million), US\$3,174.0 million was subject to fixed rates. The remaining floating rate U.S. dollar-denominated debt, or US\$154.4 million, which corresponds to 4.6% of our debt denominated U.S. dollars, was indexed to LIBOR or SIFMA. It is likely that we will have to transition away from the LIBOR as a benchmark to our debt in 2021, since the banks' obligations to report information used to set LIBOR will cease by then. As of the date of this annual report, we are discussing and analyzing the replacement of LIBOR with the applicable bank, and we have not reached a conclusion regarding this transition.

Of our US\$43.4 million Brazilian *real*-denominated debt as of December 31, 2019, US\$0.7 million bears interest at a variable rate based on the TJLP, and US\$42.7 million bears interest at a fixed rate of 3.5% per annum. The TJLP was 5.57% per annum as of December 31, 2019. Our Euro denominated debt totaled US\$20.5 million as of fixed rate as of December 31, 2019.

The table below provides information about our short-term debt obligations as of December 31, 2019, considering our continuing operations, which are sensitive to changes in interest rates and foreign currency exchange rates.

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding (in US\$ millions)	Total Fair Value
Short-Term Debt			
U.S. dollars (LIBOR indexed)	2.35	2.1	3.3
<i>Reais</i> (fixed rate)	3.50	12.6	11.7
<i>Reais</i> (TJLP indexed)	5.00	0.2	0.2
Total short-term debt		14.9	15.2

(1) The interest rate refers exclusively to the weighted average of our indebtedness (short-term and long-term). It does not represent the indexed rates as of December 31, 2019.

The table below provides information about our long-term debt obligations as of December 31, 2019, considering our continuing operations, which are sensitive to changes in interest rates and foreign currency exchange rates:

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding	2021	2022	2023	2024	2025 and thereafter	Total Fair value
Long-Term Debt								
U.S. dollars (fixed rate)	2.35	45.5	16.5	0.5	0.3	0.1	28.1	43.9

[Table of Contents](#)

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding	2021	2022	2023	2024	2025 and thereafter	Total Fair value
Long-Term Debt								
<i>Reais</i> (fixed rate)	3.5	30.2	11.0	11.0	8.2	—	—	25.6
<i>Reais</i> (TJLP indexed)	5.00	0.4	0.2	0.2	—	—	—	0.5
Total long-term debt		76.1	27.7	11.7	8.5	0.1	28.1	70.0

(1) The interest rate refers exclusively to the weighted average of our indebtedness (short-term and long-term). It does not represent the indexed rates as of December 31, 2019.

The table below provides information about our short-term debt obligations as of December 31, 2019, considering our discontinued operations, that are sensitive to changes in interest rates and foreign currency exchange rates.

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding (in US\$ millions)	Total Fair Value
Short-Term Debt			
U.S. dollars (fixed rate)	5.34	3,174.3	3,490.9
U.S. dollars (LIBOR indexed)	0.94	106.5	102.7
Euro (fixed rate)	0.00	20.5	20.5
Total short-term debt		3,301.3	3,614.1

(1) The interest rate refers exclusively to the weighted average of our indebtedness (short-term and long-term). It does not represent the indexed rates as of December 31, 2019.

In order to manage our interest rate risk on our monetary liabilities, we have entered into a number of swaps which effectively convert US\$42.7 million of our fixed interest rate, Brazilian *real*-denominated debt into floating interest rate, Brazilian *real*-denominated obligations; and convert US\$2.2 million of our floating interest rate, U.S. dollar-denominated debt to fixed interest rate, U.S. dollar-denominated obligations.

The table below provides information about our short-term debt obligations as of December 31, 2019, after taking into account the effects of the aforementioned derivative transactions, considering our continuing operations:

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding (in US\$ millions)	Total Fair Value
Short-Term Debt			
U.S. dollars (fixed rate)	5.23	0.5	0.5
U.S. dollars (LIBOR indexed)	2.29	1.6	2.8
<i>Reais</i> (CDI indexed)	1.46	12.6	11.7
<i>Reais</i> (TJLP indexed)	5.00	0.2	0.2
Total short-term debt		14.9	15.2

(1) The interest rate refers exclusively to the weighted average of our indebtedness (short-term and long-term). It does not represent the indexed rates as of December 31, 2019.

Table of Contents

The table below provides information about our long-term debt obligations as of December 31, 2019, after taking into account the effects of the aforementioned derivative transactions, considering our continuing operations:

	Weighted Average Interest Rate 2019(1) (%)	Total Amount Outstanding	2021	2022	2023	2024	2025 and There- after	Total Fair value
(in US\$ millions)								
Long-Term Debt								
U.S. dollars (fixed rate)	5.23	1.4	0.5	0.5	0.3	0.1	—	2.0
U.S. dollars (LIBOR indexed)	2.29	44.1	16.0	—	—	—	28.1	41.9
Reais (CDI indexed)	1.46	30.2	11.0	11.0	8.2	—	—	25.6
Reais (TJLP indexed)	5.00	0.4	0.2	0.2	—	—	—	0.5
Total long-term debt		76.1	27.7	11.7	8.5	0.1	28.1	70.0

(1) The interest rate refers exclusively to the weighted average of our indebtedness (short-term and long-term). It does not represent the indexed rates as of December 31, 2019.

As of December 31, 2019, there was no effect in our debt obligations relating to our discontinued operations since no derivatives considered were classified as asset held for sale.

Foreign Exchange Rate Risk

In managing our foreign currency risk, we focus on balancing our non-U.S. dollar-denominated assets against our non-U.S. dollar-denominated liabilities plus shareholders' equity in relation to our forecasts of future cash flows. Beyond the foreign currency exposure related to our debt obligations as summarized above, we also have other assets and liabilities denominated in currencies other than the U.S. dollar. These monetary assets and liabilities are primarily cash and cash equivalents, financial assets, accounts receivable and payable, deferred income taxes, dividends and certain other assets and liabilities and are primarily denominated in Brazilian *reais*. The effects on these assets and liabilities of the appreciation or devaluation of other foreign currencies against the U.S. dollar result in foreign exchange gains (losses) recognized as interest income (expense), net. The translation gains and losses arising from the remeasurement of our financial statements to U.S. dollars are recognized on our statement of income as foreign exchange gain (loss), net.

Our cash flow exposure comes as a result of the fact that approximately 9.0% of our net revenues and 30% of our total costs are denominated in *reais*. Having more *real* denominated costs than revenues generates the exposure. For additional information on our hedges and derivative instruments, see Note 9 to 2019 audited consolidated financial statements.

The table below provides information about our assets and liabilities exposed to foreign currency risk as of December 31, 2019, as well as the derivative transactions outstanding at the same date, considering our continuing operations:

Financial instruments indexed to currencies other than the U.S. dollar								
Outstanding Amount by Year of Maturity								
Total Outstanding Amount	2020	2021	2022	2023	2024	There- after	Total Fair Value	
(in US\$ millions)								
ASSETS								
Cash and cash equivalents and financial investments								
In Reais	128.7	128.7	—	—	—	—	128.7	
In Euro	105.8	105.8	—	—	—	—	105.8	
In other currencies	1.4	1.4	—	—	—	—	1.4	
Trade accounts receivable								
In Reais	6.3	6.3	—	—	—	—	6.3	
In Euro	23.1	23.1	—	—	—	—	23.1	
Deferred income tax assets								
In Reais	(0.3)	(0.2)	—	—	—	(0.1)	(0.3)	
In Euro	3.6	3.0	0.1	0.1	0.1	0.2	3.6	
In other currencies	—	—	—	—	—	—	—	
Other assets								
In Reais	163.1	103.1	60.0	—	—	—	163.1	
In Euro	11.6	10.6	1.0	—	—	—	11.6	

[Table of Contents](#)

	Financial instruments indexed to currencies other than the U.S. dollar							Total Fair Value
	Outstanding Amount by Year of Maturity							
	Total Outstanding Amount	2020	2021	2022	2023	2024	Thereafter	
		(in US\$ millions)						
In other currencies	—	—	—	—	—	—	—	—
Total assets in Reais	297.8	237.9	60.0	—	—	—	(0.1)	297.8
Total assets in Euro	144.1	142.5	1.1	0.1	0.1	0.1	0.2	144.1
Total assets in other currencies	1.4	1.4	—	—	—	—	—	1.4
LIABILITIES								
Loans								
In Reais	43.4	12.7	11.3	11.2	8.2	—	—	43.4
In Euro	—	—	—	—	—	—	—	—
Accounts payable to suppliers								
In Reais	73.3	73.3	—	—	—	—	—	73.3
In Euro	35.3	35.3	—	—	—	—	—	35.3
In other currencies	1.4	1.4	—	—	—	—	—	1.4
Customer advances								
In Reais	133.6	133.6	—	—	—	—	—	133.6
Other accounts payable & accrued liabilities								
In Reais	282.2	202.7	79.5	—	—	—	—	282.2
In Euro	22.8	18.7	4.1	—	—	—	—	22.8
In other currencies	—	—	—	—	—	—	—	—
Taxes and payroll charges payable								
In Reais	62.6	49.3	13.3	—	—	—	—	62.6
In Euro	4.4	4.4	—	—	—	—	—	4.4
In other currencies	—	—	—	—	—	—	—	—
Accrued taxes on income								
In Reais	—	—	—	—	—	—	—	—
In Euro	10.9	10.9	—	—	—	—	—	10.9
In other currencies	—	—	—	—	—	—	—	—
Deferred income tax liabilities								
In Reais	251.0	211.1	8.0	8.0	8.0	8.0	7.9	251.0
In Euro	20.5	17.2	0.7	0.7	0.7	0.7	0.5	20.5
In other currencies	0.8	0.8	—	—	—	—	—	0.8
Accrued dividends								
In Reais	1.4	1.4	—	—	—	—	—	1.4
Contingencies								
In Reais	57.0	16.1	16.1	16.1	16.1	16.1	(23.5)	57.0
In Euro	4.1	—	1.6	1.6	1.6	1.6	(2.3)	4.1
Total liabilities in Reais	904.5	700.2	128.2	35.3	32.3	24.1	(15.6)	904.5
Total liabilities in Euro	98.0	86.5	6.4	2.3	2.3	2.3	(1.8)	98.0
Total liabilities in other currencies	2.2	2.2	—	—	—	—	—	2.2
Total exposure in Reais	(606.7)	(462.3)	(68.2)	(35.3)	(32.3)	(24.1)	15.5	(606.7)
Total exposure in Euro	46.1	56.0	(5.3)	(2.2)	(2.2)	(2.2)	2.0	46.1
Total exposure in other currencies	(0.8)	(0.8)	—	—	—	—	—	(0.8)

Credit Risk

We may incur losses if counterparties to our various contracts do not pay amounts that are owed to us. In that regard, our primary credit risk derives from the sales of aircraft, spare parts and related services to customers, including the financial obligations related to those sales in the cases where we provide guarantees for the benefit of the providers of finance to the aircraft purchases of our customers. We are also exposed to the credit risk of the counterparties to our financial instruments.

Financial instruments which may potentially subject us to credit risk concentration include (i) financial investments and other financial instruments, (ii) trade accounts receivable, (iii) customer commercial financing and (iv) advances to suppliers. We seek to limit our credit risk associated with cash and cash equivalents by placing the investments we make with those instruments with investment-grade ratings following the guidelines of financial management policy. With respect to trade accounts receivable and customer commercial financing, we seek to limit our credit risk by performing ongoing credit evaluations. All these customers are currently meeting their commitments with us, are operating within the established credit

[Table of Contents](#)

limits that we assign to them and are considered by management to represent an acceptable credit risk level to us. Advances to suppliers are made only to select, long-standing suppliers. We analyze the financial condition of those suppliers on an ongoing basis with a view to limiting credit risk.

We may also have credit risk related to the sale of aircraft during the period in which their purchasers are finalizing the financing arrangements for their aircraft purchases from us. In order to try to minimize these risks, we continuously monitor customer credit analyses and work closely with financial institutions to facilitate customer aircraft financing.

Item 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

12A. Debt Securities

Not applicable.

12B. Warrants and Rights

Not applicable.

12C. Other Securities

Not applicable.

12D. American Depositary Shares

Depositary Fees and Charges

The depositary may charge, and collect from, (i) each person to whom ADSs are issued, including, without limitation, issuances against deposits of shares, issuances in respect to share distributions, rights and other distributions, issuances pursuant to a stock dividend or stock split declared by us, or issuances pursuant to a merger, exchange of securities or any other transaction or event affecting the ADSs or the deposited securities, and (ii) each person surrendering ADSs for withdrawal of deposited securities or whose ADSs are canceled or reduced for any other reason, US\$5.00 for each 100 ADSs (or portion thereof) issued, delivered, reduced, canceled or surrendered (as the case may be). The depositary may sell (by public or private sale) sufficient securities and property received in respect of share distributions, rights and other distributions prior to the deposit to pay the charge.

The following additional charges shall be incurred by ADS Holders, the beneficial owners of, or in, ADSs, by any party depositing or withdrawing shares or by any party surrendering ADSs, to whom ADSs are issued (including, without limitation, issuances pursuant to a stock dividend or stock split declared by us or an exchange of stock regarding the ADSs or the deposited securities or a distribution of ADSs pursuant to section 10 of the deposit agreement, whichever is applicable:

- a fee of US\$0.05 or less per ADS for any cash distribution made pursuant to the deposit agreement;
- a fee of US\$1.50 per ADS or ADSs or transfers made pursuant to section 3 of the deposit agreement;
- a fee for the distribution or sale of securities pursuant to section 10 of the deposit agreement, this fee being in an amount equal to the fee for the execution and delivery of ADSs, referred to above which would have been charged as a result of the deposit of the securities (for purposes of section 7 of the deposit agreement treating all such securities as if they were shares) but which securities or the net cash proceeds from the sale thereof are instead distributed by the depositary to ADS holders entitled thereto;
- an aggregate fee of US\$0.05 per ADS per calendar year (or portion thereof) for the services performed by the depositary in administering the ADSs (which fee may be charged on a periodic basis during each

[Table of Contents](#)

calendar year and shall be assessed against holders as of the record date or record dates set by the depositary during each calendar year and shall be payable at the sole discretion of the depositary by billing such holders or by deducting such charge from one or more cash dividends or other cash distributions); and

- a fee for the reimbursement of those fees, charges and expenses as are incurred by the depositary and/or any of its agents (including, without limitation, the custodian and expenses incurred on behalf of holders in connection with compliance with foreign exchange control regulations or any law or regulation relating to foreign investment) in connection with the servicing of the shares or other deposited securities, the sale of securities (including, without limitation, deposited securities), the delivery of deposited securities or otherwise in connection with the depositary's or its custodian's compliance with applicable laws, rules or regulations (which fees and charges shall be assessed on a proportionate basis against holders as of the record date or dates set by the depositary and shall be payable at the sole discretion of the depositary by billing such holders or by deducting such charge from one or more cash dividends or other cash distributions), including, without limitation, any amounts charged by any governmental authorities or other institutions such as the Brazilian Clearing and Depository Corporation (*Companhia Brasileira de Liquidação e Custódia*) or the B3 S.A. – Brasil, Bolsa, Balcão, the stock exchange on which the shares are registered for trading.

We will pay all other charges and expenses of the depositary and any agent of the depositary (except the custodian) pursuant to agreements from time to time between us and the depositary, except:

- stock transfer or other taxes and other governmental charges (which are payable by holders or persons depositing shares);
- SWIFT, cable, telex and facsimile transmission and delivery charges incurred at the request of persons depositing, or holders delivering shares, ADSs or deposited securities (which are payable by such persons or holders); and
- transfer or registration fees for the registration or transfer of deposited securities on any applicable register in connection with the deposit or withdrawal of deposited securities (which are payable by persons depositing shares or holders withdrawing deposited securities.);

These charges may at any time and from time to time be changed by agreement between us and the depositary.

Depository Payments for the Year December 31, 2019

According to our contractual arrangements with JPMorgan, in 2019, JPMorgan did not pay us in connection with investor relations related expenses of Embraer incurred in 2019.

Part II

Item 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

No matters to report.

Item 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

Material Modifications to the Rights of Security Holders

Not applicable.

[Table of Contents](#)

Use of Proceeds

Not applicable.

Item 15. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Disclosure controls and procedures refers to the controls and other procedures adopted by us that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and that the information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosures.

Our President and CEO, Francisco Gomes Neto, and our executive vice-president and chief financial and investor relations officer, Antonio Carlos Garcia, after evaluating, together with management, the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of December 31, 2019, the end of the period covered by this annual report, concluded that, as of this date, our disclosure control and procedures were effective to ensure information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and were effective in ensuring that such information is accumulated and communicated to our management, including our CEO and chief financial officer, as appropriate to allow timely decisions regarding required disclosures.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control over financial reporting is a process designed to provide reasonable assurance to our management and board of directors regarding the reliability of financial reporting and the preparation of our financial statements for external purposes in accordance with generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Effective internal control over financial reporting cannot, and does not, provide absolute assurance of achieving our control objectives. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control—Integrated Framework 2013. Based on this assessment, our management concluded that, as of December 31, 2019, our internal control over financial reporting was effective based on those criteria.

Attestation Report of the Registered Public Accounting Firm

The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers Auditores Independentes, an independent registered public accounting firm, as stated in their report which appears herein on page F-3.

[Table of Contents](#)

Changes in Internal Control over Financial Reporting

Our risks and internal controls department periodically evaluates our internal controls for the main cycles, documenting the processes used in each cycle, identifying opportunities and suggesting improvements for the existing control mechanisms. There was no change in our internal controls over financial reporting that occurred during the period covered by this annual report that has materially affected, or is reasonably likely to materially affect, our internal controls over financial reporting.

Item 16. Reserved

Item 16A. AUDIT COMMITTEE FINANCIAL EXPERT

Our board of directors has determined that Mr. Sergio Eraldo de Salles Pinto, an external member of our statutory audit, risks and ethics committee is an “audit committee financial expert” as defined by current SEC rules. For a discussion of the role of our audit, risks and ethics committee, see “Item 6. Directors, Senior Management and Employees—6C. Board Practices—Audit, Risks and Ethics Committee.”

Item 16B. CODE OF ETHICS

Our board of directors has adopted a Code of Ethics and Conduct applicable to our directors, officers and employees worldwide, including our principal executive officer, principal financial officer and controller. A copy of our Code of Ethics and Conduct has been filed as Exhibit 11.1 to this annual report.

Item 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table sets forth by category of service the total fees for services performed by PricewaterhouseCoopers Auditores Independentes during the fiscal years ended December 31, 2019 and 2018 and KPMG Auditores Independentes during the fiscal year ended December 31, 2018:

<u>Principal accountant fees and services</u>	<u>Year ended</u> <u>December 31,</u>	
	<u>2019</u>	<u>2018</u>
	<i>(in US\$ thousands)</i>	
Audit Fees(1)	4,150.4	3,583.2
Audit-Related Fees	162.0	25.9
Tax Fees	59.5	44.9
All Other Fees	5.7	52.4
Total	<u>4,377.7</u>	<u>3,706.4</u>

(1) Includes fees paid to KPMG Auditores Independentes in 2018 relating to the retrospective application of IFRS 9 and IFRS 15.

Audit Fees

Audit fees consisted of the aggregate fees in connection with (i) audit of annual financial statements prepared under Brazilian GAAP and IFRS as issued by the IASB, which are published in Brazil and United States, and performed in accordance with the International Standards on Auditing and the PCAOB auditing standards, (ii) review of quarterly financial information prepared under Brazilian GAAP and IFRS as issued by the IASB in Brazil, and (iii) audit of statutory financial statements of subsidiaries.

Audit-Related Fees

Audit-related fees consisted mainly of the aggregate fees in connection with compliance services provided to the Company and some of our subsidiaries related to documents filed with regulatory and government agencies and issuance of comfort letter related to the Company’s issuance of Notes.

[Table of Contents](#)

Tax Fees

Tax fees consisted of the aggregate fees in connection with tax compliance services for some of our subsidiaries.

All Other Fees

All other fees refer to miscellaneous permitted compliance services rendered for some subsidiaries and services related to IT diagnosis.

Pre-Approval Policies and Procedures

Our board of directors approved all audit and audit-related services provided by KPMG Auditores Independentes in 2018 and PricewaterhouseCoopers Auditores Independentes in 2018 and 2019. Any services provided by KPMG Auditores Independentes and PricewaterhouseCoopers Auditores Independentes that are not specifically included within the scope of the audit must be pre-approved by our audit, risk and ethics committee in advance of any engagement. Pursuant to Rule 2-01 of Regulation S-X, audit committees are permitted to approve certain fees for audit-related services, tax services and other services pursuant to a *de minimis* exception prior to the completion of an audit engagement. In 2018, none of the fees paid to KPMG Auditores Independentes and in 2018 and 2019, none of the fees paid to PricewaterhouseCoopers Auditores Independentes were approved pursuant to the *de minimis* exception.

Item 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

None.

Item 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

On March 10, 2016, our board of directors approved a new share buyback program for our common shares, in compliance with CVM Instruction No. 10/80. We were authorized to buy back up to an aggregate of 3,000,000 common shares, representing approximately 0.4% of our outstanding capital, which totaled 737,439,054 common shares outstanding on March 10, 2016. A total of 3,000,000 common shares were repurchased at an average price of R\$20.00 per share from March 17 through June 30, 2016.

On June 2, 2017, our board of directors approved a new share buyback program for our common shares, in compliance with CVM Instruction No. 10/80. We were authorized to buy back up to an aggregate of 3,000,000 common shares, representing approximately 0.4% of our outstanding capital, which totaled 735,752,704 common shares outstanding on June 2, 2017. A total of 3,000,000 common shares were repurchased at an average price of R\$16.13 per share from June 6 through August 29, 2017.

In 2019 and 2018, we did not approve a share buyback program.

Item 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

Not applicable.

Item 16G. CORPORATE GOVERNANCE

We are subject to NYSE corporate governance listing standards. As a foreign private issuer, the standards applicable to us are considerably different than the standards applied to U.S. listed companies. Under the NYSE rules, we are required only to: (i) have an audit committee or audit board, pursuant to an applicable exemption available to foreign private issuers, that meets certain requirements, as discussed below, (ii) provide prompt certification by our CEO of any material non-compliance with any corporate governance rules and (iii) provide a brief description of the significant differences between our corporate governance practices and the NYSE corporate governance practice required to be followed by U.S. listed companies. The discussion of the significant differences between our corporate governance practices and those required of U.S. listed companies follows below.

[Table of Contents](#)

Majority of Independent Directors

The NYSE rules require that a majority of the board of directors must consist of independent directors. Independence is defined by various criteria, including the absence of a material relationship between the director and the listed company, which independence must be affirmatively determined by the board of directors. Likewise, the *Novo Mercado* Listing Rules require that at least 20%, or at least two, whichever is bigger, of the members of the board of directors of a company listed on the *Novo Mercado* segment of the B3 be independent. Independence of Board members in accordance with the *Novo Mercado* Listing Rules is defined by criteria similar to those set forth in the NYSE rules.

The members of our board of directors declared they are independent for purposes of the *Novo Mercado* listing rules, except for the representative of the Brazilian government, as a result of the government's ownership of the "golden share," and the two representatives of our employees. Our directors meet the qualification requirements of the Brazilian Corporate Law, the CVM requirements and the *Novo Mercado* Listing Rules.

Brazilian Corporate Law and our bylaws require that our directors be elected by our shareholders at a general shareholders' meeting. The election of members of our board of directors, absent a request to adopt a cumulative voting system, will be conducted under a system of slate voting whereby voting will be based on a slate of Directors and no voting will be allowed on individual candidates. According to our bylaws, the board of directors will nominate a slate for the subsequent term of office. Our board of directors is appointed by our shareholders for a two-year term, having three reserved seats as follows: (i) one acting member (and his/her alternate) to be appointed by the Brazilian government, as holder of the "golden share" and (ii) two acting members (and his/her alternate) to be appointed by our employees. The remaining eight acting Directors are elected in accordance with the slate voting or cumulative voting rules contained in our bylaws. A person may participate in two or more different slates. Each shareholder may only vote on one slate and the slate that receives the highest number of votes shall be declared elected. For additional information on the election of our board of directors, see "Item 10. Additional Information—10B. Memorandum and Articles of Association—Board of Directors—Election of Board of Directors."

Executive Sessions

NYSE rules require that the non-management directors must meet at regularly scheduled executive sessions without management. Brazilian Corporate Law does not have a similar provision. According to Brazilian Corporate Law, up to one third of the members of the board of directors can be elected from management. The remaining non-management directors are not expressly required to check on management. Embraer's board of directors' rules of procedure provide that the external members of the board of directors (comprising members who do not hold any commercial, employment or management relationship with Embraer) shall meet on exclusive sessions to be held on the same day of and prior to the board of directors meetings to discuss the agenda of the meeting.

Nominating/Corporate Governance Committee

NYSE rules require that listed companies have a nominating/corporate governance committee composed entirely of independent directors and governed by a written charter addressing the committee's required purpose and detailing its required responsibilities, which include, among other things, identifying and selecting qualified board member nominees and developing a set of corporate governance principles applicable to the company. Members of our board of directors are elected by our shareholders at a general shareholders' meeting. Although we have not established a nominating/corporate governance committee, as we are not required to do so under applicable Brazilian law, our Personnel and Governance Committee, among other things, performs the same duties imposed to the nominating/corporate governance committee by NYSE rules.

[Table of Contents](#)

Compensation Committee

NYSE rules require that listed companies have a compensation committee composed entirely of independent directors and governed by a written charter addressing the committee's required purpose and detailing its required responsibilities, which include, among other things, reviewing corporate goals relevant to CEO compensation, evaluating CEO performance and approving CEO compensation levels and recommending to the board non-CEO compensation, incentive-compensation and equity-based plans. Although we have not established a compensation committee, as we are not required to do so under applicable Brazilian law, our Personnel and Governance Committee, among other things, performs the same duties imposed to the compensation committee by NYSE rules. According to the Brazilian Corporate Law, the total amount available for compensation of our directors and executive officers and for profit-sharing payments to our executive officers is established by our shareholders at the annual general meeting. The board of directors is then responsible for determining the individual compensation and profit sharing of each executive officer, as well as the compensation of our board and committee members. In making these determinations, the board reviews the performance of the executive officers, including the performance of our CEO.

Audit Committee

NYSE rules require that listed companies have an audit committee that (i) is composed of a minimum of three independent directors who are all financially literate, (ii) complies with the SEC rules regarding audit committees for listed companies, (iii) has at least one member who has accounting or financial management expertise and (iv) is governed by a written charter addressing the committee's required purpose and detailing its required responsibilities. We have an Audit, Risks and Ethics Committee which meets the requirements of Rule 10A-3 under the U.S. Securities Exchange Act of 1934. We do not claim an exemption from the listing standards for audit committees.

Embraer's statutory "Audit, Risks and Ethics Committee" is composed, in its majority, of independent members of our board of directors, and by two external members. For additional information, see "Item 6. Directors, Senior Management and Employees—Item 6C. Board Practice—Audit, Risks and Ethics Committee." Because foreign private issuers are subject to local legislation which may prohibit the full board of directors from delegating certain responsibilities to the audit committee, pursuant to Rule 10A-3, audit committees of foreign private issuers may be granted responsibilities, which may include advisory powers, with respect to such matters to the extent permitted by law. Due to certain restrictions imposed by the Brazilian Corporate Law, our Audit, Risks and Ethics Committee, unlike a U.S. audit committee, only has an "advisory" role and may only make recommendations for adoption by the full board of directors, which is responsible for the ultimate vote and final decision. For example, our Audit, Risks and Ethics Committee makes recommendations regarding the appointment of auditing firms, which are subject to a vote of the board of directors. Our Audit, Risks and Ethics Committee complies with Brazilian legal requirements (including "independent directors," as defined by Brazilian law).

Shareholder Approval of Equity Compensation Plans

NYSE rules require that shareholders be given the opportunity to vote on all equity compensation plans and material revisions thereto, with limited exceptions. Under the Brazilian Corporate Law, shareholders must approve all stock option plans. In addition, any issuance of new shares that exceeds our authorized share capital is subject to shareholder approval.

Corporate Governance Guidelines

NYSE rules require that listed companies adopt and disclose corporate governance guidelines. In addition to being subject to the *Novo Mercado* regulations that include rules on corporate governance, we have not adopted any formal corporate governance guidelines. We have adopted and observe, our Policy on Trading in Company Securities and Disclosure of Material Information and Preservation of Confidentiality that requires the public disclosure of all relevant information pursuant to guidelines set forth by the CVM, as well as insider trading rules, which, among other things, establishes black-out periods and requires insiders to inform management of all transactions involving our securities.

[Table of Contents](#)

In November 2016, after the contribution and comments made by the CVM, the Brazilian Corporate Governance Code, which provides for corporate governance practices guidelines for publicly held companies in Brazil, was released by an institution formed by several market entities, such as the Brazilian Pension System, the Brazilian Association of Publicly-Held Companies, the Brazilian Financial and Capital Markets Association, the Brazilian Private Equity & Venture Capital Association, the Brazilian Association of Capital Markets Investors, the Association of Capital Markets Investment Analysts and Professionals, B3, BRAIN – Brazil Investments and Business, the Brazilian Institute of Corporate Governance, the Brazilian Investor Relations Institute and the Brazilian Capital Markets Institute.

In June 2017, the CVM approved a new rule, CVM Rule No. 586, which establishes that companies must inform whether they will implement the provisions set forth in the Brazilian Corporate Governance Code, or otherwise justify the reasons for non-compliance with those practices. Additionally, the B3 and the Brazilian Institute of Corporate Governance have issued guidelines for corporate governance best practices in Brazil.

Code of Business Conduct and Ethics

NYSE rules require that listed companies adopt and disclose a code of business conduct and ethics for directors, officers and employees, and promptly disclose any waivers of the code for directors or executive officers. Applicable Brazilian law does not have a similar requirement. However, we adopted a Code of Ethics and Conduct applicable to our officers, directors and employees worldwide, including at the subsidiary level. We believe this code substantially addresses the matters required to be addressed pursuant to the NYSE rules. A copy of our Code of Ethics and Conduct has been filed as Exhibit 11.1 to this annual report. For a further discussion of our Code of Ethics and Conduct, see “—Item 16B. Code of Ethics.” We usually review our Code of Ethics every two years. The latest version of the Code of Ethics is the 6th Edition, and was approved on November 7, 2019.

Internal Audit Function

NYSE rules require that listed companies maintain an internal audit function to provide management and the audit committee with ongoing assessments of the company’s risk management processes and system of internal control. Our internal audit reports to the Audit, Risks and Ethics Committee, and risk management and internal control report to the Chief Financial Officer, respectively, assuring the necessary independence and competence to assess the design of our internal control over financial reporting, as well as to test its effectiveness as required by Section 404 of the Sarbanes-Oxley Act of 2002.

Item 16H. MINE SAFETY DISCLOSURE

Not applicable.

Part III

Item 17. FINANCIAL STATEMENTS

We have responded to Item 18 *in lieu* of responding to this item.

Item 18. FINANCIAL STATEMENTS

Our audited consolidated financial statements, together with the report of the Independent Registered Public Accounting Firm thereon, are filed as part of this annual report and are located following the signature page hereof.

[Table of Contents](#)

Item 19. EXHIBITS

Exhibit Number	Description
1.1	Bylaws of Embraer dated April 29, 2020 (English translation). *
2.1	Form of Third Amended and Restated Deposit Agreement, among Embraer S.A., JP Morgan Chase Bank, N.A., as depositary, and the Holders from time to time of American Depositary Receipts issued thereunder, including the Form of American Depositary Receipt, dated as of 2019, incorporated herein by reference from Exhibit (a) from Embraer's Form F-6 Registration Statement under the Securities Act of 1933 filed with the Securities and Exchange Commission (SEC File No. 333-133162) on November 18, 2019.
2.2	The registrant hereby agrees to furnish to the SEC, upon request, copies of instruments defining the rights of holders of long-term debt of the registrant and its consolidated subsidiaries and for any of its unconsolidated subsidiaries for which financial statements are required to be filed.
2.3	Description of the registrant's securities registered under Section 12 of the Exchange Act. *
8.1	List of Embraer's subsidiaries. *
11.1	Code of Ethics and Conduct, dated November 7, 2019. *
12.1	Rule 13a-14(a)/15d-14(a) Certification of Chief Executive Officer. *
12.2	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer. *
13.1	Section 1350 Certification of Chief Executive Officer. *
13.2	Section 1350 Certification of Chief Financial Officer. *
101.INS	XBRL Instance Document.*
101.SCH	XBRL Taxonomy Extension Schema.*
101.CAL	XBRL Taxonomy Extension Scheme Calculation Linkbase.*
101.DEF	XBRL Taxonomy Extension Scheme Definition Linkbase.*
101.LAB	XBRL Taxonomy Extension Scheme Label Linkbase.*
101.PRE	XBRL Taxonomy Extension Scheme Presentation Linkbase.*

* Filed herewith.

SIGNATURES

The Registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

EMBRAER S.A.

By: /s/ FRANCISCO GOMES NETO

Name: Francisco Gomes Neto

Title: President and Chief Executive Officer

By: /s/ ANTONIO CARLOS GARCIA

Name: Antonio Carlos Garcia

Title: Executive Vice President, Financial and Investor Relations

Date: June 1, 2020

[Table of Contents](#)

Embraer S.A.
Consolidated Financial Statements
as of December 31, 2019
and Report of Independent Registered
Public Accounting Firm

F-1

Table of Contents

INDEX TO THE FINANCIAL STATEMENTS

	<u>Page</u>
<u>Index to Financial Statements</u>	F-2
<u>Consolidated Statements of Financial Position as of December 31, 2019 and 2018</u>	F-7
<u>Consolidated Statements of Income for the Years Ended December 31, 2019, 2018 and 2017</u>	F-9
<u>Consolidated Statements of Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017</u>	F-10
<u>Consolidated Statements of Changes Shareholders' Equity for the Years Ended December 31, 2019, 2018 and 2017</u>	F-11
<u>Consolidated Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017</u>	F-12
<u>Notes to the Consolidated Financial Statements</u>	F-13

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Embraer S.A.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated statements of financial position of Embraer S.A. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of income, comprehensive income, changes in shareholders’ equity and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB). Also, in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting. Management’s Annual Report on Internal Control over Financial Reporting appearing under Item 15. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Subsequent events

As discussed in Notes 1.1, 3.4, 4 and 40.3 to the consolidated financial statements, on April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the Master Transaction Agreement (“MTA”). These Notes also describe the related consequences in the presentation and

[Table of Contents](#)

measurement of the assets, liabilities and results of operations related to the Commercial Aviation segment which were presented as “Assets and liabilities held for sale” and “Discontinued operations” as of the reporting date.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue Recognition - Estimated Costs to Complete Long-term Contracts

As discussed in Notes 2.2.26 c) and 32 to the consolidated financial statements, US\$399.1 million of the Company’s total revenues for the year ended December 31, 2019 was generated from long-term contracts. For the Company’s long-term contracts, control transfers over time and revenue is recognized based on the extent of progress in each period towards completion of the performance obligation. The selection of the measure of progress towards completion requires management judgment and is based on the nature of the products or services to be provided. As disclosed by management, the Company substantially uses the cost incurred method, using the ratio of actual cumulative costs incurred divided by total estimated costs at completion for progress measurement. Revenues are recognized proportionately as costs are incurred. Due to the nature of the work required to be performed on the performance obligations, management’s estimation of costs at completion is complex and requires significant judgment. Management has disclosed that there are many factors that can affect the accuracy of cost estimates, including, but not limited to, the projection, changes in circumstances and/ or new events, such as contract modification.

The principal considerations for our determination that performing procedures relating to revenue recognition - estimated costs to complete long-term contracts is a critical audit matter are there was significant judgment made by management when developing the estimated costs to complete long-term contracts especially in development projects. This in turn led to significant auditor judgment and effort in performing procedures to evaluate the estimates of the costs to complete, including the assessment of management’s judgment about the Company’s significant assumptions related to estimated expected labor and material costs.

[Table of Contents](#)

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the determination of estimated costs to complete long-term contracts. The procedures also included, among others, evaluating and testing management's process for determining the estimate of costs at completion for a sample of contracts, which included evaluating the reasonableness of significant assumptions, including the estimated expected labor and material costs, used by management and considering the factors that can affect the accuracy of those estimates. Evaluating the reasonableness of significant assumptions used involved assessing management's ability to reasonably estimate costs to complete long-term contracts by (i) performing a comparison of the previous year estimated and actual costs incurred for the contracts; (ii) evaluating the timely identification of circumstances that may warrant a modification to estimated costs to complete, including actual costs in excess of estimates.

Assessment of impairment for long-lived non-financial assets

As described in Note 2.2.14 to the consolidated financial statements, the Company's management performs, on an annual basis, impairment tests of intangible assets with indefinite useful lives, as well as evaluates impairment indicators for long-lived non-financial assets. When impairment indicators are identified, management compares the carrying value of an asset, or a cash-generating unit (CGU), with its recoverable amount, which is determined at the higher between its value in use and fair value less cost to disposal. An impairment charge is recognized when the carrying value exceeds the recoverable amount. As described in Note 19 to the consolidated financial statements, management determined the recoverable amounts of the CGUs related to the Commercial Aviation segment, later classified as discontinued operations, at their estimated fair value less cost to disposal. Additionally, the recoverable amounts of the remaining CGUs were determined by management at their estimated value in use. The process of estimating the recoverable amounts using value in use approach involves management's significant judgments and assumptions. During 2019, the Company recorded an impairment charge of US\$ 72 million related substantially to executive aviation segment.

The principal considerations for our determination that performing procedures relating to the impairment of long-lived non-financial assets is a critical audit matter are there was significant judgment by management when developing the value in use measurement for each CGU. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate management's cash flow projections and significant assumptions, including revenue growth rate, gross margin and the discount rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's impairment assessment, including controls over the valuation of the Company's CGUs. These procedures also included, among others, testing management's process for developing the value in use estimate of the main CGUs; evaluating the appropriateness of the discounted cash flow model; testing the completeness, accuracy, and relevance of underlying data used in the model; and evaluating the significant assumptions used by management, including the revenue growth rate, projected gross margin and discount rate. Evaluating management's assumptions related to revenue growth rate and projected gross margin involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of each CGU, (ii) the consistency of Company's internally developed models which are based on external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's discounted cash flow model and the significant assumptions, including the discount rate.

[Table of Contents](#)

Presentation and disclosure of Assets held for sale and Liabilities related to assets held for sale and Discontinued operation

As described in Note 4 to the consolidated financial statements, on January 24, 2019, Embraer, Boeing and certain subsidiaries of Boeing and Embraer entered into the MTA and other transaction documents, which defined the terms and conditions for the creation of a joint venture covering Embraer's Commercial Aviation business unit with a participation of 80% of a subsidiary of Boeing and 20% of Embraer. Upon the approval of this transaction by Embraer's shareholders, the assets and liabilities relating to the Commercial Aviation business and associated services were measured and are disclosed in the consolidated financial statements as of December 31, 2019 as Assets held for sale and Liabilities held for sale, amounting to US\$ 5.2 billion and US\$ 5.0 billion, respectively; and their results generated as a discontinued operation, amounting to US\$ (111.8) million. The segregation of the assets and liabilities, as well as the results from the discontinued operations, related to Commercial Aviation business considered the Company's best interpretations of the terms of the MTA, including the segregation of certain costs and expenses related to corporate areas which would be separated among Embraer and Boeing. In addition, as described in Notes 1.1, 3.4, 4 and 40.3, on April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the MTA.

The principal considerations for our determination that performing procedures relating to the Asset and Liabilities held for sale and discontinued operation is a critical audit matter are (i) it is a significant unusual transaction disclosed in the consolidated financial statements, (ii) significant audit effort was required in evaluating the assumptions and estimates related to segregation of assets and liabilities included in within a disposal group classified as held for sale and of results of discontinued operation.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to Financial close and report process, including controls over the segregation of Assets held for sale and Liabilities related to assets held for sale and Discontinued operation. These procedures also included, among others, (i) reading the MTA, (ii) testing management's process included evaluating the reasonableness of assumptions and estimates made by management, as well as the presentation and disclosure of assets and liabilities included in within a disposal group classified as held for sale and of results of discontinued operation in the consolidated financial statements, and (iii) assessed the appropriateness of the disclosures related to the termination of the MTA.

/s/ PricewaterhouseCoopers
Auditores Independentes
São José dos Campos, Brazil
June 1, 2020

We have served as the Company's auditor since 2017.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Financial Position as of December 31, 2019 and 2018
(In millions of U.S. dollar)

	Note	12.31.2019	12.31.2018
ASSETS			
CURRENT			
Cash and cash equivalents	6	855.2	1,280.9
Financial investments	7	409.8	1,743.4
Trade accounts receivable, net	8	149.4	318.0
Derivative financial instruments	9	1.4	5.4
Customer and commercial financing		—	1.2
Collateralized accounts receivable	10.1	4.0	218.5
Contract assets	32	461.9	358.0
Inventories	12	1,304.4	2,507.0
Guarantee deposits	11	0.1	339.9
Income tax and social contribution		90.5	95.3
Other assets	13	120.1	203.4
		3,396.8	7,071.0
Assets held for sale	4.2	5,174.6	—
		8,571.4	7,071.0
NON-CURRENT			
Financial investments	7	14.9	183.5
Derivative financial instruments	9	0.7	4.1
Customer and commercial financing		—	10.5
Collateralized accounts receivable	10.1	13.6	17.4
Guarantee deposits	11	0.5	9.8
Deferred income tax and social contribution	24.1	0.7	21.6
Other assets	13	61.8	105.6
		92.2	352.5
Investments		8.1	6.3
Property, plant and equipment, net	16	968.9	1,964.7
Intangible assets, net	18	894.1	1,898.8
Right of use	17	37.8	—
		2,001.1	4,222.3
TOTAL ASSETS		10,572.5	11,293.3

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Financial Position as of December 31, 2019 and 2018
(In millions of U.S. dollar)

	Note	12.31.2019	12.31.2018
LIABILITIES			
CURRENT			
Trade accounts payable	20	358.0	892.1
Lease liability	17	5.0	—
Loans and financing	21	14.9	179.3
Recourse and non-recourse debt	10.2	4.0	324.0
Other payables	22	162.5	288.4
Contract liabilities	32	649.1	1,045.4
Derivative financial instruments	9	4.5	8.1
Taxes and payroll charges payable	23	54.9	68.4
Income tax and social contribution		42.6	48.0
Financial guarantee and residual value	25	—	51.0
Dividends payable		1.4	5.0
Unearned income		2.0	2.0
Provision	26.1	103.1	116.9
		1,402.0	3,028.6
Liabilities held for sale	4.2	4,984.0	—
		6,386.0	3,028.6
NON-CURRENT			
Lease liability	17	33.6	—
Loans and financing	21	76.1	3,468.4
Recourse and non-recourse debt	10.2	13.6	17.4
Other payables	22	12.7	28.6
Contract liabilities	32	34.3	198.2
Taxes and payroll charges payable	23	13.4	58.2
Deferred income tax and social contribution	24.1	272.3	254.0
Financial guarantee and residual value guarantees	25	—	101.1
Unearned income		16.1	73.2
Provision	26.1	99.8	125.5
		571.9	4,324.6
TOTAL LIABILITIES		6,957.9	7,353.2
SHAREHOLDERS' EQUITY			
Capital	29.1	1,551.6	1,551.6
Treasury shares	29.3	(26.5)	(31.4)
Revenue reserves		2,110.0	2,433.7
Share-based remuneration		37.4	37.4
Accumulated other comprehensive loss		(154.8)	(145.6)
		3,517.7	3,845.7
Non-controlling interests		96.9	94.4
TOTAL SHAREHOLDERS' EQUITY		3,614.6	3,940.1
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY		10,572.5	11,293.3

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Income Years Ended
(In millions of U.S. dollar)

	Note	12.31.2019	12.31.2018*	12.31.2017*
CONTINUING OPERATIONS				
REVENUE		2,618.1	2,127.7	2,546.5
Cost of sales and services		(2,259.9)	(1,929.6)	(2,248.6)
GROSS PROFIT		358.2	198.1	297.9
Operating income (expense)				
Administrative		(136.7)	(136.1)	(138.9)
Selling		(148.2)	(151.4)	(169.9)
Research		(19.7)	(19.5)	(22.2)
Other operating income (expense), net	34	(215.8)	(173.8)	(163.9)
Equity in income (losses) of associates		(0.2)	(0.4)	1.2
OPERATING LOSS BEFORE FINANCIAL RESULT		(162.4)	(283.1)	(195.8)
Financial income, net	35	61.5	6.1	95.0
Foreign exchange gain (loss), net	36	(0.3)	(5.0)	5.7
LOSS BEFORE INCOME TAX		(101.2)	(282.0)	(95.1)
Income tax expense	24.2	(103.5)	20.7	(28.2)
LOSS OF THE CONTINUING OPERATIONS		(204.7)	(261.3)	(123.3)
Net income (loss) of the discontinued operations	4.3	(111.8)	90.1	403.3
NET INCOME (LOSS) FOR THE PERIOD		(316.5)	(171.2)	280.0
Attributable to:				
Owners of Embraer		(322.3)	(178.2)	264.0
Non-controlling interests		5.8	7.0	16.0
Earnings per share-basic in US\$	31.1	(0.44)	(0.24)	0.36
Earnings per share-diluted in US\$	31.2	(0.44)	(0.24)	0.36

* Consolidated statements of income for comparative years ended December 31, 2018 and 2017 were recasted to present the results of continuing operations separately from the results of the Commercial Aviation business unit and related services (discontinued operations) since the beginning of comparative periods (Note 4).

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Comprehensive Income Years Ended
(In millions of U.S. dollar)

	12.31.2019	12.31.2018	12.31.2017
NET INCOME (LOSS) FOR THE PERIOD	(316.5)	(171.2)	280.0
ITEMS THAT WILL NOT BE RECLASSIFIED TO PROFIT OR LOSS			
Actuarial gain on post-employment benefit obligation	—	1.1	9.2
ITEMS THAT MAY BE SUBSEQUENTLY RECLASSIFIED TO PROFIT OR LOSS			
Financial instruments - Cash flow hedge	(0.7)	0.4	(10.3)
Translation adjustments	(10.6)	(65.4)	34.1
OTHER COMPREHENSIVE INCOME (LOSS), NET OF TAX EFFECTS (i)	(11.3)	(63.9)	33.0
TOTAL OF COMPREHENSIVE INCOME (LOSS)	(327.8)	(235.1)	313.0
Attributable to:			
Owners of Embraer	(330.3)	(216.1)	292.0
Non-controlling interests	2.5	(19.0)	21.0
	(327.8)	(235.1)	313.0
Total comprehensive income (loss) of			
Continuing operations	(215.7)	(326.1)	(91.5)
Discontinued operations	(112.1)	91.0	404.5
	(327.8)	(235.1)	313.0

- (i) Items presented above are net of deferred income tax, if applicable, of US\$ (1.0), US\$ (2.8) and US\$ (3.8) for the years ended December 31, 2019, 2018 and 2017, respectively.

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Changes in Shareholders' Equity

Years Ended

(In millions of U.S. dollar)

	Revenue reserves							Accumulated other comprehensive (loss)						
	Capital	Treasury shares	Share-based remuneration	Government grants	Legal reserve	For investment and working capital	Retained earnings	Result in transactions with non-controlling interest	Actuarial gain (loss) on post-employment benefit obligation	Cumulative translation adjustment	Financial instruments	Total shareholders' equity	Non-controlling interest	Total shareholders' equity
At December 31, 2016	1,438.0	(49.1)	36.8	42.6	192.4	2,331.1	(12.1)	(4.2)	(49.5)	(92.4)	10.4	3,844.0	92.4	3,936.4
Net income for the year	—	—	—	—	—	—	264.0	—	—	—	—	264.0	16.0	280.0
Actuarial loss on post employment benefit obligation	—	—	—	—	—	—	—	—	9.2	—	—	9.2	—	9.2
Translation adjustments	—	—	—	—	—	—	—	—	—	29.1	—	29.1	5.0	34.1
Financial instruments	—	—	—	—	—	—	—	—	—	—	(10.3)	(10.3)	—	(10.3)
Total comprehensive income	—	—	—	—	—	—	264.0	—	9.2	29.1	(10.3)	292.0	21.0	313.0
Share-based remuneration	—	—	0.5	—	—	—	—	—	—	—	—	0.5	—	0.5
Stock options grants exercised	—	12.3	—	—	—	—	(6.4)	—	—	—	—	5.9	—	5.9
Acquisition of own shares	—	(15.0)	—	—	—	—	—	—	—	—	—	(15.0)	—	(15.0)
Allocation of profits:														
Government grants	—	—	—	4.3	—	—	(4.3)	—	—	—	—	—	—	—
Legal reserve	—	—	—	—	12.0	—	(12.0)	—	—	—	—	—	—	—
Interest on own capital	—	—	—	—	—	—	(47.3)	—	—	—	—	(47.3)	—	(47.3)
Dividends	—	—	—	—	—	—	(16.0)	—	—	—	—	(16.0)	—	(16.0)
Reserve for investments and working capital	—	—	—	—	—	160.8	(160.8)	—	—	—	—	—	—	—
At December 31, 2017	1,438.0	(51.8)	37.3	46.9	204.4	2,491.9	5.1	(4.2)	(40.3)	(63.3)	0.1	4,064.1	113.4	4,177.5
Net income for the year	—	—	—	—	—	—	(178.2)	—	—	—	—	(178.2)	7.0	(171.2)
Actuarial loss on post employment benefit obligation	—	—	—	—	—	—	—	—	1.1	—	—	1.1	—	1.1
Translation adjustments	—	—	—	—	—	—	—	—	—	(39.4)	—	(39.4)	(26.0)	(65.4)
Financial instruments	—	—	—	—	—	—	—	—	—	—	0.4	0.4	—	0.4
Total comprehensive income	—	—	—	—	—	—	(178.2)	—	1.1	(39.4)	0.4	(216.1)	(19.0)	(235.1)
Share-based remuneration	—	—	0.1	—	—	—	—	—	—	—	—	0.1	—	0.1
Stock options grants exercised	—	20.4	—	—	—	—	(10.9)	—	—	—	—	9.5	—	9.5
Allocation of profits:														
Government grants	—	—	—	0.1	—	—	(0.1)	—	—	—	—	—	—	—
Interest on own capital	—	—	—	—	—	(8.2)	—	—	—	—	—	(8.2)	—	(8.2)
Dividends	—	—	—	—	—	(3.7)	—	—	—	—	—	(3.7)	—	(3.7)
Increase in share capital	113.6	—	—	—	—	(113.6)	—	—	—	—	—	—	—	—
Reserve for investments and working capital	—	—	—	—	—	(184.1)	184.1	—	—	—	—	—	—	—
At December 31, 2018	1,551.6	(31.4)	37.4	47.0	204.4	2,182.3	—	(4.2)	(39.2)	(102.7)	0.5	3,845.7	94.4	3,940.1
Adjustment related to accounting policy change	—	—	—	—	—	—	1.3	—	—	—	(1.3)	—	—	—
At January 01, 2019	1,551.6	(31.4)	37.4	47.0	204.4	2,182.3	1.3	(4.2)	(39.2)	(102.7)	(0.8)	3,845.7	94.4	3,940.1
Net loss for the year	—	—	—	—	—	—	(322.3)	—	—	—	—	(322.3)	5.8	(316.5)
Translation adjustments	—	—	—	—	—	—	—	—	—	(7.3)	—	(7.3)	(3.3)	(10.6)
Financial instruments	—	—	—	—	—	—	—	—	—	—	(0.7)	(0.7)	—	(0.7)
Total comprehensive income	—	—	—	—	—	—	(322.3)	—	—	(7.3)	(0.7)	(330.3)	2.5	(327.8)
Stock options grants exercised	—	4.9	—	—	—	—	(2.7)	—	—	—	—	2.2	—	2.2
Allocation of profits:														
Government grants	—	—	—	2.0	—	—	(2.0)	—	—	—	—	—	—	—
Reserve for investments and working capital	—	—	—	—	—	(325.6)	325.7	—	—	—	—	0.1	—	0.1
AT DECEMBER 31, 2019	1,551.6	(26.5)	37.4	49.0	204.4	1,856.7	—	(4.2)	(39.2)	(110.0)	(1.5)	3,517.7	96.9	3,614.6

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Consolidated Statements of Cash Flows Years Ended
(In millions of U.S. dollar)

	Note	12.31.2019	12.31.2018	12.31.2017
OPERATING ACTIVITIES				
Net income (loss) for the period, including discontinued operations		(316.5)	(171.2)	280.0
ADJUSTMENT TO NET INCOME FOR ITEMS NOT AFFECTING CASH				
Depreciation of property plant and equipment	16	113.8	159.2	196.5
Realization of government grants		(2.1)	(3.6)	(3.3)
Amortization of intangible assets	18	95.9	112.8	146.2
Realization of contribution from suppliers	18	(22.4)	(22.0)	(27.3)
Loss (reversal) for inventory obsolescence		20.5	18.3	11.7
Adjustment to market value, inventory, property plant and equipment and intangible		102.3	99.5	110.2
Allowance for doubtful accounts		(3.1)	(7.8)	8.1
Losses on fixed assets disposal	16	28.6	19.8	18.6
Deferred income tax and social contribution	24.2	33.2	(21.2)	(12.9)
Accrued interest		1.5	(6.4)	(29.0)
Interest on marketable securities, net		(30.9)	(33.6)	(23.6)
Equity in associates gains and losses		0.2	0.4	(1.2)
Share-based remuneration		—	0.1	0.5
Foreign exchange gain (loss), net		(10.3)	20.7	6.0
Mark to market of the residual value guarantees	25	4.2	16.5	(13.3)
Provision for voluntary redundancy scheme		—	—	6.4
Other		(3.9)	(7.2)	(4.3)
CHANGES IN ASSETS				
Financial investments		507.8	790.8	(244.6)
Derivative financial instruments		4.0	23.9	(1.7)
Collateralized accounts receivable and accounts receivable		205.3	(16.0)	4.6
Contract assets		(152.3)	104.1	(76.9)
Customer and commercial financing		1.1	4.6	21.0
Inventories		147.3	(281.9)	404.9
Guarantee deposits		348.6	—	—
Other assets		13.2	43.5	249.4
CHANGES IN LIABILITIES				
Trade accounts payable		(44.6)	70.1	(127.3)
Non-recourse and recourse debt		(323.7)	(22.6)	(9.9)
Other payables		(28.7)	(16.3)	(36.6)
Contribution from suppliers		4.5	125.5	86.0
Contract liabilities		200.6	101.2	(99.9)
Taxes and payroll charges payable		2.6	30.7	21.1
Financial guarantees		(16.0)	(21.2)	(40.7)
Other provisions		20.4	9.8	(53.9)
Unearned income		(7.3)	(12.9)	(11.8)
NET CASH GENERATED BY OPERATING ACTIVITIES		893.8	1,107.6	753.0
INVESTING ACTIVITIES				
Acquisition of property, plant and equipment	16	(284.5)	(154.3)	(237.7)
Proceeds from sale of property, plant and equipment	16	0.1	0.3	19.1
Additions to intangible assets	18	(283.3)	(290.3)	(470.5)
Additions investments in subsidiaries and affiliates		(2.5)	(2.4)	(0.6)
Financial investments		977.8	(76.5)	(404.0)
Dividends received		0.1	0.1	0.1
Restricted cash reserved for construction of assets		—	—	1.0
NET CASH GENERATED (USED) IN INVESTING ACTIVITIES		407.7	(523.1)	(1,092.6)
FINANCING ACTIVITIES				
Proceeds from borrowings		400.5	124.0	972.9
Repayment of borrowings		(645.9)	(596.3)	(540.2)
Dividends and interest on own capital		(2.0)	(40.6)	(54.1)
Proceeds from stock options exercised		2.2	9.5	5.9
Acquisition of own shares		—	—	(15.0)
Lease payments		(11.8)	—	—
NET CASH GENERATED (USED) BY FINANCING ACTIVITIES		(257.0)	(503.4)	369.5
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS		1,044.5	81.1	29.9
Effects of exchange rate changes on cash and cash equivalents		(17.7)	(71.0)	(0.6)
Cash and cash equivalents at the beginning of the period		1,280.9	1,270.8	1,241.5
CASH AND CASH EQUIVALENTS AT THE END OF THE PERIOD		2,307.7	1,280.9	1,270.8
Included in cash and cash equivalents per the statements of financial position		855.2	1,280.9	1,270.8
Included in assets held for sale – Commercial Aviation business unit	4.2	1,452.5	—	—

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

1. Operations

Embraer S.A. (“Embraer” or “the Company”) is a publicly held company incorporated under the laws of the Federative Republic of Brazil (“Brazil”) with headquarters in São José dos Campos, State of São Paulo. The corporate purpose of the Company is:

- (i) To design, build and market aircraft and aerospace materials and related accessories, components and equipment, according to the highest standards of technology and quality.
- (ii) To perform and carry out technical activities related to the manufacturing and servicing of aerospace materials.
- (iii) To contribute to the training of technical personnel as necessary for the aerospace industry.
- (iv) To engage in and provide services for other technological, manufacturing and business activities in connection with the aerospace industry.
- (v) To design, build and trade in equipment, materials, systems, software, accessories and components for the defense, security and power industries, and to promote and carry out technical activities related to the manufacturing and servicing thereof, in accordance with the highest technological and quality standards.
- (vi) To conduct other technological, manufacturing, trading and services activities related to the defense, security and power industries.

The Company’s shares (B3: EMBR3, NYSE: ERJ) are listed in the enhanced corporate governance segment of the Stock Exchange in Brazil (“B3”), known as the New Market (“Novo Mercado”). Embraer S.A. also holds American Depositary Shares (evidenced by American Depositary Receipts - ADRs) which are registered with the Securities and Exchange Commission (“SEC”) and listed on the New York Stock Exchange (“NYSE”).

In accordance with the Company’s by-laws, the consolidated financial statements of the Company as of and for the year ended December 31, 2019 were approved by the Company’s Board of Directors and were published on March 26, 2020, and the Form 20-F, which these financial statements are a part of, have been approved by the Company’s executives and reviewed by the Audit, Risk and Ethics Committee of the Company.

1.1 Transaction between Embraer S.A. and The Boeing Company (“Boeing”)

On January 24, 2019, Embraer, Boeing and certain subsidiaries of Boeing and Embraer entered into the Master Transaction Agreement (“MTA”) and other transaction documents, which defined the terms and conditions for the creation of a joint venture covering Embraer’s Commercial Aviation business unit with a participation of 80% of a subsidiary of Boeing and 20% of Embraer, as well as the creation of a joint venture to promote and develop new markets and applications for the C-390 Millennium multi-mission transport aircraft, with a participation of 51% of a subsidiary of Embraer and 49% of a subsidiary of Boeing (collectively “Transaction”). Until April 25, 2020, Embraer and Boeing continued to be obligated to perform their respective obligations under the MTA with respect to the consummation of the Transaction, and therefore, Embraer maintained the classification of the assets of the Commercial Aviation business and related services as “held for sale” and “discontinued operations” as of December 31, 2019. However, on April 25, 2020, Boeing provided notice to Embraer communicating its decision to terminate the MTA. In addition, Boeing terminated the Contribution Agreement that provided for a joint venture for the C-390 Millennium multi-mission transport aircraft.

While Embraer strongly believes that Boeing wrongfully terminated the MTA and the Contribution Agreement, the accounting impacts resulting from Boeing’s notice that it was terminating the strategic partnership will be recognized by the Company starting on April 25, 2020 the date on which Boeing provided the notice to Embraer. Additional information regarding the expected impacts and details regarding the balance of “assets held for sale” and “discontinued operations” as of December 31, 2019 are disclosed on Notes 3.4, 4 and 40.

2. Presentation of the Financial Statements and Accounting Practices

2.1 Presentation and preparation of the financial statements

The consolidated financial statements have been prepared in conformity with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (“IASB”) which include (i) IFRS, (ii) the International Accounting Standard (“IAS”), and (iii) the International Financial Reporting Interpretations Committee (“IFRIC”).

All informations presented in the consolidated financial statements are those considered relevant in the context of Company’s activities and for management purposes.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

2.1.1 Basis of preparation

These consolidated financial statements have been prepared under the historical cost convention, except when the account requires different criteria, and adjusted for assets and liabilities measured as at fair value in subsequent measurement, when applicable.

The preparation of financial statements requires the use of certain critical accounting estimates. It also requires management of the Company to exercise judgment in the process of applying the Company's accounting policies. These consolidated financial statements include accounting estimates for certain assets, liabilities and other transactions.

The areas which involve high degree of judgments or complexities, or assumptions and significant estimates to the consolidated financial statements, are disclosed in Note 3.

2.1.2 Consolidation

These consolidated financial statements include the balances as of December 31, 2019 of the Company and all subsidiaries and special purpose entities in which the Company has control, directly or indirectly.

All accounts and balances arising from transactions between controlled entities are eliminated during the consolidation process.

a) Subsidiaries

Subsidiaries are entities over which the Company has control, which means exposure and rights to variable returns, ability to use its power over these entities to affect those returns and ability to manage its relevant activities. The control assessment considers, in addition to held majority of voting rights, the shareholders agreement in place between the Company and other non-controlling shareholders with voting rights, any rights arising from other contractual agreements and potential voting power. Subsidiaries are fully consolidated from the date on which control is acquired until the date in which the Company losses control.

Balances associated to the non-controlling shareholders with remaining interest over subsidiaries are presented as non-controlling interest in the Company's statements of income and shareholders' equity.

The accounting policies of the subsidiaries are consistent with the policies adopted by the Company.

b) Special Purpose Entities (SPE)

The Company held certain financing structures for aircraft sales through SPEs in which it has control even without direct or indirect interest. As of December 31, 2019, and 2018, the only SPE with ongoing activities and consolidated in the financial statements is Refine, Inc.

c) Consortia

A consortium is a legal entity set up to meet a specific purpose and is subject to mandatory laws and rules under specific regulations. As of December 31, 2019, the Company along with wholly owned subsidiary hold interest in consortium structure established by both entities solely. The transactions of this consortium are fully recorded and presented in the consolidated financial statements.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements In millions of U.S. dollar, unless otherwise stated

2.1.3 Corporate structure

Below is presented information regarding the consolidated subsidiaries as at December 31, 2019:

Entity	Participation Embraer Group	Country	Core activities
Airholding S.A.	100%	Portugal	Coordinates investments in subsidiaries in Portugal
OGMA - Indústria Aeronáutica de Portugal S.A.	65%	Portugal	Aviation maintenance and production
Yaborã Indústria Aeronáutica S.A.	100%	Brazil	Future commercial aviation joint venture with Boeing
Embraer Commercial Aviation LLC	100%	EUA	Future company related to the Commercial Aviation segment
Embraer Aircraft Customer Services, Inc.	100%	EUA	Sale of spare parts and support services in North America and the Caribbean
Embraer Aircraft Maintenance Services Inc.	100%	EUA	Maintenance of aircraft and components
Embraer Aviation France - EAF	100%	France	Future company related to the Commercial Aviation segment
ELEB – Equipamentos Ltda.	100%	Brazil	Sale of hydraulic and mechanical equipment for the aviation industry
Embraer Aircraft Holding Inc.	100%	EUA	Concentrates corporate activities in the USA
Embraer Business Innovation Center, Inc.	100%	EUA	Develops technological innovation research in aviation and related areas
Embraer Executive Jet Services, LLC	100%	EUA	After sale support and aircraft maintenance
Embraer Executive Aircraft, Inc.	100%	EUA	Final assembly and delivery of executive jets
Embraer Engineering & Technology Center USA, Inc.	100%	EUA	Engineering services related to aircraft research and development
Embraer Aero Seating Technologies, LLC	100%	EUA	Production and maintenance of aircraft seats
Embraer Defense and Security Inc.	100%	EUA	Supply of Super Tucano aircraft to the American Air Force (LAS)
Embraer CAE Training Services LLC	51%	EUA	Pilot, mechanic and crew training
EB Defense LLC	100%	EUA	Future joint venture with Boeing for the sale and promotion of C-390 Millennium
Embraer Solutions, LLC	100%	EUA	Sale of spare parts and support services for the Executive Aviation
Embraer Aviation Europe - EAE	100%	France	Concentrates corporate activities abroad, specifically Europe
Embraer Aviation International - EAI	100%	France	Sale of parts and after sale services in Europe, Africa and the Middle East
Embraer Europe SARL	100%	France	Commercial representation of the Company in Europe, Africa and the Middle East
Embraer Defesa & Segurança Participações S.A.	100%	Brazil	Coordinates investments in the Defense & Security segments
Atech - Negócios em Tecnologias S.A.	100%	Brazil	Development and control, communications, computer and intelligence services
Visiona Tecnologia Espacial S.A.	51%	Brazil	Supply of the Brazilian Government's Geostationary Defense and Strategic Communications Satellite System (SGDC)
Visiona Internacional B.V.	100%	Holanda	Integration and supply of the Brazilian Government's (SGDC) System
SAVIS Tecnologia e Sistemas S.A.	100%	Brazil	Operates in Defense and Security with the Brazilian Government
Embraer GPX Ltda	100%	Brazil	No operations
Embraer Netherlands Finance B.V.	100%	Holland	Financial operations raising and investing funds of the Embraer Group
Embraer Aviation Netherlands B.V.	100%	Holland	Future company responsible for Embraer's commercial activities in Europe
Embraer Netherlands B.V.	100%	Holland	Concentrates corporate activities abroad, leasing and selling used aircraft
Embraer Asia Pacific PTE. Ltd.	100%	Singapore	After sale services and support in Asia
Embraer CAE Training Services (UK) Limited	51%	United Kingdom	No operations
Embraer Portugal S.A.	100%	Portugal	Coordinates investments and economic activities in subsidiaries in Portugal
Embraer - Portugal Estruturas Metálicas S.A	100%	Portugal	Fabrication of steel parts and products for the aviation industry

Embraer - Portugal Estruturas em Compósitos S.A.	100%	Portugal	Fabrication of composite parts and products for the aviation industry
Embraer (China) Aircraft Technical Services Co. Ltd.	100%	China	Sales and maintenance for after sales support in China
EZ Air Interior Limited	50%	Ireland	Fabrication of interiors for commercial aircraft
Embraer Overseas Ltd.	100%	Cayman Islands	Financial operations raising and investing funds of the Embraer Group
Embraer Spain Holding Co. SL	100%	Spain	Concentrates corporate activities abroad
ECC Investment Switzerland AG	100%	Switzerland	Coordinates investments in subsidiaries abroad
ECC Insurance & Financial Company Limited.	100%	Cayman Islands	Covers financial guarantees offered in aircraft sale structuring
Embraer Finance Ltd.	100%	Cayman Islands	Support to the Company in structuring specific operations
Refine, Inc.	100%	Cayman Islands	SPE to finance sales of aircraft from the Commercial Aviation
Fundo de Investimento em Participações Embraer Ventures	100%	Brazil	Exclusive fund created with the objective of technological and financial aggregation based on investment and support to small and medium-sized companies focused on disruptive innovation in areas related to the aerospace sector.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Tepro Consortium - Entity constituted by SAVIS Tecnologia e Sistemas S.A, a company controlled by Embraer Defesa & Segurança, and Embraer S.A, with the objective of assisting the Brazilian Army in the first phase of implementation of the Integrated Monitoring System (“Sisfron”) for the development of certain activities. Located in the city of Campinas, State of São Paulo, Brazil, it represents a direct ownership stake of 93.5% from SAVIS and 6.5% of Embraer S.A.

Fundo Aeroespacial - Equity investment fund in connection with BNDES, FINEP and *Desenvolve SP*, created with the aim of strengthening the aerospace, aviation, defense and security supply chain and promoting integration of systems related to these sectors through support for small and medium enterprises. The fund is not consolidated in the Company’s financial statements, its results are recorded using the equity method and presented as part of the operating income based in the Company’s equity interest (34%).

2.1.4 Changes to the comparative consolidated financial statements

Disclosure of contingent liabilities on income tax matters (Note 26.2)

With the adoption of the IFRIC 23 interpretation, which seeks to clarify how to apply the recognition and measurement requirements of IAS 12 - Income taxes when there are uncertainties about treatments applied in the calculation of the respective taxes (income tax and social contribution on net income), the Company started a review of all its legal demands and the internal processes for identification, recognition, measurement and disclosure criteria applied in previous periods in relation to these matters.

This review involved a joint work with legal advisors that advocate the causes and an evaluation of the aspects related to uncertain tax treatments that resulted in a general review of the legal demands, its risk classification and disclosure criteria, where was noted that some legal demands classified as possible risk of loss were not disclosed because they were in initial stage of judgment in Brazil, still in the administrative instance. Also, the uniqueness of the themes, the specificities of the aeronautical segment in Brazil and the scarcity of jurisprudence were evaluated.

Management is providing disclosure of such contingent liabilities on income tax matters not disclosed before in Note 26.2 considering its historical values as of December 31, 2019 and 2018.

Classification of the Commercial Aviation business unit as discontinued operations (Note 4)

The consolidated statements of income for the comparative years ended December 31, 2018 and 2017 are being recasted due to the classification of Commercial Aviation business unit and related services as discontinued operations (Note 4).

2.2 Summary of significant accounting policies

We present below the significant accounting policies adopted in the preparation of these consolidated financial statements. Description of the significant accounting policies adopted by the Company contributes towards the correct interpretation of the consolidated financial statements, whether on account of the existence of more than one treatment option under the international accounting standards, or due to the complexity of the operation.

This set of annual consolidated financial statements includes the first year of adoption of the following new standards and interpretations:

- IFRS 16 - Leases (Note 2.2.1.1).
- Interpretation IFRIC 23 - Uncertainty over income tax treatments (Note 2.2.1.2).

In addition, at January 1, 2019 the Company changes its accounting policy choice for hedge accounting structures to adopt the requirements of IFRS 9 - Financial Instruments, as per Note 2.2.1.3.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

2.2.1 Changes due to adoption of new accounting standards, interpretations and policies

2.2.1.1 IFRS 16 - Leases

IFRS 16 establishes the principles for the recognition, measurement, and disclosure of leases and requires lessees to recognize a single accounting model in the statements of financial position. The lessor's accounting in IFRS 16 remains substantially unchanged in relation to IAS 17. Lessors will continue to classify between operating or finance leases, using principles similar to the former standard and, therefore, IFRS 16 has no impact on leases where the Company is the lessor.

From the lessee's standpoint, lease contracts previously recognized as expenses in the statement of income for the year on a straight-line basis, start to be recognized in the statements of financial position as right-of-use asset for the existing right of using the assets underlying the contract as a contra entry to a lease liability arising from the obligation to make contractual payments assumed.

The Company adopted IFRS 16 using the modified retrospective model with the adoption date on January 1, 2019. Under this approach, the financial information comparative to prior periods are not being restated and remain as previously reported in accordance with IAS 17.

The Company used the following practical expedients permitted by the standard of: (i) not recording operating lease contracts, that on the beginning date, have lease term equal to or below 12 months or less ("short-term leases") and (ii) not recording contracts for which the individual underlying asset is lower than US\$ 5 thousand ("low-value leases").

The details on and impacts from the changes in accounting policies are disclosed below:

a) Accounting impact from the adoption of IFRS 16:

As part of the adoption process, the Company has examined its lease transactions to determine whether each effective contract is or contains a lease based on the new definition. Under IFRS 16, a contract is or contains a lease if it transfers the right to control the use of an identified asset over a period of time in exchange for consideration.

The Company identified applicable contracts within the scope of IFRS 16 for leases of land and buildings, facilities, machinery, vehicles and other equipment, subject to the practical expedients applied. For the contracts identified, the Company recognized:

- A lease liability in the total amount of US\$ 57.6 related to the lease payments according to the cash flows of each contract, discounted to present value at the incremental borrowing rate. The incremental weighted average borrowing nominal rate applied to lease liability on January 1, 2019 was 6.3%.
- The right-of-use assets representing the right to use the underlying assets of these contracts were measured in an amount corresponding to the lease liability.

Lease commitments as at December 31, 2018	78.1
- (Less): short-term leases recognized on a straight-line basis as expense	(1.9)
- (Less): low-value leases recognized on a straight-line basis as expense	(3.3)
- Discounted using the incremental borrowing rate	(15.3)
Lease liability as at January 1, 2019	57.6

2.2.1.2 IFRIC 23 - Uncertainty over income tax treatments

The Interpretation IFRIC23 clarifies how to apply the recognition and measurement requirements of IAS12 - Income Taxes when there are uncertainties over treatments applied in the calculation of the respective taxes (income tax and social contribution on net income).

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

The interpretation was effective as from January 1, 2019. In the opinion of the Company's management, there were no significant impacts arising from this interpretation, as all procedures adopted for calculation and payment of income taxes are supported by the prevailing legislation and case law of Administrative and Judicial Courts. Contingent liabilities of this nature are presented in Note 26.2.

2.2.1.3 Hedge accounting - Adoption of IFRS 9

The Company changed the accounting policy previously disclosed in Note 2.2.1(a) to the consolidated financial statements as of December 31, 2018 to adopt the requirements of IFRS 9 - Financial Instruments, to supersede IAS 39 – Financial Instruments: Recognition and Measurement, for hedge instruments designated for hedge accounting beginning on January 1, 2019.

(i) Fair value hedge:

The Company applies the fair value hedge accounting to hedge against the risk of changes in borrowing and financing interest rates by contracting swaps. Interest rate swaps existing on January 1, 2019 qualify as fair value hedge for purposes of IFRS 9. The Company's risk management strategies and hedge documentation are aligned with the requirements of IFRS 9 for designation of transactions.

Changes in the fair value of derivatives designated and qualified as fair value hedge continue to be recorded in statements of income for the year as financial income (expense), net, including the changes in the fair value of hedged asset or liability (hedged item) attributable to the hedged risk. There were no changes with the adoption of IFRS 9.

(ii) Cash flow hedge:

The Company applies the cash flow hedge accounting to hedge against the cash flow volatility attributable to a risk of foreign exchange and interest rate fluctuation associated with highly probable forecast transactions that will affect income or loss for the year.

For instruments designated as cash flow hedge, the Company started to account for changes in the fair value of the time value of the instruments (options), previously recognized in financial income (expense), net according to IAS 39, in accumulated other comprehensive income as hedge cost in the cash flow hedge reserve line. Hedge costs are reclassified to the statements of income together with the intrinsic value of the options by adjusting the initial value of the hedge item.

As at January 1, 2019, the amount of US\$ 1.3 was reclassified from retained earnings to the financial instrument reserve in accumulated other comprehensive income (loss) in shareholders' equity related to the time value of the options. The Company did not reclassify the time value of outstanding options as at January 1, 2018, because these transactions were settled or expired before the transition date to IFRS 9.

The Company's risk management strategies and hedge documentation are aligned with the requirements of IFRS 9 for designation of transactions as cash flow hedge.

2.2.2 Functional and presentation currency

A Company's functional currency is the currency of the primary economic environment in which it operates and should be the currency that best reflects company's business and operations. Based on this analysis, management has concluded that the US Dollar ("US\$" or "Dollar") is its functional currency, based on analysis of the following indicators:

- Currency that most influences the prices of goods and services; this is the currency in which the sales price of its goods and services are expressed and settled.
- Currency of the country whose competitive forces and regulations most influence the Company's business.
- Currency that most influences the costs of providing goods or services, i.e., the currency in which the Company's costs are normally expressed and settled.

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

- Currency in which the Company largely obtains funds for financial operations and in which it normally receives for its sales and accumulates cash.

2.2.3 Transactions in foreign currencies

Transactions in other currencies (other than the functional currency) are translated into the functional currency at the foreign exchange rates in force on the transaction dates. The amounts are updated at the exchange rates of the reporting dates. Foreign exchange gains and losses resulting from this translation (in relation to monetary assets and liabilities indexed in currencies other than the functional currency) are recognized in the consolidated statements of income as foreign exchange gain (loss), net. Customer advances and advances to suppliers for goods and/ or services in foreign currencies are translated to the Company's functional currency in the transaction date and no subsequent translation is recognized.

2.2.4 Financial Instruments

a) Financial assets

a.1) Recognition and measurement

Financial assets are recognized when the Company becomes part of the instrument's contractual arrangements. It is initially measured at fair value, plus transaction costs attributable to their acquisition or issuance, except for instruments measured at fair value through profit or loss, for which these costs are recognized immediately in the consolidated statements of income.

The Company classifies its financial assets under the following categories: (i) measured as at amortized cost, (ii) measured as at fair value through other comprehensive income and (iii) measured at fair value through profit or loss.

Financial assets are not reclassified subsequent to initial recognition, unless the Company modifies the business model for the management of these financial assets, in which case all affected assets are reclassified on the first day of the new business model.

Financial assets are derecognised when the contractual rights to receive cash flows from the asset expires or are transferred in a transaction in which substantially all the risks and benefits of ownership of the financial asset are transferred by the Company.

a.2) Classification and subsequent measurement

The Company classifies financial assets as measured at amortized cost only if both criteria are met:

- The asset is held within a business model whose objective is to collect the contractual cash flows; and
- The contractual terms give rise to cash flows, at specific dates, which relate only to the payments of principal and interest.

Financial assets measured as at amortized cost by the Company includes cash and cash equivalents, certain financial investments, trade accounts receivable, contract assets, guarantee deposits and other financial assets.

Financial assets measured as at fair value through other comprehensive income (FVOCI) are assets held within a business model whose purpose is achieved both through the receipt of contractual cash flows and the sale of financial assets, as well as their contractual terms generate, on specific dates, cash flows that are related only to payments of principal and interest.

Changes in fair value of FVOCI financial assets are recognized in accumulated other comprehensive (income) loss in the consolidated changes in shareholders' equity. Gains or losses due to impairment and exchange variation, including interest calculated using the effective interest method, are recognized in the consolidated statements of income as financial income (expense), net, except for the exchange variation recognized as foreign exchange gain (loss), net. In the derecognition of these financial assets, any amounts accumulated in the consolidated statements of other comprehensive income are reclassified to the consolidated statements of income.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

All financial assets not classified by the Company as measured at amortized cost or as FVOCI are classified as at fair value through profit or loss (FVTPL). These assets include financial assets held for active and frequent trading and derivative financial instruments.

(i) Business model evaluation

The Company evaluates the business model objective for the management of financial assets as part of the accounting classification of the instruments. The factors considered in this evaluation are:

- The current financial policy and the objectives set for portfolio management, which includes assessing whether the strategy focuses on contractual interest income, maintaining a determined interest rate profile, the relationship between the duration of the financial assets and related liabilities, expected cash outflows, or the collection of cash flows through the sale of underlying financial assets.
- How portfolio performance is assessed and reported to Management.
- Risks that affect the performance of the business model and how they are managed.
- The frequency, volume and timing of assets sales in prior periods, the reasons for such transactions and future expectations.

(ii) Evaluation if contractual cash flows are only principal and interest payments

To assess whether contractual cash flows are only principal and interest payments, the principal is defined as the fair value of the financial asset at the initial recognition, and interest as a consideration for the time value of money, the credit risk associated with value of principal outstanding during contractual terms, other risks and general costs of loans, as well as a profit margin in the transaction.

This evaluation is made by considering the contractual terms of the financial assets, which includes, in addition to evaluating whether the contractual cash flows are only principal and interest payments, the existence of terms that could change the timing or value of the contractual cash flows which would not meet the definition, including: contingent events, terms that can adjust contractual rates, prepayment and extension of due dates, and terms that limit access to cash flows of specific assets.

b) Financial liabilities

The Company classifies its financial liabilities in the following categories: (i) measured as at amortized cost and (ii) fair value through profit or loss. A financial liability is measured at fair value through profit or loss if it is held for trading or is a derivative financial instrument, and its changes, including interest, is recognized in the consolidated statements of income. Changes in other financial liabilities measured as at amortized cost, including interest and exchange variation, are recognized in the consolidated statements of income under financial income (expenses), net caption, except for the exchange variation recognized as foreign exchange gain (loss), net.

Financial liabilities are derecognised when contractual obligations are withdrawn, canceled or expired. The difference between the extinct book value and the consideration paid (including transferred assets or assumed liabilities) is recognized in the consolidated statements of income.

2.2.5 Cash and cash equivalents and financial investments

Cash and cash equivalents include cash in hand, cash in transit (amounts paid by our customers or debtors that are pending release by the intervening bank at the reporting date), bank deposits and highly liquid short-term investments, usually maturing within 90 days of the investment date, readily convertible into a known amount of cash and subject to an insignificant risk of change in value.

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Amounts related to cash and cash equivalents, which are however not available for use by the Company, are presented within other assets in the consolidated financial statements. Other financial investments with maturities of more than 90 days from the acquisition date are presented as financial investments.

2.2.6 Trade accounts receivable, net

When making a sale, the Company evaluates its payment terms. If the sale amount is not due/ receipt immediately, which is the case of aircraft sales, it will be recognized in the trade accounts receivable. The amount receivable when the payment is deferred by the customer is adjusted to present value if applicable, identifying an interest rate compatible with the market at the time of sale and applying it to the amount receivable according to the transaction payment terms. The Company does not have trade accounts receivable from customers with a significant financing component.

Expected credit losses are recognized using actual credit loss experiences from the last 10 years and follow-up of prospective trends in the markets and segments that the Company operates. The identified factor is applied to the measurement of expected credit losses and recognition of impairment losses in the consolidated statements of income. The methodology data is reviewed and updated periodically.

2.2.7 Derivative financial instruments

The Company uses derivative instruments to hedge its operations against the risk of fluctuations in foreign exchange and interest rates; they are not used for speculative purposes.

Gains and losses on derivative transactions are recorded in consolidated statements of income, considering the fair value of these instruments. The unearned gains and losses is recognized in the consolidated statements of financial position under derivative financial instruments, and the counterpart in consolidated statements of income under financial income (expense), net, (Note 35), except for operations to hedge exposure to changes in exchange rate or designated as cash flow hedge, which is recognized as accumulated other comprehensive income (loss) in shareholders' equity.

2.2.8 Hedge accounting

The Company uses hedge accounting to book certain derivative financial instruments applied to hedge risks of fluctuations in foreign exchange and interest rates in transactions associated with firm commitments and highly probable forecast transactions.

On hedge initial designation, the Company formally documents the relationship between hedge instruments and hedged items, including the risk management objectives and the strategy for conducting the transaction, together with the methods used to evaluate the effectiveness of hedge relationship.

The fair value of derivative financial instruments designated as hedge accounting is presented in Note 9. Changes in fair value of hedge instruments and hedge costs booked in accumulated other comprehensive income (loss) in shareholders' equity are presented in Note 9.

a) Fair value hedge

Fair value hedge is applied for derivative financial instruments that hedge the Company against risk of fluctuations in interest rates (hedged risk) of loans and financing.

Changes in the fair value of derivatives that are designated and qualify as fair value hedges are recorded in income or loss, together with any changes in the fair value of the hedged asset or liability that are attributable to the hedged risk. The gain or loss relating to the effective portion of interest rate swaps is recognized in income or loss as financial income (expense), net. The gain or loss relating to the ineffective portion is recognized in income or loss within financial income (expense), net.

b) Cash flow hedge

Cash flow hedge is applied for hedging risks associated with the volatility of cash flows in foreign currency associated with highly probable forecast transaction that will impact income or loss, in this case the payroll expenses of personnel in Brazil settled in Brazilian Reais.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

The Company designates as cash flow hedges the intrinsic value of hedge instruments (put and call options of foreign currency). The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in the cash flow hedge reserve within shareholders' equity. The time value of put and call options is recognized as hedge costs in accumulated other comprehensive income (loss) within shareholders' equity. The gain or loss relating to the ineffective portion is recognized immediately in income or loss, within financial income (expense), net.

Amounts accumulated in shareholders' equity are reclassified in the periods when the hedged item affects income or loss.

When a hedging instrument expires, or is sold or terminated, or when a hedge no longer meets the criteria for hedge accounting, any cumulative deferred gain or loss and deferred costs of hedging in shareholders' equity at that time remains in shareholders' equity until the highly probable forecast transaction occurs, when it is reclassified to income or loss along with the gain or loss of forecast transaction. When the forecast transaction is no longer expected to occur, the cumulative gain or loss and deferred costs of hedging that were reported in shareholders' equity are immediately reclassified to income or loss within financial income (expense), net.

c) Effectiveness of hedge accounting

Hedge effectiveness is determined at the inception of the hedge relationship, and through periodic prospective effectiveness assessments, to ensure that an economic relationship exists between the hedged item and hedging instrument.

For fair value hedges, the Company enters into interest rate swaps where the critical terms of the hedging instrument match exactly with the terms of the hedged item, as notional value, payment term and cash outflow dates. Since all critical terms matched during the year the hedge relationship was 100% effective.

In the case of cash flow hedges designated to hedge the volatility of payroll expenses settled in Brazilian Reais, the Company enters into zero-cost collar financial instruments by buying put options and selling call options of foreign currency with the same counterparty and risk premium zero. The critical terms of financial instruments matched with the terms of hedged risk - the put and call options notional value hedges the risk 1:1 (forecast of payroll cash flows in Brazilian Reais for fiscal year) and its due date is within the forecast dates of cash outflows throughout the year. The Company assesses on a qualitative and prospective basis the cash flow hedge effectiveness. If relevant changes in circumstances affect the terms of the hedged item, as changes in the forecast value of hedged cash outflows in Brazilian Reais in comparison to the effective value, the Company performs on a prospective basis the balance of hedge relationship and any ineffective portion is recognized in income or loss within financial income (expense), net.

2.2.9 Inventories

The Company's inventories are largely comprised of raw material, work in progress, spare parts and finished goods. Inventories of raw materials are recognized at acquisition cost. Inventories of work in process comprise raw materials, direct labor, other direct costs and general production costs attributable to the cost of the inventories. Once the products have been completed, they are recognized as finished products.

Inventories of raw material and spare parts are recognized as at the weighted average cost. Manufactured aircrafts (finished goods) and work in progress are measured at its individual production cost, which is recognized as cost of sales and services in the consolidated statements of income when aircraft is delivered to the customer.

Inventories are assessed periodically to determine whether the net realizable value is higher than its cost and impairment loss is recognized if the book value is higher as cost of goods sold and services rendered.

The Company periodically assesses the consumption and demand for its inventories and records an expense for estimated losses due to obsolescence in the case of items without activity and for which there is no demand for subsequent periods, in accordance with established policy:

Provision for obsolescence is recorded for items without activity for over two years and with no planned use in the production program, and to cover expected losses from excess inventories or obsolete work in progress, except for inventories of spare parts, for which the provision is based on technical obsolescence of items without activity for over two years.

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

The Company holds used aircraft for resale, usually received in trade-in transactions to facilitate new aircraft sales. The book value of these assets is compared periodically with its net realizable value, which is the assets estimated selling price in the ordinary course of business less estimated costs to sell. Any loss identified is recognized as other operating income (expense), net in the consolidated statements of income as other operating expenses. The estimated selling price of used aircraft is based in the assessment of third party.

2.2.10 Income tax and social contribution

Tax expenses for the year comprise current and deferred income tax. Income tax is recognized in the consolidated statements of income, except the portion of deferred income tax related to items recognized directly in the consolidated shareholders' equity in other comprehensive income.

The current income tax is calculated at the nominal rates of each country, wherein 34% in Brazil, composed of 25% income tax and 9% social contribution on net income.

Deferred income tax is recognized on temporary differences arising between the tax and accounting basis of assets and liabilities.

2.2.11 Investments

Investments in associates are recorded and valued in the consolidated financial statements using the equity method of accounting. In the case of exchange variations on foreign investments that use a functional currency other than that used by the Company, such exchange variations are recognized in cumulative translation adjustments within shareholders' equity, and are only recognized in the consolidated statements of income when the investment is sold or expensed.

2.2.12 Property, plant and equipment, net

Property, plant and equipment are recognized by the acquisition, formation or construction cost, less accumulated depreciation and impairment losses.

Depreciation is calculated by the straight-line method based on the asset's estimated useful life Note 16. Land is not depreciated. The estimated useful lives are reviewed and adjusted, if appropriated, at the end of each fiscal year.

Subsequent costs are included in the asset's carrying amount or recognized as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Company.

The Company estimates the residual value for certain aircraft spare parts included in the exchange pool program, which is reviewed by Management, and if necessary adjusted, at the end of each reporting period. The Company does not attribute residual values to other assets as assets are not usually sold and in the event of a sale, the amount is not significant.

The items comprising property, plant and equipment are summarized below:

- a) **Land** - mainly comprises areas on which the industrial, engineering and administrative buildings are located.
- b) **Buildings and land improvements** - mainly plants, engineering departments and offices, and land improvements include parking lots, road systems and water and sewage networks.
- c) **Facilities** - comprise auxiliary industrial facilities that directly or indirectly support the Company's industrial operations, as well as facilities of the engineering and administrative departments.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

-
- d) **Machinery and equipment** - machinery and other equipment directly or indirectly used in the manufacturing process.
 - e) **Furniture and fixtures** - furniture and fixtures used in the production, engineering and administrative departments.
 - f) **Vehicles** - mainly industrial vehicles and automobiles.
 - g) **Aircraft** - mainly aircraft leased to airlines, and those used to assist in testing new projects.
 - h) **Computers and peripherals** - information technology equipment used mainly in the production process, engineering and administration.
 - i) **Tooling** - tools used in the Company's production process.
 - j) **Property, plant and equipment in progress** - construction works to expand the manufacturing plants and aircraft maintenance centers.
 - k) **Exchange pool program** - the exchange pool program is an operation in which the customer contracts the availability of spare parts for aircraft maintenance. In this program, when it is necessary to change a damaged part, the customer delivers the damaged part to the Company and the Company provides the customer with a part in working order. The damaged part is in turn reconditioned and added to the pool.

2.2.13 Intangible assets, net

a) Development

Research costs are recorded as an expense when they are incurred. Project costs, comprised mainly of expenditure on product development, including drawings, engineering designs and construction of prototypes, are recorded as intangible assets when it is probable that the projects will generate future benefits, taking into account their commercial and technological feasibility, availability of technological and financial resources, and only if the cost can be reliably measured.

Capitalized development costs are amortized from the time at which benefits begin to accrue (units produced), based on estimated aircraft sales, and the amortized amounts are appropriated to production cost. Revision of the sales estimate related to the amortization quota is made at least annually.

The Company has agreements with certain key suppliers, hereby denominated partners, who participate in the Company's research and development projects by contributing cash. The Company records such contributions as liabilities on receipt and as the milestones are completed and the amounts are consequently no longer subject to return, they are recorded as a reduction of development expenditure, capitalized in intangible assets and amortized on the aircraft production series.

The Company records these contributions when received as a liability and as the development stages and contractual events signed with the supplier are met, therefore, no longer subject to return, these values are slaughtered for aircraft development costs recorded in intangible, and amortized in conjunction with development expenses following the same amortization criteria.

b) Computer software

Software licenses are capitalized and amortized over their estimated useful lives.

Costs associated with maintaining computer software programs are recognized as expense as incurred. Development costs directly attributable to identifiable and unique software, controlled by the Company and that is expected to generate benefits greater than the costs for more than one year, are recorded in intangible assets.

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

2.2.14 Impairment of long-lived assets

At the end of each fiscal year, the Company performs impairment test for all cash-generating units (CGUs) with goodwill generated from business combination allocated and for CGUs with intangible assets still under development and not yet producing (undefined useful life).

CGUs with definite-lived assets (property, plant and equipment, and intangibles) allocated are analyzed, at each quarter, whether there is any indication it might be impaired to perform the impairment test.

Assets are grouped in CGUs taking into consideration the Company's business model and its monitoring of cash flows. In general, the CGUs are defined in accordance with the families/ platforms of aircrafts or other goods and services produced by the Company, irrespective of its geographic location.

The Company applies the value in use concept, using discounted cash flow projections, discounted at an appropriate rate which reflects the investors' expectations of return. The cash flow projections for the CGUs take into consideration the Company's medium and long-term strategic plan, based on the characteristics and expectations of the business.

When the impairment test is performed, Management compares the carrying amounts of the Company's CGUs with its recoverable amounts, which is determined at the higher between its value in use and fair value less cost to sell. An impairment charge is recognized when the carrying amount exceeds the recoverable amount.

Any impairment losses of a CGU are recognized in the consolidated statements of income in the line of other operating income (expense), net and allocated to relevant assets of the impaired CGU.

The exception to this concept is aircraft that the Company held in its property, plant and equipment for operating leases purposes, in which the Company acts as lessor. In this case, the aircraft is tested individually using the higher of its value in use and its market value to determine its recoverable amount. For impairment test purposes, the market value is estimated with the assistance of assessment prepared by third party appraisals and the value in use is determined by the discounted cash flow of lease agreement associated with each aircraft tested, when applicable.

Assets held for sale are tested for impairment in accordance with practice described in Note 4.

2.2.15 Leases

a) Right-of-use assets

The Company recognizes right-of-use assets on the lease inception date (that is, the date in which the asset is available for use). The right-of-use assets are measured at cost, less any depreciation or impairment losses and are adjusted for any revaluation of lease liabilities. The cost of right-of-use assets includes the amount of the recognized lease liability, the initial direct costs incurred less any lease incentives received. The right-of-use assets are depreciated on a straight-line basis considering the lease term and the Company's intention in renewal options, based on the best estimate on each reporting date. Right-of-use assets are subject to impairment test if there is evidence that their carrying amount may be higher than the recoverable amount.

Expenses on the depreciation of the right-of-use asset are recognized as operating expenses in the statements of income for the year.

b) Lease liabilities

On the lease inception date, the Company recognizes lease liabilities measured at the present value of lease payments to be made during the lease term, which is measured based on the contract term and renewal options. Lease payments include fixed payments less any lease incentives received. Variable lease payments not depending on an index or rate are recognized as expenses in the period in which the event or condition that triggers the payment occurs.

When calculating the present value of lease payments, the Company uses the incremental borrowing rate. After the inception date, the amount of the lease liability is increased to reflect the increase of interest, adjustments of installments and reduced for lease payments made. Moreover, the carrying amount of the lease liability is remeasured in case of any modification, a change in the lease term, a change in fixed lease payments or a change in valuation to acquire the underlying asset. Interest is recognized as financial income (expense), net in the statements of income for the year.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

(i) Determination of the lease term:

The Company determines the contractual term as the non-cancelable lease term, plus any period covered by a renewal option, if it is reasonably certain that it is exercised, or any option to terminate the lease, if it is reasonably certain that it will not be exercised. The Company has the option, under some of its leases, to maintain the assets for additional periods from three to five years. The Company applies judgment when assessing if it is reasonably certain that it will exercise the renewal option, considering all significant factors that create an economic incentive for the exercise of the renewal.

The Company reassesses the lease term if there is an event or significant change under circumstances that are under its control and affect its capacity to exercise (or not exercise) the option to renew (e.g. a change in the business strategy).

(ii) Short-term leases and low-value asset leases:

The Company applies the short-term lease recognition exemption to all its leases with the contractual term below or equal to 12 months from the inception date and without a purchase option. The practical expedient of recognition exemption for low-value assets leases for which the individual amount is below US\$ 5 thousand is also applied. Short-term and low-value lease payments are recognized as expenses on a straight-line basis over the lease term.

c) Accounting policies applied up to December 31, 2018

In the comparative period ended December 31, 2018, the contracts where the Company is the lessee were recognized according to their classification between finance and operating leases:

Leases, where the Company acquired substantially all the risks and rewards of ownership, were classified as finance leases. Finance leases were recorded as a financed purchase recognizing a fixed asset and borrowing and financing liability at the lease inception date.

Leases for which a significant portion of the risks and rewards of ownership remained with the lessor were classified as operating leases. Operating lease payments were recognized in profit or loss for the year under the straight-line method over the lease term.

2.2.16 Loans and financing

Loans are recognized initially at fair value, net of transaction costs, and subsequently carried at amortized cost (plus charges and interest on a pro rata basis), taking into account the effective interest rate on each transaction.

Loans are classified as current or non-current liabilities based on contractual terms.

2.2.17 Borrowing costs

When a substantial period of time is required for construction or production of an asset before it is ready for use, the borrowing costs are capitalized as part of the cost of such assets. The costs are allocated based on the average rate for all active loans, weighted in accordance with additions in the period. Borrowing costs are interest and other costs incurred by the Company in obtaining funding.

2.2.18 Financial guarantees and residual value guarantees

In certain cases, the Company grants financial or residual value guarantees on delivery of its aircraft, as part of the aircraft financing structure.

The residual amount is guaranteed to the lender based on the expected future value of the aircraft at the end of the funding, subject to a maximum limit, agreed by contract.

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Financial guarantees are calculated at the time of delivery of the aircraft and recognized as a reduction in sales revenue against contract liabilities. The income is realized in the consolidated statements of income over the aircraft financing period and all deferred income is recognized by the end of that period.

To cover the risk of losses on such guarantees, the Company may record an additional provision in the event of significant circumstances, such as a request for judicial reorganization of a client, based on the best estimate of potential losses Note 25.

In some cases, the Company holds guarantees in the form of deposits in favor of third parties to whom financial and residual value guarantees have been provided as part of aircraft financing structures.

2.2.19 Unearned income

Unearned income comprises government grants received by the Company and its subsidiaries.

Government grants are recognized against the expenses in which the resources were used. When government grants are received in advance for research investments they are recorded as unearned income and recognized in the consolidated statements of income to the extent that the resources are invested and contractual milestones are met, as reduction of research expenses.

Government grants for the acquisition of property, plant and equipment are recognized as debt (loans and financing) in liabilities until the milestones determined by the granting entity are met. Once the milestones are completed, the grant is recognized as unearned income. This unearned income is recognized in the consolidated statements of income as a reduction of the depreciation expense of the underlying asset it is proposed to subsidize in proportion with the recognition of the expense.

Income earned with non-distributable government grants is allocated from the income of the year to the government grants reserve in shareholders' equity.

2.2.20 Provisions, contingent assets and liabilities, legal obligations and court-mandated escrow deposit

Provisions – provisions are recognized based on the judgment of the Company's Management and its legal counsel, the nature of the lawsuits, legal precedent, complexity and court interpretations, whenever the loss is considered probable, when such loss would result in a probable outflow of resources to settle the obligations and when the amounts involved can be measured with a reasonable degree of certainty, the provision is recognized. The provision for labor claims is recognized based on the Company's historical percentage of cash outflows of each demand. The amounts provided represent the Company's best estimate of the anticipated outflow of resources.

For income tax matters, a provision is recognized when the Company's Management evaluates with the assistance of its legal advisors that an uncertainty over income tax treatments taken during the fiscal years subject to tax authorities' examinations, or under discussions in administrative and legal instances with tax authorities, is not probable to be accepted by decisions of the court of last resort.

Contingent liabilities – amounts for which disbursement is classified as possible risk of loss are disclosed but not recorded in the consolidated financial statements. Where the probability of loss is classified as remote, neither provision nor disclosure are required. For income tax matters and related legal demands, the Company discloses the amounts of income tax treatments taken during the fiscal years subject to tax authorities' examinations, or under discussions in administrative and legal instances with tax authorities, that in its assessment is probable to be accepted by decisions of the court of last resort.

Legal obligations - arise from tax liabilities for which the legality or constitutionality is under appeal. The related amounts are fully recognized as provisions in the consolidated financial statements.

Court-mandated escrow deposits - recorded as other assets and periodically updated for monetary correction.

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

2.2.21 Product warranties

Warranty expenditure on aircraft is estimated on delivery of these products. The estimates are based on historical data that includes, among others, warranty claims and related repair/ replacement costs, warranties given by the suppliers, contractual coverage period and warranty patterns for new aircrafts, for which the Company expects higher warranty costs in the launch of new models until the production process matures and increases the platform in service period. The coverage period varies from 3 to 6 years.

The Company may be obliged to modify the product to meet the requirements of the certification authorities, or after delivery, due to improvements or to the aircraft's performance. The costs of such modifications are provisioned when the new requirements or improvements are requested and known.

Management reviews the assumptions and the evolution of warranty relates costs periodically, and if appropriated, adjustments to the provision is recorded.

The product warranties balances are presented in the provisions caption in the consolidated statements of financial position, Note 26.1.

2.2.22 Post-retirement benefits

a) Defined contribution

The Company provides defined contribution pension plans for its employees. For the companies incorporated in Brazil, these are managed by EMBRAER PREV - Sociedade de Previdência Complementar.

b) Post-retirement healthcare benefits

The Company and some of its subsidiaries provide healthcare benefits to retired employees.

The planned costs of offering post-retirement healthcare benefits and coverage for dependents are recorded as a provision during the period of employment based on actuarial studies conducted to identify future exposure, based on the following main premises:

- i) Discount rate - brings future benefit flows to present value and is defined based on the ratio of Brazilian government securities.
- ii) Increase of medical costs rate - represents the increase in the value of medical care and is not applied linearly, as the companies historically tend to take measures to reduce the cost, or even change health plan providers.
- iii) Morbidity rate (aging factor) - measures the increased use of health plans in light of the aging population.
- iv) Mortality rate - uses the RP-2000 generational table provided by Society of Actuaries (SOA), which shows the rate by age and sex.
- v) Probability of Retirement - estimates the probability of retirement by age group.
- vi) Churn rate - uses the T-3 Table Service available from the Society of Actuaries (SOA), which shows the average rate of termination of employees by age.

The Company recognizes changes in the provision for the plan against other comprehensive income in the equity valuation adjustments account in consolidated shareholders' equity, net of taxes, to the extent that there are changes in the assumptions and against consolidated statements of income if there are changes in the costs of the current benefit plan or in the plan's contractual characteristics.

This provision is reviewed at least annually.

2.2.23 Employee profit sharing plan

The Company provides a profit-sharing plan for its employees, which is linked to performance targets established in action plans set and agreed at the beginning of each year. The profit-sharing approved policy is equivalent to 8.5% the operating result of the fiscal year, may be adjusted annually by Management based on circumstances. Provisions are recognized monthly by applying the agreed percentage to the payroll of the company, recognized in the consolidated statements of income accounts related to the job performed by each employee.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Of the total amount of profit sharing, 50% is divided equally among all the employees and the other 50% in proportion to each employee's salary.

2.2.24 Share-based payment

The Executive Remuneration Policy (PRE) determines that the remuneration of the Company's management shall be granted as a Long-Term Incentive (ILP in Portuguese) with the objective of retaining and attracting qualified personnel who will make an effective contribution to the Company's performance. The Company provides two types of share-based remuneration in the form of LTIs:

- i) Stock options plan (capital instruments based on the Company's share issues). In this modality, in return for the services provided, the program participants receive stock options, the fair value of which is calculated based on the Black & Scholes pricing model and recognized on a linear basis in the consolidated statements of income during the vesting period, which is the period during which the acquisition criteria are met. As of December 31, 2019, the vesting period of all options granted under this plan has already been completed remaining solely certain exercises still outstanding (Note 29).
- ii) Cash-settled phantom shares plan, in which the amounts attributed to the services provided by the participants are converted into virtual share units based on the market value of the Company's shares. At the end of the acquisition period the participant receives the quantity of virtual shares converted into reais, at the shares' current market value. The company recognizes the obligation during the acquisition period (quantity of virtual shares proportional to the period) in the same group as the participant's normal remuneration. This obligation is presented as an account payable to employees and the fair value is calculated based on the market price of the shares and registered as financial income (expense) in the consolidated statements of income. The phantom shares plan is a cash-settled share-based payment transaction and therefore has no impact on the calculation of diluted earnings per share.

2.2.25 Earnings per share

Basic earnings per common share are computed by dividing net income attributable to Embraer shareholders by the weighted average number of common shares outstanding during the period.

Diluted earnings per share are computed by adjusting the number of shares outstanding to include the number of additional shares that would have been outstanding had the potentially dilutive shares attributable to stock options been put into circulation during the respective periods.

2.2.26 Revenue recognition of contract with customers

Revenue comprises the fair value of the consideration received or to be received for the sale of products and services in the ordinary course of business. Revenue is presented net of taxes, returns, reductions and discounts, and in the consolidated financial statements, after eliminating intercompany sales.

a) Revenue from sales of aircraft and spare parts

Revenues from aircraft and spare parts sales are recognized when the control, is transferred to the customer, that is, when all recognition conditions are met. Revenues from commercial, executive and agricultural aircraft and spare parts are generally recognized upon delivery or shipment to the customer.

In aircraft sales contracts, the Company normally receives customer advances before the product control is transferred. The Company asserts that there is no significant financing component in this operation.

For the spare parts sale contracts, the client makes the payment after the transfer of control, with average payment term of 30 days.

In sales of aircraft contracts, other performance obligations, such as supply of spare parts, training services, technical assistance and other obligations may be presented, which may or may not be delivered simultaneously to the aircraft delivery. For the Commercial and Executive Aviation contracts, the individual

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

selling price is allocated for these additional performance obligations, and the variable considerations (as discounts), are allocated using the cost-plus margin method. In the Defense & Security aircraft sales, there is no stand-alone price basis considering its high customization, the price is allocated in the performance obligation considering the cost-plus margin method.

For these performance obligations, the revenue is recognized when the control of related product or service is transferred to the customer.

b) Revenue from sale of services

Services sale revenues are recognized over time of control transfer to the customer, that is, to the extent that services are rendered over time. The performance obligations of such contracts are satisfied and recognized in the consolidated statements of income over time.

In the Defense & Security segment, some services, such as modernization services, the client's payment schedule follow a schedule agreed between the parties.

In maintenance service contracts, the Company receives from the clients in an average term of 30 days.

Exchange Pool and EEC (Embraer Executive Care) programs revenues are recognized monthly during the contract period, because there is no customer use pattern that can be reliably projected, and consist of a fixed rate and part of a variable rate directly related to the hours actually flown by the aircraft covered in these programs. The payment term usually is 30 days.

c) Revenue from long-term contracts (Defense & Security)

In the Defense & Security segment, most of the sales contracts are characterized by the high customization of the products and development of new technologies whose transfer of control to the customer occurs over time of development and production of aircraft or new technology as a single performance obligation. In such contracts, their revenues are recognized over time at amounts equal to the ratio of actual cumulative costs incurred at the end of reporting period divided by total estimated costs at completion, multiplied by the allocated price less the cumulative revenue recognized in prior reporting period.

Some contracts contain clauses for price adjustment based on pre-established indexes and these are recognized in the accounting period. The adequacy of revenue recognition related to development contracts in the Defense & Security segment is based on Management's best estimates of total estimated costs at completion, as they become evident.

The Company understanding is that the cost incurred method provides the most reliable basis for estimating the progress of contracts whose revenues are recognized over time.

In these contracts, there is also a schedule of payments agreed between the Company and the customers, which vary from contract to contract. After analysis, the Company has concluded that there are no significant financing components in the Defense & Security segment contracts since there is no willingness on either side to finance the other and there are factors that are not under the control of any party which may affect the payment dates.

d) Contract assets and liabilities

The contract assets relate to the Company's rights to the consideration for the work completed and not billed at the date of the consolidated financial statements, mainly from long-term Defense & Security contracts that are recognized over time as noted above, and net of customer advances received and expected credit losses recognized. Contract assets are transferred to trade accounts receivable when the rights become unconditional.

Contract liabilities refer to advance payments received by the Company prior to the delivery of the aircraft, as well as to the supply of spare parts, training, technical assistance and other obligations included in aircraft sales contracts. They also refer to advances of consideration received from customers related to the acceptance of managerial stages/ tasks under long-term contracts (Defense & Security).

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

e) Costs to obtain a contract

Refers to incremental costs incurred by the Company solely to obtain contracts with customers that will be recovered in the fulfillment of these contracts, such as costs incurred with sales commissions and bank guarantees granted in Defense & Security long-term contracts. Assets for obtaining contracts are capitalized as other assets and amortized when (or as) the related contract revenue is recognized.

2.2.27 Cost of sales and services

Cost of sales and services consists of the cost of the aircraft, spare parts and services rendered, comprising:

- a) Material** - Materials used in the production process, substantially acquired from foreign suppliers.
- b) Labor** - comprises salaries and related charges, primarily in Brazilian reais.
- c) Depreciation** - The Company's fixed assets are depreciated using the straight-line basis over their useful lives.
- d) Amortization** - Internally generated intangible assets are amortized in accordance with the estimated sales of the series of aircraft. Intangible assets acquired from third parties are amortized on straight-line bases over their estimated useful lives.
- e) Product warranties** - The Company estimates and records a liability for guarantee obligations related to its products on the date of delivery of the aircraft, based on historical experience and recorded as cost of goods sold.
- f) Multiple-element arrangements** - The Company enters into transactions that represent multiple-element arrangements, such as for providing training, technical assistance, spare parts and other concessions. These costs are recognized when the product or service is delivered or provided to the customer.

2.2.28 Financial income (expenses), net and foreign exchange gains (losses), net

Financial income (expenses), net and foreign exchange gains (losses), net principally comprise interest income on cash and cash equivalents and financial investments measured as at amortized cost and FVOCI, financial charges on loans, tax updates and foreign exchange gains (losses) on assets and liabilities expressed in currencies other than the functional currency (US dollars), on an accrual basis. Gains or losses on fair value changes of FVTPL financial instruments are also recognized as financial income (expenses), net.

Changes in the fair value of the residual value guarantees and income or loss on the provision and implementation of derivative financial instruments capitalized are also recorded as financial income (expense), net in the consolidated statements of income.

Financial income and expense exclude borrowing costs attributable to acquisitions, buildings or the contribution of qualifying assets that require a substantial period of time to be ready for use or sale.

2.2.29 Statement of cash flows

The statement of cash flows was prepared using the indirect method.

2.2.30 Segment reporting

Operating segment information is presented in a manner consistent with the internal reports provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources among and assessing the performance of the operating segments and for making strategic decisions, is the Chief Executive Officer.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Generally, balances and transactions that are not directly allocated to a specific operating segment, such as corporate area expenses, are appropriated pro-rata basis, using revenue from each segment as an allocation factor.

3. Critical accounting estimates and significant judgements

Preparation of the consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and adopt assumptions that affect the reported amounts of assets and liabilities, revenue and expense and their disclosure. Therefore, variables and assumptions derived from past experience and other factors deemed relevant were used in preparing accompanying consolidated financial statements included in this report. These estimates and assumptions are reviewed on an ongoing basis and the changes to accounting estimates are recognized in the period in which the estimates are revised on a prospective basis.

The significant accounting policies, including the variables and assumptions used in the estimates, and the relevant sensitivity of those judgments to different scenarios and conditions are described below:

3.1. Revenue from long-term contracts (Defense & Security)

In the Defense & Security segment, a significant portion of revenue is derived from long-term contracts with the Brazilian and foreign governments, recognized over time by the cost incurred method (Note 2.2.26 – c), using the ratio of actual cumulative costs incurred divided by total estimated costs at completion for progress measurement.

During the contract execution, the Company assesses the costs incurred, adjusting total estimated costs at completion if necessary, to reflect variations in costs in relation to the projections, mainly due to changes in circumstances and new events, such as contract modification. Any resulting increase or decrease in estimated revenues or costs at completion is recognized as catch-up adjustment in the consolidated statements of income, increasing or decreasing revenue and gross margin, in the reporting period which the circumstances that give rise to the change become known by Management.

In a hypothetical scenario of 10% increase or decrease over Management's projection of total estimated costs at completion of long-term contracts in progress during 2019, the Company's revenue in the year would be lower in US\$ 462.7 or would increase by US\$ 309.4, respectively.

3.2. Residual value guarantees (Commercial Aviation)

The residual value guarantees granted on aircraft sales of the Commercial Aviation business unit may be exercised at the end of a financing contract between a financial agent and the customer/operator of these aircraft. The guarantees are initially measured at fair value and are revised quarterly to reflect changes in relation to the fair value of these commitments. The residual value guarantees may be exercised if the quoted market value is lower than the future fair value guaranteed. The future fair value is estimated in accordance with third party evaluation of the aircraft, including information from sale or leasing of similar aircraft in the secondary market. Sensitivity analysis of the fair value of residual value guarantees is presented below:

	Amounts exposed at 12.31.2019	Additional variations in book balances				
		-50%	-25%	Probable scenario	+25%	+50%
Financial guarantee of residual value	129.6	(57.2)	(53.4)	(0.9)	92.9	123.8
Total	129.6	(57.2)	(53.4)	(0.9)	92.9	123.8

(*) The positive and negative variations of 25% and 50% were applied on the current rates. Effects of changes would impact results of discontinued operations.

As of December 31, 2019, residual value guarantees are part of the liabilities related to assets held for sale of the Commercial Aviation business unit (Note 4).

3.3. Impairment of long-lived assets

The annual impairment test performed at the end of the year considers the Company's medium and long-term strategic plan cash flows, brought to present value at an appropriate discount rate compatible with the market and that reflects the shareholders' expectations of return. In preparing or using this information, the Company

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

uses estimates, as follows:

- a) **Gross expected cash flow** - the Management projected inflows and outflows based on past performance considering its business strategy and market development expectations. These projections also consider the efficiency gains planned for the product cycle.
- b) **Growth rates** - the growth rates were reflected in the revenue flow budgeted by the Company, consistent with the forecasts included in industry reports.
- c) **Discount rates** - an appropriate discount rate is used that reflects the expected return of investors at the time the calculation is made. This rate is also compared with the market to confirm its consistency.

Additional information on key assumptions and sensitivity analysis is disclosed in Note 19.

3.4. Classification and presentation of the Commercial Aviation business unit as assets “held for sale” and “discontinued operations”

According to IFRS 5, in light of the shareholder’s approval of the then pending strategic partnership with Boeing on Extraordinary General Shareholders’ Meeting held on February 26, 2019, the Company’s consolidated financial statements as of and for the year ended December 31, 2019 were prepared considering the designation, measurement and presentation of the assets, liabilities and results of the Commercial Aviation business unit and related services as “assets held for sale” and “discontinued operations”, pursuant to the terms of the Master Transaction Agreement. Details regarding the Transaction are disclosed in Note 4.

Since the initial designation of the Commercial Aviation business unit assets as “held for sale” until April 25, 2020, the depreciation of property, plant and equipment, and amortization of intangible assets and right of use that is part of the Commercial Aviation business unit were ceased and no longer recognized as profit or loss due to the expectation of assets realization through sale instead of continuous use. If these assets had not been classified as held for sale in 2019, the depreciation and amortization expenses that would have been recognized in profit or loss for the year was US\$ 83.5 million.

In addition, the long-lived assets held for sale were measured at the lower of their carrying amount and fair value less cost to sell (incremental costs directly attributable to the conclusion of now terminated sale transaction with Boeing Note 4). Starting on April 25, 2020, those long-lived assets previously “held for sale” will be subject to impairment test and measured at the lower of their carrying amount and recoverable amount, which is determined at the higher between their value in use and fair value less cost to sell (Note 40).

4. ASSETS HELD FOR SALE AND DISCONTINUED OPERATIONS

A discontinued operation is the Company’s business component comprising operations and cash flows that can be clearly distinguished, that represents an important separate business line and is part of a coordinated and approved plan by Management for its sale.

The classification of an operation as discontinued is reached upon its disposal, or when the related assets and liabilities are designated as held for sale, whichever the first.

An asset or group of assets and liabilities is held for sale when its carrying amount is expected to be recovered mainly through the sale transaction rather than through continuing use. This occurs if the asset is available for immediate sale “as is”, subject only to usual and customary terms for completion of the transaction, when the sale is defined as highly probable.

The group of assets and liabilities held for sale (disposal group) are measured at the lower of their carrying amount and fair value less incremental costs directly attributable to the conclusion of sale transaction.

The disposal group is also comprised of assets and liabilities that is outside the measurement scope of assets and liabilities held for sale, which includes deferred tax assets (Note 2.2.10), financial instruments (Note 2.2.4) and employee benefits (Note 2.2.22). These assets and liabilities are still measured in accordance with the Company’s accounting policies disclosed in previous topics.

When an operation is classified as discontinued, the comparative statements of income are recasted to present the results of continuing operations separately from the results of discontinued operation since the beginning of comparative periods. The results of discontinued operation are presented separately on a single line in the statement of income, net of income taxes.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

In the preparation of the consolidated statements of income, the transactions between subsidiaries, as sales of parts and services, were eliminated within continuing and discontinued operations following the consolidation practice consistently as previous periods and without adjustments between operations.

4.1 Context of the transaction between Embraer S.A. and The Boeing Company (“Boeing”)

The terms and conditions approved on December 17, 2018 defined the creation of a joint venture contemplating Embraer’s Commercial Aviation business unit with 80% interest held by a subsidiary of Boeing and 20% by Embraer, as well as the creation of joint venture to promote and develop new markets and uses for the C-390 Millennium multi-mission aircraft, with 51% interest held by a subsidiary of Embraer and 49% by a subsidiary of Boeing.

On January 10, 2019, the Brazilian Federal Government informed that it would not exercise the veto right in relation to the strategic partnership between Embraer and The Boeing Company, under the terms aforementioned. Thereafter, on January 11, 2019 the Company’s Board of Directors decided (i) to ratify the resolution of December 17, 2018 that approved the Transaction; (ii) to authorize the execution of the MTA, which provided the terms and conditions for the consummation of the strategic partnership in connection with the Commercial Aviation, and the Contribution Agreement, which provided the terms and conditions for the creation of a joint venture for the promotion and development of new markets and applications for the C-390 Millennium multi-mission transport airplane, as well as of the other agreements and documents necessary or convenient for the consummation of the Transaction; and (iii) to authorize, after the approval of the Transaction by Embraer’s shareholders, the Executive Office to perform any act necessary for the consummation of the Transaction, including the transfer to the new company of the net assets comprised by assets, liabilities, properties, rights and obligations related to the Commercial Aviation business unit.

On January 24, 2019, Embraer and The Boeing Company entered into the MTA and the Contribution Agreement and, on February 26, 2019, the shareholders of the Company approved, with 96.8% of valid votes, the strategic partnership with The Boeing Company, as stated in the Management’s Proposal disclosed on January 24, 2019.

On January 1, 2020, the internal carve-out of the Company’s Commercial Aviation business was implemented by means of the contribution by Embraer S.A., to the capital stock of its wholly-owned subsidiary, Yaborã Indústria Aeronáutica S.A. (“Yaborã”), of the net assets comprising assets and liabilities related to the Commercial Aviation business unit, including the assumption by Yaborã of the Notes issued by Embraer S.A. and its subsidiaries in the international capital markets (Note 21 and 40).

In addition to the contribution of the Commercial Aviation’s net assets, the internal carve-out also included transactions performed under common control for corporate restructuring of entities related to the Commercial Aviation business unit. These common control transactions had no impact on the consolidated financial statements as of December 31, 2019 and subsequent periods since they were carried at book value in accordance with the Company’s policy, without impact on shareholders’ equity and income for the year.

Subsequent events – Unexpected and wrongful termination of the strategic partnership by Boeing

On April 25, 2020, Embraer received a notice from Boeing communicating its decision to terminate the MTA, based on Boeing’s assertion that certain closing conditions in the MTA had not been satisfied by Embraer by the April 24, 2020 termination date in the MTA. In addition, Boeing terminated the Contribution Agreement. Embraer strongly believes that Boeing wrongfully terminated the MTA and the Contribution Agreement and that it had a continuing obligation to abide by the terms thereof. Embraer strongly believes that Embraer was in full compliance with its obligations under the MTA and the Contribution Agreement. Embraer is pursuing all remedies against Boeing for the damages incurred by Embraer as a result of Boeing’s wrongful termination and violation of the MTA and the Contribution Agreement, including by means of arbitration proceedings that have commenced by both sides in connection with the termination of the MTA and the Contribution Agreement by Boeing. No assurance can be given as to the timing or outcome of the arbitration proceedings or any recovery that Embraer may receive or loss that Embraer may incur therefrom or with respect to such arbitration proceedings.

4.2 Assets and related liabilities held for sale

The Company’s assets and liabilities related to the Commercial Aviation and related services were measured and are being presented in the consolidated financial statements as assets and liabilities held for sale, and the respective results as discontinued operation in the statements of income, beginning February 26, 2019, date of approval by shareholders at the EGM when the highly probable criteria was reached.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

There were no impairment losses recognized in the group of assets and liabilities held for sale in initial measurement. The depreciation and amortization of non-current assets held for sale, including property, plant and equipment, intangible assets and right of use, were ceased as from February 26, 2019 due to the expectation of realization of these assets by sale instead of continuous use as of this date.

The identification and segregation of assets and liabilities held for sale and part of the disposal group considered the terms approved by the parties in the MTA related to the Commercial Aviation business unit and related services, which includes:

- The business of designing, developing, manufacturing, assembling, testing, certifying, marketing, selling, and delivering commercial aircraft platforms and programs with a structural capacity capable of being configured to contain fifty (50) or more seats in an all-standard economy class configuration, including the ERJ (including for the avoidance of doubt the ERJ 145), EMB 110, EMB 120, Ejet and E2 families of regional jet aircraft, and their components, as well as all forms of maintaining, sustaining and supporting, and providing other aftermarket services for, such platforms and programs, including modifications, parts distribution and other logistics, maintenance, repair and overhaul services and training.
- The platforms and programs Lineage, Legacy and AEWC, as well as related activities performed by subsidiaries OGMA - Indústria Aeronáutica de Portugal S.A., Atech Negócios em Tecnologias S.A., Savis Tecnologias e Sistemas S.A., Visiona Tecnologia Espacial S.A., Embraer Business Innovation Center, Inc. and Embraer Aero Seating Technologies, LLC were retained by Embraer S.A. and excluded from the deal terms.

ASSETS HELD FOR SALE	Note	12.31.2019
Cash and cash equivalents		1,452.5
Financial investments		47.5
Trade accounts receivable, net		144.7
Customer and commercial financing		10.7
Contract assets		33.8
Inventories		1,079.6
Guarantee deposits		0.5
Income tax and social contribution		2.1
Other assets		111.5
Deferred income tax and social contribution		34.3
Property, plant and equipment	16	1,089.7
Intangible assets	18	1,157.5
Right of use	17	10.2
TOTAL		5,174.6

LIABILITIES HELD FOR SALE	Note	12.31.2019
Trade accounts payable		474.7
Lease liability	17	9.4
Loans and financing		3,301.3
Other payables		132.5
Contract liabilities		746.1
Taxes and payroll charges payable		8.9
Income tax and social contribution		54.9
Financial guarantee and residual value guarantee	25	140.3
Unearned income		47.7
Provisions	26.1	39.5
Deferred income tax and social contribution		28.7
TOTAL		4,984.0

The following main assumptions were considered in the segregation of the main balances above:

- Net debt of US\$ 1.8 billion transferred to the Commercial Aviation business unit, in line with the allocation interval defined in the MTA, which establishes a maximum net debt ratio of US\$ 3.0 billion. Net debt considers the sum of cash and cash equivalents and financial investments balances, reduced by the loans and financing position.
- Spare parts and production inventories were segregated by operating segment during the year and physically moved for store in the industrial/operating plants included in the MTA.
- Tangible and intangible assets were allocated as assets acquired and developed for Commercial Aviation business unit, as well as industrial/operating plants included in the agreement (São José dos Campos, Eleb and Taubaté - Brazil, Évora - Portugal and Nashville - USA).
- Trade accounts payables allocated for the contributed contracts defined in the MTA terms and the remaining contracts by operating segment based on the consumption history.
- Short-term employee obligations, including social charges, were segregated by the personnel split provided by the internal carve-out process.
- Liabilities related to contingency provisions are not transferred as agreed in the MTA.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

The following financial instruments are part of the disposal group as of December 31, 2019:

	Classification and measurement			Carrying amounts and fair value comparison	
	Amortized cost	Fair value through profit or loss	Fair value hierarchy (Note 28.2*)	Book value	Fair value (Note 28.2*)
Financial assets					
Cash and cash equivalents	1,452.5	—		1,452.5	1,452.5
Financial investments	47.5	—		47.5	—
Corporate bonds - 2.4% p.a. maturing on 2022	47.5	—		47.5	—
Trade accounts receivable, net of expected credit losses of US\$ 30.0	144.6	—		144.6	144.6
Customer and commercial financing	10.7	—		10.7	10.7
Guarantee deposits	0.5	—		0.5	0.5
Other assets	111.6	—		111.6	111.6
Financial liabilities					
Loans and financing	3,301.3	—		3,301.3	3,614.1
Notes – US\$, maturing on 2020 to 2027 (Note 21.1)	2,949.9	—		2,949.9	3,264.5
Working capital – US\$, maturing on 2021 to 2030	325.4	—		325.4	323.4
Working capital – EUR, maturing on 2023 to 2026	20.6	—		20.6	20.6
Bonds – US\$, maturing on 2030	5.4	—		5.4	5.6
Lease liability	9.4	—		9.4	9.4
Trade accounts payable	474.7	—		474.7	474.7
Residual value guarantee (Note 25)	—	129.6	Level 3	129.6	129.6
Other payables	132.5	—		132.5	132.5

* Note 28.2 includes disclosure of assumptions and methodologies applied by Management to calculate fair value of these financial assets and liabilities, as well as it presents the changes in fair value of financial instruments categorized within level 3 of fair value hierarchy.

4.3 Discontinued operations

The results from the discontinued operations is comprised of income and expenses related to the business units and legal entities included in the agreement, mainly related to:

- Revenues from contracts with customers, costs of products and services sold, and general expenses directly associated with the Commercial Aviation business unit and related services.
- Portion of general and administrative expenses with corporate areas segregated during the internal carve-out process of personnel and transferred to the Commercial Aviation joint new legal entity. However, general and administrative expenses with key management personnel are fully excluded from the discontinued operations results.
- Other operating income and expenses directly associated with discontinued operations, including carve-out costs to segregate the Commercial Aviation business unit and related services (costs to sell). Expenses with corporate projects are fully excluded from the discontinued operation results.
- Financial expenses on loans and financing interest that comprise the disposal group, including monetary and foreign exchange gains or losses of financial assets and liabilities held for sale.
- Income tax expenses generated by the Commercial Aviation business unit and related services operations, as well as income tax expenses incurred as part of the internal carve-out process and restructuring of corporate structure of foreign subsidiaries. Deferred income taxes were allocated to discontinued operations on a legal entity basis and whether it is part of the disposal group considering the future tax benefit or expense will be carryforward by the legal entity.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

	12.31.2019	12.31.2018	12.31.2017
REVENUE	2,844.5	2,943.4	3,312.9
Cost of sales and services	(2,407.2)	(2,373.6)	(2,515.5)
GROSS PROFIT	437.3	569.8	797.4
Operating Income (expense)			
Administrative	(53.5)	(46.5)	(40.2)
Selling	(137.7)	(152.8)	(146.0)
Research	(29.8)	(26.6)	(27.0)
Other operating income (expense), net	(131.0)	(25.6)	(46.5)
OPERATING PROFIT BEFORE FINANCIAL RESULT	85.3	318.3	537.7
Financial income, net	(177.5)	(177.7)	(135.6)
Foreign exchange gain (loss) , net	7.2	5.1	0.9
NET INCOME (LOSS) BEFORE TAXES ON INCOME	(85.0)	145.7	403.0
Income tax expense	(26.8)	(55.6)	0.3
NET INCOME (LOSS) OF THE DISCONTINUED OPERATIONS	(111.8)	90.1	403.3

4.4 Cash flows

The Company's cash flows attributable to assets and liabilities held for sale and results from the discontinued operation are as follows:

	12.31.2019	12.31.2018	12.31.2017
Net cash generated by operating activities	301.9	466.4	710.3
Net cash used by investing activities	(239.8)	(295.5)	(401.3)
Net cash (used) generated by financing activities	(19.1)	(212.5)	555.7
	43.0	(41.6)	864.7

5. Accounting standards not yet adopted

New accounting standards and interpretations have been published or are in the process of being amended and will be effective in the coming years, however they were not cited, as, according to the Company's assessment, no material impact arising from their application is expected.

6. Cash and cash equivalents

	12.31.2019	12.31.2018
Cash and banks	585.0	125.4
	<u>585.0</u>	<u>125.4</u>
Cash equivalents		
Private securities (i)	64.9	352.6
Fixed deposits (ii)	205.3	802.9
	<u>270.2</u>	<u>1,155.5</u>
	855.2	1,280.9

- (i) Applications in Bank Deposit Certificates (CDB's), issued by financial institutions in Brazil, available for redemption in up to 90 days without impact on contracted remuneration.
- (ii) Fixed term deposits in US Dollars with original maturities of 90 days or less.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

7. Financial investments

	12.31.2019		12.31.2018			
	Fair value through profit or loss	Total	Amortised cost	Fair value through other comprehensive income	Fair value through profit or loss	Total
Financial instruments						
Private securities (i)	—	—	—	50.4	—	50.4
Structured Notes (ii)	358.8	358.8	48.8	—	1,308.0	1,356.8
Investment funds	5.3	5.3	—	—	2.4	2.4
Fixed Deposits (iii)	—	—	—	457.3	0.1	457.4
Other (iv)	60.6	60.6	—	—	59.9	59.9
	424.7	424.7	48.8	507.7	1,370.4	1,926.9
Current portion	409.8	409.8	1.1	507.7	1,234.6	1,743.4
Non-current	14.9	14.9	47.7	—	135.8	183.5

- (i) Private securities, being investments in Financial Bills, investments in Bank Deposit Certificates and Committed Transactions issued by Brazilian financial institutions, issued with maturities of more than 90 days.
- (ii) Structured notes, being: US\$ 222.5 with credit risk of the financial institution issuer and the Brazilian government, and the amount of US\$ 121.4 associated with credit risk of two financial institutions concurrently (US\$ 1,103.7 and US\$ 121.0, respectively, on December 31, 2018).

In addition, the Company maintains financial investments in structured notes associated with its own credit risk in the amount of US\$ 14.9 as of December 31, 2019 (US\$ 83.2 as of December 31, 2018).

The increase in profitability was obtained through a Credit default swap - CDS, a transaction which provides the right for early redemption of the note in case of a default event of the Company. After a default event, the note may be redeemed by the holder by the market value or original face value, which would result in a loss to the Company of all interest accrued so far.

Default events that may anticipate the maturity of the notes are, among others: (a) the insolvency or judicial recovery of the Company; and (b) delinquency or restructuring of the Company's debts in financing agreements.

In case of default, the maturity dates of these notes will be accelerated, and the notes will be realized at market value, limited to a minimum of the initial investment. Any amount for which the market value exceeds the amount invested will be paid to the Company in the form of securities or loans of that amount.

- (iii) Fixed term deposits in US Dollars issued by financial institutions, with original maturities of 90 days or less from the date of hiring.
- (iv) Shares from Republic Airways Holdings, arising from the request for the judicial reorganization of the former entity Republic Airways and received by the Company as part of the restructuring plan (Note 25).

The weighted average nominal interest rates on December 31, 2019, related to cash equivalents and financial investments made in Brazilian Reais were 5.96% p.a., equivalent to 100.14% of the CDI, and in Dollars 2.68% p.a. (6.56% p.a., equivalent to 101.26% of the CDI and in Dollars, 2.40% p.a. on December 31, 2018).

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

8. Trade accounts receivable, net

	<u>12.31.2019</u>	<u>12.31.2018</u>
Foreign customers	149.6	325.7
Brazilian Air Force	7.0	21.8
Domestic customers	3.9	15.5
	160.5	363.0
Allowance for doubtful accounts	(11.1)	(45.0)
	<u>149.4</u>	<u>318.0</u>

The amounts and maturities of these trade accounts receivable are shown below:

	<u>12.31.2019</u>	<u>12.31.2018</u>
Current	104.2	217.0
Up to 90 days	25.6	52.6
From 91 to 180 days	10.3	13.6
More than 180 days	20.4	79.8
	<u>160.5</u>	<u>363.0</u>

Changes in estimated credit losses year over year are shown below:

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Beginning balance	(45.0)	(52.9)	(41.6)
Additions/Reversal	(4.4)	11.9	(12.2)
Write-off	7.5	3.6	5.2
Foreign exchange variation	0.8	(7.6)	(4.3)
Assets held for sale	30.0	—	—
Ending balance	<u>(11.1)</u>	<u>(45.0)</u>	<u>(52.9)</u>

9. Derivative financial instruments

Derivative financial instruments are contracted to protect the Company's operations from exchange and interest rate fluctuations and are not used for speculation.

As of December 31, 2019, the Company had the following operations:

- Non-deliverable forward (NDF), with the purpose of protecting the Company against the risks of exchange rate fluctuations. The fair value is determined by the observable market pricing model.
- Swap operations, with the main objective of changing the debts index, from floating rates to fixed interest rates or vice versa, exchange of Dollar to Real or Euro and vice versa. The fair values of these instruments are measured by the future flow, determined by applying contractual interest rates to maturity, and discounted to present value at the date of the financial statements by the prevailing market rates.
- Purchase of sell and by currency options, in order to protect cash flows for the parent company's wage costs denominated in Reais, against the risk of currency fluctuations. The financial instrument used by the Company is a zero-cost collar, which consists of the purchasing of a put option and the sale of a call option, contracted with the same counterparty and with a zero-net premium. The fair value of this instrument is determined by the observable market pricing model (through market information providers) and widely used by market participants to measure similar instruments.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

Purpose	Risk	Settlement date	12.31.2019	12.31.2018
Derivatives designated as hedge accounting				
			1.4	1.2
Expenses in Brazilian Reais (i)	Exchange rate	2019	—	(7.5)
		2020	(0.1)	—
Project development (ii)	Interest rate	2019	—	0.9
		2022	—	5.2
		2023	1.5	0.3
Export	Interest rate	2027	—	2.3
Other Derivatives			(3.8)	0.2
Recourse and non-recourse debt (iv)	Interest rate	2019	—	0.3
Acquisition of property, plant and equipment (v)	Interest rate	2019	(0.1)	(0.1)
Export (vi)	Exchange rate	2019	0.3	—
Expenses in Brazilian Reais (i)	Exchange rate	2019	(4.0)	—
Total			(2.4)	1.4
<p>(i) Zero-cost collar derivative financial instruments, designated as cash flow hedge amounting to US\$ 98.1 equivalent to R\$ 372.7 million, with purchase of PUT at the weighted average exercise price of R\$ 3.80 and sale of CALL at the weighted average exercise price of R\$ 4.40 for 2019.</p> <p>(ii) Derivative financial instruments (interest rate swaps), designated as fair value hedge, amounting to R\$ 165.7 million, equivalent to US\$ 41.1, of the Export Financing and Project Development lines subject to a weighted average fixed interest rate of 3.5% p.a. for a floating weighted average rate equivalent to 31.46% of the CDI.</p> <p>(iii) Derivative financial instruments (interest rate swaps), which converted the amount of US\$ 2.8 from a floating interest rate equivalent to 65% of LIBOR 1 month + 2.4375% p.a. to a fixed weighted average interest rate of 5.23 % p.a.</p> <p>(iv) Derivative financial instruments (Non-Deliverable Forwards), amounting to US\$ 16.5, equivalent to R\$ 66.5 million relating to U.S. dollar to Euro currency exchanges.</p> <p>(v) Derivative financial instruments (Non-Deliverable Forwards), amounting to US\$ 160.0, equivalent to R\$ 789.2 million related to the sale of US dollars and purchase of Reais.</p>				

On December 31, 2019, the amount of loans and financing measured at amortized cost amounted to US\$ 89.5, considering the mark-to-market effect of the hedged risk protected by the hedge structure US\$ 90.9 (on December 31, 2018, US\$ 3,647.6 and US\$ 3,648.4, respectively).

The hedge effectiveness ratio of the fair value and cash flow hedge on the initial date was 1:1 and 1:1, respectively. Considering the changes in the discounted cash value of the instruments not yet settled since January 1 and the amount of the hedged item, the effectiveness ratio was 1:1 and 1:1.1737 (1:1.0008 and 1:1.0303 on December 31, 2018).

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

On December 31, 2019, and December 31, 2018, the fair value of derivative financial instruments was recognized in the Company's assets and liabilities as follows:

	<u>12.31.2019</u>	<u>12.31.2018</u>
Assets		
Current portion	1.4	5.4
Non-current	0.7	4.1
Liabilities		
Current portion	(4.5)	(8.1)
Net derivative financial instruments	<u>(2.4)</u>	<u>1.4</u>

10. Collateralized accounts receivable and recourse and non-recourse debt

10.1 Collateralized accounts receivable

The Company held certain structured operations in the Commercial Aviation business unit in which the financial asset was comprised of financial inflows to be received over time and unguaranteed residual value of aircraft under specified return conditions to be received at the end of contract term. These structured operations were financed by third parties with the liability recorded as recourse and non-recourse debt. As of December 31, 2019, the remaining operations were ceased with full collection of minimum lease payments receivable and settlement of related liabilities with third parties (Note 10.2).

Impairment losses over the unguaranteed residual value of aircraft included in such structured operations amounted to US\$ 32.8 in 2019 (US\$ 32.2 in 2018) recognized as expenses of discontinued operations.

In addition, certain structured operations of the Commercial Aviation business unit had its cash inflows sold to third parties, to whom financial guarantees were granted. In such cases, the Company maintained the cash inflow recorded as collateralized accounts receivable (guaranteed operation) and recorded as recourse and non-recourse debt (Note 10.2) the related liabilities until it is exposed to the significant risks of this transaction. This structure completion is expected to 2025 and it is not part of assets and liabilities held for sale being retained by the Company continuing operations.

	<u>12.31.2019</u>	<u>12.31.2018</u>
Estimated residual value of leased assets	—	215.8
Minimum lease payments receivable	—	122.6
Guaranteed operation (cash inflow)	17.6	27.0
Impairment	—	(129.5)
Investment in sales-type lease	<u>17.6</u>	<u>235.9</u>
Current portion	4.0	218.5
Non-current portion	13.6	17.4

10.2 Recourse and non-recourse debt

	<u>12.31.2019</u>	<u>12.31.2018</u>
Recourse debt	10.6	330.6
Non-recourse debt	7.0	10.8
	<u>17.6</u>	<u>341.4</u>
Current portion	4.0	324.0
Non-current portion	13.6	17.4

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

11. Guarantee deposits

	<u>12.31.2019</u>	<u>12.31.2018</u>
Sales financing guarantees (i)	—	314.4
Sales structure guarantees (ii)	—	25.3
Other	0.6	10.0
	<u>0.6</u>	<u>349.7</u>
Current portion	0.1	339.9
Non-current	0.5	9.8

- (i) Financial investments denominated in US Dollars, tied to structured operations from Commercial Aviation aircraft, whose waive depended on the completion of these structures and the settlement of the obligation of recourse and non-recourse debt in the same amount. As of December 31, 2019, the obligation was settled, and the funds released.
- (ii) US dollar amounts deposited in an escrow account as collateral for the financing of certain aircraft sold where Embraer serves as secondary guarantor. As of December 31, 2019, the obligation has been settled and the guarantee has ended.

12. Inventories

	<u>12.31.2019</u>	<u>12.31.2018</u>
Raw materials	499.2	897.6
Work in process	439.7	891.6
Spare parts	224.6	424.3
Finished goods (i)	106.0	146.4
Held by third parties	50.7	108.7
Inventory in transit	21.0	91.1
Consumption materials	24.2	48.3
Used aircraft (ii)	5.9	46.0
Advances to suppliers	29.6	31.4
Loss on adjustment to market value (iii)	(0.9)	(7.7)
Loss due to obsolescence (iv)	(95.6)	(170.7)
	<u>1,304.4</u>	<u>2,507.0</u>

- (i) The following aircraft were held in the finished goods inventory:
- December 31, 2019: one Legacy 650, one Phenom 100, three Phenom 300, two Praetor 500, three Praetor 600, two Ipanema.
 - December 31, 2018: two Legacy 450, four Legacy 500, one Phenom 100; three Phenom 300, one Lineage and two Ipanema.
- (ii) The following used aircraft were held in inventory as available for sale:
- December 31, 2019: one Phenom 300. The inventories of used aircraft reclassified as assets held for sale (Note 4) was comprised of two Embraer 135 and three Embraer 145.
 - December 31, 2018: one Legacy 450, one Lineage, one Phenom 300.

Of the total aircraft held in inventories as of December 31, 2019, one Praetor 600 and two Ipanema had been delivered by until May 18, 2020.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

(iii) Changes in the provision for adjustments to the realizable value of used aircraft were as follows:

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Beginning balance	(7.7)	(17.2)	(19.9)
Additions	(5.2)	(8.8)	(8.2)
Disposals	11.2	18.3	10.9
Assets held for sale	0.8	—	—
Ending balance	<u>(0.9)</u>	<u>(7.7)</u>	<u>(17.2)</u>

(iv) Changes in the provision for obsolescence were as follows:

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Beginning balance	(170.7)	(153.2)	(138.1)
Additions	(50.3)	(59.8)	(48.7)
Disposals	29.8	41.5	37.0
Foreign exchange loss	0.9	0.8	(3.4)
Assets held for sale	94.7	—	—
Ending balance	<u>(95.6)</u>	<u>(170.7)</u>	<u>(153.2)</u>

13. Other assets

	<u>12.31.2019</u>	<u>12.31.2018</u>
Taxes recoverable (i)	94.4	132.2
Court-mandated escrow deposits (iii)	30.1	43.0
Prepaid expenses	22.5	24.3
Advances for services to be rendered	9.6	3.2
Other debtors (ii)	4.9	61.6
Loan with a joint operation	4.2	23.2
Advances to employees	1.9	8.5
Other	14.3	13.0
	<u>181.9</u>	<u>309.0</u>
Current portion	120.1	203.4
Non-current portion	61.8	105.6

(i) Taxes recoverable

	<u>12.31.2019</u>	<u>12.31.2018</u>
ICMS (State Value-added Tax) and IPI (Excise Tax)	65.1	85.5
PIS (Social Integration Program) and COFINS	12.0	24.5
Income tax and social security on net income	7.5	7.7
ISS (Service tax)	5.3	5.9
Other	4.5	8.6
	<u>94.4</u>	<u>132.2</u>
Current portion	64.6	93.7
Non-current portion	29.8	38.5

(ii) Refers to deposits arising from lawsuits, substantially to federal taxes and contributions, in which there is a liability recorded Note26.

(iii) Corresponds mainly to rework done on products supplied by third parties, which will be reimbursed according to the contractual terms and credits negotiated with certain suppliers that will be consumed over time from other receivables from suppliers.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

14. Interest in entities

14.1 Wholly owned subsidiaries and special purpose entities

Wholly owned subsidiaries and special purpose entities controlled directly or indirectly by the Company are described in Note 2.1.3 and are consolidated into the Embraer group.

There are no contractual or legal restrictions on the Company's access to assets or settlement of liabilities of the wholly owned subsidiaries of the group.

There are inherent risks to the operations of these entities, the most significant of which are described below:

- Economic Risks: potential losses from fluctuations in market conditions (price of products, exchange rate and interest).
- Operational risk: potential losses resulting from the emergence of new technologies or failure of current processes.
- Credit risk: potential losses that might occur if a third party (customer) becomes unable to meet its obligations, and
- Liquidity risk: financial inability to meet financial obligations.

14.2 Subsidiaries with participation of non-controlling shareholders

Non-controlling shareholders have interests in the group entities listed below, however, based on contractual agreements and analysis of the applicable accounting standards, the Company has control and therefore has the right to consolidate the following entities:

Entity	Country	Embraer Group		Non-controlling interest		Comprehensive income
		interest%				
OGMA - Indústria Aeronáutica de Portugal S.A.	Portugal	65.0%	35.0%	53.9		3.0
Embraer CAE Training Services Ltd.	United Kingdom	51.0%	49.0%	—		—
Visiona Tecnologia Espacial S.A.	Brazil	51.0%	49.0%	20.0		(0.5)
Embraer CAE Training Services	United States of America	51.0%	49.0%	23.0		10.2
				96.9		

Embraer group holds 51.0% of the entities Embraer CAE Training Services Ltd., Visiona Tecnologia Espacial S.A. and Embraer CAE Training Services. The powers described in the contractual agreements show that the Board of Directors is mainly comprised of Embraer representatives and the Embraer Group directs the principal operating activities of the entity.

The financial position of the most significant entity of the group with non-controlling interests is summarized below, which is OGMA - Indústria Aeronáutica de Portugal S.A. Other entities combined represent less than 5% of consolidated profit before taxes on income.

	12.31.2019	12.31.2018
Cash and cash equivalents	24.3	12.9
Current assets	180.2	168.9
Non current assets	60.8	61.0
Current liabilities	86.5	74.5
Non current liabilities	0.4	0.1
Noncontrolling interest	53.9	54.3
	12.31.2019	12.31.2018
Revenue	277.5	162.9
Net income for the year	3.0	6.6

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Group subsidiaries with non-controlling interests are subject to the same risks as the wholly owned subsidiaries.

15. Related parties

15.1 Related party transactions

The tables below summarize balances and transactions with related parties outside the group and refers mainly to:

- Assets: (i) accounts receivable for spare parts, aircraft sales and product development, under conditions agreed between the parties, considering the volumes, risks involved and corporate policies (ii) balances of financial investments; and (iv) bank deposits.
- Liabilities: (i) purchase of aircraft components and spare parts, under conditions agreed between the parties, considering the volumes, risks involved and corporate policies (ii) advances received on sales contracts, according to contractual agreements; (iii) commission for sale of aircraft and spare parts (iv) financing for research and product development at market rates for this kind of financing (v) loans and financing; and (vi) export financing, and
- Amounts in the consolidated statements of income: (i) purchases and sales of aircraft, components and spare parts and development of products for the defense and security market; (ii) financial income from financial investments and expense from loans and financing, and (iii) supplementary pension plan.

15.2 Brazilian Federal Government

Transactions with related parties also involves transactions with the Brazilian Federal Government.

The Brazilian Federal Government, through its direct and indirect participation and ownership of a common share denominated *golden share* is one the main Company's shareholders. As of December 31, 2019, the Brazilian Federal Government held an indirect stake of 5.37% in the Company's capital through BNDESPAR, a wholly owned subsidiary of the *Banco Nacional do Desenvolvimento Econômico e Social* - BNDES (the Brazilian Development Bank, or "BNDES"), which, in turn, is controlled by the Brazilian Federal Government.

The Brazilian government plays a key role in the Company's business activities, including as:

- Major customer for Defense & Security products (through the Brazilian Air Force, Brazilian Army and Brazilian Navy).
- Source of research and development financing through technology development institutions (FINEP and BNDES).
- Export credit agency (through the BNDES), and
- Source of short-term and long-term financing and a provider of asset management and commercial banking services (through Banco do Brasil).

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

15.3 December 31, 2019

	12.31.2019					
	Current		Non-current		Financial Results	Operating Results
	Assets	Liabilities	Assets	Liabilities		
Banco do Brasil S.A.	75.3	—	—	—	1.1	—
Banco Nacional de Desenvolvimento Econômico e Social – BNDES	—	—	—	—	(5.1)	—
Brazilian Air Force	364.4	226.9	—	—	—	(35.9)
Marinha do Brasil	0.6	4.4	—	—	—	(2.9)
Embraer Prev - Sociedade de Previdência Complementar	—	4.7	—	—	—	(19.7)
Brazilian Army	13.0	7.4	—	—	—	6.8
Financiadora de Estudo e Projetos – FINEP	—	12.7	—	30.6	(1.7)	—
	<u>453.3</u>	<u>256.1</u>	<u>—</u>	<u>30.6</u>	<u>(5.7)</u>	<u>(51.7)</u>

15.4 December 31, 2018

	12.31.2018					
	Current		Non-current		Financial Results	Operating Results
	Assets	Liabilities	Assets	Liabilities		
Banco do Brasil S.A.	326.2	314.3	9.4	—	(4.2)	—
Banco Nacional de Desenvolvimento Econômico e Social – BNDES	—	71.8	—	119.7	(8.3)	—
Brazilian Air Force	42.3	90.3	—	—	—	(176.2)
Marinha do Brasil	0.9	—	—	—	—	(12.6)
Caixa Econômica Federal	—	—	—	—	—	—
Embraer Prev - Sociedade de Previdência Complementar	—	0.2	—	—	—	(14.4)
Brazilian Army	—	4.3	—	—	—	—
Financiadora de Estudo e Projetos – FINEP	—	13.0	—	43.5	(2.3)	—
	<u>369.4</u>	<u>493.9</u>	<u>9.4</u>	<u>163.2</u>	<u>(14.8)</u>	<u>(203.2)</u>

15.5 December 31, 2017

	12.31.2017*	
	Financial Results	Operating Results
Banco do Brasil S.A.	(0.5)	—
Banco Nacional de Desenvolvimento Econômico e Social – BNDES	(14.7)	—
Brazilian Air Force	—	(23.7)
Marinha do Brasil	—	(6.2)
Embraer Prev - Sociedade de Previdência Complementar	—	(22.9)
Brazilian Army	—	(1.2)
Financiadora de Estudo e Projetos – FINEP	(2.9)	—
	<u>(18.1)</u>	<u>(54.0)</u>

15.6 Remuneration of key management personnel:

	12.31.2019	12.31.2018
Short-term benefits (i)	9.0	10.0
Share based payment	3.2	3.3
Labor contract termination	1.2	1.0
	<u>13.4</u>	<u>14.3</u>

(i) Includes wages, salaries, profit sharing, bonuses and indemnities.

Key Management includes members of the statutory Board of Directors and Executive Directors.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

16 Property, plant and equipment

The annual weighted average rates by asset class are shown below. This information is based on the consolidated depreciation of the assets recognized in the year, compared, after annualization and elimination of any non-typical movement, to the net balance of the assets in the previous year:

Class of assets	Weighted average depreciation rate (%)	
	12.31.2019	12.31.2018
Buildings and improvements	3.5%	3.8%
Installations	8.4%	4.9%
Machinery and equipment	9.1%	10.0%
Furniture and fixtures	12.0%	9.3%
Vehicles	32.0%	22.7%
Aircraft	8.9%	11.0%
Computers and peripherals	26.4%	27.6%
Tooling	13.9%	16.5%
Other assets	0.2%	0.1%
Exchange pool program assets	2.9%	3.7%

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

12.31.2019												
	Buildings and Land improvements	Installations	Machinery and equipment	Furniture and fixtures	Vehicles	Aircraft (i)	Computers and peripherals	Tooling	Other assets	Exchange pool program assets	Construction in progress	Total
Cost												
At December 31, 2018	11.0	750.1	162.4	972.4	74.2	17.3	76.2	190.0	629.1	27.6	650.8	93.7 3,654.8
Additions	0.4	5.3	—	43.6	5.6	0.6	31.7	5.0	28.2	10.3	91.8	62.0 284.5
Disposals	—	(8.3)	(3.7)	(60.2)	(22.4)	(3.0)	—	(45.4)	(26.1)	(1.0)	(19.0)	(0.8) (189.9)
Impairment	—	—	—	(14.1)	—	—	(4.6)	—	(1.8)	—	—	— (20.5)
Reclassifications*	—	30.3	6.3	11.3	(1.4)	0.1	(40.4)	(6.6)	7.0	(7.6)	(21.8)	(39.3) (62.1)
Interest on capitalized assets	—	—	—	—	—	—	—	—	—	—	—	—
Translation adjustments	—	(0.6)	(0.1)	(1.9)	(0.1)	(0.1)	—	(0.2)	—	—	(6.1)	0.3 (8.8)
Assets held for sale	(6.3)	(317.6)	(104.8)	(469.3)	(17.8)	(4.5)	(48.2)	(41.3)	(192.6)	(3.8)	(374.7)	(67.7) (1,648.6)
At December 31, 2019	5.1	459.2	60.1	481.8	38.1	10.4	14.7	101.5	443.8	25.5	321.0	48.2 2,009.4
Accumulated depreciation												
At December 31, 2018	—	(219.4)	(105.6)	(518.1)	(44.6)	(13.8)	(38.7)	(154.5)	(371.5)	(11.4)	(212.5)	— (1,690.1)
Depreciation	—	(15.2)	(3.7)	(32.9)	(4.6)	(1.0)	(1.3)	(7.0)	(25.2)	—	(12.5)	— (103.4)
Disposals	—	7.4	4.8	67.7	19.1	3.3	—	42.5	7.3	0.3	9.5	— 161.9
Reclassifications*	—	(2.9)	2.8	5.6	—	—	16.9	1.7	—	(7.3)	11.8	— 28.6
Interest on capitalized assets	—	(1.6)	—	—	—	—	—	—	—	—	—	— (1.6)
Translation adjustments	—	(1.5)	—	1.4	(0.1)	0.1	—	0.2	(0.1)	—	5.2	— 5.2
Assets held for sale	—	101.6	76.1	174.8	8.7	2.9	19.0	28.4	36.9	—	110.5	— 558.9
At December 31, 2019	—	(131.6)	(25.6)	(301.5)	(21.5)	(8.5)	(4.1)	(88.7)	(352.6)	(18.4)	(88.0)	— (1,040.5)
Net												
At December 31, 2018	11.0	530.7	56.8	454.3	29.6	3.5	37.5	35.5	257.6	16.2	438.3	93.7 1,964.7
At December 31, 2019	5.1	327.6	34.5	180.3	16.6	1.9	10.6	12.8	91.2	7.1	233.0	48.2 968.9

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

12.31.2018												
	Buildings and Land improvements	Installations	Machinery and equipment	Furniture and fixtures	Vehicles	Aircraft (i)	Computers and peripherals	Tooling	Other assets	Exchange pool program assets	Construction in progress	Total
Cost												
At December 31, 2017	11.0	741.8	161.4	971.8	74.9	17.5	193.2	190.3	620.9	26.0	672.5	76.5 3,757.8
Additions	—	1.3	—	28.5	1.9	0.5	10.2	6.3	16.6	1.4	46.3	41.3 154.3
Disposals	—	(10.9)	(0.9)	(36.5)	(2.1)	(0.5)	(0.3)	(6.4)	(1.7)	—	(20.2)	(0.7) (80.2)
Impairment	—	—	—	(0.3)	—	—	(6.0)	—	(2.5)	—	—	— (8.8)
Reclassifications*	—	19.3	2.1	8.8	(0.1)	—	(120.8)	0.9	0.5	0.2	(31.8)	(26.7) (147.6)
Interest on capitalized assets	—	—	—	—	—	—	—	—	—	—	—	4.8 4.8
Translation adjustments	—	(1.4)	(0.2)	0.1	(0.4)	(0.2)	(0.1)	(1.1)	(4.7)	—	(16.0)	(1.5) (25.5)
At December 31, 2018	11.0	750.1	162.4	972.4	74.2	17.3	76.2	190.0	629.1	27.6	650.8	93.7 3,654.8
Accumulated depreciation												
At December 31, 2017	—	(208.9)	(104.1)	(506.6)	(43.4)	(13.4)	(81.3)	(148.4)	(329.7)	(9.9)	(207.2)	— (1,652.9)
Depreciation	—	(20.2)	(2.8)	(46.4)	(2.9)	(1.0)	(9.1)	(11.5)	(48.1)	—	(17.2)	— (159.2)
Disposals	—	10.7	0.9	33.5	1.5	0.4	0.3	6.3	0.7	—	6.9	— 61.2
Reclassifications*	—	0.1	0.3	2.8	—	—	51.4	(1.7)	—	(1.5)	—	— 51.4
Interest on capitalized assets	—	(1.5)	—	—	—	—	—	—	—	—	—	— (1.5)
Translation adjustments	—	0.4	0.1	(1.4)	0.2	0.2	—	0.8	5.6	—	5.0	— 10.9
At December 31, 2018	—	(219.4)	(105.6)	(518.1)	(44.6)	(13.8)	(38.7)	(154.5)	(371.5)	(11.4)	(212.5)	— (1,690.1)
Net												
At December 31, 2017	11.0	532.9	57.3	465.2	31.5	4.1	111.9	41.9	291.2	16.1	465.3	76.5 2,104.9
At December 31, 2018	11.0	530.7	56.8	454.3	29.6	3.5	37.5	35.5	257.6	16.2	438.3	93.7 1,964.7

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

12.31.2017												
	Buildings and Land improvements	Installations	Machinery and equipment	Furniture and fixtures	Vehicles	Aircraft (i)	Computers and peripherals	Tooling	Other assets	Exchange pool program assets	Construction in progress	Total
Cost												
At December 31, 2016	11.0	657.1	156.1	909.8	74.1	16.8	316.7	179.3	587.8	29.4	669.7	116.4 3,724.2
Additions	—	4.1	—	40.3	3.6	0.4	14.4	11.4	30.8	8.6	43.6	80.5 237.7
Disposals	—	(8.1)	—	(10.1)	(1.9)	(0.7)	(8.1)	(0.8)	(1.0)	—	(33.5)	(1.1) (65.3)
Impairment	—	—	—	(2.2)	—	—	(25.8)	—	(2.1)	—	—	— (30.1)
Reclassifications*	—	85.5	4.8	22.5	(1.4)	0.5	(104.0)	(0.7)	5.1	(12.0)	(22.2)	(142.0) (163.9)
Interest on capitalized assets	—	—	—	—	—	—	—	—	—	—	—	22.1 22.1
Translation adjustments	—	3.2	0.5	11.5	0.5	0.5	—	1.1	0.3	—	14.9	0.6 33.1
At December 31, 2017	11.0	741.8	161.4	971.8	74.9	17.5	193.2	190.3	620.9	26.0	672.5	76.5 3,757.8
Accumulated depreciation												
At December 31, 2016	—	(191.3)	(101.4)	(445.1)	(40.0)	(12.7)	(153.9)	(136.2)	(278.9)	(9.4)	(201.1)	— (1,570.0)
Depreciation	—	(21.3)	(3.0)	(60.3)	(4.0)	(1.2)	(25.6)	(12.1)	(50.8)	(0.2)	(18.0)	— (196.5)
Disposals	—	4.1	—	7.5	1.0	0.6	6.9	0.6	0.3	—	8.8	— 29.8
Reclassifications*	—	0.6	0.4	—	—	0.3	91.3	—	—	(0.3)	—	— 92.3
Translation adjustments	—	(1.0)	(0.1)	(8.7)	(0.4)	(0.4)	—	(0.7)	(0.3)	—	3.1	— (8.5)
At December 31, 2017	—	(208.9)	(104.1)	(506.6)	(43.4)	(13.4)	(81.3)	(148.4)	(329.7)	(9.9)	(207.2)	— (1,652.9)
Net												
At December 31, 2016	11.0	465.8	54.7	464.7	34.1	4.1	162.8	43.1	308.9	20.0	468.6	116.4 2,154.2
At December 31, 2017	11.0	532.9	57.3	465.2	31.5	4.1	111.9	41.9	291.2	16.1	465.3	76.5 2,104.9

* Non-cash transactions

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

17 Right of use assets and lease liabilities

	12.31.2019						
	Right of use assets						
	Land	Buildings land improvements	Machinery and equipment	Vehicles	Other assets	Total	Lease Liabilities
At January 1, 2019	—	56.8	0.1	0.6	0.1	57.6	57.6
Additions	4.0	13.5	—	0.3	0.3	18.1	18.1
Depreciation expense	(1.1)	(8.6)	(0.1)	(0.5)	(0.1)	(10.4)	—
Disposals	—	(17.3)	—	—	—	(17.3)	(17.3)
Interest expense	—	—	—	—	—	—	6.0
Payments	—	—	—	—	—	—	(11.8)
Translation adjustments	—	—	—	—	—	—	(4.6)
Assets and liabilities held for sale	(2.9)	(7.2)	—	(0.1)	—	(10.2)	(9.4)
At December 31, 2019	—	37.2	—	0.3	0.3	37.8	38.6
Current portion							5.0
Non-current portion							33.6

The total amount of short-term lease expenses is US\$ 1.9 in the period ended December 31, 2019, and US\$ 1.4 for low value leases recognized as operating expenses.

Below we present the annual weighted average depreciation rates by class of right-of-use:

Class of assets	Weighted average rate (%) 12.31.2019
Land	29.9%
Buildings and improvements	12.2%
Machinery and equipment	69.6%
Vehicles	51.0%
Other assets	19.9%

Below we present the discount rates applied to lease contracts based on the weighted average nominal rate considering the remaining contracts term by year:

Deadline of the contract and discount rate	
Deadline of the contract	Rate%(p.y)
1 year	3.28
2 years	3.95
3 years	4.68
4 years	5.47
After 4 years	6.91

18 Intangible assets

Internally developed intangible assets relate to expenditure incurred in developing new aircraft, including support services, production labor, materials and direct labor allocated to the construction of aircraft prototypes or significant components, and also the use of advanced technologies to make the aircraft lighter, quieter, more comfortable and energy-efficient and to reduce emissions, in addition to speeding up design and manufacture, while optimizing the use of resources.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

	12.31.2019								
	Internally developed				Acquired from third party				
	Commercial	Executive	Defense and Security	Other	Development	Software	Goodwill	Other	Total
Intangible cost									
At December 31, 2018	1,916.3	1,341.2	43.4	3.5	6.3	350.3	10.4	68.8	3,740.2
Additions	188.2	31.3	5.9	0.1	3.1	19.3	—	35.4	283.3
Contributions from suppliers	(4.5)	—	—	—	—	—	—	—	(4.5)
Disposals	—	—	—	—	—	(2.0)	—	—	(2.0)
Impairment	—	(55.6)	—	—	—	—	—	—	(55.6)
Interest on capitalized assets	4.9	1.9	—	—	—	—	—	—	6.8
Translation adjustments	—	—	—	—	—	—	(0.4)	—	(0.4)
Assets held for sale	(2,104.9)	(26.5)	—	—	—	(153.9)	—	(29.2)	(2,314.5)
At December 31, 2019	—	1,292.3	49.3	3.6	9.4	213.7	10.0	75.0	1,653.3
Accumulated amortization									
At December 31, 2018	(1,053.6)	(512.2)	(32.4)	(1.2)	(2.9)	(232.8)	—	(6.3)	(1,841.4)
Amortization	(3.1)	(75.1)	(0.4)	(0.1)	(0.8)	(14.4)	—	(2.0)	(95.9)
Amortization of contribution from suppliers	1.0	21.4	—	—	—	—	—	—	22.4
Disposals	—	—	—	—	—	1.2	—	—	1.2
Interest on capitalized assets	—	(2.4)	—	—	—	—	—	—	(2.4)
Assets held for sale	1,055.7	18.2	—	—	—	80.4	—	2.6	1,156.9
At December 31, 2019	—	(550.1)	(32.8)	(1.3)	(3.7)	(165.6)	—	(5.7)	(759.2)
Intangible, net									
At December 31, 2018	862.7	829.0	11.0	2.3	3.4	117.5	10.4	62.5	1,898.8
At December 31, 2019	—	742.2	16.5	2.3	5.7	48.1	10.0	69.3	894.1
	12.31.2018								
	Internally developed				Acquired from third party				
	Commercial	Executive	Defense and Security	Other	Development	Software	Goodwill	Other	Total
Intangible cost									
At December 31, 2017	1,825.2	1,355.7	33.5	5.8	13.9	343.3	12.0	45.6	3,635.0
Additions	209.3	41.3	4.0	0.1	2.5	8.0	—	25.1	290.3
Contributions from suppliers	(125.5)	—	—	—	—	—	—	—	(125.5)
Disposals	—	—	—	—	—	(3.4)	—	—	(3.4)
Reclassifications	—	—	5.9	(2.4)	(10.1)	2.4	—	(1.9)	(6.1)
Impairment	—	(58.5)	—	—	—	—	—	—	(58.5)
Interest on capitalized assets	7.3	2.7	—	—	—	—	—	—	10.0
Translation adjustments	—	—	—	—	—	—	(1.6)	—	(1.6)
At December 31, 2018	1,916.3	1,341.2	43.4	3.5	6.3	350.3	10.4	68.8	3,740.2
Accumulated amortization									
At December 31, 2017	(1,031.8)	(473.7)	(27.9)	(1.1)	(6.8)	(206.9)	—	(4.4)	(1,752.6)
Amortization	(29.6)	(51.1)	(1.8)	(0.1)	(0.9)	(28.1)	—	(1.2)	(112.8)
Amortization of contribution from suppliers	8.0	14.0	—	—	—	—	—	—	22.0
Disposals	—	—	—	—	—	2.2	—	—	2.2
Reclassifications	—	—	(2.7)	—	4.8	—	—	(0.7)	1.4
Interest on capitalized assets	(0.2)	(1.4)	—	—	—	—	—	—	(1.6)
At December 31, 2018	(1,053.6)	(512.2)	(32.4)	(1.2)	(2.9)	(232.8)	—	(6.3)	(1,841.4)
Intangible, net									
At December 31, 2017	793.4	882.0	5.6	4.7	7.1	136.4	12.0	41.2	1,882.4
At December 31, 2018	862.7	829.0	11.0	2.3	3.4	117.5	10.4	62.5	1,898.8

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

	Internally developed				12.31.2017				
	Defense and Security				Acquired from third party				
	Commercial	Executive	Security	Other	Development	Software	Goodwill	Other	Total
At December 31, 2016	1,515.1	1,320.3	30.8	51.8	13.5	311.4	21.0	32.8	3,296.7
Additions	313.8	76.9	3.0	2.5	1.9	56.3	—	16.1	470.5
Contributions from suppliers	(86.0)	—	—	—	—	—	—	—	(86.0)
Disposals	—	—	—	—	(1.5)	—	—	—	(1.5)
Reclassifications	71.3	3.6	(0.3)	(48.5)	—	(24.4)	—	(1.7)	—
Impairment	—	(49.9)	—	—	—	—	(8.7)	(1.9)	(60.5)
Interest on capitalized assets	11.0	4.8	—	—	—	—	—	—	15.8
Translation adjustments	—	—	—	—	—	—	(0.3)	0.3	—
At December 31, 2017	1,825.2	1,355.7	33.5	5.8	13.9	343.3	12.0	45.6	3,635.0
Accumulated amortization									
At December 31, 2016	(992.4)	(424.9)	(25.6)	—	(5.7)	(179.8)	—	(3.7)	(1,632.1)
Amortization	(57.4)	(56.7)	(2.6)	(0.1)	(1.1)	(27.1)	—	(1.2)	(146.2)
Amortization of contribution from suppliers	13.5	13.8	—	—	—	—	—	—	27.3
Reclassifications	4.5	(4.3)	0.3	(1.0)	—	—	—	0.5	—
Interest on capitalized assets	—	(1.6)	—	—	—	—	—	—	(1.6)
At December 31, 2017	(1,031.8)	(473.7)	(27.9)	(1.1)	(6.8)	(206.9)	—	(4.4)	(1,752.6)
Intangible, net									
At December 31, 2016	522.7	895.4	5.2	51.8	7.8	131.6	21.0	29.1	1,664.6
At December 31, 2017	793.4	882.0	5.6	4.7	7.1	136.4	12.0	41.2	1,882.4

19 Impairment of assets

As of December 31, 2019, the Company performed its annual impairment test of the cash-generating units (CGUs) to which goodwill and indefinite-lived assets are allocated, as well as for the additional CGUs with long-lived assets allocated, since based in the Company's stock price observed in the end of reporting period, its market capitalization was lower than book value, external source that might indicate impairment of the Company's assets based on IFRS standards.

As a result of impairment test performed in year ended December 31, 2019, the Company identified impairment losses in the CGU of Legacy / Praetor (Executive Aviation business unit) in the total of US\$ 71.6, proportionally allocated to the development of platform (intangible assets) of US\$ 55.7, and to the property, plant and equipment in the classes of machinery and equipment of US\$ 14.1 and tolling of US\$ 1.8. The impairment charge is presented as other operating expense in profit or loss (Note 34).

In previous years ended December 31, 2018 and 2017, impairment losses of US\$ 61.3 and US\$ 62.0 were recognized, respectively, related to Lineage 1000 and Legacy 650 platforms (Executive Aviation business unit) and Monitoring, Sensoring and Radars (Defense & Security business unit) CGUs.

Impairment losses identified and recognized are consequences of revisions in market conditions, analysis of potential customers and industry forecasts of each impaired aircraft model.

Except for CGU of Legacy / Praetor platform, there are no other CGUs with impairment losses recognized or at relevant risks of impairment losses as of December 31, 2019. The remaining CGUs presents headrooms falling in range of 45% to 500% when compared its value-in-use versus carrying amount.

Assets held for sale related to the Commercial Aviation business unit were tested for impairment based on its fair value less cost to sell considering the transaction current terms agreed with Boeing (Note 4). No impairment losses were identified.

Key assumptions of impairment test:

- Except for CGU of Commercial Aviation business unit, the impairment tests were prepared based on the value-in-use approach applying the discounted cash flow method. The process of estimating the value-in-use involves assumptions, judgments and projections of future cash flows, which represents the Company's best estimates in the reporting period.

- Estimated future cash flows were discounted using the weighted average capital cost rate, which is reconciled to an estimated discount pre-tax rate of 11.3% and 11.4% in 2019 and 2018, respectively, which reflects the return expected by the investors.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

Sensitivity analysis:

The table below presents the sensitivity analysis of impairment test performed for CGU of Legacy / Praetor platform (Executive Aviation business unit):

Assumption	Factor	Sensitivity	Impact in impairment test
Estimated aircraft deliveries during the useful life of platform up to 30 years and keeping current market share	1.000-1.100	5%	- Increase or decrease of impairment loss by US\$ 65 if the level of aircrafts deliveries fluctuates positively or negatively in 5%.
Discount rate	11.3%	1 percentage point	- Increase of 1 pp. in discount rate would increase impairment loss by US\$ 64. - Reduction of 1 pp. in discount rate would change impairment loss recognized of US\$ 71.6 to zero.
Foreign exchange rate (USD/R\$) - FX spot rate applied to translate cash flows in foreign currency (R\$)	R\$4.0307	10%	- Reduction of 10% in spot rate as of 12/31/2019 would increase impairment loss by US\$ 55. - Increase of 10% in spot rate as of 12/31/2019 would decrease impairment loss by US\$ 45.

20 Trade accounts payable

	12.31.2019	12.31.2018
Foreign suppliers	300.9	574.0
Risk partners (i)	0.6	200.2
Domestic suppliers	56.5	117.9
	358.0	892.1

- (i) The Company's risk-sharing suppliers/partners develop and produce significant aircraft components, including engines, hydraulic components, avionics, wings, tail sections, interior components, and fuselage parts. Certain contracts between the Company and these risk-sharing suppliers/partners are long-term and include deferral of payments for components and systems for a negotiated term after delivery. Once the risk-sharing suppliers/partners have been selected and the aircraft development and production program has commenced, changing suppliers is more challenging. For example, in the case of engines, the aircraft is specially designed to accommodate a given component, which cannot be easily replaced by another supplier without incurring delays and significant additional expense. This dependence makes the Company vulnerable to the performance, quality and financial position of its risk-sharing suppliers/partners. Outstanding transactions related to Commercial Aviation were reclassified to liabilities held for sale Note 4.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

21 Loans and financing

	Currency	Contractual interest rate - %	Effective interest rate - %	Maturity	12.31.2019	12.31.2018
Other currencies:		5.05% to 6.38%	5.15% to 6.74%	2027(i)	—	2,941.8
	US\$	3.07% a 5.87%	3.11% a 5.87%	2030	—	124.1
Working capital		Libor 6M + 2.60%	Libor 6M + 2.60%	2021	—	219.8
	Euro	0.00%	0.00%	2026	—	19.60
Property, plant and equipment	US\$	1.90%	1.90%	2037	47.9	55.8
		Libor 1M + 2.44% a 2.5%	Libor 1M + 2.44% a 2.5%	2024		
					47.9	3,361.1
In local currency:						
Project development	R\$	3.50%	3.50%	2023	43.1	248.0
		TJLP + 0.00% to 6.00%	TJLP + 0.00% to 6.00%	2022		
Export Credit Note	R\$	11.00%	11.00%	2019	—	38.5
					43.1	286.5
Total					91.0	3,647.6
Current portion					14.9	179.3
Non-current portion					76.1	3,468.4

21.1 Issuance of Bonds

The issuances of Bonds are part of the disposal group (assets and related liabilities held for sale) as of December 31, 2019, pursuant to Note 4. The paragraphs below detail the issuances made by the Company and outstanding in the current financial position.

In October 2009, Embraer Overseas Limited issued US\$ 500,000 in guaranteed notes at 6.375% p.a., due on January 15, 2020. The operations are fully and unconditionally guaranteed by the Parent Company. Because Embraer Overseas Limited is a wholly owned subsidiary of Embraer S.A., whose objective is to perform financial operations.

Between August and September 2013, through its subsidiary Embraer Overseas Limited, Embraer S.A. made an offer to exchange existing bonds maturing in 2017 (settled in January 2017) and 2020 for “New Notes” maturing in 2023. In the case of bonds maturing in 2017, the exchange offer resulted in US\$ 146,399 of the aggregate principal of existing notes and US\$ 337,168 of the aggregate principal of the 2020 Notes, representing approximately 54.95% of the Notes exchanged. The total of the exchange offer, taking into account the effects of the exchange price on the negotiations and the total New Notes issued closed at approximately US\$ 540,518 in principal at a rate of 5.696% p.a., maturing on September 16, 2023. The operations are fully and unconditionally guaranteed by the Parent Company.

In June 15, 2012, Embraer S.A. raised funds by issuing guaranteed notes, maturing on June 15, 2022, through an overseas offer of US\$ 500,000 at a rate of 5.15% p.a.

In June 2015, the Company's wholly owned finance subsidiary Embraer Netherlands Finance B.V, which only performs financial operations, issued US\$ 1,000,000 in Guaranteed Notes at 5.05% p.a., due on June 15, 2025, in an offering subsequently registered with the SEC. This operation is fully and unconditionally guaranteed by the Parent Company. Because Embraer Netherlands Finance B.V is a wholly owned subsidiary of Embraer S.A., whose objective is to perform financial operations.

In February 2017, Embraer Netherlands Finance B.V., Embraer S.A. subsidiary, issued an offering registered with the SEC of US\$ 750,000 with a nominal interest rate of 5.40% p.a. maturing February 1, 2027. The operations are fully and unconditionally guaranteed by the Parent Company. Because Embraer Netherlands Finance B.V. is a wholly owned subsidiary of Embraer S.A., whose objective is to perform financial operations.

As a result of our then pending strategic partnership with Boeing, on January 1, 2020, the Company implemented the internal carve-out of our Commercial Aviation business unit by means of the contribution by Embraer to the capital stock of Yaborã of the net assets comprising of assets, liabilities, properties, rights and obligations related to that business unit (Note 4). In this context, the Company amended the indentures governing the senior unsecured notes due 2020, 2022, 2023, 2025 and 2027, previously mentioned, in order to (i) substitute Embraer S.A. for Yaborã as the issuer of the notes due 2022; and (ii) have Yaborã substitute Embraer S.A. as guarantor of the notes due 2020, 2023, 2025 and 2027.

On March 10, 2020, Embraer S.A. and Yaborã further amended the indentures governing the notes due 2022, 2023, 2025 and 2027, without the consent of the holders of these notes, to reflect that, from such date, Embraer S.A. irrevocably and unconditionally guarantee the full and punctual payment of the principal, premium, interest, additional amounts and all other amounts that may become due and payable under the relevant notes and indentures. The terms of the supplemental indentures provide, among other things, that the Embraer S.A. guarantee shall automatically terminate on the date that the Company cease to own 100% of the share capital of Yaborã.

On March 17, 2020, Yaborã announced that it obtained the relevant consents of the holders of the notes due 2022, 2023, 2025 and 2027 and, accordingly, further amended the indentures under which the notes due 2022, 2023, 2025 and 2027 were issued.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

On December 31, 2019, the changes in loans and financing were as follows:

	12.31.2019	12.31.2018	12.31.2017
Opening balance	3,647.6	4,198.3	3,759.9
Principal addition	400.5	124.0	972.9
Interest addition	186.3	218.0	192.7
Principal payment	(645.9)	(596.3)	(540.2)
Interest payment	(188.1)	(212.7)	(186.4)
Foreing exchange	(8.2)	(83.7)	(0.6)
Reclassification to held for sale	(3,301.2)	—	—
Ending balance	91.0	3,647.6	4,198.3

As of December 31, 2019, the maturity schedules of the long-term financing are:

Year	
2021	27.7
2022	11.7
2023	8.5
2024	0.1
After 2024	28.1
	76.1

As of December 31, 2019, the maturity schedules of the loans and financing classified as “held for sale” are (Note 4.2):

Year	
2020	200.1
2021	203.0
2022	503.4
2023	517.8
2024	12.9
After 2024	1,864.1
	3,301.3

21.2 Interest and guarantees

On December 31, 2019, loans denominated in US dollars (52.6% of the total) are mainly subject to fixed interest rates. The weighted average rate was 2.43% p.a. (5.57% p.a. on December 31, 2018).

On December 31, 2019, loans denominated in Reais (47.4% of the total) are subject to fixed interest rates or interest based on the Brazilian Long-term Interest Rate (“TJLP”) and CDI. The weighted average rate was 1.52% p.a. (2.47% p.a. on December 31, 2018).

On December 31, 2019, there are no loans in Euros (0.5% p.a. on December 31, 2018).

Real estate, machinery, equipment, commercial pledges and bank guarantees totaling US\$ 164.0 as of December 31, 2019 (US\$ 339.4 as of December 31, 2018) were provided as collateral for loans.

21.3 Restrictive clauses

Long-term financing contracts are subject to restrictive clauses, consistent with usual market practices, such as normal restrictions on the creation of new liens on assets, significant changes in the Company’s share control, sale of assets and payment of dividends in excess the minimum required by law in cases of default in financing and in transactions with controlled companies.

As of December 31, 2019, the Company and subsidiaries were in compliance with all the restrictive clauses, according with contracts clauses.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

22 Other payables

	<u>12.31.2019</u>	<u>12.31.2018</u>
Provisions related to payroll (i)	58.4	92.8
Provision for employee profit sharing	20.9	34.3
Other accounts payable (ii)	54.0	114.6
Mutual with jointly controlled operation	—	23.2
Long-term incentive (iii)	16.4	16.9
Insurance	7.1	6.2
Contractual obligations (iv)	6.7	17.5
Commission payable	11.3	10.9
Brazilian air force	0.4	0.6
	<u>175.2</u>	<u>317.0</u>
Current portion	162.5	288.4
Non-current portion	12.7	28.6

(i) Refers to personnel obligations and their respective charges recorded in the financial statements.

(ii) Represents a provision for expenses already incurred as of the date of the consolidated financial statements and for which payments are made during the following month.

(iii) Refers to the Long-Term Incentive (LTI) granted to employees of the Company in the form of phantom shares as described in Note 30.

(iv) Represents the recorded amounts regarding maintenance costs of aircraft leased through operating leases and contractually agreed upon commitments for the sale of new aircraft or the expiration of residual financial guarantees.

23 Taxes and payroll charges payable

	<u>12.31.2019</u>	<u>12.31.2018</u>
INSS (social security contribution) (i)	52.6	105.2
IPI (manufacturing tax)	4.2	0.3
PIS and COFINS (ii)	3.6	1.6
IRRF (withholding tax)	1.4	11.8
Others	6.5	7.7
	<u>68.3</u>	<u>126.6</u>
Current portion	54.9	68.4
Non-current portion	13.4	58.2

The Company is challenging, through both administrative and judicial proceedings, the constitutionality of the tax calculation base and its expansion, as well as the rate increase of certain taxes, social contributions, and charges, with the aim of ensuring its right to withhold payment or recover amounts paid in previous years.

By means of such administrative and judicial proceedings, the Company has obtained injunctions and similar measures to suspend payment or offset payment of taxes and social contributions and charges. Provisions have been recorded for taxes not paid, as a result of preliminary legal decisions, and are updated based on the SELIC interest rate, pending a final and definitive decision. In some cases, the Company maintains judicial deposit for the continuity of the judicial proceedings.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

- (i) Corresponds substantially to:
- The increase in the work-related accident insurance (“SAT”) rate. The Company is challenging the legality of the levy and absence of technical criteria for such rate since 1995. On September 2019, the law demand was concluded as favorable to the Company, therefore the liability of US\$ 46.6 was written off in that period (US\$ 47.7 on December 31, 2018).
 - Additionally, in February 2009, the Company filed a suit contesting the payment of social security on paid notice of dismissal and other indemnity payments. In October 2015 the Company obtained partial success in the dispute in relation to the employer’s portion of the Social Security on the paid notice, and therefore reduced the amount of the provision by US\$ 2.5. The partial success was ratified in November 2017. Currently, the remaining amount involved in the dispute in respect of the notice established in the collective agreement is US\$ 13.0 on December 31, 2019 (US\$ 10.0 on December 31, 2018).
 - The Company obtained an injunction guaranteeing the right to not collect social security contributions according to the system established by Law 13,670 / 2018 in 2018 (maintenance of the Social Security Contribution on Gross Revenue - CPRB until 12/31/2018). The amount involved in the discussion is US\$ 37.3 on December 31, 2019 (US\$ 31.6 on December 31, 2018).
- (ii) Refers to:
- Contributions to the PIS/PASEP fund (Social Integration Program / Public Servant Fund). The dispute, involving the calculation base for the non-cumulative system, was included under the terms of Law 11,941/09, and the suit was withdrawn. The Company continues to contest criteria for application of the benefits of refinancing in the ambit of the legal dispute.

With respect to the litigation issues mentioned above, the remaining provisions will be kept until there is a outcome of the demands and no further appeals can be made.

24 Income taxes

As the tax basis for the majority of the Company’s assets and liabilities is maintained in reais and the accounting basis is measured in US dollars (functional currency), the fluctuations in the exchange rate significantly impacted the tax basis and, in turn, the deferred income tax expense (benefit).

Based on the expectation of future taxable income, the Company recorded deferred tax assets based on tax losses carryforwards.

Credits relating to temporary differences on non-deductible provisions, represented by labor contingencies, provisions and disputed taxes will be realized as such proceedings are concluded.

24.1 Deferred income tax and social contribution

The components of deferred tax assets and liabilities are as follows:

	12.31.2019	12.31.2018	31.12.2017
Temporarily non-deductible provisions	65.2	39.7	(76.1)
Tax loss carryforwards	0.2	0.5	4.5
Functional currency effect of the non monetary assets	(297.4)	(323.4)	(206.0)
Gains not realized from sales of the Company to subsidiaries	23.1	22.7	15.4
Effect of differences by fixed asset	(12.0)	7.5	(8.1)
Differences between basis: account x tax	(50.7)	20.6	25.7
Deferred tax assets (liabilities), net	(271.6)	(232.4)	(244.6)
Total deferred tax asset	0.7	21.6	13.4
Total deferred tax liability	(272.3)	(254.0)	(258.0)

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Changes in deferred income tax that affected profit or loss were as follows:

	From the statement of income	Other comprehensive income	Total
At December 31, 2016	(292.4)	38.8	(253.6)
Temporarily non-deductible provisions	26.6	—	26.6
Tax loss carryforwards	(23.8)	—	(23.8)
Functional currency effect of the non monetary assets	(5.0)	—	(5.0)
Provision Gain not realized at sales from Controlling company to subsidiaries	(1.0)	—	(1.0)
Effect of differences by fixed asset	23.0	—	23.0
Differences between basis: account x tax	(6.9)	(3.9)	(10.8)
At December 31, 2017	(279.5)	34.9	(244.6)
Temporarily non-deductible provisions	115.8	—	115.8
Tax loss carryforwards	(4.0)	—	(4.0)
Functional currency effect of the non monetary assets	(117.4)	—	(117.4)
Gains not realized from sales of Parent Company to subsidiaries	7.3	—	7.3
Effect of differences by fixed asset	15.6	—	15.6
Differences between basis: account x tax	3.9	(9.1)	(5.2)
Discontinued operation	8.1	(8.0)	0.1
At December 31, 2018	(250.2)	17.8	(232.4)
Temporarily non-deductible provisions	14.3	—	14.3
Tax loss carryforwards	1.1	—	1.1
Functional currency effect of the non monetary assets	16.4	—	16.4
Gains not realized from sales of Parent Company to subsidiaries	0.4	—	0.4
Effect of differences by fixed asset	(47.7)	—	(47.7)
Differences between basis: account x tax	(70.3)	(1.0)	(71.3)
Discontinued operation	19.8	27.8	47.6
At December 31, 2019	(316.2)	44.6	(271.6)
24.2 Reconciliation of income tax expense			
	12.31.2019	12.31.2018	12.31.2017
Loss before income tax	(101.2)	(282.0)	(95.1)
Income tax and social contribution at the nominal Brazilian enacted tax rate - 34 %	34.4	95.9	32.3
Tax on profits of overseas subsidiaries	(72.3)	(33.2)	(9.8)
Functional currency effect of the non monetary assets	16.4	(117.4)	(5.0)
Research and development tax incentives	23.0	27.1	42.8
Interest on own capital	—	3.0	16.9
Fiscal credits (recognized and non recognized)	0.2	(8.5)	9.1
Tax rate difference	(5.3)	26.8	3.0
Other difference between IFRS and fiscal basis*	(99.9)	27.0	(117.5)
	(137.9)	(75.2)	(60.5)
Income tax and social contribution income (expense) benefit as reported	(103.5)	20.7	(28.2)
Current income tax and social contribution expense as reported	(37.5)	(8.6)	(41.1)
Deferred income tax and social contribution income (expense) benefit as reported	(66.0)	29.3	12.9

* Others and differences between accounting and fiscal basis mainly refer to: permanent additions and exclusions, realization of foreign exchange gain or loss, transfer pricing adjustments and differences between accounting basis and fiscal treatments in the income tax calculation (depreciation of fixed assets, provision for inventory losses, among others).

24.3 Uncertainty over income tax treatments

The Company and its subsidiaries held certain discussions with Brazilian tax authorities over administrative and judicial matters related to uncertain treatments adopted when calculating income tax and social contribution on net income, whose prognostic assessment was that the opted tax positions will probably be accepted by the authorities, based on internal and external evaluation by legal advisors. A summary of these processes, related contingent liabilities and their potential effects is presented in Note 26.2.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

25 Financial guarantees and residual value guarantees

	<u>12.31.2019</u>	<u>12.31.2018</u>
Financial guarantee of residual value	—	125.4
Accounts payable (i)	—	15.1
Financial guarantee	—	11.6
	<u>—</u>	<u>152.1</u>
Current portion	—	51.0
Non-current portion	—	101.1

The movement on the financial guarantees and residual guarantees is shown below:

	Financial guarantee	Financial guarantee of residual value	Accounts payable	Total
At December 31, 2016	<u>22.7</u>	<u>122.2</u>	<u>65.9</u>	<u>210.8</u>
Additions	1.2	—	3.7	4.9
Interest Additions	—	—	2.0	2.0
Disposals	—	—	(40.8)	(40.8)
Market value	—	(13.3)	—	(13.3)
Guarantee amortization	(6.8)	—	—	(6.8)
At December 31, 2017	<u>17.1</u>	<u>108.9</u>	<u>30.8</u>	<u>156.8</u>
Interest Additions	—	—	1.5	1.5
Disposals	—	—	(17.2)	(17.2)
Market value	—	16.5	—	16.5
Guarantee amortization	(5.5)	—	—	(5.5)
At December 31, 2018	<u>11.6</u>	<u>125.4</u>	<u>15.1</u>	<u>152.1</u>
Interest Additions	—	—	0.6	0.6
Disposals	—	—	(15.7)	(15.7)
Market value	—	4.2	—	4.2
Guarantee amortization	(0.9)	—	—	(0.9)
Liabilities held for sale	(10.7)	(129.6)	—	(140.3)
At December 31, 2019	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

All financial guarantees and residual value guarantees granted by the Company refer to the Commercial Aviation and comprise the disposal group (liabilities held for sale) in the statement of financial position and discontinued operation in the statement of income for the year ended December 31, 2019. See Note 4.

26 Provisions and contingent liabilities

26.1 Provisions

	<u>12.31.2019</u>	<u>12.31.2018</u>
Product warranties (i)	67.1	98.0
Provisions for labor, taxes and civil (ii)	66.4	58.4
Taxes	41.7	31.4
Post retirement benefits	11.7	31.7
Environmental provision	0.3	2.4
Other	15.7	20.5
	<u>202.9</u>	<u>242.4</u>
Current portion	103.1	116.9
Non-current portion	99.8	125.5

- (i) Recorded to cover product-related expenditure, including warranties and contractual obligations to implement improvements to aircraft delivered in order to meet performance targets.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

(ii) Provisions for labor, tax or civil contingencies, as shown in the table below Note 26.1.1.

Change in provision:

	Product warranties	Provisions labor, taxes and civil	Post retirement benefits	Taxes	Voluntary redundancy scheme	Environment provision	Other	Total
At December 31, 2016	94.1	93.1	46.0	28.5	25.3	1.0	14.8	302.8
Additions	42.5	12.7	3.2	14.0	7.0	3.0	7.1	89.5
Interest	—	12.5	4.4	—	—	—	—	16.9
Used/payments	(26.8)	(61.1)	(15.3)	—	(31.0)	—	—	(134.2)
Reversals	(8.8)	(2.3)	(1.4)	—	(1.0)	(2.0)	—	(15.5)
Translation adjustments	0.1	(0.7)	(0.8)	(0.7)	(0.3)	(0.2)	3.4	0.8
At December 31, 2017	101.1	54.2	36.1	41.8	—	1.8	25.3	260.3
Additions	38.1	24.6	0.6	0.8	—	2.0	8.0	74.1
Interest	—	5.1	2.9	—	—	—	—	8.0
Used/payments	(24.9)	(6.4)	(3.3)	(11.2)	—	—	—	(45.8)
Reversals	(16.2)	(11.8)	(0.2)	—	—	(1.0)	—	(29.2)
Translation adjustments	(0.1)	(7.3)	(4.4)	—	—	(0.4)	(12.8)	(25.0)
At December 31, 2018	98.0	58.4	31.7	31.4	—	2.4	20.5	242.4
Additions	54.2	23.8	—	63.9	—	2.3	—	144.2
Interest	—	5.2	2.2	—	—	—	—	7.4
Used/payments	(29.7)	(7.1)	—	(54.0)	—	(1.7)	(0.4)	(92.9)
Reversals	(43.2)	(10.6)	(1.8)	—	—	—	—	(55.6)
Translation adjustments	(0.2)	(1.9)	(0.7)	0.4	—	(0.1)	(0.6)	(3.1)
Liabilities held for sale	(12.0)	(1.4)	(19.7)	—	—	(2.6)	(3.8)	(39.5)
At December 31, 2019	67.1	66.4	11.7	41.7	—	0.3	15.7	202.9

26.1.1 Labor, tax and civil provisions

	12.31.2019	12.31.2018
Tax related		
IRPJ (i)	13.6	9.2
PIS and COFINS	5.3	5.3
Social security contributions (ii)	2.4	2.4
Import taxes (iii)	0.8	0.8
FUNDAF	—	0.1
Others	—	0.2
	22.1	18.0
Labor related		
Plurimas 461/1379 (iv)	9.6	10.0
Reintegration (v)	6.0	7.0
Overtime (vi)	7.6	6.0
Dangerousness (vii)	1.4	1.0
Indemnity (viii)	4.9	3.1
Third parties	1.5	0.5
Others	12.9	12.4
	43.9	40.0
Civil related		
Indemnity (ix)	0.4	0.4
	0.4	0.4
	66.4	58.4
Current portion	21.4	20.7
Non-current portion	45.0	37.7

(i) The Company has obtained an injunction to suspend collection of withholding tax related to values transferred overseas.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

-
- (ii) The Company was notified by the authorities for failing to withhold social security contributions from service providers. These lawsuits are at the second court level.
 - (iii) Deficiency and Penalty Notices issued against the Company involving the drawback regime, disputing possible differences in relation to the tax classification of certain products and is at the analysis stage in the Federal Supreme Court - STJ (*Supremo Tribunal de Justiça*).
 - (iv) Refers to claims for backdated salary increases and productivity payments, brought by former employees.
 - (v) Suits brought by former employees claiming reinstatement with the Company for various reasons.
 - (vi) Requests for payment of alleged differences in relation to overtime.
 - (vii) Requests that seek recognition of hazardous activity.
 - (viii) Indemnity claims in connection with alleged work-related accidents, pain and suffering, etc.
 - (ix) Other indemnity claims brought by parties that had some kind of legal relationship with the Company.

The tax, labor and civil provisions are recorded in accordance with the Company's accounting policy and the amounts shown here represent the estimated amounts that the Company's legal department and its external counsel expect the Company to have to disburse to settle the lawsuits.

26.2 Contingent liabilities

Contingent liabilities are amounts classified as possible losses, in accordance with the Company's accounting policy, in the opinion of the Company's legal department, supported by its external counsel. When the contingent liability arises from the same set of circumstances as an existing provision, the type of the corresponding provision is indicated at the end of the description. The Company's main contingent liabilities are listed below:

- The Company has a legal discussion related to the ISSQN rate in the amount of US\$ 60.0 on December 31, 2019 (US\$ 55.9 on December 31, 2018).
- The Company has a legal dispute over AIIM on SAT / *Agentes Nocivos* from 2003 in the amount of US\$ 7.7 on December 31, 2019 (US\$ 8.1 on December 31, 2018).
- The Company has a dispute about the transfer price calculation from the year 2009 in the amount of US\$ 9.0 on December 30, 2019 (US\$ 8.4 on December 31, 2018).
- The Company is involved in a legal dispute related to tax credits paid by its subsidiaries abroad amounting to US\$ 99.6 on December 31, 2019 (US\$ 119.6 on December 31, 2018).
- The Company has a dispute on the 2007 Tax Assessment Notice regarding the validity of the provisions contained in the Normative Instruction No. 213/02, which determined the taxation of profits from abroad through the application of Brazilian rules. The dispute involves transfer pricing in loans between associates, equity method, among others. On September 1, 2010, decadence had been accepted to exclude the requirements of the first three quarters of 2002, and it was determined to carry out diligence to collect information requested by the National Treasury Attorney (*Procuradoria da Fazenda Nacional* - PNF). In April 2019 the judge trial was converted into diligence. The amount is US\$ 161.0 on December 31, 2019 (US\$ 163.9 on December 31, 2018).
- The Company has a discussion on the disallowance of credits launched in several PERDCOMPs (electronic request for reimbursement or refund and tax offset statement program in Brazil) in the amount of US\$ 51.0 on December 31, 2019 (US\$ 37.5 on December 31, 2018).

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

- Other tax lawsuits in the amount of US\$ 0.6 as of December 31, 2019 (US\$ 0.6 as of December 31, 2018).
- The Company has contingent liabilities amounting to US\$ 20.9 on December 31, 2019 related to several labor claims (US\$ 36.4 on December 31, 2018).

26.3 SEC/DOJ and Brazilian public prosecutor's investigations

In October 2016, the Company entered into definitive agreements with the United States and Brazilian authorities for the resolution of criminal and civil violations of the U.S. Foreign Corrupt Practices Act of 1977, as amended, or FCPA and for the resolution of violations of certain Brazilian laws.

Under the final agreements with the DOJ (U.S. Department of Justice) and the SEC (U.S. Securities and Exchange Commission):

- The Company agreed to pay approximately US\$ 98.2 to the SEC (of which US\$20.0 million or R\$64.0 million was due to the Brazilian Securities and Exchange Commission (CVM or *Comissão de Valores Mobiliários*) and the Brazilian Federal Public Prosecutor's Office (MPF or *Ministério Público Federal*) under the term of undertaking (TCAC or *Termo de Compromisso e de Ajustamento de Conduta*), in the form of disgorgement of profits and pre-judgement interest.
- The Company agreed to pay approximately US\$ 107.3 to the DOJ, as penalty for one count of conspiracy to violate the anti-bribery and books and records provisions of the FCPA (U.S. Foreign Corrupt Practices Act) and one count of violating the internal controls provisions of the FCPA.
- In a deferred prosecution agreement (DPA), the DOJ agreed to defer prosecution of the charges for three years, after which period the charges will be dismissed if the Company complied with the terms of the DPA.
- The Company agreed with the DOJ and the SEC to retain an external and independent anti-corruption monitorship for a period of approximately three years. In February 2020, the Company agreed to extend the term of the external and independent monitorship for an additional 90 days in order to allow the monitor to complete his work.
- On April 13, 2020, the monitor delivered his final report to the DOJ and to the SEC, finding that Embraer's compliance program is reasonably designed and implemented to detect and prevent violations of the anti-corruption laws. On May 22, 2020, the monitorship term expired. Under both the DPA and the SEC Consent, there remain certain additional steps that the Company must take to complete the requirements of the DPA and the SEC Consent.

The Final Agreements and the TCAC represent the conclusion of the internal investigation of allegations of noncompliance with the FCPA and certain Brazilian laws in four aircraft sales outside Brazil between 2007 and 2011.

Related proceedings and developments are ongoing and could result in additional fines and possibly other sanctions and adverse consequences, which may be substantial. The Company believes that there is no adequate basis at this time for estimating accruals or quantifying any contingency with respect to these matters.

The Company will continue to cooperate with governmental authorities, as circumstances may require. In this regard, on February 23, 2017 the Company entered into an Exoneratory Agreement with the Mozambican authorities for collaboration with the investigations in that country and under which there are no financial obligations for Embraer. In July 2018, the Company entered into a collaboration agreement with the Attorney General's Office of the Dominican Republic in exchange for our cooperation with ongoing investigations in that country and paid US\$ 7.0 to the Dominican Republic.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

27 Post-retirement benefits

	<u>12.31.2019</u>	<u>12.31.2018</u>
Medical benefits plan Brazil	9.0	27.9
Medical benefits plan subsidiaries abroad	2.7	3.8
Post-retirement benefits	<u>11.7</u>	<u>31.7</u>

As of December 31, 2019, provision of US\$ 19.7 associated with post-retirement healthcare benefits provided by the Company mainly in Brazil was reclassified to liabilities held for sale related to the Commercial Aviation business unit (Note 4).

27.1 Post-retirement healthcare benefits provided by the Company in Brazil

The Company provided healthcare plan for employees, which based on its conditions, is classified as a post-employment benefit. Under this healthcare plan, employees who retire from the Company have the option of remaining in the plan, contributing the full amount charged by the insurance company. However, due to certain rules for increases under Brazilian law, there could be times the contribution made by the retired employees is insufficient to cover the medical plan costs, which would represent exposure for the Company.

27.2 Post-retirement healthcare benefits provided by subsidiaries abroad

Embraer Aircraft Holding sponsors a post-retirement healthcare plan for employees hired up to 2007. The expected costs of pension and provision of post-employment medical benefit for the individual employees and their dependents are provided on an accrual basis based on actuarial studies and the calculation is reviewed annually.

27.3 Defined contribution pension plan

The Company and certain subsidiaries sponsor a defined contribution pension plan for their employees, participation in which is optional. The Company's contributions to the plan for the years ended December 31, 2019 and 2018 were US\$ 19.0 and US\$ 14.1, respectively.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

28 Financial Instruments

28.1 Financial instruments by category

		12.31.2019				
			Amortized cost	Fair value through profit or loss	Total	
		Note				
Assets						
Cash and cash equivalents	6	855.2	—	855.2		
Financial investments	7	—	424.7	424.7		
Guarantee Deposits	11	0.6	—	0.6		
Collateralized accounts receivable	10	17.6	—	17.6		
Contract assets		461.9	—	461.9		
Trade accounts receivable, net	8	149.4	—	149.4		
Derivative financial instruments	9	—	2.1	2.1		
Other Assets		34.5	—	34.5		
		1,519.2	426.8	1,946.0		
Liabilities						
Loans and financing	21	91.0	—	91.0		
Trade accounts payable and others liabilities		550.8	—	550.8		
Lease liability		38.6	—	38.6		
Derivative financial instruments	9	—	4.5	4.5		
		680.4	4.5	684.9		
		12.31.2018				
			Amortized cost	Fair value through other comprehensive income	Fair value through profit or loss	Total
		Note				
Assets						
Cash and cash equivalents	6	1,280.9	—	—	1,280.9	
Financial investments	7	48.8	507.8	1,370.3	1,926.9	
Guarantee Deposits	11	349.7	—	—	349.7	
Collateralized accounts receivable	10	235.9	—	—	235.9	
Contract assets		358.0	—	—	358.0	
Trade accounts receivable, net	8	318.0	—	—	318.0	
Customer and commercial financing		11.7	—	—	11.7	
Derivative financial instruments	9	—	—	9.5	9.5	
Other Assets		66.2	—	—	66.2	
		2,669.2	507.8	1,379.8	4,556.8	
Liabilities						
Loans and financing	21	3,647.7	—	—	3,647.7	
Trade accounts payable and others liabilities		1,550.5	—	—	1,550.5	
Financial guarantee and residual value	25	15.0	—	125.4	140.4	
Derivative financial instruments	9	—	—	8.1	8.1	
		5,213.2	—	133.5	5,346.7	

28.2 Fair value of financial instruments

The fair value of the Company's financial assets and liabilities was determined using available market information and appropriate valuation methodologies. However, considerable judgment is required in interpreting market data to generate estimates of fair values. Consequently, the estimates presented below are not necessarily indicative of the amounts that might be realized in current market exchange. The use of different assumptions and/or methodologies could have a material effect on the estimated realizable values.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

The following methods were used to estimate the fair value of each category of financial instrument for which it is possible to estimate the fair value.

The carrying amounts of cash, financial investments, accounts receivable, other financial assets and current liabilities are approximately their fair values. The methods below were used to estimate the fair value of other class of financial instruments for which fair value is adopted.

Financial investments – The fair value of securities measured at amortized cost is estimated by the discounted cash flow methodology. For investments in corporate bonds, the unit price on the last trading day at the end of the reporting period is multiplied by the amount invested.

Loans and financing – The fair value of bonds is the unit price on the last trading day at the end of the reporting period multiplied by the quantity issued.

For other loans and financing, fair value is based on the amount of contractual cash flows and the discount rate used is based on the rate for contracting of a new transaction in similar conditions or in the lack thereof, on the future curve for the flow of each obligation.

The Company considers “fair value” to be the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (exit price). The Company utilizes market data or assumptions that market participants would use in pricing the asset or liability, including assumptions about risk and the risks inherent in the inputs to the valuation technique. The Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. The Company is able to classify fair value balances based on the observable inputs. The three Levels of the fair value hierarchy are as follows:

- **Level 1** - quoted prices are available in active markets for identical assets or liabilities at the reporting date. Active markets are those in which transactions for the asset or liability occur in sufficient frequency and volume to provide pricing information on an ongoing basis. Level 1 primarily consists of financial instruments such as exchange-traded derivatives and listed equities.
- **Level 2** - pricing inputs other than quoted prices in active markets included in level 1, which are either directly or indirectly observable as of the reporting date. Level 2 includes those financial instruments that are valued using models or other valuation methodologies. These models are primarily industry-standard models that consider various assumptions, including quoted forward prices for commodities, time value, volatility factors, and current market and contractual prices for the underlying instruments, as well as other relevant economic measures. Substantially all of these assumptions are observable in the marketplace throughout the full term of the instrument, can be derived from observable data or are supported by observable levels at which transactions are executed in the marketplace. Instruments in this category include non-exchange traded derivatives such as swaps or over-the-counter forwards and options.
- **Level 3** - pricing inputs include significant inputs that are generally less observable from objective sources. These inputs may be used with internally developed methodologies that result in Management’s best estimate of fair value. At each reporting date, the Company performs an analysis of all instruments and includes in Level 3 all of those whose fair value is based on significant unobservable inputs. Changes in the fair value of financial instruments classified as Level 3 are recognized in profit or loss for the year as finance income (expenses), net.

The following table lists the Company’s financial assets and liabilities by level within the fair value hierarchy. The Company’s assessment of the significance of an input to the fair value measurement requires judgment and may affect the valuation of fair value assets and liabilities and their placement within the fair value hierarchy levels. On December 31, 2019, there were no changes in the fair value methodology of the financial instruments and, therefore, there were no transfers between levels.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

		12.31.2019					
		Fair value through profit or loss			Other categories of financial instruments	Fair value	Book value
	Note	Level 2	Level 3	Total			
Assets							
Cash and cash equivalents	6	—	—	—	855.2	855.2	855.2
Financial investments	7	364.1	60.6	424.7	—	424.7	424.7
Guarantee deposits	11	—	—	—	0.6	0.6	0.6
Collateralized accounts receivable	10	—	—	—	17.6	17.6	17.6
Contract assets		—	—	—	461.9	461.9	461.9
Trade accounts receivable, net	8	—	—	—	149.4	149.4	149.4
Derivative financial instruments	9	2.1	—	2.1	—	2.1	2.1
Other assets		—	—	—	34.5	34.5	34.5
		<u>366.2</u>	<u>60.6</u>	<u>426.8</u>	<u>1,519.2</u>	<u>1,946.0</u>	<u>1,946.0</u>
Liabilities							
Loans and financing	21	—	—	—	91.0	85.1	91.0
Trade accounts payable and others liabilities		—	—	—	550.8	550.8	550.8
Lease liability	17	—	—	—	38.6	38.6	38.6
Derivative financial instruments	9	4.5	—	4.5	—	4.5	4.5
		<u>4.5</u>	<u>—</u>	<u>4.5</u>	<u>680.4</u>	<u>679.0</u>	<u>684.9</u>
		12.31.2018					
		Fair value through profit or loss			Other categories of financial instruments	Fair value	Book value
	Note	Level 2	Level 3	Total			
Assets							
Cash and cash equivalents	6	—	—	—	1,280.9	1,280.9	1,280.9
Financial investments	7	1,818.2	59.9	1,878.1	48.8	1,926.1	1,926.9
Guarantee deposits	11	—	—	—	349.7	349.7	349.7
Collateralized accounts receivable	10	—	—	—	235.9	235.9	235.9
Contract assets		—	—	—	358.0	358.0	358.0
Trade accounts receivable, net	8	—	—	—	318.0	318.0	318.0
Customer and commercial financing		—	—	—	11.7	11.7	11.7
Derivative financial instruments	9	9.5	—	9.5	—	9.5	9.5
Other assets		—	—	—	66.2	66.2	66.2
		<u>1,827.7</u>	<u>59.9</u>	<u>1,887.6</u>	<u>2,669.2</u>	<u>4,556.0</u>	<u>4,556.8</u>
Liabilities							
Loans and financing	21	—	—	—	3,647.7	3,756.8	3,647.7
Trade accounts payable and others liabilities		—	—	—	1,550.5	1,550.5	1,550.5
Financial guarantee and of residual value	25	—	125.4	125.4	15.0	140.4	140.4
Derivative financial instruments	9	8.1	—	8.1	—	8.1	8.1
		<u>8.1</u>	<u>125.4</u>	<u>133.5</u>	<u>5,213.2</u>	<u>5,455.8</u>	<u>5,346.7</u>
		Fair value of financial instruments using significant unobservable inputs (level 3)					
		Assets			Liabilities		
At December 31, 2017		<u>59.6</u>			<u>108.9</u>		
Changes in fair value		0.3			16.5		
At December 31, 2018		<u>59.9</u>			<u>125.4</u>		
Changes in fair value		0.7			4.2		
Reclassification to held for sale		—			(129.6)		
At December 31, 2019		<u>60.6</u>			—		

Changes in Level 3 financial instruments are recognized in the consolidated statements of income under the caption of financial income (expense), net.

28.3 Financial risk management policy

The Company has and follows a risk management policy, which involves the diversification of transactions and counterparties, with the objective of identifying the risks related to the financial transactions, as well as the operational directives related to these financial transactions. The policy provides for regular monitoring and management of the nature and general situation of the financial risks in order to assess the results and the financial impact on cash flows. The credit limits and risk rating of the counterparties are also reviewed periodically.

The Company's risk management policy is part of the financial management policy established by the Executive Directors and approved by the Board of Directors and provides for monitoring by a Financial Management Committee. Under this policy, the market risks are mitigated when there are no offsetting elements in the Company's operations and when it is considered necessary to support the corporate strategy.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

The Company's internal control procedures provide for consolidated monitoring and supervision of the financial results and of the impact on cash flows.

The Financial Management Committee assists the Financial Department in examining and reviewing information in relation to the economic scenario and its potential impact on the Company's operations, including significant risk management policies, procedures, and practices.

The financial risk management policy includes the use of derivative financial instruments to mitigate the effects of interest rate fluctuations and to reduce the exposure to exchange rate risk. The use of these instruments for speculative purposes is forbidden.

28.3.1 Capital management

The Company uses capital management to ensure the continuity of its investment program and offer a return to its shareholders and benefits to its stakeholders and to maintain an optimized capital structure in order to reduce costs.

The Company may review its dividends payment policy, payback capital to the shareholders, issue new shares or sell assets in order to maintain or adjust its capital structure (to reduce indebtedness, for instance).

Liquidity and the leverage level are constantly monitored in order to mitigate refinancing risk and to maximize the return to the shareholders. The ratio between the liquidity and the return to the shareholders may be changed pursuant to the assessment of the Board of Directors.

The Company's capital management may be modified to adjust to changes in the economic scenario or strategic repositioning of the Company.

As of December 31, 2019, the cash and cash equivalents and financial investments was lower than the financial indebtedness of the Company (net debt) by US\$ 612.4 (US\$ 439.9 as of December 31, 2018). Deducting the net debt of US\$ 1,801.3 allocated in the disposal group as of December 31, 2019 (Note 4.2), the cash and cash equivalents and financial investments would be higher than the financial indebtedness of the Company by US\$ 1,188.9.

Of the total financial indebtedness as of December 31, 2019, 16.35% was short-term (4.9% as of December 31, 2018) and the average weighted term was equivalent to 10.04 years on December 31, 2019 (5.5 years as of December 31, 2018).

28.3.2 Credit risk

Credit risk is the risk of a counterparty to a transaction not meeting an obligation established in a financial instrument, or in the negotiation of sales to customers, leading to a financial loss. The Company is exposed to credit risk in its operational activities, cash held in banks and other investments in financial instruments held in financial institutions.

- **Cash and cash equivalents and financial investments**

The credit risk of cash and cash equivalents and financial investments which is managed by the Financial Department is in accordance with the risk management policy. The credit limit of counterparties is reviewed on a daily basis in order to not to exceed the limits established mitigating possible losses generated by the bankruptcy of a counterparty, as well as transactions are carried out with counterparties with investment grade by risk rating agencies (*Fitch, Moody's e Standard and Poor's*). The Financial Management Committee assists the Financial Department in examining and reviewing operations with counterparties.

As of December 31, 2019, and 2018, all financial investments measured at amortized cost, at fair value through other comprehensive income and at fair value through profit or loss are considered as low credit risk and are in compliance. This definition is aligned with the financial and risk management policy of the Company.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

The result from the expected credit loss model set forth in IFRS 9 for balances of cash and cash equivalents and financial investments was immaterial.

- **Trade accounts receivable and contract assets with customers**

The Company may incur losses on amounts receivable from sales of spare parts and services to customers. To reduce the risk, Management performs an internal credit risk analysis which considers qualitative factors, such as past experiences, and quantitative factors, when applicable, related to external financial information. If the risk increases and/ or the customer present overdue amounts, the supply of spare parts and services can be stopped by the Company, which impacts its fleet operations.

The Company applies IFRS 9 simplified approach to the measurement of expected credit losses on trade accounts receivable balances (Note 8).

In order to calculate the expected credit losses, receivables are grouped by the period the items are outstanding, and an expected loss factor is applied based on actual credit loss experiences of each past period, which gradually increases as long as the receivable remains outstanding in portfolio. For receivables not overdue, the expected credit loss is calculated using past 10 years' experience of losses and monitoring of forward trends. As of December 31, 2019, the initial expected loss factor under the methodology is 1.4%.

Contract assets refer to contracts in progress that have not been billed, mainly related to development contracts recognized over time in the Defense & Security segment.

The credit risk characteristic of the Company's customers is different for the Defense & Security segment, since the counterparties refer only to government entities and agencies. The risk in this case is associated with the sovereign risk of each country, especially Brazil, as well as with the continuity of strategic projects under development, for which the Company usually has the enforceable right to receive for the performance completed to date. The Company historically has not presented losses in the trade accounts receivable and contract assets balances with these counterparties.

Trade accounts receivable and contract assets are written off when there is no reasonable expectation of recovery. Indications include, among others, the inability of the debtor to participate in a plan to renegotiate its debt or possible legal actions have been exhausted.

- **Other financial assets**

Other financial assets measured as at amortized cost includes guarantee deposits, collateralized accounts receivable, customer financing, court-mandated escrow deposits and loan with joint operation. The result of the expected credit losses model set forth in IFRS 9 for other financial assets was immaterial.

Also, the Company has guarantees, such as guarantee deposits in financial institutions rated as investment grade, pledge assets or other contractual guarantees, which also mitigates the risk of financial loss in these assets.

28.3.3 Liquidity risk

This is the risk of the Company not having enough funds to honor its financial commitments as a result of a mismatch of terms or volumes of estimated receipts and payments.

Projections and assumptions are established to manage the liquidity of cash in U.S. dollars and Reais, in accordance with the financial management policy, based on contracts for future disbursements and receipts, and monitored periodically by the Company. Accordingly, possible mismatches are detected well in advance allowing the Company to adopt mitigation measures to reduce risks and financial cost.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

The following table provides additional information related to undiscounted contractual obligations and commercial commitments and their respective maturities:

	Cash Flow	Less than one year	One to three years	Three to five years	More than five years
At December 31, 2019					
Loans and financing	148.5	45.8	58.5	10.5	33.7
Trade accounts payable	358.0	358.0	—	—	—
Recourse and non recourse debt	17.6	4.0	7.9	4.4	1.3
Financial guarantees	—	—	—	—	—
Other liabilities	128.1	3.2	52.8	70.4	1.7
Capital lease	38.5	7.4	12.1	5.0	14.0
Total	690.7	418.4	131.3	90.3	50.7
At December 31, 2018					
Loans and financing	4,701.3	321.0	867.3	1,345.7	2,167.3
Trade accounts payable	892.1	892.1	—	—	—
Recourse and non recourse debt	341.4	324.0	7.6	6.6	3.2
Financial guarantees	152.1	51.0	39.9	31.3	29.9
Other liabilities	227.3	5.4	92.2	95.3	34.4
Total	6,314.2	1,593.5	1,007.0	1,478.9	2,234.8

The table above shows the outstanding principal and interest if applicable at the maturity dates. In the case of the fixed rate liabilities, interest expense was calculated based on the rate established in each debt contract. Interest expense on floating rate liabilities was calculated based on a market forecast for each period (e.g. LIBOR 6m - 12m).

28.3.4 Market risk

a) Interest rate risk

This risk arises from the possibility of the Company incurring losses on the fluctuation of floating interest rates, which might increase financial expenses of financial liabilities, and/ or decrease financial income of financial assets, as well as negatively impacting the fair value of financial assets measured as at fair value. The lines of the consolidated financial statements most affected by interest rate risks are:

- Cash, cash equivalents and financial investments – the Company's policy for managing the risk of fluctuations in interest rates on financial investments is to maintain a system to measure market risk, which consists of an aggregate analysis of variety of risk factors that might affect the return of those investments.
- Loans and financing – the Company monitors financial markets with the purpose of evaluate hedge structures (derivative transactions) in compliance with the financial and risk management policy to protect its exposure risks of volatility in foreign currency and interest rates.

At December 31, 2019, the Company's cash, cash equivalents, financial investments and loans and financing were indexed as follows:

Without derivative effect

	Pre-fixed		Post-fixed		Total	
	Amount	%	Amount	%	Amount	%
Cash, cash equivalents and financial investments	1,149.6	89.81%	130.4	10.19%	1,280.0	100.00%
Loans and financing	42.4	46.59%	48.6	53.41%	91.0	100.00%

With derivative effect

	Pre-fixed		Post-fixed		Total	
	Amount	%	Amount	%	Amount	%
Cash, cash equivalents and financial investments	1,149.6	89.81%	130.4	10.19%	1,280.0	100.00%
Loans and financing	2.2	2.42%	88.8	97.58%	91.0	100.00%

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

At December 31, 2019, the Company's cash equivalents and post -fixed financing were indexed as follows:

	Without derivative effect		With derivative effect	
	Amount	%	Amount	%
Cash equivalents and financial investments	64.9	100.00%	64.9	100.00%
CDI	64.9	100.00%	64.9	100.00%
Libor	—	0.00%	—	0.00%
Loans and financing	48.6	100.00%	88.8	100.00%
TJLP	0.7	1.44%	0.7	0.79%
Libor	19.8	40.74%	17.6	19.82%
CDI	—	0.00%	42.4	47.75%
SIFMA	28.1	57.82%	28.1	31.64%

b) Foreign exchange rate risk

Consequently, the Company's operations most exposed to foreign exchange gains/losses are those denominated in Reais (labor costs, tax issues, local expenses, financial investments and loans and financing) as well as investments in subsidiaries in currencies other than the US dollar.

Company policy for protection against foreign exchange risks on assets and liabilities is mainly based on seeking to maintain a balance between assets and liabilities indexed in each currency and management of foreign currency purchases and sales to ensure that, on realization of the transactions contracted, this natural hedge will occur. This policy minimizes the effect of exchange rate changes on assets and liabilities already contracted, but do not protect against the risk of fluctuations in future results due to appreciation or depreciation of the real that can, when measured in dollars, result in an increase or reduction in the portion of costs denominated in reais.

Under certain market conditions, the Company may protect itself against potential future mismatches of expenses and revenues denominated in foreign currency, to minimize the effects of future exchange variations on the Company's consolidated statements of income.

Efforts to minimize the foreign exchange risk for rights and liabilities denominated in currencies other than the functional currency may involve transactions with derivatives, such as swaps, exchange options and Non-Deliverable Forwards ("NDF") (Note 9).

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

At December 31, 2019, the Company had the following amounts of financial assets and liabilities denominated in several currencies:

	Consolidated	
	12.31.2019	12.31.2018
Loans and financing		
Brazilian reais	43.1	286.5
U.S. dollars	47.9	3,341.6
Euro	—	19.6
	<u>91.0</u>	<u>3,647.7</u>
Trade accounts payable		
Brazilian reais	73.3	77.1
U.S. dollars	248.0	715.6
Euro	35.3	27.2
Other currencies	1.4	72.2
	<u>358.0</u>	<u>892.1</u>
Total (1)	<u>449.0</u>	<u>4,539.8</u>
Cash and cash equivalents and financial investments		
Brazilian reais	128.7	406.5
U.S. dollars	1,044.0	2,746.8
Euro	105.7	47.7
Other currencies	1.5	6.8
	<u>1,279.9</u>	<u>3,207.8</u>
Trade accounts receivable:		
Brazilian reais	6.3	10.7
U.S. dollars	120.0	274.2
Euro	23.1	33.1
Other currencies	—	—
	<u>149.4</u>	<u>318.0</u>
Total (2)	<u>1,429.3</u>	<u>3,525.8</u>
Net exposure (1 - 2):		
Brazilian reais	(18.6)	(53.6)
U.S. dollars	(868.1)	1,036.2
Euro	(93.5)	(34.0)
Other currencies	(0.1)	65.4

The Company has other financial assets and liabilities that are also influenced by foreign exchange variations that are not included in the table above. These are used to minimize exposure in the currencies presented.

28.4 Sensitivity analysis

In order to present positive and negative variations of 25% and 50% in the risk variable considered, a sensitivity analysis of the financial instruments, including derivatives, is presented below describing the effects on the monetary and foreign exchange variations on the financial income and expense, as well as in the consolidated shareholders' equity, determined on the balances recorded at December 31, 2019, in the event of such variations in the risk component.

However, statistical simplifications were made in isolating the variability of the risk factors in question. Consequently, the following estimates do not necessarily represent the amounts that might be determined in future consolidated financial statements. The use of different hypotheses and/or methodologies could have a material effect on the estimates presented below.

28.4.1 Methodology

Assuming that the balances remain constant, the Company calculates the interest and exchange variation differential for each of the projected scenarios.

[Table of Contents](#)
Embraer S.A.
Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

Evaluation of the amounts exposed to interest rate risk considers only the risks for the financial statement. Operations subject to prefixed interest rates were not included. The probable scenario is based on the possible change for each of the variables indicated, and positive and negative variations of 25% and 50% were applied to the rates in force as of the reporting date.

In the sensitivity analysis of derivative contracts, positive and negative variations of 25% and 50% were applied to the market yield curve (B3) as of the reporting date.

28.4.2 Interest risk factor

	Risk factor	Amounts exposed at 12.31.2019	Additional variations in book balances (*)				
			-50%	-25%	Probable scenario	+25%	+50%
Cash equivalents and financial investments	CDI	64.9	(1.5)	(0.8)	(0.1)	0.6	1.3
Net impact	CDI	64.9	(1.5)	(0.8)	(0.1)	0.6	1.3
Loans and financing	LIBOR	(19.8)	0.2	0.1	—	(0.1)	(0.1)
Net impact	LIBOR	(19.8)	0.2	0.1	—	(0.1)	(0.1)
Loans and financing	TJLP	(0.7)	—	—	—	—	—
Net impact	TJLP	(0.7)	—	—	—	—	—
Rates considered	CDI	4.40%	2.15%	3.23%	4.30%	5.38%	6.45%
Rates considered	LIBOR	1.93%	0.89%	1.34%	1.79%	2.24%	2.68%
Rates considered	TJLP	5.95%	2.79%	4.18%	5.57%	6.96%	8.36%

(*) The positive and negative variations of 25% and 50% were applied on the rates in effect at 12.31.2019

28.4.3 Foreign exchange risk factor

	Risk factor	Amounts exposed at 12.31.2019	Additional variations in book balances (*)				
			-50%	-25%	Probable scenario	+25%	+50%
Assets		39.7	19.8	9.9	(0.1)	(10.0)	(20.1)
Cash, cash equivalents and financial	R\$	128.7	64.2	32.0	(0.3)	(32.5)	(64.9)
Other assets	R\$	(89.0)	(44.4)	(22.1)	0.2	22.5	44.8
Liabilities		(34.3)	(17.1)	(8.5)	0.1	8.7	17.3
Loans and financing	R\$	(43.1)	(21.5)	(10.7)	0.1	10.9	21.7
Other liabilities	R\$	8.8	4.4	2.2	—	(2.2)	(4.4)
Net impact		74.0	2.7	1.4	—	(1.3)	(2.8)
Exchange rate considered		4.0307	2.0200	3.0300	4.0400	5.0500	6.0600

(*) The positive and negative variations of 25% and 50% were applied on the rates

28.4.4 Derivative contracts

2019-4 Derivative contracts			Additional variations in book balances (*)				
	Risk factor	Amounts exposed at 12.31.2019	-50%	-25%	Probable scenario	+25%	+50%
Derivative Designated as Hedge Accounting							
Interest swap - fair value hedge	CDI	1.5	0.6	0.3	—	(0.3)	(0.6)
Hedge destined as cash flow	US\$/R\$	(0.1)	65.5	24.9	(2.5)	(37.6)	(81.6)
Other derivatives	CDI	(0.1)	(0.1)	—	—	—	—
Hedge desinated as cash flow	LIBOR						
Other derivatives							
Interest swap	LIBOR	(0.1)	(0.1)	—	—	—	—
Foreign Exchange option	EUR/US\$	0.3	(2.3)	(1.3)	(0.3)	0.8	1.8
	US\$/R\$	(4.0)	79.8	39.7	(0.4)	(40.5)	(80.6)
Total		(2.5)	143.4	63.6	(3.2)	(77.6)	(161.0)
Rate considered	LIBOR	1.93%	0.89%	1.34%	1.79%	2.24%	2.68%
Rate considered	CDI	4.40%	2.15%	3.23%	4.30%	5.38%	6.45%
Rate considered	US\$/R\$	4.031	2.020	3.030	4.040	5.050	6.060
Rate considered	LIBOR	1.121	0.560	0.840	1.120	1.400	1.680

(*) The positive and negative variations of 25% and 50% were applied on the rates

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

29 Shareholders' equity

29.1 Capital

The authorized capital is divided into 1,000,000,000 common shares. The Company's subscribed and paid up capital as of December 31, 2019 was US\$ 1,551.6 and was comprised of 740,465,044 common shares, without par value, of which 4,385,218 shares were held in treasury.

The capital is comprised entirely of common shares. As per Article 14 of the Company's bylaws, each common share generally empowered with one vote at general shareholders' meeting, considering that no shareholder or group of shareholders, may exercise votes representing more than 5% of the quantity of share into which our capital stock is divided. Votes that exceed this 5% threshold will not be considered.

29.2 Brazilian Federal Government Golden Share

The Federal Government holds one *golden share* with the same voting rights as other holders of common shares, but which grants it certain additional rights as established in article 9 of the Embraer's bylaws.

29.3 Treasury Shares

Common shares acquired with resources from the investments and working capital reserve. This operation occurred in accordance with rules approved by the Statutory Board of Directors in a meeting held on December 7, 2007 and corresponds to 4,385,218 common shares and US\$ 26.5 as of December 31, 2019. These shares lose voting and economic rights during the period in which they are held in Treasury. The movement is shown below:

	USD	Quantity	Share value (USD)	Net income of uses
At the beginning of the year	31.4	4,977,698	6.3	—
Used for stock options plan (i)	(4.9)	(592,480)	8.3	2.7
At December 31, 2019	26.5	4,385,218	6.0	2.7

- (i) The beneficiaries of the shares used in the share-based compensation plan include the Statutory Board of Directors, Executive Directors and certain employees. Refer to Note 30.

At December 31, 2019, the market value of the shares held in Treasury was US\$ 21.4 (December 31, 2018 - US\$ 27.5).

29.4 Investment subsidy reserve

This reserve was formed as allowed by article 195-A of Brazilian Corporate Law (as amended by Law 11.638, of 2007) and corresponds to the appropriation of the portion of retained earnings derived from government grants received by the Company, which cannot be distributed to shareholders in the form of dividends. It is recognized in the consolidated statements of income in the same expense line to which the subsidy refers.

These subsidies are not included in the calculation of the minimum mandatory dividends.

29.5 Legal reserve

The statutory reserve is a revenue reserve recorded annually as an appropriation of 5% of the net income for the year. The reserve may not exceed 20% of capital, or 30% of capital and capital reserves.

The reserve limit was not exceeded as of December 31, 2019 and 2018.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

29.6 Investment and working capital reserve

The purpose of this revenue reserve is to shield funds which might otherwise be subject to distribution and are earmarked for: (i) investments in property, plant and equipment, without detriment to retained earnings, pursuant to art. 196 of Law 6.404/76; (ii) the Company's working capital (iii) redeem, reimburse or purchase shares of the Company and (iv) be distributed to the shareholders.

29.7 Interest on own capital and dividends

Under the Company's bylaws, shareholders are entitled to dividends or interest on own capital equivalent to 25% of net income for the year, adjusted in accordance with the bylaws. The calculation takes into account the interest on own capital net of withholding tax.

Proposed distributions of dividends to shareholders are recorded as a liability in the consolidated financial statements at the end of the year. Any amount over and above the minimum mandatory dividend is recognized in a specific account as additional dividends proposed in the revenue reserve in consolidated shareholders' equity, until it is approved by the shareholders, at which point the reserve is reversed against a liability in the consolidated financial statements.

Interest on own capital paid or provisioned is recorded as a financial expense for tax purposes. However, for purposes of these consolidated financial statements, the amount is recorded as dividend distribution of net income for the year, and the gross amount is reclassified to consolidated shareholders' equity.

The Company did not distribute dividends and interest on equity during the financial year 2019.

29.8 Other Comprehensive Income

Consists of the following adjustments:

- Cumulative translation adjustment: foreign exchange gains/losses resulting from translation of the consolidated financial statements in the functional currency to the presentation currency (Real) and foreign exchange gains/losses resulting from translation of the foreign subsidiaries' financial statements measured in other functional currencies to the Company's functional currency (dollar); and
- Other comprehensive income: unrealized actuarial gains (losses) resulting from the healthcare plans sponsored by the Company and the fair value variation of financial instruments available for sale.

30 Share-based compensation

In February 2014, the Board of Directors approved the revision of the Executive Remuneration Policy (ERP), applicable to all executive officers and other Company executives. The elements of executive compensation include the Long Term Incentives (LTI), the main objectives of which are to (i) maintain and attract highly qualified personnel for the Company, (ii) assure those who are able to contribute to improving the Company's performance of the right to participate in the results of their contribution, and (iii) also to ensure the continuity of the Company's management by aligning the interests of executives with those of shareholders. The Company currently has two LTI modes: stock options and virtual shares.

30.1 Stock options

Program for the granting of stock options, for the executives of the Company or its subsidiaries, who may exercise their right, is as follows: I) 33% after 3 years, II) 33% after 4 years and III) 34% after 5 years, all in relation to the grant date of each option.

The exercise price of each option is set on the grant date at the weighted average stock option price of the last sixty trading days and may be adjusted by up to 30% to offset any speculation. The participant will have a maximum exercise period of seven years, starting from the grant date.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

The grants awarded are summarized below:

	12.31.2019 in thousands of options				
	Grants	Exercised	Canceled (i)	Outstanding	Exercible
Grants on January 23, 2012	4,860,000	(3,850,900)	(1,009,100)	—	11.5
Grants on March 20, 2013	4,494,000	(2,882,882)	(1,315,910)	295,208	15.7
At December 31, 2019	9,354,000	(6,733,782)	(2,325,010)	295,208	27.2

- (i) The cancellations refer to shares granted to executives or employees who no longer work for the Company. Additionally, on April 16, 2014, there was a cancellation of the grants awarded to members of the Board of Directors, with payment of compensation to plan participants.

30.2 Phantom shares plan

The plan is based on the granting of virtual shares to directors and managers and the main objective is to attract and keep highly qualified staff in the Company and its subsidiaries to ensure continuity of management and align the interests of directors and key personnel of the Company and controlled entities to those of the Company's shareholders.

The value of the long-term incentives ("LTI") will be converted at the average price of the Company's shares in the last 30 trading days by determining the quantity of virtual shares allocated to each participant, divided into two classes, with 50% in the form of restricted virtual shares and 50% in the form of virtual performance shares.

The Company will pay the LTI by converting the quantity of virtual shares into reais at the average quoted price (weighted by trading volume) of the Company's shares in the last 10 trading days, as follows:

- restricted virtual shares: (i) 33% on the third anniversary of the grant date; (ii) 33% on the fourth anniversary of the grant date, and (iii) 34% on the fifth anniversary of the grant date; and
- A change in the virtual performance share calculation was approved in August 2017. Virtual performance shares granted in 2015, 2016 and 2017 will be paid in 2020, while those granted in 2018 will be paid in 2021. The amounts payable will now be based on the internal cost reduction target and not on the Economic Value-Added indicator.

The amounts resulting from conversion of virtual shares will be added to the amounts equivalent to dividends and interest on own capital effectively paid by the Company during the vesting period.

The fair value of virtual shares is determined based on the average price (weighted by trading volume) of the Company's shares (EMBR3-R\$) for the last 10 trading days prior to the close of the period, applied to the number of virtual shares assigned to each participant in proportion to the vesting period.

	Amount of virtual stock	Grant value	Amount of virtual stock (i)	Fair value of shares (R\$)
Grants on March 03, 2015	1,237,090	30.2	650,178	12.3
Grants on March 10, 2016	1,095,720	31.1	685,272	13.0
Grants on June 09, 2016	55,994	1.1	43,325	0.8
Grants on August 25, 2016	70,978	1.1	59,172	1.1
Grants on August 24, 2017	1,930,350	30.5	1,535,154	29.1
Grants on April 12, 2018	1,622,986	35.2	794,616	15.0
Grants on March 12, 2019	964,198	18.6	234,598	4.4
At December 31, 2019	6,977,316	147.8	4,002,315	75.7

- (i) Virtual shares until December 31, 2019 considering the plan's vesting period.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

31 Earnings per Share

31.1 Basic

Basic earnings per common share is computed by dividing net income for the year by the weighted average number of shares outstanding during the period, excluding shares acquired by the Company and held in Treasury.

	12.31.2019			12.31.2018			12.31.2017		
	Continuing operations	Discontinued operation	Total	Continuing operations	Discontinued operation	Total	Continuing operations	Discontinued operation	Total
Net income (loss) attributable to owners of Embraer	(210.5)	(111.8)	(322.3)	(268.3)	90.1	(178.2)	(139.3)	403.3	264.0
	(210.5)	(111.8)	(322.3)	(268.3)	90.1	(178.2)	(139.3)	403.3	264.0
Weighted average number of shares (in thousands)	735,850	735,850	735,850	734,065	734,065	734,065	734,264	734,264	734,264
Basic earnings per share - U.S. dollars	(0.29)	(0.15)	(0.44)	(0.37)	0.12	(0.24)	(0.19)	0.55	0.36

31.2 Diluted

Diluted earnings per share are calculated by adjusting the weighted average number of common shares outstanding to assume conversion of all potentially dilutive shares. The Company has only one category of potentially dilutive shares, namely share purchase options. A calculation is made in respect of these share purchase options to determine the number of shares that could be acquired at fair value (determined as the average market price of the Company's share), based on the monetary value of subscription rights tied to the share purchase options in circulation. The number of shares calculated as described above is compared with the number of shares issued, assuming the exercise of share purchase options.

	12.31.2019			12.31.2018			12.31.2017		
	Continuing operations	Discontinued operations	Total	Continuing operations	Discontinued operations	Total	Continuing operations	Discontinued operations	Total
Net income (loss) attributable to owners of Embraer	(210.5)	(111.8)	(322.3)	(268.3)	90.1	(178.2)	(139.3)	403.3	264.0
Profit used to determine diluted earnings per share	(210.5)	(111.8)	(322.3)	(268.3)	90.1	(178.2)	(139.3)	403.3	264.0
Weighted average number of shares (in thousands) - diluted	735,850	735,850	735,850	734,065	734,065	734,065	734,264	734,264	734,264
Dilution for the issuance of stock options (in thousands) (i)	—	—	—	—	720	—	—	545	545
Weighted average number of shares (in thousands) - diluted	735,850	735,850	735,850	734,065	734,785	734,065	734,264	734,809	734,809
Diluted earnings per share - U.S. dollars	(0.29)	(0.15)	(0.44)	(0.37)	0.12	(0.24)	(0.19)	0.55	0.36

(i) Refers to the effect of potentially dilutive shares for December 31, 2018.

At December 31, 2019, 93,025 options (719,899 in 2018) were excluded from the weighted average number of shares, since their effect would have been anti-dilutive.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

32 Revenue from contracts with customers

a) Revenue disaggregation:

The following tables provide disaggregated revenue by category, including main product and service lines, and main geographic areas. The Company discloses such balances reconciled to the reportable segments Note 39, being this information regularly provided and reviewed in such way by the chief operating decision-maker. Reconciliation of reportable segments to the statements of income is provided in Note 39.6.

- Revenue by category at December 31, 2019, including continuing and discontinued operations:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
Aircraft	2,184.7	89.9	1,311.9	0.2	5.6	3,592.3
Long-term contracts (Defense BU)	—	397.9	—	1.2	—	399.1
Others	49.7	16.0	85.1	0.7	—	151.5
Service	—	264.2	—	618.5	0.1	882.8
Spare Parts	—	7.3	—	426.1	3.5	436.9
Total	2,234.4	775.3	1,397.0	1,046.7	9.2	5,462.6
Revenue from Continuing operations	—	775.3	1,397.0	437.2	8.6	2,618.1
Revenue from Discontinued operations	2,234.4	—	—	609.5	0.6	2,844.5
Total	2,234.4	775.3	1,397.0	1,046.7	9.2	5,462.6

	North America	Latin America	Asia Pacific	Brazil	Europe	Other	Total
Aircraft	2,549.0	21.3	272.0	59.1	614.3	76.6	3,592.3
Long-term contracts (Defense BU)	0.1	1.3	2.1	378.8	13.5	3.3	399.1
Others	98.6	19.2	5.7	8.6	12.5	6.9	151.5
Service	437.5	26.6	72.6	101.3	205.1	39.7	882.8
Spare Parts	260.4	8.0	24.6	55.5	78.3	10.1	436.9
Total	3,345.6	76.4	377.0	603.3	923.7	136.6	5,462.6
Revenue from Continuing operations	1,601.0	46.4	59.8	570.5	297.6	42.8	2,618.1
Revenue from Discontinued operations	1,744.6	30.0	317.2	32.8	626.1	93.8	2,844.5
Total	3,345.6	76.4	377.0	603.3	923.7	136.6	5,462.6

- Revenue by category at December 31, 2018, including continuing and discontinued operations:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
Aircraft	2,276.2	92.5	997.4	—	6.9	3,373.0
Long-term contracts (Defense BU)	—	267.0	—	—	—	267.0
Others	82.1	2.0	106.9	—	—	191.0
Service	—	183.2	—	622.7	0.2	806.1
Spare Parts	—	67.4	—	358.1	8.5	434.0
Total	2,358.3	612.1	1,104.3	980.8	15.6	5,071.1
Revenue from Continuing operations	—	612.1	1,104.3	399.8	11.5	2,127.7
Revenue from Discontinued operations	2,358.3	—	—	581.0	4.1	2,943.4
Total	2,358.3	612.1	1,104.3	980.8	15.6	5,071.1

	North America	Latin America	Asia Pacific	Brazil	Europe	Other	Total
Aircraft	2,253.8	87.0	318.2	40.3	644.5	29.2	3,373.0
Long-term contracts (Defense BU)	1.9	0.1	0.7	243.3	12.6	8.4	267.0
Others	66.6	11.9	5.2	74.7	8.9	23.7	191.0
Service	353.7	42.2	92.3	42.4	230.3	45.2	806.1
Spare Parts	283.0	8.8	15.6	42.3	69.7	14.6	434.0
Total	2,959.0	150.0	432.0	443.0	966.0	121.1	5,071.1
Revenue from Continuing operations	1,245.0	120.3	42.1	367.5	327.0	25.8	2,127.7
Revenue from Discontinued operations	1,714.0	29.7	389.9	75.5	639.0	95.3	2,943.4
Total	2,959.0	150.0	432.0	443.0	966.0	121.1	5,071.1

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

- Revenue by category at December 31, 2017, including continuing and discontinued operations:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
Aircraft	2,691.8	—	1,175.0	—	7.1	3,873.9
Long-term contracts (Defense BU)	—	651.8	—	—	—	651.8
Others	79.6	7.2	105.3	0.3	—	192.4
Service	—	177.8	—	622.2	1.0	801.0
Spare Parts	—	16.9	—	299.7	23.7	340.3
Total	2,771.4	853.7	1,280.3	922.2	31.8	5,859.4
Revenue from Continuing operations	—	853.7	1,280.3	398.3	14.2	2,546.5
Revenue from Discontinued operations	2,771.4	—	—	523.9	17.6	3,312.9
Total	2,771.4	853.7	1,280.3	922.2	31.8	5,859.4

	North America	Latin America	Asia Pacific	Brazil	Europe	Other	Total
Aircraft	2,711.5	0.2	754.0	20.0	359.3	28.9	3,873.9
Long-term contracts (Defense BU)	38.0	1.3	9.8	558.4	33.7	10.6	651.8
Others	104.1	0.2	1.7	11.9	0.3	74.2	192.4
Service	304.1	36.9	75.4	109.4	231.5	43.7	801.0
Spare Parts	180.2	13.0	18.6	49.2	66.8	12.5	340.3
Total	3,337.9	51.6	859.5	748.9	691.6	169.9	5,859.4
Revenue from Continuing operations	1,266.1	28.1	141.3	700.0	377.1	33.9	2,546.5
Revenue from Discontinued operations	2,071.8	23.5	718.2	48.9	314.5	136.0	3,312.9
Total	3,337.9	51.6	859.5	748.9	691.6	169.9	5,859.4

The contracts are grouped in the categories above as they are affected similarly by economic factors.

b) Contract balances, including contract costs:

	Note	12.31.2019	12.31.2018
Contract assets		461.9	358.0
Contract costs (Other assets)		9.1	9.1
Contract liabilities		683.4	1,243.6
Advances from customers		435.4	1,057.4
Deferred revenue		248.0	186.2
Financial Guarantee	25	—	11.6

As of December 31, 2019, and December 31, 2018, there were no losses recognized for contract assets. Losses recognized on trade accounts receivable balances are presented in Note 8.

Out of the total revenues recognized for the year ended December 31, 2019, US\$ 822.6 were included in the contract liabilities at the beginning of the period (US\$ 785.9 for the year ended December 31, 2018).

The amount of revenue recognized as of December 31, 2019 related to performance obligations achieved in prior years (or partially achieved) is US\$ 57.4, which refers mainly to change orders approved in the year without changes in goods or services to be delivered.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

The Company had the following amounts in other assets related to costs to obtain contracts:

	Sales commissions	Bank guarantees	Total
At December 31, 2018	0.6	8.4	9.0
Additions	3.0	0.8	3.8
Disposals	(2.5)	(1.2)	(3.7)
Exchange rate variation	—	—	—
At December 31, 2019	1.1	8.0	9.1

There were no impairment losses recognized for costs to obtain contracts.

Assets for obtaining contracts are amortized when (or as and when) the revenue is recognized.

c) Performance obligations:

The Company has a portfolio of firm orders, whose performance obligations are unsatisfied or partially satisfied. The amount of revenue allocated to performance obligations not yet satisfied (or partially satisfied) as of December 31, 2019 is US\$ 16.8 billion, of which US\$ 13.3 billion is expected to be satisfied in the next 5 years, as estimated by the Company.

33 Revenue (expenses) by type

The Company opted to present the consolidated statements of income by function. The table below shows the detailed costs and expenses by nature:

	12.31.2019	12.31.2018	12.31.2017
As presented in the statements of income:			
Revenue	2,618.1	2,127.7	2,546.5
Cost of sales and services	(2,259.9)	(1,929.6)	(2,248.6)
Administrative	(136.7)	(136.1)	(138.9)
Selling	(148.2)	(151.4)	(169.9)
Research	(19.7)	(19.5)	(22.2)
Other income (expenses), net	(215.8)	(173.8)	(163.9)
Equity in losses on associates	(0.2)	(0.4)	1.2
Operating profit before financial income	(162.4)	(283.1)	(195.8)
Revenue (expenses) by nature:			
Revenue from sales of goods	2,207.0	1,797.1	2,011.2
Revenue from sales of services	462.8	365.1	600.3
Sales deductions and tax on revenue (i)	(51.7)	(34.5)	(65.0)
General manufacturing costs (ii)	(2,104.3)	(1,788.2)	(2,016.5)
Depreciation	(90.6)	(74.0)	(131.5)
Amortization	(65.0)	(67.4)	(100.6)
Personnel expenses	(146.2)	(158.5)	(156.0)
Selling expenses	(37.5)	(39.1)	(33.0)
Miscellaneous	(336.9)	(283.6)	(304.7)
Operating profit before financial income	(162.4)	(283.1)	(195.8)

(i) Refers to sales taxes and other deductions.

(ii) Refers to costs of materials, direct labor and general manufacturing expenses.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

34 Other operating income (expense), net

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Corporate projects	(123.3)	(72.6)	(33.0)
Impairment of assets	(71.6)	(61.3)	(64.8)
Taxes on other outputs	(24.4)	(21.6)	(15.3)
Expenses system project	(9.3)	(13.1)	(15.4)
Training and development	(5.1)	(7.8)	(8.6)
Provision for contingencies	(4.3)	(11.1)	(6.7)
Flight safety standards	(3.7)	(4.0)	(4.1)
Aircraft maintenance and flights costs - fleet	(1.7)	(2.6)	(1.9)
Product modifications	(0.6)	—	—
Recovery of expenses	2.2	9.4	3.5
Royalties	2.9	4.4	2.8
Other sales	4.2	5.0	8.6
Contractual fines revenue (expenses)	5.7	8.3	(0.5)
Others	13.2	(6.8)	(28.5)
	<u>(215.8)</u>	<u>(173.8)</u>	<u>(163.9)</u>

35 Financial income (expense), net

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Financial income:			
Interest on cash and cash equivalents and financial investments	54.6	80.3	122.6
Interest on receivables	36.8	3.6	24.5
Taxes over financial revenue	(7.0)	(9.4)	(13.4)
Other	0.2	—	2.4
Total financial income	<u>84.6</u>	<u>74.5</u>	<u>136.1</u>
Financial expenses:			
IOF - (tax on financial transactions)	(1.5)	(1.4)	(3.6)
Interest on taxes, social charges and contributions	(6.0)	(5.2)	(3.6)
Residual value guarantee	—	—	—
Interest on loans and financing	(9.5)	(39.7)	(37.5)
Other	(12.4)	(13.2)	(4.0)
Total financial expenses	<u>(29.4)</u>	<u>(59.5)</u>	<u>(48.7)</u>
Derivative financial instruments	6.3	(8.9)	7.6
Financial income (expenses), net	<u>61.5</u>	<u>6.1</u>	<u>95.0</u>

36 Foreign exchange gain (loss), net

	<u>12.31.2019</u>	<u>12.31.2018</u>	<u>12.31.2017</u>
Monetary and foreign exchange variations			
Assets:			
Advances to suppliers	—	—	(1.3)
Tax credits	(8.6)	(26.8)	(2.5)
Trade accounts receivable and contract assets	(8.1)	(25.7)	(18.2)
Cash and cash equivalents and financial investments	(16.9)	(63.9)	(0.6)
Other	11.1	(15.8)	(0.7)
	<u>(22.5)</u>	<u>(132.2)</u>	<u>(23.3)</u>
Liabilities:			
Loans and financing	7.5	81.2	5.4
Advances from customers	—	—	7.2
Provisions	4.2	14.3	2.9
Taxes and charges payable	0.8	6.3	0.8
Other payables	(9.2)	10.6	3.1
Suppliers	15.2	(1.5)	0.4
Provisions for contingencies	5.4	3.1	(1.3)
Other	2.4	(3.8)	(1.6)
	<u>26.3</u>	<u>110.2</u>	<u>16.9</u>
Net monetary and foreign exchange variations	<u>3.8</u>	<u>(22.0)</u>	<u>(6.4)</u>
Derivative financial instruments	(4.1)	17.0	12.1
Foreign exchange gain (loss), net	<u>(0.3)</u>	<u>(5.0)</u>	<u>5.7</u>

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements In millions of U.S. dollar, unless otherwise stated

37 Responsibilities and Commitments

37.1 Insurance cover

The Company contracts different types of insurance policies to protect assets in the event of any accident that might cause significant losses. Policies are also contracted for risks subject to compulsory insurance, either legally or contractually.

The Company and its subsidiaries have civil liability insurance for their operations in Brazil and abroad, with coverage and conditions that management considers appropriate to the risks involved.

To cover substantial damage to assets and loss of earnings of its operations in Brazil and abroad, the Company has insured an amount of US\$ 7.8 billion.

37.2 Financial guarantees (Commercial Aviation)

The table below provides quantitative data on the financial guarantees provided by the Company to third parties in the Commercial Aviation business unit (discontinued operations). The maximum potential payments (off balance sheet exposure) represent the worst-case scenario and do not necessarily reflect the results expected by the Company. Estimated proceeds from performance guarantees and underlying assets represent the anticipated values of assets the Company could liquidate or receive from other parties to offset its payments under guarantees.

	12.31.2019	12.31.2018
Maximum financial guarantees	35.9	66.6
Maximum residual value guarantees	204.3	253.1
Mutually exclusive exposure (i)	(12.5)	(26.9)
Provisions and liabilities recorded	(140.3)	(137.0)
Off-balance sheet exposure	<u>87.4</u>	<u>155.8</u>
Estimated proceeds from financial guarantees and underlying assets	<u>86.9</u>	<u>177.6</u>

- (i) When an underlying asset is covered by mutually exclusive financial and residual value guarantees, the residual value guarantee may only be exercised if the financial guarantee has expired without having been exercised. On the other hand, if the financial guarantee is exercised, the residual value guarantee is automatically terminated.

This exposure is reduced by the fact that, to benefit from the guarantee, the counterparty must ensure that the aircraft complies with rigid conditions for its return.

38 Supplemental Cash Flow information

38.1 Payments made during the year and transactions not affecting cash and cash equivalents

	12.31.2019	12.31.2018	12.31.2017
Payments made during the period:			
Interest	184.2	200.6	186.4
Income tax and social contribution	42.3	23.3	28.6
Non-cash financing and investing transactions			
Property, plant and equipment, transfer to pool parts inventory	—	(29.5)	(21.6)
Write off on Property, plant and equipment by transfer to pool parts inventory	(21.6)	—	—
Property, plant and equipment, transfer for providing for the sale of inventory	(38.5)	(112.7)	(100.8)
Impairment of assets	—	(55.2)	(58.4)
Government grants	—	—	(4.3)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

39 Segment information

Management defined the Company's operating segments based on the reports used for strategic decision making, reviewed by the chief operating decision-maker.

The chief operating decision-maker evaluates the businesses based on its consolidated operating results, dividing it geographically and in terms of markets for specific products. From a geographic perspective, Management considers the performance of the operations in Brazil, North America, Europe, Latin America and Asia Pacific.

The Company discloses the results of discontinued operation (Note 4) related to the Commercial Aviation business unit and part of related results from Services & Support business unit as separated reportable segments and with equivalent composition as presented in the comparative consolidated financial statements as of December 31, 2018, since the chief operating decision-maker continues to review and evaluates these segments results in the same format until the completion of disposal. Note 39.6 provides reconciliation of reportable segments to the statements of income.

39.1 Commercial aviation business

The Commercial Aviation business mainly involves the development, production and sale of commercial jets and aircraft leases.

- ERJ 145 family, comprising the ERJ 135, ERJ 140 and ERJ 145 jets, certified to operate with 37, 44 and 50 seats, respectively.
- EMBRAER 170/190 family, comprising the EMBRAER 170, a 70-seat jet, EMBRAER 175, a 76-seat jet, EMBRAER 190, a 100-seat jet and the EMBRAER 195, a 108-seat jet. The EMBRAER 170 model has been operating commercially since 2004, the EMBRAER 175 and EMBRAER 190 models started commercial operations in 2006, and the EMBRAER 195 model in 2007.
- E-Jets E2, the second generation of the E-Jets family of commercial aircraft, consists of three new aircraft - E175-E2 with capacity of up to 88 seats, E190-E2 with up to 106 seats and E195-E2, with up to 132 seats in a typical single-class configuration. The E190-E2 started commercial operations in the first half of 2018. The E195-E2 is scheduled to enter service in 2019 and the E175-E2 in 2021.

39.2 Defense and security business

The defense and security business operations mainly involve research, development, production, modification and support for military defense and security aircraft, as well as a wide range of products and integrated solutions that include radars, special space systems (satellites) and advanced information and communications systems, such as Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance, or C4ISR systems.

The expansion and diversification of the portfolio, previously focused on military aircraft, was facilitated by a strategy of partnerships, acquisitions and organic growth.

The Company's principal customer is currently the Brazilian Defense Ministry and, in particular, the Brazilian Air Force, although the diversification of the portfolio has resulted in a corresponding diversification of customers: the Brazilian Army and Navy and the Communications Ministry, as well as a growing international presence of our products and solutions.

The main products of the Defense and Security portfolio are as follows

- Light Attack and Advanced Training Aircraft (Super Tucano) – the Super Tucano is a military turboprop that combines training and operational capacities with low acquisition and operating costs. The Super Tucano has the operational capacities for frontier surveillance, proximity aerial support and counter insurgence missions (COIN).

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

- Aircraft Modernization – The Company offers aircraft upgrade services and currently operates four contracted programs. The first, known as F-5BR, is focused on the structural and electronic upgrading of the Brazilian Air Force's F-5 jet. The second, A-1M, concerns upgrading of the AMX, an advanced ground attack jet, for the Brazilian Air Force. The third program, contracted by the Brazilian Navy, is for the revitalization and incorporation of new technologies to the A-4 Skyhawk aircraft (denominated AF-1 by the customer). In the fourth program, with the Brazilian Air Force, the Company was contracted to upgrade the EMB 145 AEW&C aircraft.
- The ISR family (Intelligence, Surveillance and Reconnaissance), based on the ERJ 145 platform, includes the EMB 145 AEW&C – Anticipated Aerial Alert and Control, EMB 145 Multi Intel – Remote Sensing and Air-Ground Surveillance and EMB 145 MP – Sea Patrol and Anti Submarine War models. Originally developed to serve the SIVAM program, versions have been ordered by the Greek, Mexican and Indian governments.
- C-390 Millennium is a joint project between the Brazilian Air Force and Embraer to develop and produce tactical military transportation and aerial refueling and represents a significant advance in terms of technology and innovation for the airspace industry. The aircraft is designed to establish new standards in its category, with lower operating costs and the flexibility to execute a variety of missions, including troop carriage and transportation, air delivery, aerial refueling, search and rescue and aerial fire-fighting and combat.
- Transportation of Authorities and Special Missions – Derived from the commercial and executive aircraft platforms, these are aircraft used to transport government authorities or to carry out special missions.
- Radars – solutions offered through Bradar, a technology-based industry specialized in developing and producing radars for Remote Sensing and Defense, include radar for anti-aircraft artillery, surveillance of terrestrial activity, military and civil air traffic control, a communications intelligence system and synthetic aperture radar for cartography and precision monitoring services.
- Software and Systems Development – combining the expertise of Atech – Negócios em Tecnologia S.A. and investments by Embraer in system development and integration, provides specialized engineering services for the development, installation, revitalization and maintenance of critical control, defense and monitoring systems, as well as the machinery and equipment required for the services.
- Frontier monitoring and protection of strategic structures – Based on its experience in systems integration, and through its wholly owned subsidiary Savis, Embraer is dedicated to developing, designing, certifying, producing, integrating and implementing systems and services in the field of frontier monitoring and control and protection of critical infra-structures.
- Satellites - Visiona Space Technology, a joint venture between Embraer and Telebrás, was hired to provide and integrate the Brazilian Geostationary Defense and Communications Satellite system (SGDC), to meet the satellite communications requirements of the Brazilian government, including the National Broadband Program and a wide range of strategic defense transmissions, as well as the assimilation of technologies, marking Embraer's presence in this market. Also provides services of supply and analysis of satellite images with the objective of developing major sensing projects in Brazil and neighboring countries.

39.3 Executive Jet business

Executive Jets market operations comprise the development, production and sale of executive jets and the provision of support services, and leases of the following product lines:

- Legacy 600 and Legacy 650 - executive jets in the super midsize and large categories, deliveries of which started in 2002 and 2010, respectively.

Embraer S.A.**Notes to the Consolidated Financial Statements****In millions of U.S. dollar, unless otherwise stated**

-
- Legacy 450 and Legacy 500- executive jets in the Midlight and Midsize categories, deliveries of which started in 2014 and 2015, respectively.
 - Phenom family - executive jets in the Entry Jet and Light Jet categories, respectively. The first deliveries of the Phenom 100 were made in 2008, and deliveries of the Phenom 300 started in 2009.
 - Lineage 1000 - an ultra-large executive jet. Deliveries of this model started in 2009.
 - Praetor 500 and Praetor 600 - most disruptive executive jets in the Midsize and Super Midsize categories, introduced in Q4 2018 with deliveries starting in 2nd half 2019.

39.4 Service & Support

Segment created to strengthen Embraer's know-how and provide the best after-service solutions and support to its customers through a comprehensive portfolio of innovative and competitive solutions to ensure operational efficiency of products manufactured by Embraer and by other aircraft manufacturers, extending the useful life of commercial, executive and defense aircraft.

In addition to its experience in proposing support solutions to customers, OGMA (Embraer's subsidiary in Portugal) offers MRO (Maintenance, Repair and Overhaul) services for a wide range of commercial, executive and defense aircraft, aircraft components and engines and also it is a significant supplier of steel and composite aviation structures to several aircraft manufacturers.

The Services and Support segment consist of 6 macro processes:

- Capture customer needs and develop integrated support and services solutions: To develop integrated and competitive support solutions, technical services, materials, or MRO activities that meet the needs and expectations of Embraer customers.
- Sell and administrate support and services solution: To sell integrated and competitive technical support, service solutions, materials, or MRO activities, and administer support and service contracts.
- Deliver Material Solutions: To provide parts to customers, by direct sale or availability through special programs, manage component repair, provide inventory management services and advice on inventory formation, etc.
- Deliver Technical Solutions: To provide technical, operational and maintenance support to customers fleets with services such as providing training for pilots and commissioners, aircraft modification and enhancement projects, review of technical, operational and maintenance publications, and sustaining digital solutions.
- Deliver MRO Solutions: To provide maintenance services for aircraft, engines and landing gear (scheduled and unscheduled), aircraft modernization and component repair.
- Monitor and ensure operational excellence and customer relationship excellence:

To guarantee the operational excellence of Materials, Technique and MRO Solutions, through maintaining accountability of the operational leadership and the support areas, consistent monitoring of operational KPIs, reviewing customer satisfaction through MFA practices, maintaining customer relationships with CRM and operational areas that directly interface with the customers.

39.5 Other

Operations reported as others relate to the supply of structural parts and mechanical and hydraulic systems, and production of agricultural crop-spraying aircraft.

[Table of Contents](#)
Embraer S.A.
Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

Consolidated statements of income data by operating segment – year ended December 31, 2019:

	Commercial Aviation	Defense and Security (i)	Executive Jets	Service and Support	Other	Total reportable Segments	Unallocated	Total
Revenue	2,234.4	775.3	1,397.0	1,046.7	9.2	5,462.6	—	5,462.6
Cost of sales and services	(1,971.2)	(711.4)	(1,211.2)	(755.5)	(17.8)	(4,667.1)	—	(4,667.1)
Gross profit	263.2	63.9	185.8	291.2	(8.6)	795.5	—	795.5
Gross profit %	11.8%	8.2%	13.3%	27.8%	-93.5%	14.6%		14.6%
Operating income (expense)	(332.3)	(110.4)	(235.2)	(176.5)	(18.1)	(872.5)	—	(872.5)
Operating profit before financial income (expense)	(69.1)	(46.5)	(49.4)	114.7	(26.7)	(77.0)	—	(77.0)
Financial income (expense), net							(116.1)	(116.1)
Foreign exchange gain (loss), net							6.9	6.9
Loss before taxes on income								(186.2)
Income tax expense							(130.3)	(130.3)
Net income								(316.5)

Revenue by geographic area – year ended December 31, 2019:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
North America	1,399.8	202.8	1,181.6	560.7	0.7	3,345.6
Europe	508.2	96.7	118.8	200.0	—	923.7
Asia Pacific	256.9	4.3	20.3	95.5	—	377.0
Latin America, except Brazil	17.0	2.7	21.6	35.1	—	76.4
Brazil	0.7	431.8	54.7	107.6	8.5	603.3
Other	51.8	37.0	—	47.8	—	136.6
Total	2,234.4	775.3	1,397.0	1,046.7	9.2	5,462.6

Assets by operating segment - year ended December 31, 2019:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total reportable Segments	Unallocated	Total
Trade accounts receivable	4.7	62.0	15.2	208.6	3.7	294.2	—	294.2
Property, plant and equipment	859.5	261.6	456.6	480.9	—	2,058.6	—	2,058.6
Intangible assets	1,048.8	16.5	750.5	—	113.8	1,929.6	122.1	2,051.7
Total	1,913.0	340.1	1,222.3	689.5	117.5	4,282.4	122.1	4,404.5

Assets by geographic area - year ended December 31, 2019:

	North America	Europe	Asia Pacific	Brazil	Total
Trade accounts receivable	101.5	89.8	5.9	97.0	294.2
Property, plant and equipment	371.5	556.9	48.3	1,081.9	2,058.6
Intangible assets	79.5	10.4	—	1,961.8	2,051.7
Total	552.5	657.1	54.2	3,140.7	4,404.5

Consolidated statements of income data by operating segment – year ended December 31, 2018:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total reportable Segments	Unallocated	Total
Revenue	2,358.3	612.1	1,104.3	980.8	15.6	5,071.1	—	5,071.1
Cost of sales and services	(1,976.7)	(702.3)	(914.0)	(689.0)	(21.1)	(4,303.1)	—	(4,303.1)
Gross profit	381.6	(90.2)	190.3	291.8	(5.5)	768.0	—	768.0
Gross profit %	16.2%	-14.7%	17.2%	29.8%	-35.3%	15.1%		15.1%
Operating income (expense)	(229.1)	(93.0)	(235.0)	(168.7)	(6.9)	(732.7)	—	(732.7)
Operating profit before financial income (expense)	152.5	(183.2)	(44.7)	123.1	(12.4)	35.3	—	35.3
Financial income (expense), net							(171.5)	(171.5)
Foreign exchange gain (loss), net							—	—
Loss before taxes on income								(136.2)
Income tax expense							(35.0)	(35.0)
Net income								(171.2)

[Table of Contents](#)
Embraer S.A.
Notes to the Consolidated Financial Statements
In millions of U.S. dollar, unless otherwise stated

Revenue by geographic area – year ended December 31, 2018:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
North America	1,449.4	145.7	936.7	422.2	5.0	2,959.0
Europe	519.1	122.8	127.4	196.7	—	966.0
Asia Pacific	324.1	1.6	1.6	104.7	—	432.0
Latin America, except Brazil	11.9	68.3	22.5	47.3	—	150.0
Brazil	0.2	258.9	16.1	157.2	10.6	443.0
Other	53.6	14.8	—	52.7	—	121.1
Total	2,358.3	612.1	1,104.3	980.8	15.6	5,071.1

Assets by operating segment - year ended December 31, 2018:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total reportable Segments	Unallocated	Total
Trade accounts receivable	5.8	111.2	1.3	192.2	7.5	318.0	—	318.0
Property, plant and equipment	688.8	295.6	544.0	435.6	0.7	1,964.7	—	1,964.7
Intangible assets	862.5	11.0	829.0	—	78.4	1,780.9	117.9	1,898.8
Total	1,557.1	417.8	1,374.3	627.8	86.6	4,063.6	117.9	4,181.5

Assets by geographic area - year ended December 31, 2018:

	North America	Europe	Asia Pacific	Brazil	Total
Trade accounts receivable	83.9	106.4	8.8	118.9	318.0
Property, plant and equipment	351.1	501.6	57.1	1,054.9	1,964.7
Intangible assets	53.6	5.7	—	1,839.5	1,898.8
Total	488.6	613.7	65.9	3,013.3	4,181.5

Consolidated statements of income data by operating segment – year ended December 31, 2017:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total reportable Segments	Unallocated	Total
Revenue	2,771.4	853.7	1,280.3	922.2	31.8	5,859.4	—	5,859.4
Cost of sales and services	(2,178.1)	(792.9)	(1,126.4)	(640.3)	(26.4)	(4,764.1)	—	(4,764.1)
Gross profit	593.3	60.8	153.9	281.9	5.4	1,095.3	—	1,095.3
Gross profit %	21.4%	7.1%	12.0%	30.6%	17.0%	18.7%	0.0%	18.7%
Operating income (expense)	(230.5)	(109.5)	(206.0)	(177.0)	(13.9)	(736.9)	(16.5)	(753.4)
Operating profit before financial income (expense)	362.8	(48.7)	(52.1)	104.9	(8.5)	358.4	(16.5)	341.9
Financial income (expense), net							(40.6)	(40.6)
Foreign exchange gain (loss), net							6.6	6.6
Profit before taxes on income								307.9
Income tax expense							(27.9)	(27.9)
Net income								280.0

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

Revenue by geographic area – year ended December 31, 2017:

	Commercial Aviation	Defense and Security	Executive Jets	Service and Support	Other	Total
North America	1,795.5	93.3	1,006.8	421.0	21.3	3,337.9
Europe	200.1	133.5	161.7	196.3	—	691.6
Asia Pacific	670.3	13.7	94.1	81.4	—	859.5
Latin America, except Brazil	0.5	5.4	0.6	45.1	—	51.6
Brazil	0.9	587.1	17.1	133.3	10.5	748.9
Other	104.1	20.7	—	45.1	—	169.9
Total	2,771.4	853.7	1,280.3	922.2	31.8	5,859.4

39.6 Reconciliation of reportable segments and statements of income

The table below presents portion of revenues, costs and expenses of the Commercial Aviation and Services & Support segments that will be discontinued by the Company under the sale of control of related assets to Boeing (Note 4). Operating expenses presented in the column corporate expenses represent expenses with central overheads and other operating expenses (such as corporate projects) allocated on a pro-rata basis for segment information (Note 39), using revenue from each segment as an allocation factor, however fully reported as results of continuing operations (Note 4.3).

12.31.2019						
(-) Elimination of discontinued operations						
	Total reportable segments	Commercial Aviation	Service and Support	Other	Corporate expenses	Results of continuing operations
Revenue	5,462.6	2,234.4	609.5	0.6	—	2,618.1
Cost of sales and services	(4,667.1)	(1,971.2)	(429.7)	(6.3)	—	(2,259.9)
Gross profit	795.5	263.2	179.8	(5.7)	—	358.2
Gross profit %	14.6%					13.7%
Operating income (expense)	(872.5)	(332.3)	(101.1)	—	81.5	(520.6)
Operating profit before financial income (expense)	(77.0)	(69.1)	78.7	(5.7)	81.5	(162.4)
Operating margin %	-1.4%					-6.2%
12.31.2018						
(-) Elimination of discontinued operations						
	Total reportable segments	Commercial Aviation	Service and Support	Other	Corporate expenses	Results of continuing operations
Revenue	5,071.1	2,358.3	581.0	4.1	—	2,127.7
Cost of sales and services	(4,303.1)	(1,976.7)	(389.4)	(7.4)	—	(1,929.6)
Gross profit	768.0	381.6	191.6	(3.3)	—	198.1
Gross profit %	15.1%					9.3%
Operating income (expense)	(732.7)	(229.1)	(99.7)	—	77.3	(481.2)
Operating profit before financial income (expense)	35.3	152.2	91.9	(3.3)	77.3	(283.1)
Operating margin %	0.7%					-13.3%
12.31.2017						
(-) Elimination of discontinued operations						
	Total reportable segments	Commercial Aviation	Service and Support	Other	Corporate expenses	Results of continuing operations
Revenue	5,859.4	2,771.4	523.9	17.6	—	2,546.5
Cost of sales and services	(4,764.1)	(2,178.1)	(326.3)	(11.1)	—	(2,248.6)
Gross profit	1,095.3	593.3	197.6	6.5	—	297.9
Gross profit %	18.7%					11.7%
Operating income (expense)	(753.4)	(230.5)	(101.3)	—	72.1	(493.7)
Operating profit before financial income (expense)	341.9	362.8	96.3	6.5	72.1	(195.8)
Operating margin %	5.8%					-7.7%

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

40 Subsequent events

Information on the subsequent event that occurred in transaction between Embraer and Boeing are disclosed in Notes 1.1, 3.4, 4 and 40.3 of the consolidated financial statements.

40.1 New financing for working capital purposes of US\$ 600.0

On March 13, 2020, Embraer Aviation Netherlands B.V. entered into a loan credit and guarantee agreement with Citibank, N.A., J.P. Morgan Chase Bank, N.A. and Banco Santander, S.A. in the amount of US\$ 600.0, accruing interest at three months LIBOR *plus* 1.5% per year, maturing on December 15, 2020.

[Table of Contents](#)

Embraer S.A.

Notes to the Consolidated Financial Statements

In millions of U.S. dollar, unless otherwise stated

40.2 Impacts of the COVID-19 pandemic

Embraer has been monitoring the COVID-19 pandemic situation and its impacts on its employees, operations, the global economy, the supply and the demand for its products and services. The Company's Crisis Committee monitors on a daily basis the development of the pandemic situation and it has implemented contingency plans to act as quickly as necessary as the current situation continues to unfold.

As a result of COVID-19 pandemic, on March 17, 2020, our Brazilian corporate employees responsible for critical functions started to work from home and, on March 22, 2020, we decided to put our Brazilian employees that could not work remotely on paid leave until March 31, 2020. Until March 31, 2020, we were only carrying out essential activities at our facilities, including customer support, aircraft maintenance and manufacturing. On March 30, 2020, we further decided to put our Brazilian employees responsible for non-critical functions on collective vacation from April 1 to April 9, 2020. During this temporary shutdown of our facilities, we implemented safety measures to adapt our facilities to the World Health Organization guidelines. On April 10, 2020, we implemented a job preservation plan that included temporary furloughs, reduction in working hours and pay cuts to certain of our employees, as a means of guaranteeing their employment upon completion of the plan. This plan started on April 13, 2020 and will last between 60 and 90 days. On April 13, 2020, all of our Brazilian employees that could not work remotely and were not included in the job preservation plan returned to work at our adapted facilities. Our or other companies' operations may be suspended again or remain suspended for a longer time.

Due to the uncertainty related to the spread of COVID-19, on March 26, 2020, we also suspended the projections relating to our expected results for 2020, dated as of November 12, 2019. We will issue updated projections for 2020 when we conclude the assessment of the effects that the COVID-19 pandemic will cause to our business.

We expect that 2020 will be a distinct year in terms of orders and deliveries due to the impacts of the COVID-19 pandemic. The airline business has been adversely affected due to COVID-19, and we will have to review our production chain in order to reflect the new and uncertain demand scenario.

As a result of the COVID-19, on April 6, 2020, Standard & Poor's downgraded our rating by one notch to BBB- with a negative outlook, due to expectations that many airlines will delay new deliveries at least until the end of the third quarter of 2020. On April 28, 2020, Fitch also downgraded our rating from BBB- to BB+ as a result of the negative expectations relating to the commercial aviation industry due to the COVID-19 pandemic. On April 29, 2020, Moody's also downgraded our rating from Ba1 to Ba2 with a negative outlook.

In the Defense and Security business unit, as of the date of this annual report, we cannot fully predict the impact that the COVID-19 outbreak will have on our Defense and Security business. However, we are facing difficulties to deliver products to international customers due to border and quarantine controls.

In the Executive Jets business unit, restrictions on travel and emergency quarantine have posed some challenges for aircraft deliveries to international customers. As of the date of this annual report, production lines of our business aviation products are abreast for attending planned supply levels, with no major supply shortages. We are supervising the risks and controlling the supply chain and postponements in demand in order to prevent obstacles that may arise from this global crisis. As a result of COVID-19, as of the date of this annual report, one of our executive jets customers cancelled its firm orders and some of our executive jet customers postponed their scheduled aircraft deliveries. Although we cannot fully predict the impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that some customers will continue to postpone their scheduled aircraft deliveries and will continue to cancel their orders.

In the Commercial Aviation business unit (recorded and presented as discontinued operations for the financial statements as of and for the year ended December 31, 2019), due to extensive traffic disruption affecting our customer's operations throughout the world, as a result of the COVID-19, it is reasonable to expect a material impact on our 2020 deliveries. According to Cirium, a data analytics and consulting company, as of May 2020, 60% of the global fleet has been placed into storage, and the International Air Transport Association - IATA projects a decline of 50% in commercial traffic for 2020 in year-over-year terms. As a result of COVID-19, some of our customers rescheduled their aircraft deliveries carrying them over to 2021 and beyond, which has affected our 2020 projected deliveries. As of the date of this annual report, no cancellation has occurred. The recovery pace is difficult to predict since this outbreak has no precedent in history. Although we cannot fully yet determine the impact of the COVID-19 outbreak in the short-to-medium term on our business, we expect that customers will continue to postpone their scheduled aircraft deliveries and will cancel their orders.

As a result of the COVID-19 pandemic, the Company has taken measures to preserve cash flow, including (i) reductions in working hours and pay cuts; (ii) extension of payments terms relating to our suppliers; (iii) extension of tax payment deadlines; (iv) negotiation of new credit lines; and (v) adjustment of production chain.

As of March 31, 2020, the Company has already recognized the following impacts in profit or loss as result of the COVID-19 pandemic:

- Negative changes in the fair value of Republic Airways shares held as financial investments (Note 7) impacting the Company's 2020 operating results in the amount of US\$22.2.
- Additional provision for expected credit losses over trade accounts receivable, contract assets and customer financing as result of increase in credit risks of the Company's customers during the pandemic in the amount of US\$33.4.

As of March 31, 2020, the Company had a trigger event related to impairment of assets in our Executive Aviation and Defense & Security business units due to the impacts of the COVID-19 pandemic and its impact on our market capitalization devaluation in the period. Based on our best estimate using certain assumptions for short-medium term impacts on deliveries of Executive Aviation and Defense & Security business units, at this time have not identified additional impairment charges to be recognized in addition to the charges described in Note 19. The depreciation of Brazilian Reais vs. U.S. Dollars in the period of 29% has a positive impact in future cash flows for that base date due to reduction of cash outflows indexed in Brazilian Reais (costs of goods sold and general expenses). However, an improvement in the currency exchange rate in the future may result in a future impairment charge.

40.3 Impairment losses – Commercial Aviation business unit

Due to the unexpected and wrongful termination of the strategic partnership by Boeing on April 25, 2020, from this date forward the Company will stop designating and measuring the assets and liabilities associated with the Commercial Aviation Business and related services as "held for sale" and its generated results as "discontinued operations," which are to be reclassified as "held for continuous use" and "continuing operations."

The change in designation requires the remeasurement of the long-lived assets held for sale (fixed assets, intangibles, and rights-of-use) for the lower value between the book value, adjusted for accumulated depreciation and amortization not recognized while classified as held for sale in the amount of US\$83.5 (Note 3.4) that will be recorded in the second quarter of 2020, and the recoverable value determined by the highest amount between the value-in-use of these assets and the fair value minus expenses that would be incurred by sale. During the term described in Note 3.4, the long-lived assets held for sale were listed at the recoverable value by the lesser value between the book value and the fair value based on the purchase price set forth in the MTA minus the incremental costs incurred to close the transaction.

In line with the Company's practice as shown in Note 19, the recoverable value of these assets will be measured based on the approach of value-in-use using the discounted cash flow method, which is not substantially different from fair value under current market conditions. The discount rate applied in this case is based on the rate of the weighted average cost of capital for the Company, reconciled with the estimated discount rate before taxes of 10.6%. That rate differs from the discount rate applied to the December 31, 2019 calculation as result of the Company's increased risk diversification and due to increased funding costs as a result of not concluding the transaction with Boeing.

The future cash flows utilized in the determination of the value-in-use account for significant economic environment impacts resulting from the COVID-19 pandemic on the commercial aviation market in accordance with the best estimate of the Management up to the present date.

As a result of the measurement of the recoverable value of the assets of the Commercial Aviation Business, including fixed assets, intangibles and rights-of-use, the Company expects to recognize in the second quarter of 2020 losses due to impairment charges relating to these assets which will impact the operating results for the year. Based on preliminary calculations, these losses are estimated to be in the range of US\$153.0 to US\$526.0 taking into account Management's current estimates of potential projected scenarios of future deliveries of commercial jets and market share development in the coming years post COVID-19, based on currently available information. The estimated losses were calculated based on carrying amounts of CGUs and foreign exchange rate observed as of March 31, 2020. The amount to be recorded as of June 30, 2020 is subject to revision and update based on certain assumptions and factors that are subject to change, including without limitation the foreign exchange rate and discount rate on that date, and may vary materially from the estimates above. Because a substantial portion of the cost of goods sold is indexed in Brazilian Reais, positive or negative fluctuations of 10% in the Brazilian Reais to U.S. dollar foreign exchange rate impact the mid-range of estimated impairment charges by approximately US\$163.0 and US\$201.0, respectively.