



Half-Year Financial Report

January 1 to June 30, 2020



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Key facts and figures

Key facts and figures for the group

in € million (unless stated otherwise)	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Change	
			in € million	in %
Income statement				
Revenue	2,048.8	2,243.0	-194.2	-8.7
Gross profit	314.9	453.4	-138.5	-30.5
Earnings before interest and taxes (EBIT)	199.0	339.5	-140.5	-41.4
Adjusted earnings before interest and taxes (adjusted EBIT)	224.2	365.2	-141.0	-38.6
Earnings before tax	177.3	321.5	-144.2	-44.9
Net income	125.0	229.3	-104.3	-45.5
Net income adjusted	161.3	261.0	-99.7	-38.2
Basic earnings per share (in €)	2.30	4.34	-2.04	-47.0
Diluted earnings per share (in €)	2.25	4.06	-1.81	-44.6
Revenue margins in %				
Earnings before interest and taxes (EBIT)	9.7	15.1		
Adjusted earnings before interest and taxes (adjusted EBIT)	10.9	16.3		
Earnings before tax	8.7	14.3		
Net income	6.1	10.2		
Net income adjusted	7.9	11.6		
Cash flow				
Cash flow from operating activities	228.6	406.0	-177.4	-43.7
Cash flow from investing activities	-104.2	-141.3	37.1	26.3
Free cash flow	125.2	235.4	-110.2	-46.8
Cash flow from financing activities	47.3	-232.1	279.4	>100
Change in cash and cash equivalents	167.8	35.7	132.1	>100
Balance sheet				
in € million (unless stated otherwise)				
	June 30, 2020	Dec 31, 2019	Change	
			in € million	in %
Balance sheet				
Intangible assets	1,161.7	1,162.5	-0.8	-0.1
Cash and cash equivalents	307.3	139.5	167.8	>100
Pension provisions	996.3	976.2	20.1	2.1
Equity	2,517.8	2,421.2	96.6	4.0
Net financial debt	787.2	960.7	-173.5	-18.1
Order backlog	18,363.0	19,820.5	-1,457.5	-7.4
Number of employees				
	10,661	10,660	1	
Commercial and military engine business (OEM)	6,660	6,698	-38	-0.6
Commercial maintenance business (MRO)	4,001	3,962	39	1.0

Interim group management report

The MTU Group

MTU's portfolio covers the entire lifecycle of commercial and military aircraft engines and aero-derivative industrial gas turbines. The company's activities range from development, manufacturing and marketing to maintenance.

Research and development

The pace of technological development in the aviation sector is very high and requires continual innovation. Development work at MTU is dominated principally by the Pratt & Whitney Geared Turbofan™ (GTF) engines, the GE9X and the PW800.

MTU – Geared Turbofan® engine programs

Engine	MTU program share	Aircraft manufacturer	Aircraft type
PW1100G-JM	18%	Airbus	A320neo
PW1200G	15%	Mitsubishi	SpaceJet
PW1400G-JM	18%	Irkut	MC-21
PW1500G	17%	Airbus	A220
PW1700G	15%	Embraer	E-Jet E175-E2
PW1900G	17%	Embraer	E-Jet E190-E2 / E195-E2

In view of the operating restrictions in connection with the coronavirus pandemic, in 2020, research and development expenses will probably be lower than in 2019. They developed as follows in the reporting period:

Research and development expenses

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Change	
			in € million	in %
Commercial engine business (OEM)	87.8	103.2	-15.4	-14.9
Military engine business (OEM)	7.4	4.8	2.6	54.2
Commercial maintenance business (MRO)	2.9	4.0	-1.1	-27.5
Total research and development expenses	98.1	112.0	-13.9	-12.4
less: customer-funded R&D expenditure	14.4	16.1	-1.7	-10.6
Company-funded R&D expenses	83.7	95.9	-12.2	-12.7
Expenditure meeting recognition criteria for intangible assets				
less: commercial engine business (OEM)	32.5	47.5	-15.0	-31.6
less: commercial maintenance business (MRO)	0.6	1.4	-0.8	-57.1
Research and development costs recognized as expense	50.6	47.0	3.6	7.7
Amortization of capitalized development costs	11.3	9.8	1.5	15.3
Development costs recognized in adjusted EBIT	61.9	56.8	5.1	9.0
thereof: amounts accounted for as revenue or cost of sales	37.7	28.4	9.3	32.7
thereof: amounts accounted for as research and development expenses	24.2	28.4	-4.2	-14.8

A distinction is made between company- and customer-funded research and development projects. Company-funded projects are funded out of the group's own resources, while customer-funded projects are ordered and paid for by customers. The company-funded research and development expenses are presented in section "3 Research and development expenses" in the condensed consolidated interim financial statements.

The capitalized development work funded by the company or by compensation payments in the reporting period amounted to €33.1 million (January through June 2019: €48.9 million). The capitalized development costs recognized in profit or loss amounted to €11.3 million (January through June 2019: €9.8 million) and mainly related to GTF programs that have entered into service. Adjusted earnings before interest and taxes (adjusted EBIT) were therefore reduced by €61.9 million by expenses for development activities (January through June 2019: €56.8 million).

Business environment

Macroeconomic conditions

The coronavirus pandemic is a global health crisis that has plunged the world into a deep economic recession. In most countries, lockdowns slowed the spread of COVID-19. However, this was accompanied by a sharp reduction in economic activity in many sectors. Borders were closed, trade slumped and there were restrictions on travel and the freedom of movement.

Initially, China and Europe were worst hit by COVID-19. According to the OECD, in the first quarter of 2020, China's economic output declined by 6.8% year-on-year (Q4 2019: +6.0%). In the euro zone, GDP shrank by 3.1% in the first three months of this year compared with the first quarter of 2019 (Q4 2019: +1.0%). By contrast, the U.S. economy was still stable in the first quarter, before the strong outbreak of the virus in the second quarter. GDP rose 0.3% compared with the first quarter of 2019 (Q4 2019: 2.3%).

Governments and central banks responded with far-reaching measures to protect people and companies, thereby preventing the health and economic crisis becoming a financial crisis. The restrictions have now been eased in many places. Nevertheless, the path to recovery remains uncertain and there is a risk of further waves of infection.

Sector-specific conditions within the aviation industry

Year-on-year, passenger demand (measured in revenue passenger kilometers or RPKs) fell by 94 percent in April and 91 percent in May (source: IATA) because the COVID-19-related travel restrictions brought national and international flights to a virtual standstill.

Analyses of flights show that the crisis bottomed out in April and the sector is gradually recovering – as long as there is not a second wave of infections. Since mid-April there has been a steady increase in the number of passenger flights in aircraft with more than 100 seats. The weekly decline compared with the prior year decreased from 83% in April to 63% in the first week of July (source: Flightradar 24). At the same time, the number of planes with more than 100 seats in active service increased from 40% in April to 65% at the start of July (source: Cirium Fleets Analyzer).

The price of Brent crude oil fell to a low of U.S.\$18 per barrel in April and was U.S.\$40 in June. In 2019, the average price was U.S.\$65 per barrel (source: U.S. Energy Information Administration). That represents a significant financial benefit for airlines and also improves the competitiveness of older aircraft.

As a result of production stoppages, postponement of orders and the freeze on deliveries of the 737MAX, which remains in force, Airbus and Boeing only delivered 235 commercial aircraft in the first half of 2020. In the same period of 2019, 589 aircraft were delivered. At the end of June 2020, there were 13,251 orders on the aircraft manufacturers' books, slightly more than in the prior-year period due to the drop in deliveries and a moderate number of cancellations (446 in the first half of the year) (source: Cirium Fleets Analyzer).

Financial situation

Information on exchange rates

The development of the U.S. dollar is particularly important for MTU's international business. The U.S. dollar exchange rate was U.S.\$1.12 per €1 as of June 30, 2020 (December 31, 2019: U.S.\$1.12 per €1). The average exchange rate in the period from January 1 through June 30, 2020 was U.S.\$1.10 per €1 (H1 2019: U.S.\$1.13 per €1).

Results of operations

Reconciliation to adjusted key performance figures

The reconciliation from earnings before interest and taxes to adjusted earnings before interest and taxes and adjusted net income is as follows:

Reconciliation to adjusted key performance figures

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Change	
			in € million	in %
Earnings before interest and taxes (EBIT)	199.0	339.5	-140.5	-41.4
Depreciation / amortization effects of purchase price allocation / IAE-V2500 stake increase	25.2	25.7	-0.5	-1.9
Impairment (IAS 36) / Restructuring expenses (IAS 37)	0.0	0.0		
Adjusted earnings before interest and taxes (adjusted EBIT)	224.2	365.2	-141.0	-38.6
Interest result	-5.9	-4.4	-1.5	-34.1
Interest cost on pension provisions	-4.5	-7.5	3.0	40.0
Earnings before tax adjusted	213.8	353.3	-139.5	-39.5
Income taxes	-52.5	-92.3	39.8	43.1
Net income adjusted	161.3	261.0	-99.7	-38.2

The reconciliation serves to factor special items out of the key earnings figures of the group and its operating segments. In this way, the success of managing operating activities is measured. The adjusted earnings figures furthermore support comparability over time, and between MTU and other companies. MTU utilizes the following adjusted key performance figures in its financial reports: adjusted earnings before interest and taxes (adjusted EBIT), the adjusted EBIT margin and adjusted net income. The earnings figures do not come under the provisions of the International Financial Reporting Standards (IFRSs); they are to be seen as an addition to the key financial indicators reported pursuant to IFRSs.

In the interests of ensuring comparability of the EBIT figure, it is adjusted for the contributions (special items) resulting from the "effects from purchase price allocation," the "effects from the increase in the stake in IAE-V2500," extraordinary effects from "impairment losses (IAS 36)" and the accrued "restructuring expenses (IAS 37)."

As of January 1, 2004, MTU passed into the ownership of Kohlberg Kravis Roberts & Co. Ltd. (KKR), following the latter's purchase of 100% of the MTU shares from the then DaimlerChrysler AG. In the context of the acquisition, assets, liabilities and contingent liabilities were identified in accordance with IFRS 3 and measured at fair value. Since then, the identified intangible assets, in particular, have resulted in substantial amortization. The latter are referred to collectively as "effects from purchase price allocation." The contributions from the "effects from an increase in the stake in IAE-V2500" result from the increase in the stake in the V2500 program in 2012, which is capitalized as an acquired program asset and is accounted for as a reduction of revenue over its estimated economic life of 25 years.

Similarly, the effect of special items is eliminated from earnings before income taxes. To establish adjusted earnings before income taxes, net interest income/expense and the interest shares in other financial income/expense connected with provisions for pensions and liabili-

ties from pensions and plan assets are added to adjusted EBIT. All other components of financial income/expense that are influenced by the U.S. dollar exchange rate, such as the effects of exchange-rate hedging, are adjusted.

The adjusted amount of earnings before income taxes is used to determine the adjusted amount of net income. The normalized income taxes are calculated on the basis of the expected average tax rate for the group of 29%. The profit/loss of companies accounted for using the equity method does not form part of the tax basis.

Order backlog

MTU's order backlog consists of firm customer orders that commit the group to delivering products or providing services, plus the contractual value of service agreements. As of June 30, 2020, the order backlog was approximately €18.4 billion, corresponding to theoretical production workload of around three and a half years.

Revenue

Due to the pandemic, revenue declined by €194.2 million year-on-year (8.7%) to €2,048.8 million in the first six months of 2020. Revenue from the commercial and military engine business dropped by €175.2 million (17.7%) to €813.8 million. In the commercial maintenance business, revenue was €1,272.3 million, virtually unchanged compared with the first half of the previous year (€1,287.3 million).

Cost of goods sold and gross profit

In correlation with revenue, in the first six months of 2020, the cost of goods sold declined by €55.7 million (3.1%) year-on-year to €1,733.9 million. The gross profit was €314.9 million in the first six months, a drop of €138.5 million (30.5%) compared with the comparative value for the prior year. The decline relative to revenue was above-average as a result of the COVID-19 crisis. As a consequence, the gross margin dropped to 15.4% (January through June 2019: 20.2%).

Earnings before interest and taxes (EBIT)

Earnings before interest and taxes dropped by €140.5 million (41.4%) to €199.0 million in the first six months of 2020 (January through June 2019: €339.5 million). Adjusted earnings before interest and taxes declined to €224.2 million (January through June 2019: €365.2 million) and the adjusted EBIT margin was therefore 10.9% (January through June 2019: 16.3%).

Net financial income / expense

Net financial expense was –€21.7 million in the reporting period (January through June 2019: –€18.0 million). The deterioration was mainly due to currency translation losses of €9.7 million (January through June 2019: –€3.7 million), which were partially offset by lower actuarial losses

from interest rate adjustments in connection with the measurement of pension obligations and plan assets.

Earnings before income taxes

Earnings before income taxes fell by €144.2 million to €177.3 million in the first six months of 2020 (January through June 2019: €321.5 million).

Net income

Net income decreased to €125.0 million (January through June 2019: €229.3 million). Net income attributable to stockholders of MTU Aero Engines AG was €121.8 million (January through June 2019: €224.4 million). Adjusted net income was €161.3 million, which was €99.7 million lower than in the same period of the previous year (January through June 2019: €261.0 million).

Consolidated statement of comprehensive income

In the consolidated statement of comprehensive income, the net income of €125.0 million (January through June 2019: €229.3 million) is reconciled with the total comprehensive income for the period of €68.1 million (January through June 2019: €172.9 million).

Income and expense items directly recognized in other comprehensive income in the first six months of 2020, net of deferred taxes, mainly comprised negative changes in the fair value of cash flow hedges totaling €23.9 million (January through June 2019: €1.6 million), negative effects from currency translation of foreign group companies totaling €23.2 million (January through June 2019: positive effects of €11.0 million), and actuarial losses from changes in interest rates in connection with the measurement of pension obligations and plan assets totaling €8.7 million (January through June 2019: €65.9 million).

Of the total comprehensive income for the period of €68.1 million (January through June 2019: €172.9 million), €64.7 million is attributable to stockholders of MTU Aero Engines AG (January through June 2019: €167.6 million).

Financial position

The principles and objectives of financial management are outlined on page 63 et seq. of the Annual Report 2019 and are still applied unchanged by the group. There were the following changes compared with the financial statements as of December 31, 2019:

Effective May 6, 2020, MTU Aero Engines AG took out a note loan with a nominal value of €100.0 million and a maturity date of June 10, 2021. This has a variable interest rate corresponding to the three-month EURIBOR rate plus 1.7%, with a minimum interest rate of 1.7%. Further, on May 11, 2020, the €600 million revolving

credit facility was increased by €100.0 million to €700.0 million. This increase has a maturity of one year and can be extended twice by six months each time at the company's request (see also Note 28. "Financial liabilities" in the notes to the condensed consolidated interim financial statements as of June 30, 2020).

The group's borrowing mainly comprises loans, including bank loans, bonds, and note loans.

As of June 30, 2020, the group had a revolving credit facility totaling €700.0 million, which has been agreed with five banks. €10.8 million of this credit facility had been drawn down in the form of guarantees as of June 30, 2020 (December 31, 2019: €36.0 million).

Free cash flow

MTU determines its free cash flow from the total of its cash flow from operating activities and its cash flow from investing activities, after eliminating components of the latter (non-recurring cash flows) that are outside the operational management of the core business. In the calculation of the free cash flow, corresponding adjustments were therefore made for non-recurring cash outflows for program assets and aircraft or engine financing in the amount of €1.0 million (January through June 2019: €3.4 million) and non-recurring cash inflows from aircraft or engine financing agreements in the amount of €0.2 million (January through June 2019: €32.7 million).

A free cash flow of €125.2 million was realized in the first six months of 2020 (January through June 2019: €235.4 million).

Financial position

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Year-on-year change	
			in € million	in %
Cash flow from operating activities	228.6	406.0	-177.4	-43.7
Cash flow from investing activities	-104.2	-141.3	37.1	26.3
+ Cash flow adjustments	0.8	-29.3	30.1	>100
Free cash flow	125.2	235.4	-110.2	-46.8
- Cash flow adjustments	-0.8	29.3	-30.1	<100
Cash flow from financing activities	47.3	-232.1	279.4	>100
Translation differences	-3.9	3.1	-7.0	<100
Change in cash and cash equivalents	167.8	35.7	132.1	>100
Cash and cash equivalents				
at the beginning of the reporting period	139.5	99.0		
at the end of the reporting period	307.3	134.7		

Cash flow from operating activities

In the first six months of the 2020 fiscal year, the cash flow from operating activities was €228.6 million (January through June 2019: €406.0 million). The year-on-year reduction corresponded, in particular, with the development of revenue in the reporting period, which was affected by the COVID-19 pandemic.

Cash flow from investing activities

The cash outflow for investing activities was €104.2 million in the first six months of the 2020 fiscal year (January through June 2019: €141.3 million). Cash outflows for investments in intangible assets amounted to €18.7 million (January through June 2019: €57.2 million). They mainly comprised expenditures for company-funded development assets for the Geared Turbofan™ program and the PW800 engine program.

Cash outflows for investment in property, plant and equipment amounted to €64.8 million in the reporting period (January through June 2019: €100.6 million). The funds were used for both new technical equipment, plant and machinery and manufacturing aides, which were required to ramp up serial production and prepare for maintenance of the Geared Turbofan™ programs, and to procure replacements for existing technical equipment, plant and machinery. In addition, proceeds of €1.8 million were generated from the sale of property, plant and equipment (January through June 2019: €1.6 million).

Investment in financial assets was €17.4 million (January through June 2019: €14.7 million) and comprised contributions of €12.5 million (January through June 2019: €7.1 million) to the equity of PW1100G-JM Engine Leasing LLC., East Hartford, U.S.A., to support the leasing activities of the PW1100G-JM program.

In the first half of 2020, €5.3 million (January through June 2019: €3.3 million) was spent on program assets (acquisition costs to purchase and/or increase program stakes) and acquired development work relating to participation in consortia for commercial engine programs.

Repayments in connection with aircraft- and engine-financing activities and other financial assets resulted in a cash inflow to the MTU Group of €0.2 million (January through June 2019: €32.9 million).

Cash flow from financing activities

Between January 1 and June 30, 2020, the cash inflow from financing activities was €47.3 million (January through June 2019: cash outflow of €232.1 million). The main driver of the cash inflow in the reporting period was a €100.0 million note loan.

Change in cash and cash equivalents

The development of the cash flow, including currency effects, resulted in an increase of €167.8 million in cash and cash equivalents (January through June 2019: €35.7 million).

Net financial debt

Net financial debt serves as an indicator of the MTU Group's liquidity situation and is defined as the difference between gross financial debt and financial assets. As of June 30, 2020, net financial debt declined by €173.5 million to €787.2 million (December 31, 2019: €960.7 million). In addition to the above effects in the cash flow from operating, investing and financing activities, this was due principally to the pandemic-induced subsequent measurement of the contingent, deferred purchase price liability arising from the increased stake in the IAE-V2500.

Net financial debt

in € million	June 30, 2020	Dec. 31, 2019	Year-on-year change	
			in € million	in %
Bonds and notes	98.6	100.3	-1.7	-1.7
Convertible bonds	564.3	562.4	1.9	0.3
Promissory notes	100.0		100.0	
Financial liabilities to banks	30.1	40.1	-10.0	-24.9
thereof: note purchase agreement	30.1	30.1		
thereof: other liabilities to banks		10.0	-10.0	-100.0
Financial liabilities to related companies	0.5		0.5	
Lease liabilities	162.5	147.0	15.5	10.5
Financial liabilities arising from increased or new stakes in engine programs	188.2	300.0	-111.8	-37.3
thereof: financial liabilities arising from IAE-V2500 stake increase	176.4	270.5	-94.1	-34.8
Gross financial debt	1,144.2	1,149.8	-5.6	-0.5
less:				
Cash and cash equivalents	307.3	139.5	167.8	>100
Loans to third parties	49.7	49.6	0.1	0.2
Financial assets	357.0	189.1	167.9	88.8
Net financial debt	787.2	960.7	-173.5	-18.1

For a detailed explanation of the bonds and notes, note purchase agreement and financial liabilities from the increase in the stake in the IAE V2500, please refer to the explanations on page 171 et seq of the Annual Report 2019 of MTU Aero Engines AG.

Net assets

Changes in balance sheet items

Total assets were €7,775.4 million as of June 30, 2020, almost unchanged from December 31, 2019 (€7,765.3 million).

Non-current assets were €106.4 million lower than on December 31, 2019 at €4,048.6 million, while current assets were €116.5 million higher at €3,726.8 million.

In the first six months of 2020, intangible assets totaling €19.4 million were recognized (January through June 2019: €57.9 million). The additions mainly comprise capitalized, self-created development assets for the PW800 engine types and the Pratt & Whitney Geared Turbofan™.

Additions to property, plant and equipment amounted to €106.0 million in the first six months of 2020 (January through June 2019: €122.4 million).

Acquired program assets, development work and other assets declined by €122.2 million to €1,098.4 million, mainly due to the pandemic-driven subsequent measurement of program assets relating to the increased stake in IAE-V2500, negative currency effects and the impact of amortization on revenue.

In the first half of 2020, inventories rose by €54.5 million to €1,333.1 million, income tax receivables rose by €6.6 million to €122.4 million, current other financial assets rose by €2.1 million to €64.0 million, and cash and cash equivalents rose by €167.8 million to €307.3 million. By contrast, trade payables declined by €19.6 million to €903.2 million, contract assets dropped by €77.2 million to €969.3 million and current other assets fell by €17.7 million to €27.5 million.

Group equity increased by €96.6 million compared with the level on December 31, 2019 to €2,517.8 million.

In the first six months of 2020, equity was increased by net income of €125.0 million (January through June 2019: €229.3 million), the sale of treasury shares in an amount of €23.3 million (January through June 2019: €18.8 million) in connection with the employee stock option program, and €5.0 million (January through June 2019: €5.0 million) in connection with the restricted stock plan. Equity was reduced by the negative effects of currency translation of foreign group companies totaling €23.2 million (January through June 2019: positive

effects of €11.0 million), reductions in the fair value of equity investments totaling €1.1 million (January through June 2019: fair value increases of €0.1 million), actuarial losses totaling €8.7 million, mainly due to changes in the discount rate for pension obligations and plan assets (January through June 2019: €65.9 million), and a of €23.9 million (January through June 2019: €1.6 million) in the fair value of cash flow hedges. In the prior-year period, January through June 2019, the dividend payment of €147.1 million for 2018 has to be taken into account as it reduced equity. The equity ratio was 32.4% (December 31, 2019: 31.2%).

In the reporting period, pension provisions increased by €20.1 million compared with December 31, 2019, principally due to a reduction in the discount rate and additions to service cost. The €51.6 million decline in other provisions to €164.5 million mainly relates to the carrying amount of provisions for bonuses and one-time payments due to a reduction in the accrual period and the pandemic-related decline in the expected business performance in 2020.

Financial liabilities rose by €18.0 million compared with December 31, 2019 to €1,350.9 million. This mainly comprised additions of financial liabilities due to the issue of a note loan and the drop in the pandemic-induced subsequent measurement of the deferred, conditional purchase price liability relating to the increase in the stake in the AIE-V2500.

Trade payables were €192.8 million as of June 30, 2020, which was €120.3 million lower than on December 31, 2019.

Compared with December 31, 2019, contract liabilities increased by €31.9 million to €739.2 million. The increase was principally attributable to a rise in advance payments received. These are recognized as contract liabilities if they exceed the associated contract assets.

Other liabilities fell €32.3 million compared with December 31, 2019 to €57.8 million. This was principally due to a reduction in other tax liabilities.

Employees

MTU had 10,661 employees on June 30, 2020, almost unchanged from year-end 2019 (December 31, 2019: 10,660).

Events after the reporting date

Events after the reporting date (June 30, 2020)

MTU Aero Engines AG successfully placed a corporate bond with a total nominal value of €500 million on the capital market on July 1, 2020. The bond matures in five years on July 1, 2025. The coupon is 3.0% p.a. The proceeds of the issue will be used for general corporate purposes and to refinance existing financial liabilities. It supplements other measures to safeguard the financing of the group, not least in view of the pandemic-related development of the global economy.

In view of the impact of the coronavirus pandemic on MTU's business performance, the Executive Board has decided to reduce personnel capacity at its German and international sites by around 10-15 percent by the end of 2021. This will be achieved through individual agreements such as increased use of pre-retirement part-time working arrangements, early retirement and other offers. In addition, MTU has already introduced a general hiring freeze, halted the filling of vacancies and reduced weekly working hours.

There were no other events of specific importance with a significant impact on the net assets, financial position and results of operations of the MTU Group between the interim reporting date and the adoption of this semi-annual financial report on July 31, 2020.

Forecast, risk and opportunity report

In order to take best advantage of market opportunities and to identify and manage the risks involved, the Executive Board has established an integrated opportunity and risk management system. This is linked to the group's value-oriented performance indicators and its organizational structure. The system is based on the internationally recognized COSO II Enterprise Risk Management Framework. It also includes the internal control system for the accounting process in accordance with Sections 289 (5) and 315 (2) No. 5 of the German Commercial Code (HGB). For a more detailed description of the attributes of this system and the methods applied, please refer to the Annual Report 2019, page 101 et seq.

Forecasts

Macroeconomic conditions

The growth forecast depends on many factors, especially how the pandemic develops, the duration of lockdowns, their impact on economic activity and the fiscal and monetary policy response. Forecasting will remain uncertain for a long time.

Current forecasts for 2020 anticipate that global GDP will decline by around 5%, based on the assumption that the lockdowns will end in the second half of the year and there are not further waves of infections. In June 2020, the World Bank forecast a 5.2% contraction in the global economy. In its June forecast for 2020, the Economist Intelligence Unit (EIU) predicts that global GDP will decline by 4.8%.

According to the World Bank and EIU, the industrialized nations will initially be hardest hit by the effects of the coronavirus pandemic. Their combined GDP is expected to drop by between 6% and 7% in 2020. A decline of 2.5% is forecast for the emerging markets and developing countries.

Sector-specific conditions within the aviation industry

The airlines' global revenue is expected to halve from around U.S.\$840 billion in 2019 to around U.S.\$420 billion in 2020 as a result of the coronavirus pandemic (IATA forecast of June 2020). IATA expects a year-on-year loss of around U.S.\$84 billion or 20 % of revenue. On the positive front, low energy prices are bringing some relief on the cost side. According to the forecast, airlines could save U.S.\$110 in 2020 because the average price of crude oil should drop from U.S.\$65 per barrel in 2019 to U.S.\$35 in 2020.

IATA expects passenger traffic to decline by 54.7 % year-on-year in 2020 and forecasts that a recovery will start in 2021, with a rebound of 55.2 %. The sector is likely to be past the worst, provided that there is not a further wave of coronavirus infections.

In view of falling load factors, demand for passenger aircraft is likely to drop by 32 % from around 29,700 in 2019 to around 20,300 in 2020. The reduction is due principally to grounding of aircraft, but will also include postponement and cancellation of aircraft orders.

This forecast is confirmed by the announcement that Airbus and Boeing are adjusting production of new aircraft. Airbus plans to cut total output by 40 % this year. The production rate of the A320 family will be adjusted from 60 to 40 planes per month. Boeing is scaling back monthly deliveries of its best-selling 787 from 14 to 10 planes. The reduction in production of new aircraft is attributable to low energy prices, which reduces the need to retire older aircraft.

The cargo business is one ray of light in the aviation sector. Despite lower capacity due to the unavailability of belly cargo space on passenger flights, revenue is expected to rise in 2020. While only 43 % of the passenger fleet was in use as of May 30, 2020, the figure for the cargo fleet was 91 % (source: Cirium Fleets Analyzer). The CF6-80C and PW2000 are benefiting particularly from this development as 55 % of their fleet is in the cargo sector.

Future performance of MTU

MTU withdrew its guidance for the 2020 fiscal year on March 26. The present disruption caused by the COVID-19 pandemic and the associated drop in demand have altered the outlook for development in the coming months.

At present it is only possible to give a rough estimate of the development of the business areas.

For the commercial OEM business, MTU anticipates a significant reduction in revenue in both the series and

the spare parts business. In percentage terms, the year-on-year drop in volume is likely to be in the mid-to-high twenties.

Revenue in the military engine business is expected to grow slightly in 2020.

A drop in volume is also expected in the commercial MRO business. This will be reflected in a reduction in reported revenue. The decline in revenue in this segment is expected to be in the low to mid single-digit percentage range. An even sharper drop in revenue resulting from original demand is likely to be offset by intensive retrofit activity for GTF engines.

As a result of reduced capacity utilization in the business units, the adjusted EBIT margin is likely to be below the prior year level, in a range of between 9 % and 10%. The altered product mix and retrofit activities will hold back development of the margin.

MTU also expects that adjusted net income will drop analogously to EBIT in 2020.

The adverse effects of the COVID-19 pandemic on the development of revenue and earnings at MTU are also reflected in the expected FCF. This will be considerably lower than in the previous year, but nevertheless positive.

Risks

In view of MTU's business activities, its involvement in a globally networked market with a wide range of different economic and political conditions and its business relationships dominated by consortia, it is exposed to risks that could influence its economic development. The present situation in the global aviation sector makes it clear how a pandemic can bring air traffic and the aviation sector to an almost complete standstill within a very short space of time. As a consortium partner and supplier to this sector, MTU is greatly affected by this crisis.

In the commercial OEM parts business and as a service provider in the commercial after-sales market, MTU is feeling the effects of the COVID-19 pandemic on many of its business activities. A clear drop in demand for passenger flights and air cargo, partly due to extensive travel restrictions, will also result in more cautious approach by MTU's customers to new orders for products and services, which could lead to considerable postponements or even the cancellation of some of the orders that have already been received.

COVID-19 could have a significantly negative impact on MTU's stakes in commercial engine programs, i.e., it could result in impairment losses on the value of the related assets or increase (contingent) liabilities from

such participations and MTU's obligations as a member of risk- and revenue-sharing partnerships (RRSP). In particular, with regard to its stakes in commercial engine programs, MTU capitalizes the corresponding upfront investments as assets (non-current other assets, intangible assets). These assets result from both compensation payments to the relevant engine OEM over the program lifecycle and from self-created engine development assets. They are amortized over the lifecycle of the relevant engine program, which is generally more than 30 years, through the marketing of engine components and modules and through relevant services. In the case of stakes in such engine programs, deviations from the plans can imply a significant risk of impairment losses on the program-related assets (intangible assets, non-current other assets), up to an including the need to recognize an impairment loss on the full amount. The impact of the COVID-19 pandemic on the aviation industry is therefore affecting MTU's forecasting ability for its stakes in commercial engine programs. Based on the restrictions on air travel, MTU currently anticipates in particular that there will be delays in the materialization of marketing of its products and services to the respective engine OEMs. If the crisis results in sustained restrictions or changes in air traffic, this could result in specific impairment risks for individual assets relating to MTU's engine programs, possibly with a magnitude of double or triple-digit millions of euros. According to internal valuation models, MTU's stakes in engine programs in the "widebody" segment are particularly sensitive to changes in forecasts. MTU continuously reviews its internal forecasts and the underlying parameters, particularly in cooperation with its customers, the engine OEMs. Nevertheless, there is still a valuation risk; due to estimation uncertainties relating to long program lifecycles, there is no absolute guarantee that future impairment losses on the related assets can be avoided or alternatively anticipated at an early stage.

The COVID-19 pandemic could also lead to further operational challenges within the MTU Group because MTU has to protect the health and safety of its employees, production and research and development (R&D) locations could be closed and there could be disruption at workplaces. Moreover, MTU's operations could be adversely affected by official restrictions on the movement of people, raw materials and goods from and to its locations, suppliers or customers. MTU could also be indirectly affected by the effects of the COVID-19 pandemic on its suppliers. Some suppliers may have to temporarily suspend operations due to state-imposed restrictions, confronting MTU with additional business disruption and challenges in the short or mid term. Therefore, MTU

could be exposed to risks in respect of costs that are necessary to meet its contractual commitments as well as risks to its product supply schedules, possibly including penalties.

The restrictions on air travel in connection with the COVID-19 pandemic are having a direct impact on the solvency of commercial airlines. Alongside the implications for future demand for MTU products and services outlined above, which has a direct effect on the value of non-current intangible assets, other non-current assets and inventories, there are risks relating to the contract assets and financial assets recognized as of the reporting date. The latter also relate to MTU's stakes in the OEM sales financing arrangements recognized. Although MTU has many years' experience in handling such risks, especially credit risks in the aviation industry, the present situation confronts it with additional challenges. MTU is endeavoring to address these, in particular through continuous, intensive risk analyses and risk-oriented security (collateral, guarantees, etc.).

As a long-term effect of the COVID-19 pandemic, MTU could face more rapid changes in usage patterns or aviation regulations, which could adversely affect its business model. There is already a public debate about the social and economic implications air travel and air cargo driven by the ongoing global climate debate. This has heightened personal and corporate awareness of travel and consumption behavior. Potential changes in usage patterns and the applicable regulations could be intensified and given new momentum by experience during the COVID-19 pandemic, e.g., the shift from business trips to online video conferences. If a reduction in travel and altered consumer spending patterns are regarded as socially desirable by the general public, this could have a sustained negative impact on MTU's business model. As already mentioned, this would involve the risk of impairment losses on investments in commercial engine programs (non-current other assets, intangible assets) and, furthermore, affect the forecast long-term growth of the aviation industry and thus MTU's business potential in its current market segments.

These effects would have a direct impact on the performance indicators of both segments. Only the military business is not directly affected by the COVID-19 pandemic, either at present or in the foreseeable future. The risks in the military business still come mainly from political conditions such as export restrictions and budget reductions for new transactions.

MTU is actively monitoring and responding to the effects of the COVID-19 pandemic. In particular, the frequency of the financial forecasting processes has been increased

to effectively address the dynamic effects of the pandemic on management of the company. Nevertheless, the unprecedented situation resulting from the COVID-19 pandemic and uncertainty about duration and future development are seriously hampering MTU's ability to plan and forecasts its business operations, especially in the short and mid term. Although MTU consults with government agencies at national and international level, as well as with OEMs and other representatives of the sector, there is a risk that it may not be (fully) able to forecast the impact of the COVID-19 pandemic on its business. This could have a detrimental effect on MTU's business, cash flow, results of operations and financial position. To mitigate these effects, MTU identified countermeasures at an early stage, many of which have already been implemented. For example, MTU has identified and introduced short-term measures to reduce material and personnel expenses in the double to triple-digit millions of euros. Further, new priorities have been set for the timing and content of global investment activities. MTU is addressing the present need to maintain and expand strategic resources, on the one hand, and the need to maximize the efficiency of costs and liquidity, on the other, with great determination.

Apart from the above risks relating to the COVID-19 pandemic, MTU currently see the same risk potential as in the 2019 Annual Report. For further details of these risks, please refer to the Annual Report 2019, page 80 et seq. (risk report) and page 89 (SWOT analysis).

Opportunities

MTU's business model, which focuses on the commercial engine business, military business and commercial maintenance, and its balanced product mix give it a good market position in each of its business areas. New opportunities arise from continuous investment in research, development and new technologies, strengthening risk- and revenue-sharing partnerships and extending the maintenance business.

Despite the effects of the COVID-19 pandemic, MTU see opportunities in all business areas. The temporary grounding of fleets offers specific opportunities, for example, to optimize the timing and cost of technical improvements to GTF engines that have already been taken into service. With regard to the military engine programs, export campaigns and the replacement of current fleets offer scope to benefit from additional sales and the related maintenance business.

Over and above this, MTU currently sees the same potential opportunities as outlined in the Annual Report 2019. For a full overview of the opportunities, please refer to the Annual Report 2019, page 87 et seq. (opportunity report) and page 89 (SWOT analysis).

Overall assessment of the risk and opportunity situation at MTU

Thanks to its extensive risk and opportunity management system, MTU is able to identify risk areas and potential opportunities at an early stage, so it can take suitable measures to actively manage and mitigate risks and exploit opportunities. Although the COVID-19 pandemic means that MTU's risk situation has changed substantially compared with the assessment as of December 31, 2019, MTU still classifies its risk management system as effective to counter present and future challenges.

As a result of close monitoring of the effects of COVID-19 pandemic and the measures developed and introduced as a result, MTU considers that in the present situation it is well-placed to come through the unprecedented disruption in the aviation industry and has taken steps to emerge strengthened and well-positioned. In view of its extensive and continuously updated forecasts and counter-measures, MTU considers that the altered risk position is manageable. From the present viewpoint, there is no threat to the survival of the MTU Group.

Report on material transactions with related parties

For information on the main transactions with related companies and individuals please refer to Note 38 to the condensed consolidated interim financial statements (“Related party disclosures”).

Condensed consolidated interim financial statements

Consolidated income statement

Consolidated income statement (unaudited)			
in € million	(Note)	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Revenue	(1.)	2,048.8	2,243.0
Cost of goods sold	(2.)	-1,733.9	-1,789.6
Gross profit		314.9	453.4
Research and development expenses	(3.)	-24.2	-28.4
Selling expenses	(4.)	-75.3	-62.0
General administrative expenses	(5.)	-42.3	-42.5
Other operating income		24.1	4.1
Other operating expenses		-31.1	-21.5
Profit / loss of companies accounted for using the equity method	(7.)	32.6	34.9
Profit / loss of equity investments		0.3	1.5
Earnings before interest and taxes (EBIT)		199.0	339.5
Net interest income / expense	(8.)	-5.9	-4.4
Other financial income / expense	(9.)	-15.8	-13.6
Net financial income / expense		-21.7	-18.0
Earnings before income taxes		177.3	321.5
Income taxes	(10.)	-52.3	-92.2
Net income		125.0	229.3
thereof:			
Owners of MTU Aero Engines AG		121.8	224.4
Non-controlling interests		3.2	4.9
Earnings per share in €			
Basic (EPS)	(11.)	2.30	4.34
Diluted (DEPS)	(11.)	2.25	4.06

Consolidated statement of comprehensive income

Consolidated statement of comprehensive income (unaudited)

in € million	(Note)	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Net income		125.0	229.3
Translation differences arising from the financial statements of foreign entities		-23.2	11.0
Financial instruments designated as cash flow hedges		-23.9	-1.6
Items that may subsequently be recycled to profit or loss		-47.1	9.4
Actuarial gains and losses on pension obligations and plan assets		-8.7	-65.9
Changes in the fair value of equity investments		-1.1	0.1
Items that will not be recycled to profit or loss		-9.8	-65.8
Other comprehensive income after taxes	(24.)	-56.9	-56.4
Total comprehensive income		68.1	172.9
thereof:			
Owners of MTU Aero Engines AG		64.7	167.6
Non-controlling interests		3.4	5.3

Consolidated balance sheet – assets

Assets (unaudited)

in € million	(Note)	June 30, 2020	Dec. 31, 2019
Non-current assets			
Intangible assets	(14.)	1,161.7	1,162.5
Property, plant and equipment	(15.)	1,101.2	1,100.8
Financial assets accounted for using the equity method	(16.)	548.0	538.2
Other financial assets	(16.)	82.3	77.1
Acquired program assets, development work and other assets	(17.)	1,098.4	1,220.6
Deferred taxes		57.0	55.8
Total non-current assets		4,048.6	4,155.0
Current assets			
Inventories	(19.)	1,333.1	1,278.6
Trade receivables	(20.)	903.2	922.8
Contract assets	(21.)	969.3	1,046.5
Income tax receivables		122.4	115.8
Other financial assets	(16.)	64.0	61.9
Other assets	(17.)	27.5	45.2
Cash and cash equivalents	(23.)	307.3	139.5
Total current assets		3,726.8	3,610.3
Total assets		7,775.4	7,765.3

Consolidated balance sheet – equity and liabilities

Equity and liabilities (unaudited)

in € million	(Note)	June 30, 2020	Dec. 31, 2019
Equity	(24.)		
Subscribed capital		53.1	53.1
Capital reserves		480.0	460.4
Retained earnings		2,282.2	2,160.4
Treasury shares		-2.5	-11.4
Accumulated other comprehensive income		-384.1	-327.0
Owners of MTU Aero Engines AG		2,428.7	2,335.5
Non-controlling interests		89.1	85.7
Total equity		2,517.8	2,421.2
Non-current liabilities			
Pension provisions		974.4	954.3
Other provisions	(27.)	59.1	47.8
Refund liabilities	(31.)	10.4	20.7
Financial liabilities	(28.)	1,045.8	1,079.9
Contract liabilities	(30.)	10.9	26.9
Other liabilities	(32.)	0.5	0.4
Deferred taxes		10.1	0.2
Total non-current liabilities		2,111.2	2,130.2
Current liabilities			
Pension provisions		21.9	21.9
Income tax liabilities		1.2	5.2
Other provisions	(27.)	105.4	168.3
Refund liabilities	(31.)	1,734.4	1,682.3
Financial liabilities	(28.)	305.1	253.0
Trade payables		192.8	313.1
Contract liabilities	(30.)	728.3	680.4
Other liabilities	(32.)	57.3	89.7
Total current liabilities		3,146.4	3,213.9
Total equity and liabilities		7,775.4	7,765.3

Consolidated statement of changes in equity

For information on the components of equity, please refer to Note 24 “Equity” in the selected explanatory notes to the financial statements.

	Subscribed capital	Capital reserves	Revenue reserves	Treasury shares	Accumulated other equity				Owners of MTU Aero Engines AG	Non-controlling interests	Total equity
					Translation differences arising from the financial statements of international entities	Fair value gains and losses on equity investments	Actuarial gains and losses ¹⁾	Financial instruments designated as cash flow hedges			
in € million											
Carrying amount at Jan. 1, 2019 as reported	52.0	465.8	1,829.0	-16.9	9.4	12.3	-249.9	-31.5	2,070.2	74.0	2,144.2
Effect of first-time application of IFRS 16			0.4						0.4	0.1	0.5
Carrying amount at Jan. 1, 2019	52.0	465.8	1,829.4	-16.9	9.4	12.3	-249.9	-31.5	2,070.6	74.1	2,144.7
Net income			224.4						224.4	4.9	229.3
Other comprehensive income					10.6	0.1	-65.9	-1.6	-56.8	0.4	-56.4
Total comprehensive income			224.4		10.6	0.1	-65.9	-1.6	167.6	5.3	172.9
Dividend payment			-147.1						-147.1		-147.1
Restricted Stock Plan		3.9		1.1					5.0		5.0
MAP employee stock option program		14.4		4.4					18.8		18.8
Carrying amount at June 30, 2019	52.0	484.1	1,906.7	-11.4	20.0	12.4	-315.8	-33.1	2,114.9	79.4	2,194.3
Carrying amount as of Jan. 1, 2020	53.1	460.4	2,160.4	-11.4	22.0	10.5	-316.0	-43.5	2,335.5	85.7	2,421.2
Net income			121.8						121.8	3.2	125.0
Other comprehensive income					-23.4	-1.1	-8.7	-23.9	-57.1	0.2	-56.9
Total comprehensive income			121.8		-23.4	-1.1	-8.7	-23.9	64.7	3.4	68.1
Convertible bond 2016		0.2							0.2		0.2
Restricted Stock Plan		3.0		2.0					5.0		5.0
MAP employee stock option program		16.4		6.9					23.3		23.3
Carrying amount as of June 30, 2020	53.1	480.0	2,282.2	-2.5	-1.4	9.4	-324.7	-67.4	2,428.7	89.1	2,517.8

¹⁾ Refers to pension obligations and plan assets

Consolidated cash flow statement

Consolidated cash flow statement (unaudited)

in € million	(Note)	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Operating activities			
Net income		125.0	229.3
Non-cash accounting adjustments to capitalized program assets and acquired development assets		26.5	26.3
Depreciation / appreciation, amortization and impairment of non-current assets		110.3	94.5
Profit / loss of companies accounted for using the equity method	(7.)	-32.6	-34.9
Profit / loss of equity investments		-0.3	-1.5
Gains / losses on the disposal of assets		0.2	-0.1
Change in pension provisions		7.1	11.8
Change in other provisions	(27.)	-51.6	-14.4
Change in refund liabilities (not included in working capital)		-7.5	79.8
Change in working capital		28.0	-40.7
Other non-cash items		12.3	25.3
Interest result	(8.)	5.9	4.4
Interest paid		-8.7	-9.8
Interest received		1.6	3.6
Dividends received		1.4	12.2
Income taxes	(10.)	52.3	92.2
Income taxes paid		-41.3	-72.0
Cash flow from operating activities		228.6	406.0
Investing activities			
Capital expenditure on:			
Intangible assets	(14.)	-18.7	-57.2
Property, plant and equipment	(15.)	-64.8	-100.6
Financial assets	(16.)	-17.4	-14.7
Acquired program assets and development assets	(17.)	-5.3	-3.3
Proceeds from disposal of:			
Intangible assets / property, plant and equipment	(14.) / (15.)	1.8	1.6
Financial assets	(16.)	0.2	32.9
Cash flow from investing activities		-104.2	-141.3
Financing activities			
Proceeds from promissory note	(28.)	100.0	
Repayment of leasing liabilities	(28.)	-20.9	-20.4
Increase in / Repayment of liabilities to banks	(28.)	-9.9	-14.5
Dividend payment			-147.1
Settlement of purchase price liabilities for shares in IAE-V2500 program	(28.)	-45.7	-33.9
Sale of treasury shares under the MAP employee stock option program		23.3	18.8
Increase in / Repayment of other financial liabilities	(28.)	0.5	-35.0
Cash flow from financing activities		47.3	-232.1
Net change in cash and cash equivalents during the period		171.7	32.6
Effect of translation differences on cash and cash equivalents		-3.9	3.1
Cash and cash equivalents at beginning of the year (January 1)		139.5	99.0
Cash and cash equivalents at end of period (June 30)		307.3	134.7

Notes to the interim consolidated financial statements

Consolidated segment report

Segment information

For information on the activities of the individual operating segments, please refer to the notes in the Annual Report 2019, page 202. There was no change in the segmentation in the first six months of 2020.

The segment information is as follows:

Reporting by operating segment – Prior year amounts adjusted										
	Commercial and military engine business (OEM)		Commercial maintenance business (MRO)		Total reportable segments		Consolidation / reconciliation		MTU group	
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
External revenues	792.3	969.0	1,256.5	1,274.0	2,048.8	2,243.0			2,048.8	2,243.0
Revenues from intersegment sales	21.5	20.0	15.8	13.3	37.3	33.3	-37.3	-33.3		
Total revenues	813.8	989.0	1,272.3	1,287.3	2,086.1	2,276.3	-37.3	-33.3	2,048.8	2,243.0
Gross profit	180.3	300.7	134.5	152.2	314.8	452.9	0.1	0.5	314.9	453.4
Amortization	19.2	17.0	3.3	3.3	22.5	20.3			22.5	20.3
Non-cash amortization of capitalized program assets and acquired development costs	26.5	26.3			26.5	26.3			26.5	26.3
Depreciation	48.5	43.9	36.0	30.3	84.5	74.2			84.5	74.2
Impairment losses			2.9		2.9				2.9	
Total depreciation / amortization / impairment losses	94.2	87.2	42.2	33.6	136.4	120.8			136.4	120.8
Earnings before interest and taxes (EBIT)	104.1	218.0	95.1	121.1	199.2	339.1	-0.2	0.4	199.0	339.5
Exceptional effect of purchase price allocation	9.2	9.3	1.2	1.2	10.4	10.5			10.4	10.5
Exceptional effect of IAE-V2500 stake increase	14.8	15.2			14.8	15.2			14.8	15.2
Adjusted Earnings before interest and taxes (adjusted EBIT)	128.1	242.5	96.3	122.3	224.4	364.8	-0.2	0.4	224.2	365.2
Profit / loss of companies accounted for using the equity method	11.7	13.9	20.9	21.0	32.6	34.9			32.6	34.9
Carrying amount of companies accounted for using the equity method (June 30, 2020, Dec. 31, 2019)	350.0	325.2	198.0	213.0	548.0	538.2			548.0	538.2
Assets (June 30, 2020 / Dec. 31, 2019)	6,692.7	6,686.9	2,280.7	2,360.8	8,973.4	9,047.7	-1,198.0	-1,282.4	7,775.4	7,765.3
Liabilities (June 30, 2020 / Dec. 31, 2019)	4,483.9	4,550.0	1,631.1	1,736.1	6,115.0	6,286.1	-857.4	-942.0	5,257.6	5,344.1
Significant non-cash items	12.7	18.6	-0.1	6.6	12.6	25.2	-0.3	0.1	12.3	25.3
Capital expenditure:										
Intangible assets	18.8	35.2	0.6	22.7	19.4	57.9			19.4	57.9
Property, plant and equipment	50.2	71.1	55.8	51.3	106.0	122.4			106.0	122.4
Acquired program assets and development assets	8.1	15.9			8.1	15.9			8.1	15.9
Total capital expenditure	77.1	122.2	56.4	74.0	133.5	196.2			133.5	196.2
Key segment data:										
EBIT in % of revenues	12.8	22.0	7.5	9.4	9.5	14.9	-0.5	1.2	9.7	15.1
Adjusted EBIT in % of revenues	15.7	24.5	7.6	9.5	10.8	16.0	-0.5	1.2	10.9	16.3

The material non-cash items relate, in particular, to gains and losses arising from foreign currency translation, which have no impact on cash flows.

Reconciliation to MTU consolidated earnings before tax

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Earnings before interest and taxes (EBIT)	199.0	339.5
Interest income	1.6	3.6
Interest expenses	-7.5	-8.0
Financial result on other items	-15.8	-13.6
Earnings before tax	177.3	321.5

Accounting policies and principles

MTU Aero Engines AG, Munich, together with its consolidated companies (hereinafter referred to as MTU or the MTU Group) is a manufacturer of engine modules and components as well as a provider of maintenance services for commercial aircraft engines.

The group's business activities encompass the entire life-cycle of an engine program - from development, structural design, testing and manufacturing of engines and spare parts through to maintenance, repair and overhaul. MTU's business activities are divided into two operating segments: the commercial and military engine business (OEM) and the commercial maintenance business (MRO).

MTU's commercial and military engine business covers the development and manufacturing of modules, components and spare parts for engine programs, and in some cases final assembly. The military engine business additionally includes the provision of maintenance services. The commercial maintenance segment comprises maintenance, repair and overhaul as well as logistics support for commercial engines.

The parent company, MTU Aero Engines AG, with its registered office at Dachauer Strasse 665, 80995 Munich, Germany, is registered under reference HRB 157206 in the commercial registry of the district court of Munich.

The condensed consolidated interim financial statements were approved for publication by the Executive Board of MTU Aero Engines AG, Munich, on July 31, 2020.

Financial reporting

In accordance with the provisions of Section 115 of the German Securities Trading Act (WpHG), the half-year financial report of MTU comprises condensed consolidated interim financial statements, an interim group management report and a responsibility statement. The condensed, unaudited consolidated interim statements were prepared in accordance with the International Financial

Reporting Standards (IFRS) for interim reporting, as applicable in the EU, and the interim group management report was prepared in accordance with the applicable regulations of the German Securities Trading Act (WpHG).

Statement of compliance

The condensed consolidated interim financial statements as of June 30, 2020 have been prepared in accordance with International Accounting Standard (IAS) 34 "Interim Financial Reporting." MTU applied all International Financial Reporting Standards (IFRSs) issued by the International Standards Board (IASB) that were in effect at the time when the condensed consolidated interim financial statements were prepared and had been endorsed by the European Commission for use in the EU.

The same accounting policies were applied in the condensed consolidated interim financial statements as in the consolidated financial statements as of December 31, 2019. In addition, the following new and amended standards were applied for the first time:

New and amended standards

Standard	Title
IFRS 3	Amendments: Definition of Business
IFRS 7, IFRS 9 and IAS 39	Amendments: Interest Rate Benchmark Reform
IAS 1 and IAS 8	Amendments: Definition of Material

These had to be applied for the first time for fiscal years beginning on or after January 1, 2020. However, they did not have any material impact on the condensed interim consolidated financial statements of MTU.

The condensed interim consolidated financial statements do not contain all information and disclosures required for consolidated financial statements at the end of the fiscal year so they should be read in conjunction with the consolidated financial statements of MTU as of December 31, 2019.

In the opinion of the management, the half-year financial report contains all customary ongoing accounting adjustments that are necessary for a fair presentation of the results of operations, financial position and net assets of the MTU Group. The accounting policies used for the consolidated financial statements are explained in the notes to the consolidated financial statements as of December 31, 2019, starting on page 137.

Consolidated group

As of June 30, 2020, the MTU Group, including MTU Aero Engines AG, Munich, comprised shares in 34 companies.

There were no changes in the consolidated group during the reporting period.

Notes to the consolidated income statement

1. Revenues

Revenues – Prior year amounts adjusted

in € million	Revenue recognized at a point in time	Revenue recognized over time	Jan. 1 - June 30, 2020	Revenue recognized at a point in time	Revenue recognized over time	Jan. 1 - June 30, 2019
Commercial engine business	630.6		630.6	773.0		773.0
Military engine business	114.6	68.6	183.2	143.4	72.6	216.0
Commercial and military engine business (OEM)	745.2	68.6	813.8	916.4	72.6	989.0
Commercial maintenance business (MRO)	51.4	1,220.9	1,272.3	42.4	1,244.9	1,287.3
Consolidation	-21.5	-15.8	-37.3	-20.0	-13.3	-33.3
Total revenue	775.1	1,273.7	2,048.8	938.8	1,304.2	2,243.0

2. Cost of goods sold

Cost of goods sold

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Cost of materials	-1,316.9	-1,327.6
Personnel expenses	-344.8	-376.0
Depreciation and amortization	-106.7	-92.4
Other cost of goods sold	2.0	-41.1
Capitalized development costs	32.5	47.5
Total cost of goods sold	-1,733.9	-1,789.6

The year-on-year reduct in the cost of goods sold was lower than the drop in revenue, which was affected by the COVID-19 pandemic.

The other cost of goods sold mainly comprises changes in inventories of finished products and work in progress, currency effects and effects from the accrual of components of the cost of goods sold that had not been invoiced as of the reporting date. Further, this item contains accruals for additional impairment risks in connection with the impact of the COVID-19 pandemic on the aviation sector.

The capitalized self-created development assets correspond to the development work as part of the participation in commercial engine programs in the civil and military engine (OEM) business, for which capitalization is mandatory.

3. Research and development expenses

Research and development expenses

in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Cost of materials	-13.8	-14.4
Personnel expenses	-10.1	-13.2
Depreciation and amortization	-0.6	-0.6
Other development costs	-0.3	-1.6
Company-funded research and development expenditure	-24.8	-29.8
Capitalized development costs	0.6	1.4
Research and development costs recognized as expense	-24.2	-28.4

4. Selling expenses

Selling expenses		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Cost of materials	-10.6	-10.0
Personnel expenses	-37.2	-36.7
Depreciation and amortization	-0.8	-0.5
Other selling expenses	-26.7	-14.8
Total selling expenses	-75.3	-62.0

As well as expenses for marketing and advertising, selling expenses include impairment allowances and impairments of receivables from customers.

In the reporting period, the development of other selling expenses was dominated by valuation allowances for actual or expected credit losses (IFRS 9). This was driven principally by the effects of the COVID-19 pandemic on the international aviation sector.

5. General administrative expenses

General administrative expenses		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Cost of materials	-3.8	-2.6
Personnel expenses	-30.3	-30.4
Depreciation and amortization	-1.8	-0.8
Other administrative expenses	-6.4	-8.7
Total general administrative expenses	-42.3	-42.5

General administrative expenses are expenses incurred in connection with administrative activities that cannot be directly allocated to development, production or sales activities.

7. Profit / loss of companies accounted for using the equity method

Profit / loss of companies accounted for using the equity method		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Associated companies	12.0	13.8
Joint ventures	20.6	21.1
Profit / loss of companies accounted for using the equity method	32.6	34.9

8. Net interest income / expense

Net interest income / expense		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Interest income	1.6	3.6
Interest expense		
Bonds and notes	-1.9	-1.8
Convertible bonds	-2.3	-2.3
Liabilities to banks	-0.3	-0.7
Lease liabilities	-2.3	-2.2
Other interest expense	-2.3	-2.7
Capitalized borrowing costs for qualifying assets	1.6	1.7
Interest expense	-7.5	-8.0
Net interest income / expense	-5.9	-4.4

9. Other financial income / expense

Other financial income / expense		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Effects of currency translation: exchange rate gains / losses on		
Currency holdings	-9.0	-3.2
Financing transactions	-0.1	0.3
Lease liabilities	-0.6	-0.8
Fair value gains / losses on derivatives		
Currency and interest rate derivatives	4.9	3.2
Commodity forwards	-1.2	0.7
Interest included in measurement of assets and liabilities		
Relating to pensions	-4.5	-7.5
Receivables, other provisions and liabilities	-5.2	-6.5
Miscellaneous other financial income / expense	-0.1	0.2
Other financial income / expense	-15.8	-13.6

10. Income taxes

Analysis of current and deferred income taxes		
in € million	Jan. 1 - June 30, 2020	Jan. 1 - June 30, 2019
Current income taxes	-32.2	-89.5
Deferred income taxes	-20.1	-2.7
Income tax expense	-52.3	-92.2

11. Earnings per share

Diluted earnings per share are calculated by dividing net income by the sum obtained when the number of common shares that could potentially be issued through the granting of equity instruments is added to the weighted average number of outstanding shares.

To determine diluted earnings per share, the average number of common shares that could potentially be issued through the granting of equity instruments is added to the weighted average number of outstanding shares.

In the first six months of 2020, the net income attributable to the stockholders of MTU Aero Engines AG amounted to €121.8 million (January through June 2019: €224.4 million). The weighted average number of outstanding shares in the period January through June 2020 was 52,890,595 (January through June 2019: 51,658,754 shares). This results in basic earnings per share of €2.30 in the first six months of 2020 (January through June 2019: €4.34).

Diluted earnings per share were €2.25 (January through July 2019: €4.06). Diluting effects arose from 2,050,806 shares that could potentially be issued through the convertible bond issued in May 2016 and the convertible bond issued in September 2019.

Notes to the consolidated balance sheet

In view of the COVID-19 pandemic, intangible assets, property, plant and equipment, program assets and acquired development work were tested for impairment as of the reporting date.

In view of the high degree of planning uncertainty inherent in the COVID-19 pandemic, in order to update the assessment of the recoverable amounts of the operating segments to which goodwill is allocated to reflect the present situation, MTU started from this year's "pre-crisis" planning data for the segments calculated in the fiscal year and applied a "coronavirus risk premium" (CVRP) to the pre-tax cost of capital derived for each segment: OEM: 13.1%; MRO: 13.7% (prior year: OEM: 9.5%; MRO: 9.8%) (cf. Annual Report 2019, Notes to the consolidated financial statements, page 186 et seq.). On this basis, no additional impairment requirements were identified as of June 30, 2020.

As a sensitivity analysis, based on an unchanged cost of capital, a sustained reduction of 20% in the budgeted segment results would not result in the need to recognize an impairment loss on goodwill in either the OEM segment or the MRO segment. Similarly, based on unchanged segment results, no impairment losses would have to be recognized in either segment if the cost of capital before taxes were to rise by 10% (1.3 percentage points) in the OEM segment and by 10% (1.4 percentage points) in the MRO segment.

MTU used a two-step impairment test for compensation payments relating to the term of engine programs, capitalized program development assets and the assets and liabilities that can be allocated to the programs. The first step comprised an assessment based on the "pre-crisis" planning for the programs in the 2019 fiscal year. The effects of the pandemic are taken into account by applying a flat-rate "coronavirus risk premium" (CVRP) of 3.8% to the cost of capital after taxes of 7.5% (previous year: 7.9%). If indications of impairment were derived from this or from a qualitative assessment a more detailed impairment test was conducted. This involved a blanket update of the corresponding program plans using the current cost of capital after taxes of 7.5% (previous year: 7.9%). On this basis, no additional impairment requirements were identified as of June 30, 2020.

As a sensitivity analysis, based on unchanged program earnings, if the cost of capital (after taxes) of 11.3% (“pre-crisis” planning parameter for programs) or 7.5% (current planning parameter for programs) were to increase by 10% (1.1 and 0.8 percentage points respectively), this would result in an impairment loss of around €40 million, while an increase of 20% (2.2 or 1.6 percentage points respectively) would result in an impairment loss of around €100 million.

The dynamic effects of the COVID-19 pandemic are adversely affecting MTU’s forecasting ability, especially for its stakes in commercial engine programs. Based on the restrictions on air travel, MTU currently anticipates in particular that there will be delays in the materialization of marketing of its products and services to the respective engine OEMs. As the sensitivity analyses show, if the crisis were to cause a persistent reduction or change in air traffic, this could result in specific impairment risks for individual assets relating to engine programs. According to internal valuation models, MTU’s stakes in commercial engine programs in the “widebody” segment are particularly sensitive to changes in forecasts.

MTU continuously reviews its internal forecasts and parameters used in its impairment tests, particularly in cooperation with its customers, the engine OEMs. Nevertheless, there is still a valuation risk; due to estimation uncertainties relating to long program lifecycles, there is no absolute guarantee that future impairment losses on the related assets can be avoided or alternatively anticipated at an early stage.

14. Intangible assets

The intangible assets are program-independent technologies, development assets, technical software and acquired goodwill.

In the first six months of 2020, intangible assets amounting to €19.4 million were recognized (January through June 2019: €57.9 million). This included self-created development assets and the related borrowing costs totaling €17.7 million (January through June 2019: €35.4 million).

Amortization of intangible assets was €22.5 million in the first six months of 2020 (January through June 2019: €20.3 million).

15. Property, plant and equipment

In the period from January 1 to June 30, 2020, additions to property, plant and equipment amounted to €106.0 million (January through June 2019: €122.4 million) and mainly comprised technical equipment, plant and machinery and the corresponding advance payments. Depreciation of property, plant and equipment was €84.5 million in the first six months of 2020 (January through June 2019: €74.2 million).

16. Financial assets

Financial assets accounted for using the equity method

The financial assets accounted for using the equity method are described in the Annual Report 2019, page 158 et seq. As of the reporting date, no COVID-19-related impairment losses were necessary for shares in sales financing arrangements, mainly due to existence of compensatory collateral.

Other financial assets

Breakdown of other financial assets

in € million	Total		Non-current		Current	
	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019
Financial assets measured at purchase cost	120.8	116.8	57.1	56.7	63.7	60.1
Loans to third parties ¹⁾	49.7	49.6	49.7	49.6		
Receivables from employees	1.7	0.9			1.7	0.9
Receivables from suppliers	2.9	18.5			2.9	18.5
Miscellaneous other financial assets	66.5	47.8	7.4	7.1	59.1	40.7
Financial assets measured at fair value through other comprehensive income	19.5	16.2	19.5	16.2		
Other interests in related companies	19.5	16.2	19.5	16.2		
Derivatives without hedging relationship	0.2	1.2		0.3	0.2	0.9
Derivatives with hedging relationship	5.8	4.8	5.7	3.9	0.1	0.9
Total other financial assets	146.3	139.0	82.3	77.1	64.0	61.9

¹⁾ Included in net financial debt

The main reason for the increase in other financial assets comprised receivables from profit distributions from the joint venture MTU Maintenance Zhuhai Co. Ltd. This was partially offset by lower credit balances with suppliers.

17. Acquired program assets, development work and other assets

The total amount of acquired program assets recognized in profit or loss in the reporting period was €22.5 million (January through June 2019: €22.5 million).

MTU acquired development assets amounting to €7.1 million in the first six months of 2020 (January through June 2019: €14.4 million). In the reporting period, compensation payments for development work in an amount of €4.0 million (January through June 2019: €3.8 million) paid to consortium leaders (OEMs) were offset against revenue.

As well as claims to tax refunds, the other assets include prepaid maintenance charges, insurance premiums and rents.

19. Inventories

Inventories		
in € million	June 30, 2020	Dec. 31, 2019
Raw materials and supplies	645.2	618.4
Work in progress	463.8	454.7
Finished goods	214.0	192.1
Advance payments	10.1	13.4
Total inventories	1,333.1	1,278.6

In the reporting period, additional loss allowances of €19 million had to be recognized in the cost of goods sold for both the OEM segment and the MRO segment, due to the effects of the COVID-19 pandemic.

20. Trade receivables

Trade receivables		
in € million	June 30, 2020	Dec. 31, 2019
Third parties	477.3	441.9
Related companies	425.9	480.9
Total trade receivables	903.2	922.8

In the reporting period, additional loss allowances of €6.1 million had to be recognized in selling expenses for the MRO segment, due to the effects of the COVID-19 pandemic.

21. Contract assets

The contract assets result from performance obligations that have been satisfied, where receipt of the agreed consideration depends on acceptance of the performance obligation by the customer and the amounts becoming due for payment. The changes in the reporting period are attributable to ongoing business activities.

As of the reporting date, there were no material impairment effects resulting from COVID-19.

23. Cash and cash equivalents

The cash and cash equivalents comprise cash in hand and bank balances. This item also includes foreign-currency holdings with an equivalent value of €149.0 million (December 31, 2019: €131.2 million).

24. Equity

Changes in equity are presented in the consolidated statement of changes in equity.

The company's subscribed capital (capital stock) is unchanged at €53.1 million and is divided into 53.1 million non-par-value registered shares.

The capital reserves contain premiums from the issue of shares and the equity component (net of proportional transaction costs and taxes) of the bond issued in 2007 and redeemed or converted in 2012, the convertible bond issued in 2016, which was partially redeemed in 2019, and the convertible bond issued in 2019. Details of the individual effects of the convertible bonds are set out in the Annual Report 2019, page 163.

A total of 53,041,078 shares in MTU Aero Engines AG, Munich, were in circulation as of June 30, 2020 (June 30, 2019: 51,756,930 shares). The company held 54,410 treasury shares as of June 30, 2020 (June 30, 2019: 243,070 shares).

27. Other provisions

The other provisions take account of obligations arising from warranty and liability risks, personnel obligations and invoices not yet received. The reduction of €51.6 million in other provisions to €164.5 million is mainly due to the reduction in provisions for bonus and other one-time payments due to the shorter accrual period and the pandemic-related reduction in the expected business performance in 2020.

28. Financial liabilities

Financial liabilities

in € million	Total		Non-current		Current	
	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019
Registered bond	98.6	100.3	98.4	98.3	0.2	2.0
Convertible bond	564.3	562.4	564.2	562.3	0.1	0.1
Promissory note	100.0				100.0	
Financial liabilities arising from increased or new stakes in engine programs	188.2	300.0	172.7	217.9	15.5	82.1
Financial liabilities to banks						
Note purchase agreement	30.1	30.1		30.0	30.1	0.1
Other liabilities to banks		10.0				10.0
Financial liabilities to related companies	0.5				0.5	
Lease liabilities	162.5	147.0	124.4	102.7	38.1	44.3
Total gross financial debt	1,144.2	1,149.8	959.7	1,011.2	184.5	138.6
Derivatives without hedging relationship	0.2		0.1		0.1	
Derivatives with hedging relationship	82.7	67.0	39.7	20.3	43.0	46.7
Personnel-related financial liabilities	74.7	74.1	46.1	48.1	28.6	26.0
Repayment of grants toward development costs	3.3	6.6			3.3	6.6
Sundry other financial liabilities	45.8	35.4	0.2	0.3	45.6	35.1
Total other financial liabilities	206.7	183.1	86.1	68.7	120.6	114.4
Total financial liabilities	1,350.9	1,332.9	1,045.8	1,079.9	305.1	253.0

Registered bond

For full details of the registered bond with a nominal value of €100.0 million, please refer to the Annual Report 2019, page 171.

Convertible bonds

On May 17, 2016, MTU Aero Engines AG issued a senior unsecured convertible bond with a total nominal value of €500.0 million. This bond is convertible into new and/or existing registered non-par-value shares in the issuing company.

Furthermore, in 2019, MTU Aero Engines AG issued a senior unsecured convertible bond with a total nominal value of €500.0 million. This bond is convertible into non-par-value common shares in MTU from September 18, 2024.

For a full description of the convertible bonds, please refer to the Annual Report 2019, page 171 et seq.

Bond

On May 6, 2020, MTU Aero Engines AG issued a bond with a nominal value of €100.0 million and a maturity date of June 10, 2021. This has a variable interest rate corresponding to the three-month EURIBOR rate plus 1.7%, with a minimum interest rate of 1.7%.

Financial liabilities arising from increased or new stakes in engine programs

Financial liabilities arising from the increase in the stake in IAE-V2500

The agreement signed by MTU in the fiscal year 2012 in order to increase its stake in the V2500 engine program by 5 percentage points to 16% included a deferred payment component contingent upon the number of flight hours performed over the next 15 years. Since there has been a substantial change in the estimate of the relevant flight hours in the wake of the coronavirus pandemic, the above purchase price liability and the corresponding program asset for the increase in the stake in the IAE-V2500 have been reduced.

Financial liabilities arising from the acquisition of stakes in programs

The financial liabilities arising from the acquisition of stakes in programs mainly relate to program lifetime-related payments for the acquisition of shares in Pratt & Whitney and GE engine programs.

Note purchase agreement

For full details of the note purchase agreement, which has a nominal value of €30.0 million, please refer to the Annual Report 2019, page 172.

Revolving credit facility

The group has access to a revolving credit facility of €600.0 million with five banks, which runs until October 28, 2023. On May 11, 2020, this credit facility was increased by €100.0 million. This increase runs for one year and can be extended twice by 6 months in each case at the company's request. As of June 30, 2020, €10.8 million of this credit facility had been drawn down in the form of guarantees (December 31, 2019: €36.0 million). Any credit utilized is subject to interest at the customary market reference rates plus an additional margin. Unused credit facilities are subject to a loan commitment fee.

Lease liabilities

Lease liabilities relate to liabilities under leases recognized using the effective interest rate method.

Due to the effects of the COVID-19 pandemic, some engine leasing contracts were terminated prematurely in the reporting period. This resulted in a corresponding reduction in lease liabilities.

For a description of the main leased items, please refer to the Annual Report 2019, page 157 and page 194 et seq.

Liabilities from derivatives

The derivatives of €82.9 million with and without hedging relationships recognized as of the reporting date (December 31, 2019: €67.0 million) are used to offset currency and commodity price risks. The increase in these liabilities corresponds to the hedging rates for the derivatives held relative to the U.S. dollar/euro exchange rate on the reporting date.

Personnel-related financial liabilities

The personnel-related financial liabilities mainly comprise accruals for pension payments and Christmas bonuses. The obligations resulting from lump-sum and other claims on pension capital under the company pension plan amount to €46.0 million (December 31, 2019: €54.6 million). In addition, this item contains liabilities of €16.5 million (December 31, 2019: €3.6 million) to group employees for vacation pay and Christmas bonuses, and liabilities of €5.4 million (December 31, 2019: €8.9 million) arising from the employee stock option program (MAP). The total expense resulting from the stock option program in the first six months of 2020 was €4.2 million (January through June 2019: €3.8 million).

Repayment of grants toward development costs

In the fiscal years from 1976 through 1991, MTU received grants from the German Federal Ministry of Economics and Technology toward the development costs of the PW2000 engine. Once the sales figures of PW2000 production engines for the Boeing 757 and C-17 as set down in the grant notice have been reached, MTU is obliged to reimburse the full sum of the grants received within a period of ten years. In fiscal years 2011 through 2019, a total amount of €60.5 million was repaid, and a further €3.4 million repaid in the first six months of 2020.

Miscellaneous other financial liabilities

The miscellaneous other financial liabilities of €45.8 million (December 31, 2019: €35.4 million) contain customer credits of €14.9 million (December 31, 2019: €10.4 million) and a large number of minor individual obligations.

30. Contract liabilities

The contract liabilities contain advance payments for the delivery of engine modules and components and for maintenance and repair services.

Where there are corresponding contract assets, these are offset in accordance with IFRS 15. In the reporting period, contract liabilities amounting to €195.0 million (December 31, 2019: €214.5 million) were offset against the corresponding contract assets.

The increase in the reporting period corresponds to the business performance, which was dominated by the COVID-19 pandemic.

31. Refund liabilities

Refund liabilities

in € million	Total		Non-current		Current	
	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019
Warranty and liability risks	510.0	521.3			510.0	521.3
Invoice corrections	543.7	539.3			543.7	539.3
Subsequent costs	691.1	642.4	10.4	20.7	680.7	621.7
Total refund liabilities	1,744.8	1,703.0	10.4	20.7	1,734.4	1,682.3

The refund liabilities for warranty and liability risks correspond to the compensation obligations resulting from defective workmanship and the share of the consortium leader's (OEM) expenses under risk- and revenue-sharing models for commercial engine programs.

The refund liabilities for invoice corrections are retrospective adjustments to the prices in contracts with customers. The increase in the reporting period corresponds to business activity close to the reporting date and the development of the U.S. dollar exchange rate. In accordance

with invoicing practice for shares in commercial engine programs, retrospective adjustments are regularly made to the allocated share of revenue. Settlement of these price corrections was still outstanding as of the reporting date.

The subsequent costs mainly comprise accruals for the share of marketing expenses for civil engine programs for which a final invoice has yet not been issued by the consortium leader (OEM) but which are already recognized as revenue reductions.

32. Other liabilities

Other liabilities

in € million	Total		Non-current		Current	
	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019	June 30, 2020	Dec. 31, 2019
Personnel-related liabilities						
Social security	1.2	1.2			1.2	1.2
Other personnel-related liabilities	37.1	42.2			37.1	42.2
Other tax liabilities	18.8	43.1			18.8	43.1
Miscellaneous other liabilities	0.7	3.6	0.5	0.4	0.2	3.2
Total other liabilities	57.8	90.1	0.5	0.4	57.3	89.7

Personnel-related liabilities

The other liabilities are mainly due to employees' unused vacation entitlements and flextime credits. Their development in the reporting period was affected by the pandemic-driven restrictions on business operation.

Other tax liabilities

The tax liabilities of €18.8 million (December 31, 2019: €43.1 million) relate to payable wage and church taxes, solidarity surcharge and transactional taxes in Germany and other countries.

33. Additional disclosures relating to financial instruments

Carrying amounts, measurement / recognition methods and fair values

The following tables present the carrying amounts of financial instruments, regardless whether the instruments fall within the scope of IFRS 7 or IFRS 9. In addition, the carrying amounts are compared to the fair values.

Disclosures relating to financial instruments Carrying amounts, measurement / recognition methods and fair values as of June 30, 2020

	Carrying amount June 30, 2020	Amount carried in balance sheet			Amount carried in balance sheet IFRS 16	Financial instruments not within the scope of IFRS 9 or IFRS 7	Total	Fair value June 30, 2020
		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
in € million								
ASSETS								
Other financial assets								
Loans and receivables	120.8	113.4				7.4	120.8	120.8
Other interests in related companies	19.5		19.5				19.5	19.5
Trade receivables	903.2	903.2					903.2	903.2
Derivative financial assets								
Derivatives without hedging relationship	0.2			0.2			0.2	0.2
Derivatives with hedging relationship	5.8		5.8				5.8	5.8
Cash and cash equivalents	307.3	307.3					307.3	307.3
EQUITY AND LIABILITIES								
Refund liabilities	1,744.8	1,744.8					1,744.8	1,745.2
Trade payables	192.8	192.8					192.8	192.8
Financial liabilities								
Bonds and notes	98.6	98.6					98.6	109.1
Convertible bond	564.3	564.3					564.3	563.4
Promissory note	100.0	100.0					100.0	100.0
Financial liabilities arising from increased or new stakes in engine programs	188.2	188.2					188.2	194.9
Financial liabilities to banks	30.1	30.1					30.1	30.1
Financial liabilities to related companies	0.5	0.5					0.5	0.5
Lease liabilities	162.5				162.5		162.5	162.5
Derivative financial liabilities								
Derivatives without hedging relationship	0.2			0.2			0.2	0.2
Derivatives with hedging relationship	82.7		82.7				82.7	82.7
Other financial liabilities	123.8	49.1				74.7	123.8	123.8

Disclosures relating to financial instruments

Carrying amounts, measurement / recognition methods and fair values 2019

	Carrying amount Dec. 31, 2019	Amount carried in balance sheet			Amount carried in balance sheet IAS 17	Financial instruments not within the scope of IFRS 9 or IFRS 7	Total	Fair value Dec. 31, 2019
		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
in € million								
ASSETS								
Other financial assets								
Loans and receivables	116.8	109.4				7.4	116.8	116.8
Other interests in related companies	16.2		16.2				16.2	16.2
Trade receivables	922.8	922.8					922.8	922.8
Derivative financial assets								
Derivatives without hedging relationship	1.2			1.2			1.2	1.2
Derivatives with hedging relationship	4.8		4.8				4.8	4.8
Cash and cash equivalents	139.5	139.5					139.5	139.5
EQUITY AND LIABILITIES								
Refund liabilities	1,703.0	1,703.0					1,703.0	1,703.2
Trade payables	313.1	313.1					313.1	313.1
Financial liabilities								
Bonds and notes	100.3	100.3					100.3	119.2
Convertible bond	562.4	562.4					562.4	727.2
Financial liabilities arising from increased or new stakes in engine programs	300.0	300.0					300.0	303.8
Financial liabilities to banks	40.1	40.1					40.1	40.1
Finance lease liabilities	147.0				147.0		147.0	147.0
Derivative financial liabilities								
Derivatives with hedging relationship	67.0		67.0				67.0	67.0
Other financial liabilities	116.1	42.0				74.1	116.1	116.2

The financial assets and liabilities carried at amortized cost contain cash and cash equivalents, trade receivables, other receivables, trade payables and other liabilities which are generally due within a relatively short time. The carrying amounts of these assets and liabilities therefore correspond approximately to their fair value at the reporting date. Looking at the other financial instruments that are carried at amortized cost, the reported fair values would be allocated to level 2 of the fair value hierarchy, with the exception of the convertible bonds (2016 and 2019), which are traded on the stock exchange and are allocated to level 1. The difference between the carrying amounts and fair values of these instruments was determined using a discounted cash flow model.

Classification of financial assets and liabilities within the fair value hierarchy

To take account of the relevance of the estimated parameters used in the measurement of financial assets and liabilities measured at fair value, MTU's financial assets and liabilities are allocated to three levels.

The three levels of the fair value hierarchy are described below, together with their utilization when measuring financial assets and liabilities:

- Level 1 Quoted prices in active markets for identical assets or liabilities (unadjusted input);
- Level 2 Prices of assets or liabilities that can be observed directly or indirectly (derived);
- Level 3 Unobservable inputs used to measure prices of assets or liabilities.

The following tables show the allocation of financial assets and liabilities measured at fair value to the three levels of the fair value hierarchy for 2020 and 2019:

Classification within the fair-value hierarchy as of June 30, 2020

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		6.0		6.0
Other interests in related companies			19.5	19.5
Total financial assets		6.0	19.5	25.5
Financial liabilities measured at fair value				
Derivative financial instruments		82.9		82.9
Total financial liabilities		82.9		82.9

Classification within the fair-value hierarchy for the financial year 2019

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		6.0		6.0
Other interests in related companies			16.2	16.2
Total financial assets		6.0	16.2	22.2
Financial liabilities measured at fair value				
Derivative financial instruments		67.0		67.0
Total financial liabilities		67.0		67.0

The fair value of the derivative financial instruments and securities assigned to Level 2 is measured using a discounted cash flow (DCF) method. Equity investments, which are allocated to Level 3, are also measured using a DCF method based on internal planning figures. The discount rate is calculated using both internal planning data and available market data. A change of +/-0.5% in the growth rate used to calculate the perpetuity would alter the fair value of the equity investments allocated to level 3 by +/-€0.5 million.

Within the scope of its participation in consortia for commercial engine programs, MTU is a party to aircraft financing agreements for the purpose of promoting sales. Such commitments are always made jointly with other members of engine consortium in favor of the consortium leader (OEM). They are provided in two basic forms: predelivery payments (PDP) and backstop commitments. In both cases, any funds made available to the purchaser are always transferred directly to the aircraft manufacturer solely by the consortium leader (OEM).

MTU classifies loan commitments granted up to the reporting date totaling a nominal amount, translated into euros, of €800.2 million (December 31, 2019: €840.0 million) as part of its gross liquidity risk in accordance with the requirements of IFRS 7. However, based on experience, it is considered to be very unlikely that these nominal loan amounts will actually be utilized to their full extent. In the event that they are utilized, MTU considers the associated liquidity and credit risks to be manageable. For further explanations, especially of the structure of financing offers, please refer to the Annual Report 2019, page 180.

37. Contingent liabilities and other financial obligations

As of June 30, 2020, contingent liabilities amounted to €166.7 million (December 31, 2019: €142.2 million).

The contingent liabilities and other financial obligations are not significant for MTU's financial position. In the reporting period, as in previous periods, no amounts were due and payable. No material claims are expected in the 2020 fiscal year. For information and disclosures regarding the composition of contingent liabilities and other financial obligations, please refer to the Annual Report 2019, page 197.

Purchase commitments for intangible assets and property, plant and equipment amounted to €94.7 million as of June 30, 2020 (December 31, 2019: €98.4 million).

38. Related party disclosures

Related companies

Transactions between group companies and joint ventures or associates were, without exception, entered into in the normal course of business and on an arm's length basis.

Transactions between consolidated companies were eliminated in the consolidated financial statements and are therefore not disclosed separately in this Note.

Business with related companies

In the reporting period, intragroup transactions involving the supply of goods and services were conducted by group companies as part of their normal operating activities (e.g., development, repairs, assembly, IT support).

Receivables from these companies were €425.9 million as of June 30, 2020 (December 31, 2019: €480.9 million). Liabilities were €6.0 million (December 31, 2019: €7.1 million). Income was €993.5 million in the first six months of 2020 (January through June 2019: €899.1 million). Expenses were €485.8 million (January through June 2019: €446.0 million).

Related persons

No group companies entered into any material transactions with members of the group's Executive Board or Supervisory Board or with any other individuals in key management positions, or with companies of whose governing or supervisory bodies these individuals are members. The same applies to close members of the families of such individuals.

Events after the reporting date (June 30, 2020)

MTU Aero Engines AG successfully placed a corporate bond with a total nominal value of €500 million on the capital market on July 1, 2020. The bond matures in five years on July 1, 2025. The coupon is 3.0% p.a. The proceeds of the issue will be used for general corporate purposes and to refinance existing financial liabilities.

In view of the impact of the coronavirus pandemic on MTU's business performance, the Executive Board has decided to reduce personnel capacity at its German and international sites by around 10-15 percent by the end of 2021. This will be achieved through individual agreements such as increased use of pre-retirement part-time working arrangements, early retirement and other offers. In addition, MTU has already introduced a general hiring freeze, halted the filling of vacancies and reduced weekly working hours.

There were no other events of specific importance with a significant impact on the net assets, financial position and results of operations of the MTU Group between the interim reporting date and the adoption of this semi-annual financial report on July 31, 2020.

Publication of the half-year financial report

The half-year financial report of MTU Aero Engines AG, Munich, for the period from January 1 through June 30, 2020 has been published on the internet (www.mtu.de).

Responsibility statement

We hereby affirm that, to the best of our knowledge, the condensed consolidated interim financial statements of the MTU Group present a true and fair view of the net assets, financial position and results of operations in accordance with the applicable financial reporting standards, and that the interim group management report provides a faithful and accurate review of the operating performance of the MTU Group, including its business performance and its position, and outlines the significant opportunities and risks of the MTU Group's likely future development.

Munich, July 31, 2020

signed
Reiner Winkler
Chief Executive Officer

signed
Michael Schreyögg
Chief Program Officer

signed
Peter Kameritsch
Chief Financial Officer and
Chief Information Officer

signed
Lars Wagner
Chief Operating Officer

Auditor's review report

Addressed to: MTU Aero Engines AG

We have reviewed the condensed interim consolidated financial statements prepared by MTU Aero Engines AG, Munich, comprising the Consolidated Income Statement, the Consolidated Statement of Comprehensive Income, the Consolidated Balance Sheet, the Consolidated Statement of Changes in Equity, the Consolidated Cash Flow Statement and selected explanatory notes, together with the interim group management report similarly prepared by MTU Aero Engines AG, Munich, for the interim reporting period from January 1, 2020 to June 30, 2020. These documents form part of the half-year report pursuant to Section 115 of the German Securities Trading Act (WpHG). The preparation of the condensed interim consolidated financial statements in accordance with IFRSs as endorsed for application in the EU, and the preparation of the interim group management report in accordance with the applicable requirements of the German Securities Trading Act (WpHG), are the responsibility of the group's legal representatives. Our responsibility is to confirm that we have reviewed the condensed interim consolidated financial statements and the interim group management report in accordance with our mandate.

We conducted our review of the condensed interim consolidated financial statements and of the interim group management report in accordance with German generally accepted standards for the auditing of financial statements promulgated by the Institute of Public Auditors in Germany (IDW). Those standards require that we plan and perform the review such that we obtain reasonable assurance that the condensed interim consolidated financial statements do not deviate significantly from the IFRS requirements concerning the presentation of interim reports, as endorsed for application in the EU, and that the interim group management report does not deviate from the applicable requirements of the German Securities Trading Act (WpHG), based on our critical evaluation of these documents. In a review as opposed to a full audit, our evaluation is based principally on interviews with employees of the company and on analytical assessments. Its findings are therefore less reliable than those of a full audit. Since our review does not constitute an audit in the strict legal sense, we are unable to pronounce a certified opinion.

Nonetheless, based on our review, no findings have come to light that might lead us to conclude that the condensed interim consolidated financial statements do not comply with the IFRS requirements for interim financial reporting, as endorsed for application in the EU, nor that the interim group management report does not comply with the applicable requirements of the German Securities Trading Act (WpHG).

Munich, July 31, 2020

Ernst & Young GmbH

Wirtschaftsprüfungsgesellschaft

signed
Keller
German Public Auditor

signed
Stummer
German Public Auditor

Additional information

Financial calendar

Interim financial report at June 30, 2020	August 03, 2020
Quarterly Statement as of September 30, 2020	October 29, 2020
MTU Investor & Analyst Day 2020	November 19, 2020

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MTU Aero Engines AG on the internet

- You can find further information about MTU Aero Engines AG on the internet at www.mtu.de
- The Investor Relations site can be accessed directly at www.mtu.de/de/investor-relations
- You can find information on the products of MTU Aero Engines AG at www.mtu.de/de/engines

Translation.

The German version takes precedence.



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