

Report on Economic Position

Macroeconomic and Sector-Specific Environment

Based on the World Economic Outlook published by the International Monetary Fund (IMF) on January 26, 2021, the recession in the second quarter of 2020 was followed by a recovery in the global economy from the second half of 2020 onward. However, there is considerable variation between individual countries when it comes to the pace of the continued recovery. Key factors include the comprehensive rollout of vaccines as quickly as possible, the extent to which those vaccines are effective against Covid-19 mutations, and effective containment measures. Government fiscal policy measures could also have a further positive impact. Yet, the IMF does not expect the global economic activity to return to the level forecast prior to the outbreak of the Covid-19 pandemic by 2022.

According to the latest forecasts by the IMF, global gross domestic product (GDP) fell by -3.5% in 2020 (previous year: +2.8%). Activity resumed more quickly after the lockdowns than had been initially anticipated, especially in the advanced economies, although there are general differences in terms of the impact of the pandemic in the individual countries. While economic output in the industrialized nations fell by -4.9% (previous year: +1.6%), the emerging markets and developing economies saw a less pronounced downturn of -2.4% (previous year: +3.6%). GDP in the United States declined by -3.4% (previous year: +2.2%). The eurozone was hit harder by the pandemic, with GDP decreasing by -7.2% (previous year: +1.3%). The downturn in GDP in the emerging economies of Asia was relatively minor at -1.1% (previous year: +5.4%). While the Indian economy contracted by -8.0% (previous year: +4.2%), the rapid recovery of the Chinese economy to record growth of 2.3% (previous year: 6.0%) meant that the overall figure decreased only slightly. As part of the advanced economies, Japan reported a downturn of -5.1% (previous year: +0.3%).

As in the previous year, our organic sales growth was significantly higher than the IMF's global growth expectations at 6.0%. With the exception of the Middle East and Africa, all regions contributed to this growth in the reporting year. North America accounted for the highest share of Group-wide growth at 42.4%, followed by Europe with 33.4%, Asia-Pacific with 17.8%, and Latin America with 8.2%. The organic downturn in the Middle East and Africa region was reflected in a slightly negative contribution to Group growth of -1.8%.

The overall growth was driven in particular by the Life Science business sector, with Healthcare also making a positive contribution to organic growth. Performance Materials was down on the previous year in terms of organic sales. This illustrates the fact that the growth in the North America and Europe regions is primarily attributable to the Life Science business sector. In the Asia-Pacific region, the growth contributions from the Life Science and Healthcare business sectors were more than enough to offset the downturn in the Performance Materials business sector.

Development in 2020 and 2019

	Change 2020 ¹	Change 2019
Healthcare		
Global pharmaceutical market	3.0%	6.2%
Market for multiple sclerosis therapies ²	0.9%	1.0%
Market for type 2 diabetes therapies ²	12.4%	12.8%
Market for fertility treatment ²	-2.5%	6.9%
Market for the treatment of colorectal cancer ³	-10.5%	5.7%
Life Science		
Market for laboratory products ⁴	6.1%	4.4%
Share of biopharmaceuticals in the global pharmaceutical market ⁵	32.3%	30.5%
Monoclonal antibody (mAb) pipeline ⁶	10.8%	13.3%
Performance Materials		
Growth of wafer area for semiconductor chips	2.4%	-6.9%
Growth of liquid crystal display surface area ⁷	-2.0%	4.2%
Global sales of cosmetics and care products	-2.5%	2.0%
Global number of produced light vehicles	-16.7%	-5.6%

¹ Predicted development. Final development rates for 2020 were not available for all industries when this report was prepared.

² Growth rates based on market data in local currency, translated at a constant euro exchange rate. The IQVIA market data on the growth of indications are based on current figures, including the third quarter of 2020. Annual growth based on the values for the past 12 months. The type 2 diabetes market excludes the United States, since this market is insignificant to Merck KGaA, Darmstadt, Germany.

³ Growth rates based on market data stated in US dollars. Market data from EvaluatePharma on the growth of indications are based on published company reports and are subject to exchange rate fluctuations.

⁴ The Global Market for Laboratory Products, December 2020, Frost & Sullivan. Acceleration attributed to Covid related tailwinds (Covid-19 testing, research, and vaccines).

⁵ Growth rates based on market data in local currency, translated at a constant euro exchange rate. IQVIA market data on the growth of indications are based on current figures, including the third quarter of 2020. Annual growth based on the values for the past 12 months.

⁶ EvaluatePharma. Deceleration since 2019 is due to global lockdowns in response to Covid-19 causing a pause in manufacturing and clinical trials. Volatility is expected to persist in the near term as routine healthcare use resumes with lower clinic capacities.

⁷ Growth of display area is a pure volume indicator, which is counteracted by a negative price momentum.

Healthcare

In a study from September 2020, the pharmaceutical market research firm IQVIA forecast growth in the global pharmaceutical market of 3.0% in 2020 (previous year: 6.2%). Due to Covid-19, the pharmaceutical market is therefore expected to see lower growth in the reporting year than was originally anticipated at the start of the year. The reduced growth forecast is due to people making fewer visits to physicians, and hence slower growth in the number of new patients. This particularly affected the areas of gastroenterology, oncology, and cardiology, while endocrinology and dermatology were least affected. In particular, the lockdowns and the rules on social distancing have made it harder for patients to access hospitals, leading to reduced demand for these products.

The developments at a regional level are extremely heterogeneous. Latin America reported significant growth of 10.6% (previous year: 11.8%). The EMEA (Europe, Middle East, and Africa) region also enjoyed solid if slower year-on-year growth of 4.4% (previous year: 6.8%). In North America, growth also slowed compared with the previous year, amounting to 3.9% (previous year: 5.3%). In absolute terms, the pharmaceutical market in the United States remains the biggest and most important market by some distance. Market growth in the Asia-Pacific region (excluding China) stagnated at 0.5% (previous year: 5.0%). Individual positive developments, particularly in India, were offset by a sharp downturn in Japan. Despite the downturn of -2.9% in China, which was largely due to the impact of the Covid-19 pandemic, the continued development of the local healthcare system and the shift from spending on generic products as a result of price regulation (e.g. volume-based procurement) in favor of innovative treatments mean that China will remain an attractive market, and we are forecasting a return to substantially positive growth from 2021 onward.

Besides the growth of the pharmaceutical sector as a whole, the development of the biopharmaceutical market is particularly relevant to our business. According to IQVIA, the market volume for biological pharmaceuticals totaled approximately € 316 billion in 2020 (previous year: approximately € 288 billion), thus continuing the recent trend of a continuous increase in market share. These products accounted for 32.3% of the global pharmaceutical market in 2020 (previous year: 30.5%). The most important market for biological pharmaceuticals remains the United States, with a 61.0% share of the global market volume.

The developments in the therapeutic areas of relevance to the Group saw differing trends in the reporting year. The global market for type 2 diabetes excluding the United States followed the positive trend of previous years, achieving growth of 12.4% in 2020 (previous year: 12.8%). The therapeutic area of infertility saw a downturn of -2.5% in the reporting year (previous year: +6.9%). Following a strong upturn in recent years, the market for colorectal cancer also declined by -10.5% in 2020 (previous year: +5.7%). The growth trend in the market for multiple sclerosis patients remains at previous year's level with 0.9% (previous year: 1.0%).

Life Science

Our Life Science business sector is a leading global supplier of products, tools and services for research laboratories, pharma and biotech production, and industrial and testing laboratories. While Covid-19 is having a pronounced impact on many sectors and the global economy as a whole, the life science market has proven itself to be robust.

According to the market research firm Frost & Sullivan, the market for laboratory products, which is relevant to our Research Solutions and Applied Solutions business units, grew 6.1% in 2020 (previous year: +4.4%). This was primarily due to a surge in demand for products related to Covid-19 testing, research, and vaccination. These developments served to more than offset the temporary reduction in laboratory activity during the lockdowns that were imposed in response to the Covid-19 pandemic. The impact of the closures was most pronounced in the second quarter of 2020, when just 12.2% of the laboratories surveyed by the market research firm Bioinformatics were fully operational. Lab activity picked up steadily throughout the fall and winter (39% of laboratories were fully operational in the fourth quarter of 2020) and is expected to return to pre-pandemic levels in 2021. Market development for 2021-2022 is expected to continue growing between 4% and 6%.

In the pharma and biotech production market in which our Process Solutions business unit is active, demand is driven by the development and manufacture of therapeutics and vaccines. According to IQVIA, the end market for biopharmaceuticals grew by 9.9% in 2020 (previous year: 13.9%) to € 316 billion (or 32.3% of the global pharmaceutical market). Monoclonal antibodies, currently the leading area of biopharmaceuticals, continued on their growth path in 2020 with positive development of 10.8% (previous year: 13.3%). The slowdown compared with the previous year is due to the global lockdowns in response to Covid-19, which led to production and clinical trials being suspended. Volatility is expected to persist in the near term as routine healthcare applications start to resume, albeit with reduced hospital capacities. The rapid development of treatment methods and vaccines in connection with Covid-19 is giving the pharma and biotech production a considerable boost. As of January 21, 2021, a total of 1,083 programs for the development and production of billions of vaccine doses were in progress.

Performance Materials

The semiconductor industry is the most important market for our business with materials for the production of integrated circuits (Semiconductor Solutions). In particular, the growth in demand for semiconductor materials depends on the wafer area produced for semiconductors. The silicon wafers required as raw materials are used as an indicator to estimate the demand for semiconductor materials. According to the global industry association SEMI.org, the area of delivered silicon wafers increased by approximately 2.4% in 2020 (previous year: -6.9%). Although the global economy fell into a severe recession in the first half of 2020 as a result of the global lockdowns to protect public health in response to Covid-19, demand for semiconductor chips remained robust. This was due to the strict social distancing rules, which triggered a significant wave of IT spending on the part of companies, governments, and individuals. With entire production facilities, offices, schools, and companies closing their doors temporarily, working from home, home schooling, online shopping and online entertainment suddenly became considerably more important as a means of enabling economic activity to resume, at least in part. To this end, demand for electronics – and hence semiconductor chips – remained robust and even intensified as the digitalization of the world picked up pace. McKinsey estimates that the global digital transformation has accelerated by around five years as a result of the Covid-19 lockdowns. As a consequence, the production capacities of semiconductor manufacturers remained largely constant with sustained high utilization rates throughout 2020, meaning that the development of the semiconductor and electronics industry was entirely decoupled from the wider GDP trend. As social distancing rules look set to remain in place or be intensified in order to prevent a renewed rise in new infections from the fourth quarter of 2020 onward, demand for laptops/PCs, servers, communication infrastructure, storage capacity, and similar products will be high, especially in 2021.

With its Liquid Crystals business, we are the leading producer of liquid crystal mixtures for the display industry. According to surveys by market researchers at Omdia (formerly IHS), growth in the display surface area was negative at around -2.0% in 2020 (previous year: +4.2%). This was primarily due to the low level of demand for televisions and mobile phones as a result of the weaker consumer demand in connection with Covid-19, as well as the trade dispute between the United States and China. Liquid crystals will continue to play a key role in the display industry in the future. OLED technology, for which we are also one of the leading material suppliers, is becoming increasingly important in high-end display applications.

The markets for automotive coatings and cosmetics are crucial to our Surface Solutions business. Global automobile production fell by -16.7% in 2020 (previous year: -5.6%). Factory closures in response to Covid-19, supply chain interruptions and a slump in consumer demand are the main reasons for this development. In China, one of the most important markets, the recovery has already progressed well, whereas in Europe and North America the markets are not yet on the pre-Covid-19 level.

The market for cosmetics and care products fell by -2.5% overall in 2020 (previous year: +2.0%). Our relevant market of color cosmetics declined by as much as -8.4% in 2020 due to Covid-19-related effects such as lockdowns and social distancing. The trade conflicts between the United States and China and uncertainties in connection with Brexit also served to slow market growth further.

Review of Forecast against Actual Business Developments

The forecast of the Group for fiscal 2020 published in the Annual Report for fiscal 2019 comprised the forecast for the Group as well as the forecast for the three business sectors: Healthcare, Life Science, and Performance Materials.

Net sales

We forecast solid organic net sales growth for the Group in 2020. Over the course of the year, the Group reported more dynamic organic sales growth, driven by the strong organic growth of the Life Science business sector in particular. This meant we slightly exceeded our forecast with strong overall organic net sales growth of 6.0% in fiscal 2020. At the start of the year, we still anticipated a slightly negative to slightly positive exchange rate effect on our net sales. However, several currencies saw increasingly unfavorable development as the year progressed, particularly the US dollar. The negative exchange rate effect in 2020 as a whole was -2.6% and thus slightly outside our most recent update in the third quarter, which provided for a range of -3% to -4%. The positive portfolio effect of 5.3% was primarily due to the acquisition of Versum Materials and developed in line with our original assessment.

Healthcare

We originally forecast solid organic sales growth for our Healthcare business sector compared with the previous year. Despite the impact of the Covid-19 pandemic, the business sector recorded moderate organic growth of 3.4% in 2020 as a whole. This was slightly above the forecast we updated in the third quarter, which provided for organic growth of between 2% and 3%. This development was driven in particular by the significant growth contribution of our most recently approved products, especially Mavenclo®. Together with the positive sales performance of the rest of our base business, this more than offset the downturn in sales in the fertility business in the second quarter as a result of Covid-19.

Life Science

Our Life Science business sector significantly exceeded our original forecast, generating organic sales growth of 11.8% in 2020. Following an especially strong fourth quarter, this was also above the most recently updated range of 9% to 10%. Thanks in particular to the extreme relevance of our product and service range in the context of the pandemic, Process Solutions was the most dynamic business unit, as expected, and delivered the largest contribution to organic sales growth within Life Science. Applied Solutions and Research Solutions also contributed positively to the organic sales performance, as anticipated, albeit to a considerably lesser extent than Process Solutions.

Performance Materials

Since we expected the growth in semiconductor business to exceed the downturn in sales in the Display Solutions business unit, we originally forecast slight organic growth for our Performance Materials business sector. In light of the impact of Covid-19 on our display, automotive, and cosmetics end markets in the first quarter, we were forced to significantly downgrade our forecast to a moderate to strong organic decline. Our key assumption of high growth momentum in the Semiconductor Solutions business unit proved to be correct. Thanks to a particularly strong fourth quarter for Semiconductor Solutions in particular, the business sector closed the year with an organic sales decline of -3.2%, ahead of our most recent forecast of between -4% and -5%. As consistently forecast, the portfolio effect of 35.4% primarily resulting from the Versum Materials acquisition, was in the mid-thirties percentage range.

EBITDA pre

For 2020, we originally forecast strong year-on-year organic growth in EBITDA pre for the Group. This assumption was based on the expectation of strong organic growth in Life Science, supported by solid organic growth in Healthcare and slight organic growth in Performance Materials. Furthermore, because of the expected unfavorable foreign exchange environment, we still expected moderate negative exchange rate effects to burden EBITDA pre by between 0% and -3% compared with the prior year. In 2020, EBITDA pre amounted to € 5,201 million, equivalent to an increase of 18.6% compared with the prior year (2019: € 4,385 million). The organic growth of 16.8% included in this figure was slightly above the forecast range of 14% to 16% we issued in the third quarter of 2020. Both figures included € 365 million from the reversal of a provision for a patent dispute. However, exchange rate effects had a more negative impact than expected at the start of the year, which is why we narrowed our forecast range to between -3% and -5% in our reporting over the course of the year. We ultimately closed 2020 at -4.6%.

Healthcare

For our Healthcare business sector, we originally forecast solid year-on-year organic growth in EBITDA pre thanks to substantial anticipated earnings contributions from our new products, particularly Mavenclad®, and a decline in marketing and selling expenses and development expenses in relation to sales. This was expected to offset the effect of the forecast downturn in sales of Rebif®. In light of the impact of Covid-19 on our fertility business in particular in the first quarter, we significantly downgraded our forecast to a slight organic decline. In 2020, EBITDA pre in the Healthcare business sector amounted to € 2,267 million thanks to a rapid recovery from the middle of the year onward (2019: € 1,922 million). This is equivalent to an increase of 18.0% over 2019; the organic rise of 26.6% corresponded to the upper end of the forecast range we issued at the end of the year. Both figures included € 365 million from the reversal of a provision for a patent dispute. By contrast, the foreign exchange effect on EBITDA pre in 2020 as a whole was substantially more negative than expected at the start of the year at -8.5%, although this was within the range of between -7% and -9% to which we had adjusted in the course of our reporting on the third quarter of 2020.

Life Science

For the Life Science business sector, we originally forecast strong organic growth in EBITDA pre on the back of the expected organic sales growth and a slight improvement in margins. However, the impact of the Covid-19 pandemic on the three Life Science business units became increasingly evident as the year progressed. Thanks to a particularly strong fourth quarter, EBITDA pre amounted to € 2,405 million in fiscal 2020 and year-on-year organic growth came in at 17.2%, thereby exceeding the forecast range that had already been significantly raised to between 13% and 15% in the course of our reporting on the third quarter. Foreign exchange development impacted EBITDA pre in the Life Science business sector by -3.8%, thereby developing in line with our most recent forecast.

Performance Materials

Due to the expected sales growth accompanied by the Bright Future transformation program, we also originally forecast slight organic growth in EBITDA pre in the Performance Material business sector. In the light of the impact of Covid-19 on our display, automotive, and cosmetics end markets in the first quarter, we were forced to significantly downgrade our forecast to an organic decline in the low to mid-teens percentage range. Thanks to sustained positive development in our semiconductor business, we most recently raised our forecast to an organic decline of between -6% and -9%. For 2020 as a whole, Performance Materials achieved an EBITDA pre of € 1,024 million (2019: € 803 million). This represented an organic decline of -7.5% compared with the previous year, which was within our most recent forecast range of -6% to -9%. As consistently forecast, the portfolio effect of 36.3% primarily resulting from the Versum Materials acquisition was in the mid-thirties percentage range. The foreign exchange effect of -1.3% was also at the upper end of our forecast range from the third quarter of -1% to -3%.

Corporate and Other

EBITDA pre of Corporate and Other amounted to € -495 million in fiscal 2020, thus exceeding the forecast range of € -460 million to € -490 million that we specified in the reporting on the third quarter of 2020. Compared with the prior-year figure of € -469 million, this corresponded to a rise in costs of 5.5%. The higher expenditures compared to the last forecast were mainly due to higher losses from our currency hedging transactions.

Business free cash flow

We originally expected the business free cash flow of the Group to see an increase in the mid-twenties percentage range in 2020. Even excluding the € 365 million reversal of a provision for a patent dispute, this forecast was achieved with growth of 24.5% to € 3,400 million (2019: € 2,732 million). Including the reversal of the provision in the amount of € 365 million, business free cash flow rose by 37.8% to € 3,765 million.

The year-on-year increase of 22.2% in the Healthcare business sector (less € 365 million from the reversal of provisions) exceeded the growth in the low double-digit teens percentage range that we forecast at the start of the year. At € 1,895 million (including € 365 million from the reversal of provisions), it was also above the third quarter forecast range of between € 1,625 million and € 1,775 million. At 16.0%, business free cash flow in the Life Science business sector fell below the original forecast range of growth in the low to mid-twenties percentage range. At € 1,595 million, it also fell slightly short of the range of € 1,600 million to € 1,750 million that we forecast in the third quarter. In the Performance Materials business sector, we originally forecast growth rates in the low thirties percentage range, which we achieved with an increase of 32%. At € 847 million, Performance Materials also fell within the third quarter forecast range of between € 770 million and € 870 million.

Group

	Net sales	EBITDA pre	Business free cash flow	EPS pre
Actual results 2019 in € million	16,152	4,385	2,732	€ 5.56
Forecast for 2020 in the 2019 Annual Report	- Solid organic growth - Portfolio effect in the mid-single-digit percentage range - Slightly negative foreign exchange effect of 0% to -3%	- Strong organic growth - Positive portfolio effect in the mid-single-digit percentage range - Slightly negative foreign exchange effect of 0% to -3%	Percentage growth in the mid-twenties percentage range	
Main comments	- Organic growth driven by Healthcare and Life Science; Performance Materials with slight organic growth - Positive portfolio effect in the mid-single-digit percentage range, mainly resulting from the acquisition of Versum Materials - Foreign exchange effect due to emerging market currencies and the US Dollar	- Strong organic growth in Life Science supported by solid organic growth in Healthcare and Performance Materials with slight organic growth - Realization of synergies from the integration of Versum Materials in Performance Materials as planned - Foreign exchange effect due to emerging market currencies and the US Dollar	Rise in EBITDA pre and positive effects from working capital; higher investments in property, plant, and equipment	
Forecast for 2020 in the interim report:				
Q1/2020	~16,800 to 17,800 - Slight to moderate organic growth - Portfolio effect in the mid-single-digit percentage range - Exchange rate effect of -2% to +1%	~4,350 to 4,850 - Stable organic development - Positive portfolio effect in the mid-single-digit percentage range - Slightly adverse foreign exchange effect of 0% to -3%	~2,650 to 3,250 Slight to strong increase	€ 5.50 to € 6.35
Q2/2020	~16,900 to 17,700 - Slight to moderate organic growth - Portfolio effect in the mid-single-digit percentage range - Exchange rate effect of -2% to +0%	~4,450 to 4,850 - Slight to moderate organic growth - Positive portfolio effect in the mid-single-digit percentage range - Negative foreign exchange effect of -4% to -2%	~2,750 to 3,200 Stable to strong increase	€ 5.60 to € 6.25
Q3/2020	~17,100 to 17,500 - Organic growth between 4% and 5% - Portfolio effect in the mid-single-digit percentage range - Exchange rate effect of -2% to -3%	~5,050 to 5,250 (thereof income from the release of a provision for a patent dispute + 365 million) - Organic growth between 14% and 16% (excluding income from a release of a provision between 6% and 8%) - Positive portfolio effect in the mid-single-digit percentage range - Negative foreign exchange effect of -3% to -5%	~3,475 to 3,775 (thereof from the release of a provision for a patent dispute + 365 million) Growth in the low to mid-thirties percentage range (excluding release of a provision: increase in the high teens to low twenties percentage range)	€ 6.50 to € 6.80 – thereof € 0.63 from the release of a provision for patent litigation
Results 2020 in € million	17,534 (+8.6%: +6.0% organic, +5.3% portfolio, -2.6% currency)	5,201 (+18.6%: +16.8% organic, +6.4% portfolio, -4.6% currency)	3,765 +37.8%	€ 6.70 +20.5%

Healthcare

	Net sales	EBITDA pre	Business free cash flow
Actual results 2019 in € million	6,714	1,922	1,252
Forecast for 2020 in the 2019 Annual Report	- Solid organic growth - Slightly negative foreign exchange effect	- Solid organic growth - Moderate negative foreign exchange effect	Increase in the low-double-digit teens percentage range
Main comments	- Expected substantial earnings contributions from our new products, especially Mavenclad®, offset negative mix effects associated with the projected decline in Rebif® sales - Stable development of the base business in organic terms - Substantial growth contribution by our newly approved products, particularly Mavenclad® - Negative foreign exchange effect due to foreign exchange developments in several growth markets and of the US Dollar	- Marketing and selling expenses as well as research and development costs decrease in percent of sales due to systematic cost management and strict pipeline prioritization - Negative foreign exchange effect due to foreign exchange developments in several growth markets and of the US Dollar	- Rise in EBITDA pre - Improved management of working capital offsets higher investments in property, plant and equipment
Forecast for 2020 in the interim report:			
Q1/2020	- Organic stable - Adverse portfolio effect in the mid-double-digit million range - Neutral to moderately adverse foreign exchange effect	- Organic slightly negative - Slightly to moderately adverse foreign exchange effect	Moderate decline
Q2/2020	- Slight organic growth - Adverse portfolio effect in the mid-double-digit million range - Slight to moderately adverse foreign exchange effect	- Organic stable - Significantly negative foreign exchange effect	Stable to slight decline
Q3/2020	~6,500 to 6,700 - Organic growth of 2% to 3% - Adverse portfolio effect in the mid-double-digit million range - Negative foreign exchange effect of between -3% and -4%	~2,220 to 2,290 (thereof income from the release of a provision for a patent dispute + 365 million) - Organic growth between 25% and 27% (excluding income from the release of a provision 6% and 8%) - Foreign exchange effect of between -7% and -9%	~1,625 to 1,775 (thereof income from the release of a provision for a patent dispute + 365 million) - Growth in the mid-thirties percentage range (excluding release of a provision: increase in the mid-single-digit percentage range)
Results 2020 in € million	6,639 (-1.1%: +3.4% organic, -0.9% portfolio, -3.6% currency)	2,267 (+18.0%: +26.6% organic, -0.1% portfolio, -8.5% currency)	1,895 +51.4%

Life Science

	Net sales	EBITDA pre	Business free cash flow
Actual results 2019 in € million	6,864	2,129	1,375
Forecast for 2020 in the 2019 Annual Report	- Strong organic growth - Slightly negative foreign exchange effect	- Strong and profitable organic earnings growth - Foreign exchange effect slightly negative	Strong increase in the low- to mid-twenties percentage range
Main comments	- All businesses contribute to growth - Process Solutions remains the main driver of growth, followed by Applied Solutions - Negative foreign exchange effect on account of the US Dollar and foreign exchange developments in several growth markets	- Organic earnings growth on account of the expected sales growth and slight margin improvement - Negative foreign exchange effect due to the trend of exchange rates on several growth markets	- Rise in EBITDA pre - Improved management of working capital - On the other hand, increase in capital spending on strategic projects
Forecast for 2020 in the interim report			
Q1/2020	- Strong organic growth - Neutral to slightly adverse foreign exchange effect	- Strong organic growth - Neutral to moderately adverse foreign exchange effect	Increase in the low-tens range percentage
Q2/2020	- Strong organic growth - Slightly negative foreign exchange effect	- Strong organic earnings growth - Moderately negative foreign exchange effect	Increase in the low-tens percentage range
Q3/2020	~7,250 to 7,450 - Organic growth between 9% and 10% - Exchange rate effect of -2% to -3%	~2,300 to 2,370 - Organic growth between 13% and 15% - Foreign exchange effect between of -3% and -4%	~1,600 to 1,750 - Increase in the low-twenties percentage range
Results 2020 in € million	7,515 (+9.5%: +11.8% organic, 0.0% portfolio, -2.3% currency)	2,405 (+13.0%: +17.2% organic, -3.8% portfolio, -0.5% currency)	1,595 +16.0%

Performance Materials

	Net sales	EBITDA pre	Business free cash flow
Actual results 2019 in € million	2,574	803	641
	- Slight organic growth	- Slight organic growth	
Forecast for 2020 in the 2019 Annual Report	- Portfolio effect in the low- to mid-thirties percentage range - Slightly negative foreign exchange effect	- Portfolio effects in the low- to mid-thirties percentage range - Slightly negative foreign exchange effect	Increase with growth rates in the low-thirties percentage range
Main comments	- Strong growth momentum in the Semiconductor Solutions business unit - Continued price decline in Liquid Crystals business, slightly mitigated by a volume increase - Slight growth of Surface Solutions - Portfolio effects due to Versum Materials in the low to mid-thirties percentage range, no material portfolio effect from Intermolecular - Negative foreign exchange effect due to the trend of exchange rates on several growth markets and of the US Dollar	- Growth in Semiconductor Solutions could offset price decline in Liquid Crystals supported by active cost management - Versum Materials earnings contribution in the low to mid-thirties percentage range leads to slight margin improvement - Planned realization of synergies of around € 25 million from the integration of Versum Materials - Negative foreign exchange effect due to the foreign exchange developments in several growth markets and of the US Dollar	Rise in EBITDA pre including the contribution from Versum Materials, reduced by higher capital investments
Forecast for 2020 in the interim report			
	- Moderate to strong organic decline	- Organic decline in the low to mid-teens percentage range	
Q1/2020	- Portfolio effect in the low- to mid-thirties percentage range - Slightly positive foreign exchange effect	- Portfolio effect in the low to mid-thirties percentage range - Moderately positive foreign exchange effect	Increase with growth rates in the low-twenties percentage range
	- Moderate to strong organic decline	- Organic decline in the low teens percentage range	
Q2/2020	- Portfolio effect in the mid-thirties percentage range - Neutral to slightly positive foreign exchange effect	- Portfolio effect in the mid-thirties percentage range - Slightly positive foreign exchange effect	Increase with growth rates in the low-twenties percentage range
	~3,250 to 3,400	~980 to 1,030	
	- Organic decline between -4% and -5%	- Organic decline between -6% and -9%	~770 to 870
Q3/2020	- Portfolio effect in the mid-thirties percentage range - Exchange rate effect of 0% to -2%	- Portfolio effect in the mid-thirties percentage range - Foreign exchange effect between -1% and -3%	- Increase with growth rates in the high-twenties percentage range
Results 2020 in € million	3,380 (+31.3%: -3.2% organic, +35.4% portfolio, -0.9% currency)	1,024 (+27.5%: -7.5% organic, +36.3% portfolio, -1.3% currency)	847 +32.1%

Corporate and Other

	EBITDA pre	Business free cash flow
Actual results 2019 in € million	-469	-536
Forecast for 2020 in the 2019 Annual Report	We expect Corporate and Other to be below the prior year in fiscal 2020. This is mainly due to a substantially lower burden from foreign currency hedging, which will partly offset opposing foreign exchange effects in the sectors.	
Main comments		
Forecast for 2020 in the interim report		
Q1/2020	Slightly higher than in 2019	
Q2/2020	Costs slightly below the year-earlier level	
Q3/2020	~-440 to -460	~-510 to -550
	- Costs slightly below the year-earlier level	
Results 2020 in € million	-495 (+5.5%: +17.7% organic, -0.4% portfolio, -11.8% currency)	-571 +6.6%

Course of Business and Economic Position

Group

Overview of 2020

- Group net sales up € 1.4 billion or 8.6% to € 17.5 billion (2019: € 16.2 billion)
- Organic (6.0%) and acquisition-related (5.3%) sales growth offset by negative exchange rate effects (-2.6%)
- Group EBITDA pre increases by 18.6% to € 5.2 billion (2019: € 4.4 billion); this includes income of € 365 million from the release of a provision for patent dispute
- Profitable growth for the Group: EBITDA pre margin rises to 29.7% (2019: 27.1%)
- Earnings per share pre increases by 20.5% to € 6.70 (2019: € 5.56)
- Business free cash flow of the Group amounts to € 3.8 billion (2019: € 2.7 billion)
- Reduction in net financial debt of 13.0% to € 10.8 billion (December 31, 2019: € 12.4 billion)

Group

Key figures

€ million	2020	2019	Change	
			€ million	%
Net sales	17,534	16,152	1,383	8.6%
Operating result (EBIT) ¹	2,985	2,120	865	40.8%
Margin (% of net sales) ¹	17.0%	13.1%		
EBITDA ¹	4,923	4,066	857	21.1%
Margin (% of net sales) ¹	28.1%	25.2%		
EBITDA pre ¹	5,201	4,385	817	18.6%
Margin (% of net sales) ¹	29.7%	27.1%		
Profit after tax	1,994	1,324	670	50.6%
Earnings per share (€)	4.57	3.04	1.53	50.3%
Earnings per share pre (€) ¹	6.70	5.56	1.14	20.5%
Business free cash flow ¹	3,765	2,732	1,033	37.8%

¹ Not defined by International Financial Reporting Standards (IFRS).

Development of sales and results of operations

In fiscal 2020, the Group generated net sales of € 17,534 million (2019: € 16,152 million), representing a year-on-year increase of € 1,383 million or 8.6%. This positive development was attributable to organic sales growth in the Life Science and Healthcare business sectors as well as acquisition-related sales growth in the Performance Materials business sector. Group-wide organic net sales growth totaled € 961 million or 6.0% in fiscal 2020. Information on the impact of the Covid-19 pandemic on net sales can be found in the sections on the individual business sectors. Exchange rate effects negatively impacted net sales in the amount of € -428 million or -2.6% in fiscal 2020. They resulted in particular from the U.S. dollar, the Brazilian real, and the Chinese renminbi. Group net sales rose by € 849 million or 5.3% due to portfolio changes in the year under review. This was primarily due to the acquisition of Versum Materials, Inc., United States (Versum Materials), which was completed on October 7, 2019, and which supplements the semiconductor business of the

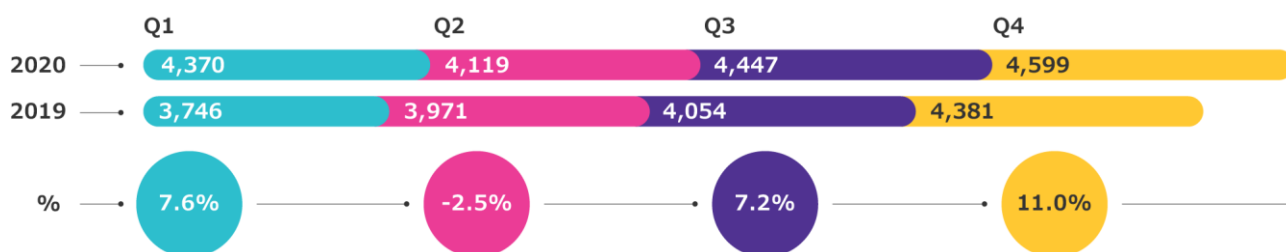
Performance Materials business sector. The disposal of the Allergopharma allergy business effective March 31, 2020, served to reduce net sales in the Healthcare business sector.

The net sales in the individual quarters as well as the respective organic growth rates in 2020 are presented in the following graph:

Group

Net sales and organic growth¹ by quarter²

€ million/organic growth in %



¹ Not defined by International Financial Reporting Standards (IFRS).

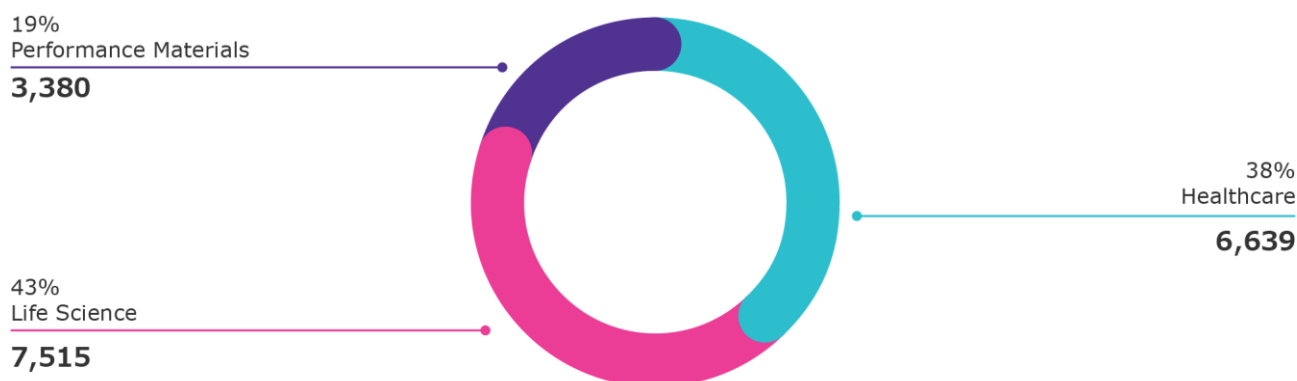
² Quarterly breakdown unaudited.

The Life Science business sector increased its net sales by 9.5% year-on-year to € 7,515 million (2019: € 6,864 million). Double-digit organic growth of 11.8% was offset by negative exchange rate effects of -2.3%. Accounting for 43% of Group sales (2019: 42%), Life Science was the strongest business sector in terms of net sales. The net sales of the Healthcare business sector declined by -1.1% to € 6,639 million in fiscal 2020 (2019: € 6,714 million). This was due to negative exchange rate and portfolio effects, which exceeded the organic growth of 3.4%. Accordingly, the share of Group sales attributable to Healthcare fell by 4 percentage points to 38% (2019: 42%). The 31.3% increase in Performance Materials sales to € 3,380 million (2019: € 2,574 million) was primarily attributable to the acquisition of Versum Materials. In organic terms, net sales declined by -3.2%. The share of the Group's net sales attributable to Performance Materials increased by 3 percentage points to 19% (2019: 16%).

Group

Net sales by business sector – 2020

€ million/% of net sales



Group

Net sales by business sector

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Healthcare	6,639	38%	3.4%	-3.6%	-0.9%	-1.1%	6,714	42%
Life Science	7,515	43%	11.8%	-2.3%	-	9.5%	6,864	42%
Performance Materials	3,380	19%	-3.2%	-0.9%	35.4%	31.3%	2,574	16%
Group	17,534	100%	6.0%	-2.6%	5.3%	8.6%	16,152	100%

¹ Not defined by International Financial Reporting Standards (IFRS).

In fiscal 2020, the Group recorded the following regional sales performance:

Group

Net sales by region

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Europe	4,991	29%	6.8%	-1.1%	-0.3%	5.4%	4,735	29%
North America	4,739	27%	9.7%	-2.4%	5.2%	12.5%	4,214	26%
Asia-Pacific (APAC)	6,313	36%	3.0%	-1.4%	11.1%	12.7%	5,599	35%
Latin America	910	5%	7.8%	-18.0%	0.1%	-10.1%	1,012	6%
Middle East and Africa (MEA)	581	3%	-3.0%	-2.2%	3.5%	-1.7%	591	4%
Group	17,534	100%	6.0%	-2.6%	5.3%	8.6%	16,152	100%

¹ Not defined by International Financial Reporting Standards (IFRS).

The Consolidated Income Statement of the Group is as follows:

Group

Consolidated Income Statement

€ million	2020	%	2019	%	Change	
					€ million	%
Net sales	17,534	100.0%	16,152	100.0%	1,383	8.6%
Cost of sales	-6,835	-39.0%	-6,006	-37.2%	-829	13.8%
Gross profit	10,699	61.0%	10,145	62.8%	554	5.5%
Marketing and selling expenses	-4,207	-24.0%	-4,576	-28.3%	369	-8.1%
Administration expenses	-1,188	-6.8%	-1,154	-7.1%	-34	3.0%
Research and development costs	-2,288	-13.0%	-2,268	-14.0%	-20	0.9%
Impairment losses and reversals of impairment losses on financial assets (net)	-6	0.0%	-8	0.0%	2	-24.8%
Other operating income and expenses	-25	-0.1%	-19	-0.1%	-6	31.8%
Operating result (EBIT)¹	2,985	17.0%	2,120	13.1%	865	40.8%
Financial result	-354	-2.0%	-385	-2.4%	30	-7.9%
Profit before income tax	2,630	15.0%	1,735	10.7%	895	51.6%
Income tax	-637	-3.6%	-440	-2.7%	-197	44.8%
Profit after tax from continuing operations	1,994	11.4%	1,296	8.0%	698	53.9%
Profit after tax from discontinued operation	-	0.0%	28	0.2%	-28	-100.0%
Profit after tax	1,994	11.4%	1,324	8.2%	670	50.6%
Non-controlling interests	-7	0.0%	-3	0.0%	-3	96.4%
Net income	1,987	11.3%	1,320	8.2%	667	50.5%

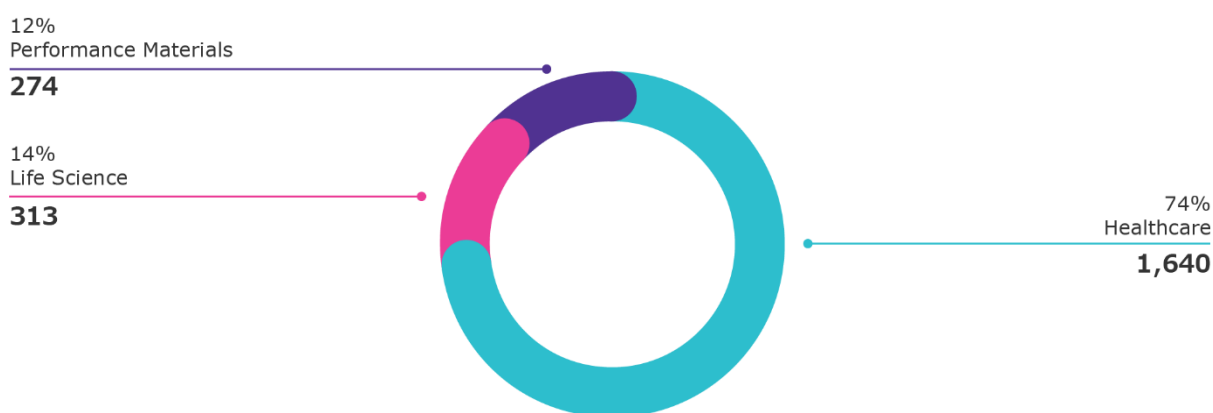
¹ Not defined by International Financial Reporting Standards (IFRS).

The positive business performance in the year under review led to an increase of 5.5% in the gross profit to € 10,699 million (2019: € 10,145 million). The resulting gross margin of the Group, i.e. gross profit as a percentage of net sales, amounted to 61.0% (2019: 62.8%). The -8.1% reduction in marketing and selling expenses to € 4,207 million (2019: € 4,576 million) was attributable to the Healthcare business sector (see “Healthcare” section). Group-wide research and development (R&D) costs rose slightly year-on-year to € 2,288 million in fiscal 2020 (2019: € 2,268 million) and led to a research spending ratio (research and development costs as a percentage of net sales) of 13.0% (2019: 14.0%). Accounting for 74% (2019: 75%) of Group R&D spending, Healthcare remained the most research-intensive business sector of the Group.

Group

Research and development costs by business sector¹ – 2020

€ million/%



¹ Not presented: research and development costs of € 62 million allocated to Corporate and Other.

Detailed information about the development and composition of other operating expenses and income can be found in Note (13) “Other operating income” and Note (14) “Other operating expenses” in the Notes to the Consolidated Financial Statements.

An increase in provisions for obligations under long-term variable compensation programs (Long-Term Incentive Plan of Merck KGaA, Darmstadt, Germany) had an adverse effect on the operating result in the year under review, with the rise in the intrinsic value of the Share Units of Merck KGaA, Darmstadt, Germany, being reflected in the respective functional costs depending on the area of activity of the plan beneficiaries.

The financial result improved by 7.9% to € -354 million in fiscal 2020 (2019: € -385 million) which was particularly attributable to lower interest expenses. Details about the development of the finance income and finance expenses of the Group can be found in Note (40) “Financial income and expenses/Net profit and losses from financial instruments” in the Notes to the Consolidated Financial Statements.

Income tax expense amounted to € 637 million in 2020 (2019: € 440 million) and resulted in a tax rate of 24.2% (2019: 25.3%). Further information on income taxes can be found in Note (15) “Income taxes” in the Notes to the Consolidated Financial Statements.

The profit after tax from discontinued operations reported in the previous year in the amount of € 28 million was due to subsequent effects in connection with the sale of the Consumer Health business in December 2018.

The net income attributable to Merck KGaA, Darmstadt, Germany, shareholders increased by 50.5% to € 1,987 million (2019: € 1,320 million) and resulted in a corresponding improvement in earnings per share to € 4.57 in fiscal 2020 (2019: € 3.04).

EBITDA pre, the key financial indicator used to steer operating business, rose by € 817 million, or 18.6%, to € 5,201 million (2019: € 4,385 million). Organic earnings growth, which also includes income from the release

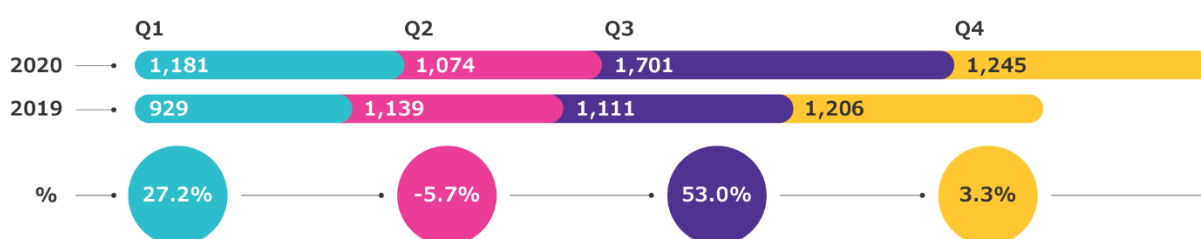
of a provision for patent dispute in the amount of € 365 million (see Note (27) "Other provisions" in the Notes to the Consolidated Financial Statements), amounted to 16.8%. Portfolio effects – primarily resulting from the acquisition of Versum Materials – led to a 6.4% increase in EBITDA pre in fiscal 2020. This was offset by negative exchange rate effects of -4.6%. Relative to net sales, the Group recorded an EBITDA pre margin of 29.7% (2019: 27.1%). The reconciliation of the operating result (EBIT) to EBITDA pre is presented in the chapter entitled "Internal Management System".

The development of EBITDA pre in the individual quarters in comparison with 2019 as well as the respective growth rates are presented in the following overview:

Group

EBITDA pre¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

All business sectors contributed to the growth in Group EBITDA pre. Life Science generated EBITDA pre of € 2,405 million, up 13.0% on the previous year (2019: € 2,129 million). This meant the EBITDA pre margin in the Life Science business sector increased to 32.0% in fiscal 2020 (2019: 31.0%). The share of Group EBITDA pre attributable to the Life Science business sector (not taking into account the € -495 million reduction due to Corporate and Other) amounted to 42% in the year under review (2019: 44%).

EBITDA pre in the Healthcare business sector increased by 18.0% to € 2,267 million (2019: € 1,922 million). The resulting EBITDA pre margin improved substantially to 34.1% (2019: 28.6%). The share of Group EBITDA pre attributable to Healthcare remained unchanged year-on-year at 40%.

In fiscal 2020, the Performance Materials business sector benefited considerably from the acquisition of Versum Materials in October 2019, reporting a 27.5% increase in EBITDA pre to € 1,024 million (2019: € 803 million). Accordingly, the share of Group EBITDA pre attributable to Performance Materials rose by 2 percentage points to 18% (2019: 16%). The EBITDA pre margin declined slightly to 30.3% (2019: 31.2%).

Group

EBITDA pre¹ by business sector² – 2020

€ million/%



¹ Not defined by International Financial Reporting Standards (IFRS).

² Not presented: Decline in Group EBITDA pre by €-495 million due to Corporate and Other.

Group

Balance sheet structure¹

	Dec. 31, 2020		Dec. 31, 2019		Change	
	€ million	%	€ million	%	€ million	%
Non-current assets	32,516	77.8%	34,805	79.4%	-2,289	-6.6%
thereof:						
Goodwill	15,959		17,114		-1,155	
Other intangible assets	7,653		9,221		-1,567	
Property, plant and equipment	6,421		6,192		229	
Other non-current assets	2,483		2,278		205	
Current assets	9,280	22.2%	9,003	20.6%	277	3.1%
thereof:						
Inventories	3,294		3,342		-48	
Trade and other current receivables	3,221		3,488		-267	
Other current financial assets	125		57		68	
Other current assets	1,286		1,336		-51	
Cash and cash equivalents	1,355		781		575	
Total assets	41,796	100.0%	43,808	100.0%	-2,012	-4.6%
Equity	17,017	40.7%	17,914	40.9%	-897	-5.0%
Non-current liabilities	15,548	37.2%	14,053	32.1%	1,496	10.6%
thereof:						
Non-current provisions for employee benefits	3,880		3,194		686	
Other non-current provisions	281		254		27	
Non-current financial debt	9,785		8,644		1,141	
Other non-current liabilities	1,603		1,962		-359	
Current liabilities	9,231	22.1%	11,842	27.0%	-2,610	-22.0%
thereof:						
Current provisions	613		933		-320	
Current financial debt	2,357		4,550		-2,193	
Trade and other current payables/ refund liabilities	2,434		2,618		-185	
Other current liabilities	3,828		3,740		88	
Total equity and liabilities	41,796	100.0%	43,808	100.0%	-2,012	-4.6%

¹ Previous year's figures have been adjusted, see Note (2) "Reporting principles" in the Notes to the Consolidated Financial Statements.

The total assets of the Group amounted to € 41,796 million as of December 31, 2020 (December 31, 2019: € 43,808 million), representing a decrease of -4.6% or € -2,012 million in fiscal 2020. The development of total assets was largely due to exchange rate changes, in particular the weaker US dollar at the reporting date. Working capital remained largely unchanged year-on-year at € 3,938 million (2019: € 3,944 million) despite the increase in the business volume in fiscal 2020.

Group

Working capital¹

€ million	Dec. 31, 2020	Dec. 31, 2019	Change	
			€ million	%
Trade accounts receivable	3,052	3,174	-122	-3.8%
Receivables from royalties and licenses	24	45	-22	-47.8%
Inventories/right of return for goods already delivered	3,296	3,344	-47	-1.4%
Trade and other current payables/refund liabilities	-2,434	-2,618	185	-7.1%
Working capital¹	3,938	3,944	-6	-0.2%

¹ Not defined by International Financial Reporting Standards (IFRS).

The composition and the development of net financial debt were as follows:

Group

Net financial debt¹

€ million	Dec. 31, 2020	Dec. 31, 2019	Change	
			€ million	%
Bonds and commercial paper	9,642	10,059	-417	-4.1%
Bank loans	1,085	1,587	-501	-31.6%
Liabilities to related parties	817	809	8	1.0%
Loans from third parties and other financial debt	58	97	-39	-40.5%
Liabilities from derivatives (financial transactions)	102	76	26	34.2%
Lease liabilities	438	567	-129	-22.7%
Financial debt	12,142	13,194	-1,052	-8.0%
less:				
Cash and cash equivalents	1,355	781	575	73.6%
Other current financial assets ²	28	50	-22	-43.4%
Net financial debt¹	10,758	12,363	-1,605	-13.0%

¹ Not defined by International Financial Reporting Standards (IFRS).

² Excluding current derivatives (operational).

Group

Reconciliation of net financial debt¹

€ million	2020	2019
Jan. 01	12,363	6,701
Currency translation difference	-189	79
Change in lease liabilities ²	65	663
Dividend payments/profit withdrawals ³	687	689
Acquisitions ³	11	5,020
Payments for/proceeds from the disposal of assets held for sale ³	-48	110
Transfer of financial debt due to acquisitions	-	966
Free cash flow ¹	-2,038	-1,889
Other	-93	24
Dec. 31	10,758	12,363

¹ Not defined by International Financial Reporting Standards (IFRS).

² In 2019 included € 465 million due to the first-time application of IFRS 16 as of January 1, 2019.

³ According to the Consolidated Cash Flow Statement.

In fiscal 2020, the equity of the Group declined by -5.0% to € 17,017 million (December 31, 2019: € 17,914 million). This development was primarily due to negative currency translation effects as well as dividend payments and profit withdrawals. The profit after tax generated in fiscal 2020 was not sufficient to offset these effects (see “Consolidated Statement of Changes in Equity” in the Consolidated Financial Statements). The equity ratio declined only slightly to 40.7% (December 31, 2019: 40.9%). The composition of free cash flow as well as the development of the relevant items are presented in the following table:

Group

Free cash flow¹

€ million	2020	2019	Change	
			€ million	%
Cash flow from operating activities according to the consolidated cash flow statement	3,477	2,856	621	21.7%
Payments for investments in intangible assets	-150	-208	58	-27.8%
Proceeds from the disposal of intangible assets	88	23	66	>100.0%
Payments for investments in property, plant and equipment	-1,413	-813	-600	73.8%
Proceeds from the disposal of property, plant and equipment	35	31	4	14.3%
Free cash flow¹	2,038	1,889	149	7.9%

¹ Not defined by International Financial Reporting Standards (IFRS).

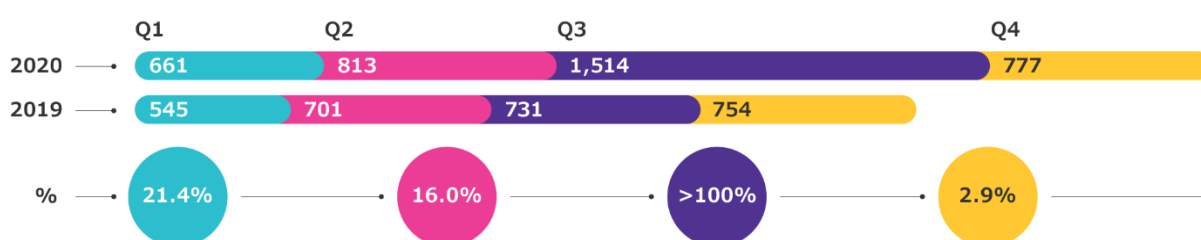
The business free cash flow of the Group rose by 37.8% to € 3,765 million in fiscal 2020 (2019: € 2,732 million). This was due in particular to the higher level of EBITDA pre and the development of inventories and receivables. The composition of business free cash flow is presented in the chapter entitled “Internal Management System”.

The distribution of business free cash flow across the individual quarters and the percentage changes in comparison with 2019 were as follows:

Group

Business free cash flow¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Group

Business free cash flow¹ by business sector² – 2020

€ million/%

¹ Not defined by International Financial Reporting Standards (IFRS).² Not presented: decline in Group business free cash flow by € -571 million due to Corporate and Other.

The contributions of the operating business sectors to Group business free cash flow developed as follows in fiscal 2020: The contribution of Healthcare increased by 51.4% to € 1,895 million (2019: € 1,252 million) and hence was the business sector with the highest cash flows, accounting for a 44% share (2019: 38%) of Group business free cash flow (not taking into account the € -571 million reduction due to Corporate and Other). In 2020, the Life Science business sector generated business free cash flow of € 1,595 million (2019: € 1,375 million), thus contributing a share of 37% to Group business free cash flow (2019: 42%). With business free cash flow of € 847 million (2019: € 641 million), Performance Materials contributed 19% (2019: 20%) to this Group key performance indicator.

Investments in property, plant, equipment, and software, as well as advance payments for intangible assets included in the calculation of business free cash flow, rose in 2020 by 40.2% to € 1,439 million (2019: € 1,026 million). The investments in property, plant, and equipment included therein amounted to € 1,344 million in 2020 (2019: € 1,104 million), of which € 858 million (2019: € 497 million) was attributable to strategic investment projects each with a project volume of more than € 2 million.

In 2020, strategic investments of € 168 million were made in Germany (2019: € 146 million), of which € 118 million related to the expansion of our site in Darmstadt. Among other things, the Performance Materials business sector invested € 15 million in a new research center and the Life Science business sector invested € 34 million in a new membrane production plant. The Life Science business sector also invested € 33 million in a new filling and logistics center in Schnelldorf.

Outside Germany, high levels of strategic investments were made in the United States (€ 366 million) and Switzerland (€ 162 million) in particular. The United States saw a Healthcare investment of € 27 million in the expansion of the research and development center in Billerica, Massachusetts, and a Life Science investment of € 36 million in a new manufacturing facility for gene therapy products in Carlsbad. In addition, the Life Science business sector acquired its previously leased company headquarters in Burlington, Massachusetts, for € 208 million. The same applies to the Performance Materials business sector, which purchased its previously leased facility in Tempe, Arizona, for € 18 million. In Switzerland, the Healthcare business sector invested € 85 million in a new development center to produce biotechnological products and € 41 million in a new production building for bottling these products.

Our credit ratings from the independent rating agencies did not change in 2020. Merck KGaA, Darmstadt, Germany, is currently rated by Standard & Poor's, Moody's, and Scope. Standard & Poor's has issued a long-term credit rating of A with a stable outlook, Moody's a rating of Baa1 with a stable outlook, and Scope a rating of A-, likewise with a stable outlook. An overview of the development of our rating in recent years is presented in the Report on Risks and Opportunities.

The development of key balance sheet figures was as follows:

Group

Key balance sheet figures

%		Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2016
Equity ratio ¹	Total equity	40.7%	40.9%	46.7%	39.5%	36.7%
	Total assets					
Asset ratio ¹	Non-current assets	77.8%	79.4%	75.0%	79.1%	80.0%
	Total assets					
Asset coverage ¹	Total equity	52.3%	51.5%	62.3%	49.9%	45.9%
	Non-current assets					
Finance structure ¹	Current liabilities	37.3%	45.7%	43.3%	40.1%	37.5%
	Liabilities (total)					

¹ Not defined by International Financial Reporting Standards (IFRS).

Overall assessment of business performance and economic situation

2020 was dominated by the global spread of Covid-19. The Group succeeded in mastering the unprecedented challenges this entailed, with the effectiveness of our business model and its three innovative business sectors proving its worth in the Covid-19 crisis.

Despite considerable obstacles in some business units as a result of the pandemic, the financial targets we had set for 2020 were reached or even exceeded. In particular, we recorded further profitable growth in fiscal 2020. Group net sales increased by 8.6% to € 17,534 (2019: € 16,152 million), while the key financial indicator used to steer our operating business, EBITDA pre, rose by as much as 18.6% to € 5,201 million (2019: € 4,385 million). All our business sectors contributed to this success.

Another milestone in our Healthcare business sector was the approval of our cancer immunotherapy Bavencio® by the U.S. Food and Drug Administration (FDA) for the treatment of patients with advanced urothelial carcinoma. We obtained additional approvals for Mavenclad® around the world, meaning that the product is now approved in more than 80 countries including in the European Union, the United States, Australia, Canada, and Switzerland. With the sale of our Allergopharma allergy business, we are now further heightening our focus on the development of innovative medicines for hard-to-treat diseases.

We also invested in research, development and production in the Life Science business sector in fiscal 2020. For example, we celebrated the topping-out ceremony for our new membrane facility in Darmstadt and announced the expansion of production sites in the United States.

In Performance Materials, we developed further into a leading player for materials-based solutions for the electronics market in 2020 as part of the “Bright Future” transformation program. Our current portfolio means we already occupy a strong position on the market for electronic materials, thanks in part to the acquisitions of Versum Materials and Intermolecular in 2019.

The solid financing policies of the Group are reflected in persistently good key balance sheet figures. The equity ratio was 40.7% on December 31, 2020 (December 31, 2019: 40.9%), and thus at a very good level. Having risen to € 12,363 million in the previous year due to the acquisition of Versum Materials, net financial debt was reduced by 13.0% in 2020 and amounted to € 10,758 million at the end of the fiscal year. So that we can continue to achieve a rapid reduction in financial liabilities, we are focusing on generating organic growth and on high inflows of financial resources from operating business activities.

Based on our solid net assets and financial position, and our profitable operations, we view the economic situation of the Group as positive overall. Our clear focus on science and technology means we are well positioned even in economically challenging times.

Healthcare

Healthcare

Key figures

€ million	2020	2019	Change	
			€ million	%
Net sales	6,639	6,714	-75	-1.1%
Operating result (EBIT) ¹	1,804	1,149	654	56.9%
Margin (% of net sales) ¹	27.2%	17.1%		
EBITDA ¹	2,184	1,896	288	15.2%
Margin (% of net sales) ¹	32.9%	28.2%		
EBITDA pre ¹	2,267	1,922	346	18.0%
Margin (% of net sales) ¹	34.1%	28.6%		
Business free cash flow ¹	1,895	1,252	643	51.4%

¹ Not defined by International Financial Reporting Standards (IFRS).

Development of sales and results of operations

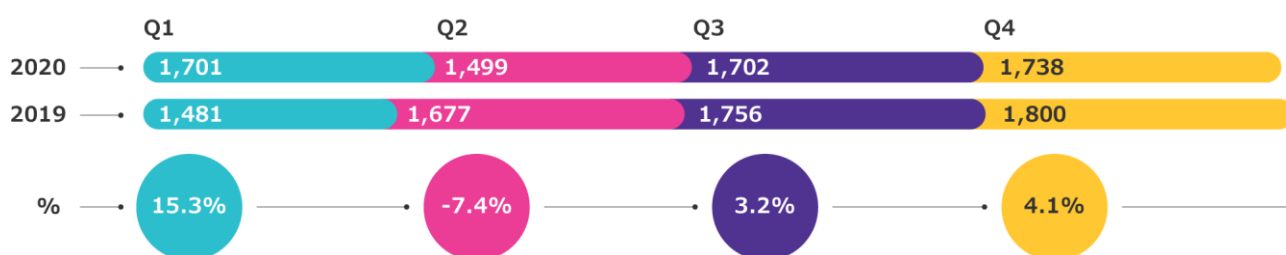
In fiscal 2020, the Healthcare business sector recorded net sales of € 6,639 million (2019: € 6,714 million). Organic sales growth amounted to 3.4%. All in all, net sales decreased by -1.1% due to unfavorable exchange rate developments (-3.6%) and the disposal of the Allergopharma allergy business in the first quarter of 2020 (-0.9%). The exchange rate effect reflects the unfavorable development of various currencies against the euro, particularly the U.S. dollar, individual Latin American currencies, and the Russian ruble.

The net sales in the individual quarters as well as the respective organic growth rates in 2020 are presented in the following graph:

Healthcare

Net sales and organic growth¹ by quarter²

€ million/organic growth in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Net sales of the key product lines and products developed as follows in 2020:

Healthcare

Net sales by major product lines/products

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Total change	2019	Share
Oncology	1,116	17%	12.0%	-3.6%	8.4%	1,030	15%
thereof: Erbitux®	891	13%	6.0%	-3.7%	2.3%	871	13%
thereof: Bavencio®	156	2%	57.4%	-4.9%	52.5%	103	2%
Neurology & Immunology	1,662	25%	6.7%	-2.4%	4.3%	1,594	24%
thereof: Rebif®	1,131	17%	-9.4%	-1.7%	-11.1%	1,273	19%
thereof: Mavenclad®	531	8%	70.5%	-5.2%	65.4%	321	5%
Fertility	1,079	16%	-10.7%	-2.7%	-13.4%	1,247	19%
thereof: Gonal-f®	630	9%	-12.7%	-2.5%	-15.2%	743	11%
General Medicine & Endocrinology	2,585	39%	5.9%	-4.8%	1.1%	2,557	38%
thereof: Glucophage®	903	14%	8.1%	-5.0%	3.1%	877	13%
thereof: Concor®	529	8%	4.4%	-4.7%	-0.2%	530	8%
thereof: Euthyrox®	455	7%	18.6%	-5.5%	13.1%	402	6%
thereof: Saizen®	234	4%	4.0%	-5.8%	-1.8%	238	4%
Other	197	3%				287	4%
Healthcare	6,639	100%	3.4%	-3.6%	-1.1%	6,714	100%

¹ Not defined by International Financial Reporting Standards (IFRS).

The oncology drug Erbitux® (cetuximab) posted organic sales growth of 6.0% in fiscal 2020. Taking into account negative exchange rate effects of -3.7%, global net sales of Erbitux® increased by 2.3% to € 891 million (2019: € 871 million). While China continued to see encouraging development following the addition of Erbitux® to the National Reimbursement Drug List (NRDL) in 2018, growth in the Asia-Pacific region as a whole stagnated as a result of the difficult competitive situation in Japan due to the launch of new drugs. The situation in the core European markets was also characterized by a difficult competitive environment, but positive effects from successful tenders resulted in moderate organic growth of 1.9%. All in all, Erbitux® sales in Europe amounted to € 404 million (2019: € 405 million). A partnership with Eli Lilly and Company, United States, also had a positive impact. Services performed for the production of cetuximab as part of this cooperation resulted in net sales in the United States in 2020.

In the area of immuno-oncology, sales of the oncology drug Bavencio® (avelumab) posted organic growth of 57.4%. Taking into account negative exchange rate effects of -4.9%, net sales of € 156 million were generated in 2020 (2019: € 103 million). This highly encouraging growth was due in particular to the approval granted for the first-line maintenance treatment of patients with locally advanced or metastatic urothelial carcinoma (UC) in the United States in June 2020. Bavencio® is the first immunotherapy to demonstrate an improvement in overall survival in a Phase III study compared with the standard treatment in the first-line setting for patients with locally advanced or metastatic urothelial carcinoma. Sales growth was also driven by the approval of Bavencio® in combination with axitinib for the treatment of patients with advanced renal cell carcinoma (RCC) in Europe and Japan in 2019.

Mavenclad®, for the oral short-course treatment of highly active relapsing multiple sclerosis, also made a substantial contribution to the encouraging organic growth in the Healthcare business sector. Mavenclad® posted net sales of € 531 million in fiscal 2020, almost double the figure recorded in the previous year (2019: € 321 million). In a market environment impacted by Covid-19, prescription rates for Mavenclad® declined temporarily. However, the second half of 2020 in particular saw strong signs of a recovery, supported by new safety data indicating that patients treated using Mavenclad® who acquire Covid-19 are not at an increased risk of severe outcomes. With the additional approvals obtained in 2020, Mavenclad® is now approved in more than 80 countries around the world.

Healthcare

Product sales and organic growth¹ of Rebif®, Glucophage® and Erbitux® by region – 2020

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
	€ million	1,131	331	705	11	34	50
Rebif®	Organic growth ¹	-9.4%	-2.3%	-11.2%	-3.2%	-2.4%	-28.1%
	Share	100%	29%	62%	1%	3%	5%
	€ million	903	123	–	543	128	110
Glucophage®	Organic growth ¹	8.1%	1.9%	–	8.4%	18.0%	2.1%
	Share	100%	14%	–	60%	14%	12%
	€ million	891	404	32.2	342	64	48
Erbitux®	Organic growth ¹	6.0%	1.9%	>100.0%	0.6%	15.9%	-2.0%
	Share	100%	45%	4%	39%	7%	5%

¹ Not defined by International Financial Reporting Standards (IFRS).

Sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw an organic decline in net sales of -9.4% in fiscal 2020. This meant the long-term downward trend slowed temporarily in the year under review. Taking into account negative exchange rate effects of -1.7%, global net sales decreased to € 1,131 million (2019: € 1,273 million). The drop in sales was attributable to the persistently difficult competitive situation on the interferon market and the competition from alternative therapies, including oral dosage forms and high-efficacy therapies.

Fertility was the product line in the Healthcare business sector that was hardest hit by the Covid-19 pandemic. Gonal-f®, the leading recombinant hormone used in the treatment of infertility, saw an organic decline in net sales of -12.7% in 2020 that was exacerbated by negative exchange rate effects of -2.5%. As a result, global sales fell to € 630 million (2019: € 743 million). Despite signs of a recovery and isolated catch-up effects in the second half of 2020, only the North America region reported moderate organic growth of 2.7% in 2020, whereas full-year sales in the other regions were down compared to the previous year.

The General Medicine & Endocrinology franchise (including CardioMetabolic Care) recorded organic growth of 5.9% in fiscal 2020. The franchise includes medicines to treat cardiovascular diseases, thyroid disorders, diabetes, and growth disorders. Taking into account negative exchange rate effects of -4.8%, net sales in the General Medicine & Endocrinology franchise amounted to € 2,585 million (2019: € 2,557 million).

The diabetes drug Glucophage® from the General Medicine franchise became the second-strongest drug in the Healthcare product portfolio in terms of net sales, which increased to € 903 million (2019: € 877 million). This corresponds to organic growth of 8.1%, which was offset by negative exchange rate effects of -5.0%. The main driver of this development was positive performance in China and Latin America.

The beta-blocker Concor® also generated positive organic sales growth of 4.4%. However, negative exchange rate effects of -4.7% meant that total sales stagnated at € 529 million (2019: € 530 million).

Euthyrox®, a medicine to treat thyroid disorders, developed very favorably with organic sales growth of 18.6%. Taking into account negative exchange rate effects of -5.5%, net sales increased to € 455 million (2019: € 402 million).

Sales of the growth hormone Saizen® declined slightly to € 234 million in fiscal 2020 (2019: € 238 million). Organic growth of 4.0% was not enough to offset negative exchange rate effects of -5.8%.

Net sales of the Healthcare business sector by region in 2020 developed as follows:

Healthcare

Net sales by region

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Europe	2,158	32%	1.1%	-2.0%	-2.8%	-3.7%	2,241	33%
North America	1,554	23%	7.8%	-2.3%	-	5.5%	1,474	22%
Asia-Pacific (APAC)	1,831	28%	2.4%	-1.5%	-	0.9%	1,816	27%
Latin America	641	10%	9.3%	-18.0%	-	-8.8%	702	11%
Middle East and Africa (MEA)	455	7%	-3.5%	-2.0%	-	-5.5%	482	7%
Healthcare	6,639	100%	3.4%	-3.6%	-0.9%	-1.1%	6,714	100%

¹ Not defined by International Financial Reporting Standards (IFRS).

The following table presents the composition of EBITDA pre in fiscal 2020 in comparison with 2019. The IFRS figures have been modified to reflect the elimination of adjustments included in the functional costs.

Healthcare

Reconciliation EBITDA pre¹

€ million	2020			2019			Change
	IFRS	Elimination of adjustments	Pre ¹	IFRS	Elimination of adjustments	Pre ¹	Pre ¹
Net sales	6,639	-	6,639	6,714	-	6,714	-1.1%
Cost of sales	-1,613	7	-1,606	-1,605	-	-1,605	0.1%
Gross profit	5,026	7	5,033	5,109	-	5,109	-1.5%
Marketing and selling expenses	-1,664	47	-1,617	-2,305	3	-2,303	-29.8%
Administration expenses	-320	7	-313	-344	15	-329	-4.8%
Research and development costs	-1,640	24	-1,616	-1,666	2	-1,663	-2.9%
Impairment losses and reversals of impairment losses on financial assets (net)	-4	-	-4	-1	-	-1	>100.0%
Other operating income and expenses	406	-1	405	357	6	363	11.5%
Operating result (EBIT)¹	1,804			1,149			
Depreciation/amortization/impairment losses/reversals of impairment losses	381	-2	379	747	-1	746	-49.2%
EBITDA¹	2,184			1,896			
Restructuring expenses	95	-95	-	17	-17	-	
Integration expenses/IT expenses	4	-4	-	13	-13	-	
Gains (-)/losses (+) on the divestment of businesses	-16	16	-	-5	5	-	
Acquisition-related adjustments	-	-	-	-	-	-	
Other adjustments	-	-	-	-	-	-	
EBITDA pre¹	2,267	-	2,267	1,922	-	1,922	18.0%
of which: organic growth ¹							26.6%
of which: exchange rate effects							-8.5%
of which: acquisitions/divestments							-0.1%

¹ Not defined by International Financial Reporting Standards (IFRS).

The gross profit of the Healthcare business sector after adjustments declined slightly to € 5,033 million (2019: € 5,109 million). This was largely due to the sales development. At 75.8%, the resulting gross margin was down slightly on the 2019 reporting period (76.1%).

Marketing and selling expenses after adjustments declined by -29.8% year-on-year to € 1,617 million (2019: € 2,303 million). The main reasons were lower costs due to the Covid-19 pandemic and the end of scheduled amortization in connection with purchase price allocation for the Serono acquisition in 2006. With investment requirements for our development portfolio being slightly lower at present, research and development costs declined by -2.9% to € 1,616 million in the year under review (2019: € 1,663 million). The change in other operating expenses and income was due to several factors. Earnings were positively affected in the amount of € 365 million as a result of the reversal of a provision for potential compensation payments for damages in connection with the patent dispute with Biogen Inc., United States (Biogen). This was offset by the end of the recognition of the upfront cash payment by Pfizer Inc., United States, from 2014. The 2019 reporting period was also positively influenced by the recognition of milestone payments of € 75 million from BioMarin Pharmaceutical Inc., United States, in connection with the sale of Palynziq™ rights in 2016 and € 90 million from the partnership with Pfizer following the extension of approval of Bavencio® for the treatment of advanced renal cell carcinoma in combination with axitinib.

EBITDA pre developed very favorably in 2020, rising by 18.0% to € 2,267 million (2019: € 1,922 million). Organic earnings growth amounted to 26.6%. Overall, the EBITDA pre margin also saw growth of more than 5 percentage points to 34.1% (2019: 28.6%).

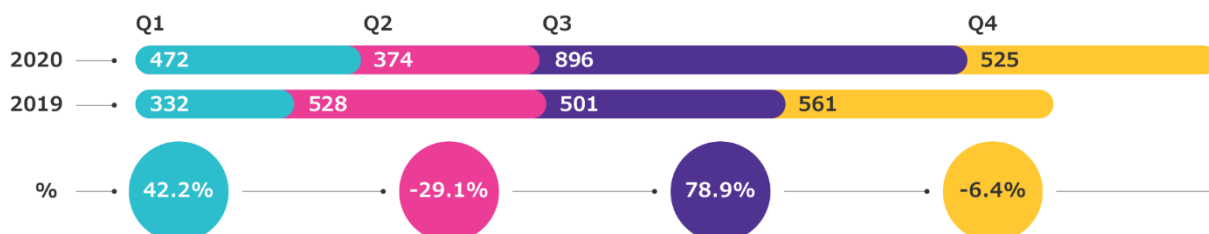
The restructuring expenses eliminated in calculating EBITDA pre are primarily attributable to transformation and growth programs initiated in fiscal 2020 (see Note (27) "Other provisions" in the Notes to the Consolidated Financial Statements).

The development of EBITDA pre in the individual quarters in comparison with 2019 is presented in the following overview:

Healthcare

EBITDA pre¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Development of business free cash flow

In 2020, business free cash flow increased by 51.4% year-on-year to € 1,895 million (2019: € 1,252 million). This was primarily due to the higher EBITDA pre and the positive development of receivables compared with the previous year.

Healthcare

Business free cash flow¹

€ million	2020	2019	Change	
			€ million	%
EBITDA pre ¹	2,267	1,922	346	18.0%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	-448	-427	-22	5.1%
Changes in inventories	-20	-94	73	-78.2%
Changes in trade accounts receivable as well as receivables from royalties and licenses	170	-100	270	>100.0%
Lease payments ²	-47	-50	3	-5.5%
Elimination Allergopharma divestment	-26			
Business free cash flow¹	1,895	1,252	643	51.4%

¹ Not defined by International Financial Reporting Standards (IFRS).

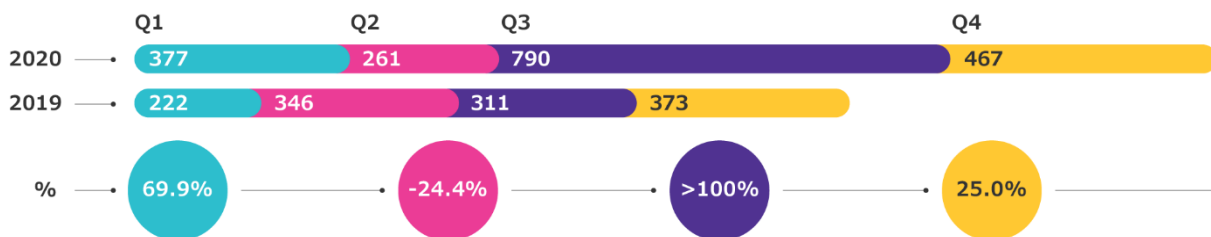
² Excluding payments for low-value leases and interest components included in lease payments.

The development of business free cash flow items in the individual quarters in comparison with 2019 is presented in the following overview:

Healthcare

Business free cash flow¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Life Science

Life Science

Key figures

€ million	2020	2019	Change	
			€ million	%
Net sales	7,515	6,864	651	9.5%
Operating result (EBIT) ¹	1,599	1,280	318	24.9%
Margin (% of net sales) ¹	21.3%	18.7%		
EBITDA ¹	2,387	2,070	317	15.3%
Margin (% of net sales) ¹	31.8%	30.2%		
EBITDA pre ¹	2,405	2,129	276	13.0%
Margin (% of net sales) ¹	32.0%	31.0%		
Business free cash flow¹	1,595	1,375	220	16.0%

¹ Not defined by International Financial Reporting Standards (IFRS).

Development of sales and results of operations

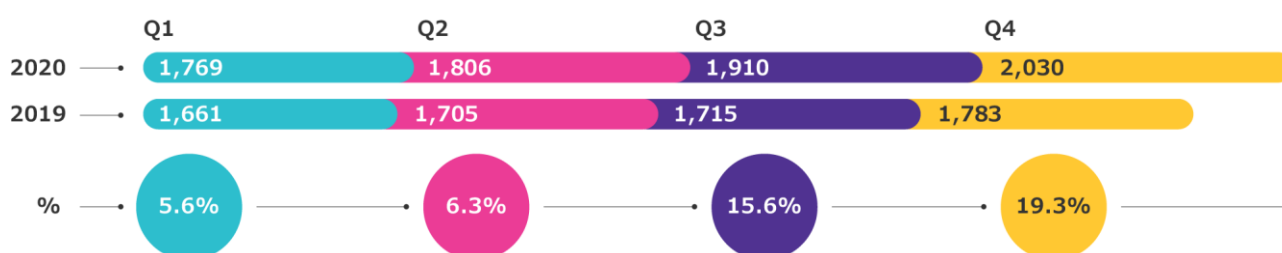
In fiscal 2020, Life Science posted organic sales growth of 11.8% with unfavorable foreign exchange impact of -2.3%, resulting in a total net sales growth of 9.5% compared to the previous year. All three business units contributed to the organic growth, with the largest contribution coming from Process Solutions followed by Research Solutions. Overall, Life Science net sales increased to € 7,515 million (2019: € 6,864 million).

The development of sales in the individual quarters in comparison with 2019 as well as the respective organic growth rates are presented in the following graph:

Life Science

Net sales and organic growth¹ by quarter²

€ million/organic growth in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Life Science

Net sales by business unit¹

€ million	2020	Share	Organic growth ²	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Process Solutions	3,596	48%	21.8%	-2.1%	-	19.8%	3,002	44%
Research Solutions	2,215	29%	4.6%	-2.5%	-	2.1%	2,170	31%
Applied Solutions	1,704	23%	3.3%	-2.6%	-	0.8%	1,692	25%
Life Science	7,515	100%	11.8%	-2.3%	-	9.5%	6,864	100%

¹ Previous year's figures have been adjusted due to internal realignment.

² Not defined by International Financial Accounting Standards (IFRS).

The Process Solutions business unit, which markets products and services for the pharmaceutical production value chain, generated organic sales growth of 21.8%, which was the highest rate within the Life Science business sector. The business experienced strong demand in both Covid-19 and non Covid-19 related product and service offerings. With an unfavorable foreign exchange rate effect of -2.1%, net sales amounted to € 3,596 million in fiscal 2020 (2019: € 3,002 million). The percentage contribution of the Process Solutions business unit to Life Science total net sales rose by 4 percentage points to 48%. All regions experienced double-digit organic sales growth within Process Solutions.

The Research Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology, and academic research laboratories, recorded an organic sales growth of 4.6% in 2020. This was due to a recovery of the base business in the second half of 2020 combined with some tailwind in Covid-19 demand. Amid an unfavorable foreign exchange rate effect of -2.5%, net sales totaled € 2,215 million in 2020 (2019: € 2,170 million). Research Solutions thus accounted for 29% of Life Science total net sales. The organic sales growth was reported in Asia-Pacific, North America and Europe.

The Applied Solutions business unit with its broad range of products for researchers as well as scientific and industrial laboratories, accounted for a 23% share of Life Science sales. Applied Solutions recorded an organic sales growth of 3.3% in 2020. The Applied Solutions product portfolio faced some slowdown in customer demand due to Covid-19 related lockdowns, in particular in the first half of 2020. With an unfavorable foreign exchange rate effect of -2.6%, sales totaled € 1,704 million in 2020 (2019: € 1,692 million). Applied Solutions saw organic sales growth in all regions apart from Middle East and Africa.

Net sales of the business sector by region developed as follows:

Life Science

Net sales by region

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Acquisitions/ divestments	Total change	2019	Share
Europe	2,583	35%	13.6%	-0.2%	-	13.4%	2,277	33%
North America	2,701	36%	11.6%	-2.4%	-	9.2%	2,474	36%
Asia-Pacific (APAC)	1,900	25%	11.5%	-2.5%	-	9.0%	1,743	26%
Latin America	241	3%	5.1%	-18.3%	-	-13.2%	278	4%
Middle East and Africa (MEA)	89	1%	-	-3.3%	-	-3.3%	92	1%
Life Science	7,515	100%	11.8%	-2.3%	-	9.5%	6,864	100%

¹ Not defined by International Financial Accounting Standards (IFRS).

The following table presents the composition of EBITDA pre for 2020 in comparison with 2019. The International Financial Reporting Standards (IFRS) figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Life Science

Reconciliation EBITDA pre¹

€ million	2020			2019			Change
	IFRS	Elimination of adjustments	Pre ¹	IFRS	Elimination of adjustments	Pre ¹	Pre ¹
Net sales	7,515	–	7,515	6,864	–	6,864	9.5%
Cost of sales	-3,215	5	-3,210	-2,962	5	-2,957	8.6%
Gross profit	4,300	5	4,305	3,903	5	3,908	10.2%
Marketing and selling expenses	-1,995	4	-1,992	-1,924	2	-1,922	3.6%
Administration expenses	-354	32	-322	-341	34	-307	4.6%
Research and development costs	-313	1	-312	-276	–	-276	13.1%
Impairment losses and reversals of impairment losses on financial assets (net)	-1	–	-1	-7	–	-7	-79.9%
Other operating income and expenses	-38	-21	-59	-75	19	-56	5.4%
Operating result (EBIT)¹	1,599			1,280			
Depreciation/amortization/impairment losses/reversals of impairment losses	789	-3	786	789	–	789	-0.4%
EBITDA¹	2,387			2,070			
Restructuring expenses	16	-16	–	13	-13	–	
Integration expenses/IT expenses	32	-32	–	36	-36	–	
Gains (-)/losses (+) on the divestment of businesses	–	–	–	9	-9	–	
Acquisition-related adjustments	-30	30	–	2	-2	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre¹	2,405	–	2,405	2,129	–	2,129	13.0%
of which: organic growth ¹							17.2%
of which: exchange rate effects							-3.8%
of which: acquisitions/divestments							-0.5%

¹ Not defined by International Financial Reporting Standards (IFRS).

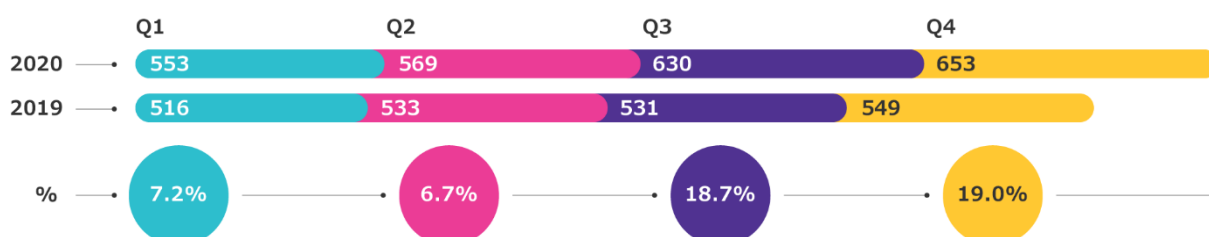
Adjusted gross profit increased by 10.2% to € 4,305 million (2019: € 3,908 million). The increase was mainly driven by the strong sales development. Marketing and selling expenses increased by 3.6% to € 1,992 million (2019: € 1,922 million), with higher logistics costs as the main driver. Administration expenses increased by 4.6% to € 322 million (2019: € 307 million) and research and development costs increased by 13.1% to € 312 million (2019: € 276 million). After eliminating adjustments, amortization, and depreciation, EBITDA pre rose by 13.0% to € 2,405 million (2019: € 2,129 million) reflecting the strong performance of the Life Science business. Organically, EBITDA pre increased by 17.2% in 2020. The result margin, i.e. EBITDA pre as a percentage of net sales, improved to 32.0% in 2020 (2019: 31.0%).

The development of EBITDA pre in the individual quarters in comparison with 2019 is presented in the following overview:

Life Science

EBITDA pre¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Development of business free cash flow

In 2020, Life Science generated business free cash flow which amounted to € 1,595 million (2019: € 1,375 million). This positive development was mainly driven by higher EBITDA pre as well as a decrease in inventories partly offset by increased capital spending.

Life Science

Business free cash flow¹

€ million	2020	2019	Change	
			€ million	%
EBITDA pre ¹	2,405	2,129	276	13.0%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	-693	-384	-309	80.4%
Changes in inventories	13	-232	246	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	-75	-81	6	-7.8%
Lease payments ²	-56	-56	-	-0.4%
Elimination first-time consolidation	-	1	-1	-100.0%
Business free cash flow¹	1,595	1,375	220	16.0%

¹ Not defined by International Financial Reporting Standards (IFRS).

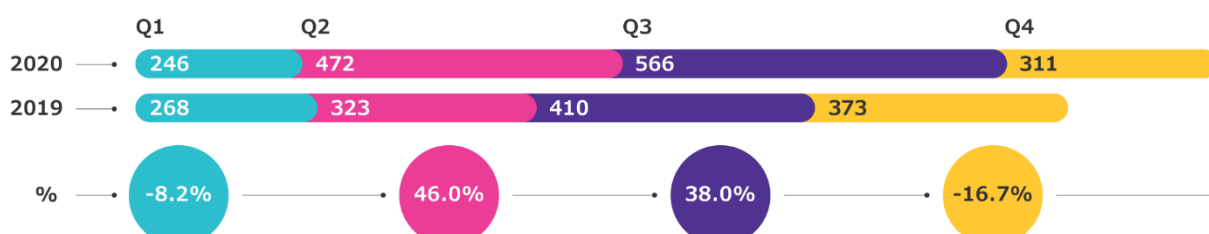
² Excluding payments for low-value leases and interest components included in lease payments.

The development of business free cash flow in the individual quarters in comparison with 2019 is presented in the following overview:

Life Science

Business free cash flow¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Performance Materials

Performance Materials

Key figures

€ million	2020	2019	Change	
			€ million	%
Net sales	3,380	2,574	807	31.3%
Operating result (EBIT) ¹	240	307	-67	-21.7%
Margin (% of net sales) ¹	7.1%	11.9%		
EBITDA ¹	925	637	288	45.2%
Margin (% of net sales) ¹	27.4%	24.8%		
EBITDA pre ¹	1,024	803	221	27.5%
Margin (% of net sales) ¹	30.3%	31.2%		
Business free cash flow¹	847	641	206	32.1%

¹ Not defined by International Financial Reporting Standards (IFRS).

Development of net sales and results of operations

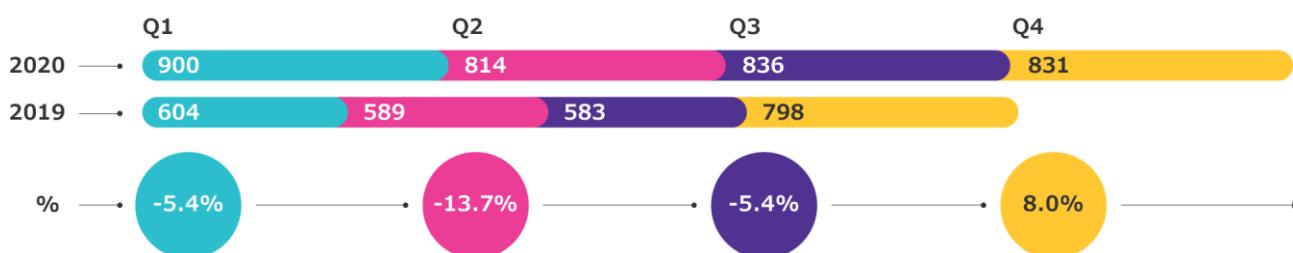
In 2020, net sales of the Performance Materials business sector increased 31.3% to € 3,380 million (2019: € 2,574 million). The acquisitions of Versum Materials and Intermolecular contributed 35.4% to the growth of Performance Materials, but an organic decline of -3.2% and a negative exchange rate impact of -0.9% partially offset the acquisition effects.

The net sales in the individual quarters as well as the respective organic growth rates in 2020 are presented in the following graph:

Performance Materials

Net sales and organic growth¹ by quarter²

€ million/organic growth in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

The Covid-19 pandemic caused a significant demand decrease in both Surface Solutions and Display Solutions in the second quarter of fiscal year 2020 and was a major factor for the organic sales growth development for fiscal year 2020.

The Semiconductor Solutions business unit was transformed through the acquisitions of Versum Materials and Intermolecular in the fourth quarter of 2019. As a result, the share of Performance Materials sales attributable to Semiconductor Solutions increased from 34% to 56%. Semiconductor Solutions now comprises two businesses, Semiconductor Materials and Delivery Systems & Services. Semiconductor Materials will continue to focus on the development and commercialization of material-based solutions for the semiconductor industry. Delivery Systems & Services focuses on developing and operating delivery systems for semiconductor manufacturers. Additionally, the unit offers services to support the equipment install base and safe handling of the specialty materials that flow through it. In Semiconductor Solutions, strong improvement in the underlying

semiconductor markets helped drive organic growth of 14.3% for fiscal 2020. The organic growth was broad based across nearly all of the Semiconductor Materials businesses. Exchange rates negatively impacted net sales by -1.5%. Total growth in Semiconductor Solutions was mainly attributable to the acquisitions of Versum Materials and Intermolecular in the fourth quarter of 2019.

The Display Solutions business unit, consisting mainly of the businesses with liquid crystals, photoresists for display applications as well as OLED materials, recorded a sales decrease of -11.7% for fiscal year 2020, which was in total organically driven. The Covid-19 pandemic had a considerable impact on the development of net sales in 2020.

Net sales of the Surface Solutions business unit decreased by a total of -15.4% in fiscal year 2020. An organic decline of -13.5% was due to Covid-19 pandemic-driven demand decreases in the automotive, industrial and cosmetic markets. Foreign exchange effects contributed a further decrease of -1.9%.

Performance Materials

Net sales by business unit¹

€ million	2020	Share	Organic growth ²	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Semiconductor Solutions	1,901	56%	14.3%	-1.5%	>100.0%	>100.0%	878	34%
Display Solutions	1,108	33%	-11.7%	-	-	-11.7%	1,256	49%
Surface Solutions	370	11%	-13.5%	-1.9%	-	-15.4%	438	17%
Other	1	-	-56.2%	0.1%	-	-56.1%	2	-
Performance Materials	3,380	100%	-3.2%	-0.9%	35.4%	31.3%	2,574	100%

¹ Previous year's figures have been adjusted due to internal realignment.

² Not defined by International Financial Accounting Standards (IFRS).

Net sales of the Performance Materials business sector by region developed as follows:

Performance Materials

Net sales by region

€ million	2020	Share	Organic growth ¹	Exchange rate effects	Acquisitions/divestments	Total change	2019	Share
Europe	250	8%	-5.9%	-0.4%	21.5%	15.2%	217	9%
North America	484	14%	2.2%	-3.1%	82.0%	81.2%	267	10%
Asia-Pacific (APAC)	2,582	76%	-3.6%	-0.4%	30.5%	26.5%	2,041	79%
Latin America	28	1%	0.2%	-15.3%	3.9%	-11.2%	32	1%
Middle East and Africa (MEA)	37	1%	-3.2%	-3.8%	>100.0%	>100.0%	17	1%
Performance Materials	3,380	100%	-3.2%	-0.9%	35.4%	31.3%	2,574	100%

¹ Not defined by International Financial Reporting Standards (IFRS).

The following table presents the composition of EBITDA pre for 2020 in comparison with 2019. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Performance Materials

Reconciliation EBITDA pre¹

€ million	2020			2019			Change
	IFRS	Elimination of adjustments	Pre ¹	IFRS	Elimination of adjustments	Pre ¹	Pre ¹
Net sales	3,380	–	3,380	2,574	–	2,574	31.3%
Cost of sales	-2,007	40	-1,966	-1,437	51	-1,386	41.9%
Gross profit	1,374	40	1,414	1,137	51	1,188	19.0%
Marketing and selling expenses	-539	9	-530	-329	6	-323	64.0%
Administration expenses	-162	17	-144	-118	11	-107	34.7%
Research and development costs	-274	2	-272	-267	26	-241	12.9%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating income and expenses	-160	154	-5	-116	80	-37	-85.3%
Operating result (EBIT)¹	240			307			
Depreciation/amortization/impairment losses/reversals of impairment losses	684	-123	561	330	-7	323	74.0%
EBITDA¹	925			637			
Restructuring expenses	31	-31	–	61	-61	–	
Integration expenses/IT expenses	47	-47	–	23	-23	–	
Gains (-)/losses (+) on the divestment of businesses	1	-1	–	–	–	–	
Acquisition-related adjustments	21	-21	–	82	-82	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre¹	1,024	–	1,024	803	–	803	27.5%
of which: organic growth ¹							-7.5%
of which: exchange rate effects							-1.3%
of which: acquisitions/divestments							36.3%

¹ Not defined by International Financial Reporting Standards (IFRS).

Adjusted gross profit of the Performance Materials business sector rose by 19.0% to € 1,414 million in fiscal 2020 (2019: € 1,188 million). The main driver for the increase was the acquisition of Versum Materials in the fourth quarter of 2019. The adjusted gross margin declined to 41.8% in 2020 (2019: 46.2%), primarily owing to the consolidation of the lower-margin Versum Materials business and the additional depreciation and amortization associated with acquisition accounting (purchase price allocation). Not including adjustments, the operating result (EBIT) decreased by € 67 million to € 240 million in 2020 (2019: € 307 million). The decrease was attributable to additional amortization and impairments partially offset by the additional EBIT provided by the Versum Materials acquisition.

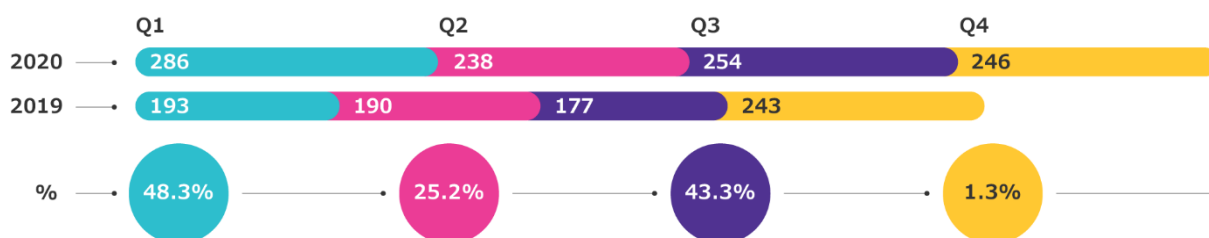
The rise in marketing and selling expenses, administrative expenses and research and development costs was due to the additional costs of the Versum Materials and Intermolecular organizations. The successful implementation of the “Bright Future” transformation program reduced the underlying research and development costs of the legacy business – excluding the increase associated with the acquisitions of Versum Materials and Intermolecular. EBITDA pre of the business sector grew by 27.5% to € 1,024 million (2019: € 803 million) as the additional EBITDA pre from the acquisitions (36.3%) more than offset the decline in organic EBITDA pre (-7.5%) and negative foreign exchange effects (-1.3%). At 30.3%, the EBITDA pre margin in 2020 was down from the prior-year figure (2019: 31.2%).

The development of EBITDA pre in the individual quarters in comparison with 2019 is presented in the following overview:

Performance Materials

EBITDA pre¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Development of business free cash flow

The business free cash flow of the Performance Materials business sector rose by € 206 million or 32.1% to € 847 million in 2020 (2019: € 641 million). Higher EBITDA pre from the acquisition of Versum Materials and lower inventories and receivables exceeded higher investments.

Performance Materials

Business free cash flow¹

€ million	2020	2019	Change	
			€ million	%
EBITDA pre ¹	1,024	803	221	27.5%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	-245	-158	-86	54.6%
Changes in inventories	55	-251	306	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	49	-88	137	>100.0%
Lease payments ²	-18	-11	-7	60.9%
Elimination first-time consolidations of Versum/Intermolecular	-19	346	-365	>100.0%
Business free cash flow¹	847	641	206	32.1%

¹ Not defined by International Financial Reporting Standards (IFRS).

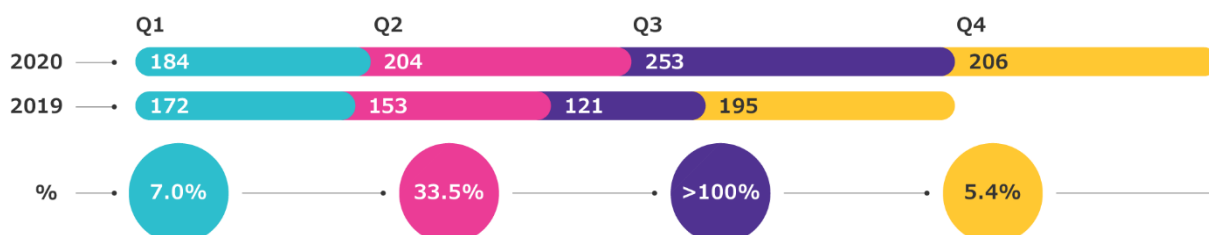
² Excluding payments for low-value leases and interest components included in lease payments.

The development of business free cash flow in the individual quarters in comparison with 2019 is presented in the following overview:

Performance Materials

Business free cash flow¹ and change by quarter²

€ million/change in %



¹ Not defined by International Financial Reporting Standards (IFRS).

² Quarterly breakdown unaudited.

Corporate and Other

Corporate and Other comprises administrative expenses for central Group functions that cannot be directly allocated to the business sectors, such as Finance, Procurement, Legal, Communications, and Human Resources. Corporate costs additionally encompass expenses for central, non-allocated IT functions, including expenses related to the expansion and harmonization of IT systems within the Group as well as research and development costs spanning business sectors.

Corporate and other

Key figures

€ million	2020	2019	Change	
			€ million	%
Operating result (EBIT) ¹	-658	-617	-41	6.6%
EBITDA ¹	-573	-537	-37	6.8%
EBITDA pre ¹	-495	-469	-26	5.5%
Business free cash flow ¹	-571	-536	-35	6.6%

¹ Not defined by International Financial Reporting Standards (IFRS).

After eliminating adjustments, administrative costs increased by 3.1% to € 311 million in fiscal 2020 (2019: € 302 million). Cross-business research and development costs amounting to € 62 million (2019: € 59 million), such as expenses for the Innovation Center, were allocated to Corporate. After eliminating adjustments, other operating expenses (net) increased to € -197 million (2019: € -167 million). After eliminating depreciation, amortization, and adjustments, EBITDA pre amounted to € -495 million in 2020 (2019: € -469 million). The increase in negative business free cash flow to € -571 million (2019: € -536 million) was largely due to the development of EBITDA pre.