Report on Economic Position

Macroeconomic and Sector-Specific Environment

According to the most recently available figures from the International Monetary Fund (IMF), the global economy faced rising growth expectations in 2018. Forecast growth in 2019 is expected to be slightly below the level of the two previous years. Although the global economy thus continues to expand, growth in the third quarter of 2018 fell short of expectations in a number of economies. Risks to global growth include, in particular, a further rise in trade barriers and the outflow of capital from emerging economies.

Expressed in figures, according to the latest IMF forecasts global gross domestic product (GDP) rose by 3.7% in 2018, equivalent to a slight decline in the growth rate in comparison with 2017 (3.8%). Strong regional differences and differences between industrial nations and emerging economies could be seen. Industrial nations registered a slight weakening of growth to 2.3% (2017: 2.4%). At 4.6% (2017: 4.7%), growth in the emerging economies and developing countries also declined slightly. The GDP of the United States, the world's largest economy, grew by 2.9% (2017: 2.2%). By contrast, the eurozone recorded a weakening of GDP growth to 1.8% (2017: 2.4%). The emerging economies of Asia registered stable growth of 6.5% (2017: 6.5%). As in 2017, India at 7.3% (2017: 6.7%) and China at 6.6% (2017: 6.9%) were the strongest growth drivers. In the industrialized countries of Asia, the GDP of Japan grew by 0.9% (2017: 1.7%) and that of Taiwan by 2.7% (2017: 2.9%). Korea registered growth of 2.8% (2017: 3.1%).

Organic sales growth of the Group was above the IMF's global growth expectations in 2018 and came to 6.1%. It was supported by all regions. Asia-Pacific accounted for the largest share of growth across the Group at around 42%, followed by Europe at 24.6%, North America at 20.2%, Latin America at 11.5% and the Middle East and Africa at 1.8%. Growth was driven primarily by the Healthcare and Life Science business sectors, while Performance Materials came in slightly above the 2017 figure. Growth in the Asia-Pacific region was supported by all business sectors. Healthcare and Life Science made a positive contribution in Europe as well as in the Latin America region. Growth in North America was principally the result of operations in the Life Science business sector.

	Development 2018[1]	Development 2017
Healthcare		
Global pharmaceutical market	4.8%	2.7%
Market for multiple sclerosis therapies[2]	2.6%	7.4%
Market for type 2 diabetes therapies[2]	9.7%	9.2%
Market for fertility treatment[2]	9.2%	7.4%
Market for the treatment of colorectal cancer[3]	5.1%	–0.7%
Life Science		
Market for laboratory products	3.6%	3.4%
Share of biopharmaceuticals in the global pharmaceutical market[2]	27.9%	25.9%
Performance Materials		
Growth of wafer area for semiconductor chips	7.6%	10.0%
Growth of LC display surface area[4]	8.6%	6.0%
Global sales of cosmetics and care products	3.3%	3.5%
Global automobile sales volumes	0.0%	2.2%

[1] Predicted development. Final development rates for 2018 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 2018. 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 the Group.
[3] Growth rates based on market data stated in U.S. dollars. Market data from EvaluatePharma on the growth of indications are based on published company reports and are subject to exchange rate fluctuations.
[4] Growth of display area is a pure volume indicator, which is counteracted by a negative price momentum.

HEALTHCARE

In the latest study published in October 2018 by the pharmaceutical market research firm IQVIA entitled “Market Prognosis 2018 – 2022”, the growth of the global pharmaceutical market for 2018 is quantified at 4.8%. By comparison, in 2017, sales growth was only 2.7%. As was already the case in 2017, the EMEA and Latin America regions were the main contributors to growth in 2018. North America also fueled growth. In the United States, growth accelerated substantially to 5.2% (2017: 1.4%). Latin America continued to see strong growth of 8.3% (2017: 8.0%). The EMEA region generated growth of 5.0% (2017: 3.6%). The Asia-Pacific region recorded a slight increase in growth to 3.2% (2017: 2.8%).

Not only the growth of the pharmaceutical sector as a whole, but also in particular the development of the biopharmaceutical market is relevant for our business. According to IQVIA, the market volume of biological pharmaceuticals was approximately € 249 billion in 2018. In recent years, the share of the global pharmaceutical market accounted for by these products has grown continuously and already amounted to 27.9% in 2018 (2017: 25.9%). Globally, the largest share, or 37.8%, was attributable to the U.S. market.

The developments in the therapeutic areas of relevance to the Group generally reflect robust growth, albeit with different trends. The market for the therapeutic area type 2 diabetes excluding the United States showed a positive trend with a growth rate of 9.7% (2017: 9.2%) and those for fertility and the treatment of colorectal cancer also saw positive growth rates of 9.2% (2017: 7.4%) and 5.1% (2017: –0.7%), respectively, whereas the market for multiple sclerosis patients registered a weakening of growth to 2.6% (2017: 7.4%).

LIFE SCIENCE

Our Life Science business sector is a leading supplier of products and services for both research and applied laboratory applications, as well as for formulating, purifying, manufacturing and quality-assuring drug therapies of chemical and biological origin.

According to the market research firm Frost & Sullivan, the laboratory product market relevant to Research Solutions and Applied Solutions achieved growth of 3.6% in 2018 (2017: 3.4%). Strong growth continued over the course of the year and was driven primarily by customers in the biopharmaceutical industry, specifically emerging biotech companies. The European market grew by 2.4% compared with the previous year (2017: 3.5%). The weakening of growth is attributable to continuing uncertainties, for example resulting from Brexit. The market in the United States grew by 4.2% (2017: 3.1%), driven by increased National Institutes of Health (NIH) funding and the tax reform. The emerging countries recorded higher growth rates, particularly in China and India. The Chinese market grew by 7.0% (2017: 7.8%). Although Chinese GDP growth is slowing down and the tariff and trade relationships have led to uncertainties in procurement, China remains interested in financing scientific tools and in product investments in the laboratory area, which are considered key priorities of the 13th Five-Year Plan. India generated growth of 8.2% (2017: 8.0%) with laboratory products, and is focusing more strongly on supporting academic and government research.

The demand for Process Solutions products depends heavily on the sales of biopharmaceutical companies with biologics as well as on the productivity of their research & development activities.

According to IQVIA, the market volume of biotechnological pharmaceuticals grew in 2018 to € 249 billion (equivalent to 27.9% of the global pharmaceutical market). Around 7,800 biotechnological drug candidates were in preclinical phase 2 of clinical development. In 2018, monoclonal antibodies accounted for around 25% of these drug candidates (2017: 23%). Biosimilars are a small, but fast-growing part of the pharmaceutical market. For 2018, annual sales of biosimilars were estimated at US$ 5.95 billion; this figure is expected to increase to US$ 23.63 billion by 2023.

PERFORMANCE MATERIALS

The semiconductor industry is the most important market for business with material for integrated circuits (IC Materials). The growth rates of the wafer area for semiconductor chips is independent of cyclical prices, for example for memory, and is a good indicator of demand for semiconductor materials. According to the global industry association SEMI, the area of delivered wafers rose by just under 8% in 2018, mainly thanks to consistently strong demand from consumers. Sales of semiconductor manufacturers, which have grown even more sharply, are affected by the price trend of DRAM and NAND memory chips.

With its Liquid Crystals business, the Group is the leading producer of liquid crystal mixtures for the display industry. The growth rates of display surfaces totaled on average around 7% in 2017 and 2018, according to surveys by market researchers at IHS DisplaySearch. This growth was mainly attributable to increasing average display size amid slightly declining sales volumes. Liquid crystals will continue to play a key role in the display industry in the future. OLED technology, for which the Group also ranks among the leading material suppliers, is gaining importance in the high-quality display sector.

The markets for automotive coatings and cosmetics are crucial to our Pigments business. As reported by IHS, global automobile sales in 2018 remained at the 2017 level. Only a few emerging economies recorded growth while Europe, North America and China showed a slightly negative trend after high 2017 figures. In the second half of 2018, in particular, economic relationships between the United States and China together with political uncertainties in Europe contributed to a weakening of demand. According to Statista, global sales of cosmetics and care products rose by approximately 3%.

Review of Forecast against Actual Business Developments

The forecast of the Group for fiscal 2018 published in the Annual Report for fiscal 2017 comprised the three business sectors of Healthcare, Life Science and Performance Materials. On September 5, 2017, our company had announced that it was examining strategic options for its Consumer Health business. This analysis had not been completed by the time the 2017 Annual Report was prepared, and as of December 31, 2017, the Executive Board concluded that a divestment of the Consumer Health business within twelve months was not regarded as highly likely. As a result, the forecast at the time included the Consumer Health business.

On April 19, 2018, we announced the signing of an agreement to divest our global consumer health business to Procter & Gamble (P&G) for around € 3.4 billion in cash. At the time, the transaction was expected to be signed at the end of the fourth quarter of 2018. Signing took place on November 30, 2018. In order to ensure the systematic continuation of the forecast from the 2017 Annual Report and assess the further development with respect to the Consumer Health business, we presented our forecast for the expected sales and earnings of the Group and our Healthcare business sector as of the first quarter of 2018 both with and without the Consumer Health business. In its report on the second quarter of 2018, the Consumer Health business was classified as a “discontinued operation” in accordance with IFRS 5. Consequently, the prior-year figures and the figures for the first quarter of 2018 were adjusted accordingly, as was our forecast. At the same time, the key drivers of the forecast – organic sales and EBITDA pre growth for the Group and for the business sectors together with their exchange rate effects in each case – remained unchanged.

Due to this portfolio change, the following analysis reflects the new structure of the Group: it takes the Consumer Health business into account as “discontinued operation”.

NET SALES

For 2018, we had forecast moderate organic net sales growth for the Group. In the second half of 2018, we recorded more dynamic sales growth in all business sectors than expected at the start of the year; this means that for 2018 as a whole we realized a strong organic rise in net sales of + 6.1%, thereby slightly exceeding our forecast.

Due to the emerging unfavorable development of the exchange rate between the euro and the U.S. dollar and various currencies in the growth markets at the start of the year, we anticipated a moderately negative exchange rate effect on our net sales. At the same time, we assumed that the charges would be greater in the first half than in the second half of 2018. This assessment was confirmed: the negative exchange rate effect in 2018 as a whole was – 3.9%. From the middle of 2018 onward a perceptible easing of the exchange rate between the euro and the U.S. dollar was observed, as expected, although a number of different currencies in the growth markets, particularly the Latin American currencies, showed a less favorable than expected development in the second half of 2018.

Healthcare

In 2018, our Healthcare business sector generated solid organic sales growth of + 5.2% (or € 324 million), thus meeting our forecast of moderate organic growth. Sales growth in 2018 was supported by the continuation of good organic sales growth in the General Medicine & Endocrinology and Fertility business units in our growth markets (€ 179 million) and the contribution to sales made by our newly approved products Bavencio® and Mavenclad®, which slightly exceeded our expectations. Both products together generated sales of € 160 million in 2018 and thus contributed € 138 million to organic sales growth.

Life Science

For our Life Science business sector, at the beginning of the year we had forecast solid organic sales growth, slightly above expected medium-term market growth of around + 4% per year. The business sector achieved very strong organic growth of + 8.8% in 2018. This means that it exceeded the top end of our forecast of between + 7% and + 8% that we had raised in our report on the third quarter of 2018, thanks to the very positive organic sales development in the fourth quarter of 2018. As expected, Process Solutions was the most dynamic business unit, delivering the largest contribution to organic sales growth within Life Science. As expected, Applied Solutions and Research Solutions also contributed positively to the organic sales performance, albeit to a significantly lesser extent than Process Solutions.

Performance Materials

Contrary to our original expectation of a slight to moderate decline in organic sales, the Performance Materials business sector generated a slight increase in organic sales of +1.7% in 2018. Since the third quarter of 2018, various capacity expansion projects by our customers in the display industry have prompted an increase in demand for our liquid crystal materials in the Display Solutions business unit. Prompted by this development and by sales growth of Semiconductor Solutions in line with our expectations, we raised our estimate of organic sales growth to between −1% and +1% in our report on the third quarter of 2018. This temporary upturn continued in the liquid crystal business in the fourth quarter of 2018, as a result of which organic sales growth of the Performance Materials business sector in 2018 slightly exceeded our updated forecast range, at +1.7%.

EBITDA PRE

For 2018 we expected a slight organic decline in EBITDA pre over the prior year for the Group. Furthermore, because of the difficult foreign exchange environment, we expected negative exchange rate effects to depress EBITDA pre by between −4% and −6% over the prior year. In 2018, EBITDA pre came to € 3,880 million, equivalent to a decrease of −10.5% compared with the prior year (2017: € 4,246 million). The organic decline of −1.6% entailed by this figure was in line with our forecast. By contrast, at −8.9% the foreign exchange effect on EBITDA pre in 2018 as a whole was substantially more negative than expected at the start of the year, although it was in line with the range of between −8% and −10% which we had adjusted in the course of our reporting on the third quarter of 2018. The expected advantageous development of the euro against the U.S. dollar in the second half of 2018 was more than offset by the continuing depreciation of various emerging market currencies versus the euro, particularly of the Latin American currencies. During this period in 2018, the Argentine peso and the Brazilian real performed significantly worse than we had expected at the start of the year.

Healthcare

For our Healthcare business sector we are forecasting a slight organic decrease in EBITDA pre over the prior year due to the continuing rise in research and development expenses to develop our pipeline, particularly in immuno-oncology, and the disappearance of exceptional income from the prior year and a slight decline in organic EBITDA pre over the prior year. In addition, we had expected moderately negative exchange rate effects. In 2018, EBITDA pre in Healthcare amounted to € 1,556 million (2017: € 1,773 million). This is equivalent to a decline of −12.2% over 2017; the organic drop of −1.6% corresponded to the forecast we issued at the start of the year. The exchange rate effects had a substantially greater negative impact than expected at the start of the year. As a result, in our reporting on the third quarter of 2018 we changed our forecast range to between −9% and −11% and closed out the year 2018 at −10.7%.

Life Science

For Life Science we had expected organic EBITDA pre growth to be similarly dynamic as in 2017 at around +8% due to the expected organic sales growth and continuing realization of synergies from the acquisition of Sigma-Aldrich, which remain on schedule. With € 1,840 million, the business sector delivered organic growth of +7.0% and was thus below the forecast range we had given at the beginning of the year. The exchange rate developments depressed EBITDA pre by −3.9% and thus corresponded to our forecast of a moderately negative exchange rate effect.

Performance Materials

Owing to the expected corrections in the Display Solutions business, we forecast an organic percentage decline in EBITDA pre for the Performance Materials business sector totaling a mid-teen percentage figure at the start of the year. For the exchange rate effects we moreover projected a moderately negative charge on EBITDA pre over 2017. For 2018 as a whole, Performance Materials achieved EBITDA pre of € 786 million. This corresponded to a drop of −19.8% over 2017, of which −12.9% was attributable to the organic business performance and a further −6.9% to exchange rate developments. Both key financial indicators were thus within the ranges we had indicated at the start of the year.

Corporate and Other

EBITDA pre of Corporate and Other, which reached a level of € −381 million in 2018, was within our forecast range of € −360 million to € −400 million that we specified at mid-year. Compared with the prior-year figure of € −292 million this corresponded to a rise in costs of 30.6%. This development was primarily attributable to losses from our currency hedging, which were higher in the second half of 2018 than had been expected at the start of the year. We did, however, reach the forecast we issued at the start of the year, which provided for an increase in expenses for Corporate and Other amounting to a low single-digit percentage figure.

BUSINESS FREE CASH FLOW

For 2018, we expected business free cash flow of the Group to see a low double-digit percentage decline. We met this forecast with a decrease of 21.4%. The Healthcare business sector reported a decline of 22.0% compared with the previous year, which was lower than the single-digit percentage fall we had forecast at the start of the year. This development was primarily attributable to the sale of the Consumer Health business, which had not yet been anticipated when the forecast was made at the start of the year. The transfer of the EBITDA pre of the divested business had a particularly significant impact. The business free cash flow of the Life Science business sector was more or less stable, declining by 0.7%. This is in line with the small percentage decrease we had forecast. For the Performance Materials business sector we anticipated a double-digit decline in 2018. The drop of 35.1% – essentially the result of lower EBITDA pre – thus corresponded to our expectations.

GROUP

	Net sales	EBITDA pre	Business free cash flow	EPS pre
Actual results 2017 in € million	14,517	4,246	3,193	€ 5.92
Forecast for 2018 in the 2017 Annual Report[1]	Moderate organic growth Moderately negative exchange rate effect	Slight organic decline Moderately negative foreign exchange effect of –4% to –6%	Low double-digit percentage decline	
Main comments	Moderate organic growth in Healthcare due to strong dynamics in growth markets as well as increasing sales of Mavenclad® and Bavencio® Solid organic growth in Life Science, slightly above expected market growth Slight to moderate organic decrease in Performance Materials owing to the ongoing adjustment processes in the Liquid Crystals business Negative foreign exchange effect, driven primarily by the exchange rate of the U.S. dollar and currencies of various growth markets	In Healthcare continued high investments in research and development as well as in marketing and sales; absence of positive one-time effects from the previous year Organic sales growth and continued realization of planned synergies from the integration of Sigma-Aldrich in Life Science Ongoing adjustment processes in the Liquid Crystals business that will not be offset despite the enhanced diversification of Performance Materials and active cost management Moderately negative foreign exchange effect, particularly owing to the development of the U.S. dollar and currencies of various growth markets	Lower EBITDA pre and investments in property, plant and equipment, as well as digitalization initiatives, higher inventories due to changes in the product mix and volume growth	
Forecasts for 2018 in the interim report:				
Q1/2018	Organic growth +3% to +5% Exchange rate effect –4% to –6% ~15,000 to 15,500 (excluding Consumer Health ~14,000 to 14,500)	Organic decline –1% to –3% vs. 2017 Exchange rate effect –5% to –7% ~3,950 to 4,150 (excluding Consumer Health ~3,750 to 4,000)	~2,460 to 2,770 (excluding Consumer Health ~2,310 to 2,620)	EPS pre € 5.30 to € 5.65 (excluding Consumer Health business € 5.00 to € 5.40)
Q2/2018	~14,100 to 14,600 Organic growth +3% to +5% vs. 2017 Moderately negative foreign exchange effect –3% to –5%	~3,750 to 4,000 Organic decline –1% to –3% vs. 2017 Exchange rate effect –5% to –7%	~2,380 to 2,670	€ 5.00 to € 5.40
Q3/2018	~14,400 to 14,800 Organic decline +4% to +6% vs. 2017 Moderately negative foreign exchange effect –3% to –5%	~3,700 to 3,900 Organic decline –1% to –3% vs. 2017 Exchange rate effect –8% to –10%	~2,340 to 2,630	€ 5.00 to € 5.30
Results 2018 in € million	14,836 (+2.2%: +6.1% Organic, 0.0% Portfolio, –3.9% Currency)	3,800 (–10.5%: –1.6% Organic, 0.0% Portfolio, –8.9% Currency)	2,508 –21.4%	5.10 –13.9%

[1] The 2018 forecast in the 2017 Annual Report included the Consumer Health business.
Figures in € million unless otherwise specified.

HEALTHCARE

	Net sales	EBITDA pre	Business free cash flow
Actual results 2017 in € million	6,190	1,773	1,314
Forecast for 2018 in the 2017 Annual Report[1]	Moderate organic growth Moderately negative exchange rate effect		Single-digit percentage decline
Main comments	Organic sales growth in growth markets will compensate for the organic decline in Rebif® sales, which is expected to be in the high single-digit percentage range Continued price pressure in Europe and also in the Asia-Pacific as well as Middle East and Africa regions Bavencio® and Mavenclad® will contribute visibly to sales growth Solid organic growth of our Consumer Health business Negative foreign exchange effect, driven primarily by the exchange rate of the U.S. dollar and currencies of various growth markets	Continued high investments in research and development as well as in marketing and sales; absence of positive one-time effects from the previous year Negative foreign exchange effect, particularly owing to the development of the U.S. dollar and currencies of various growth markets	Decline in EBITDA pre Increase in working capital due to product mix effects
Forecasts for 2018 in the interim report:			
Q1/2018	Moderate organic growth Moderately negative foreign exchange effect	Organic decline of −1% to −2% Exchange rate effect −5% to −7% ~1,770 to 1,830 (excluding Consumer Health ~1,580 to 1,650)	~1,140 to 1,240 (excluding Consumer Health ~1,000 to 1,080)
Q2/2018	Moderate organic growth +3% to +5% Moderately negative foreign exchange effect −4% to −6%	~1,580 to 1,650 Organic decline of −1% to −2% Exchange rate effect −5% to −7%	~1,060 to 1,140
Q3/2018	Solid organic growth +4% to +5% Moderately negative foreign exchange effect −4% to −6%	~1,540 to 1,600 Organic decline of −1% to −2% Significantly negative foreign exchange effect −9% to −11%	~1,030 to 1,110
Results 2018 in € million	6,246 (+0.9%: +5.2% Organic, 0.0% Portfolio, −4.3% Currency)	1,556 (−12.2%: −1.6% Organic, 0.0% Portfolio, −10.7% Currency)	1,025 −22.0%

[1] The 2018 forecast in the 2017 Annual Report included the Consumer Health business.
Figures in € million unless otherwise specified.

LIFE SCIENCE

	Net sales	EBITDA pre	Business free cash flow
Actual results 2017 in € million	5,882	1,786	1,402
Forecast for 2018 in the 2017 Annual Report[1]	Solid organic growth, slightly above expected market growth Moderately negative foreign exchange effect	Organic earnings growth with a similar dynamic as in 2017 Moderately negative foreign exchange effect	Slightly below the prior-year level
Main comments	Process Solutions is likely to remain the strongest growth driver, followed by Applied Solutions Research Solutions will also contribute positively to organic sales development, albeit to a smaller extent No significant portfolio effect from the acquisition of Natrix Separations Negative foreign exchange effect, particularly owing to the development of the U.S. dollar	Positive development resulting from expected sales growth Continuation of the planned realization of synergies from the Sigma-Aldrich acquisition Negative foreign exchange effect, particularly owing to the development of the U.S. dollar	Improved EBITDA pre Higher inventories reflect the expected sales growth and changed product mix
Forecasts for 2018 in the interim report:			
Q1/2018	Organic growth slightly above the medium-term market average of 4% p.a. Moderately negative foreign exchange effect	Organic growth at around the previous year's level of +8% Exchange rate effect −4% to −6% ~1,820 to 1,870	~1,310 to 1,400
Q2/2018	Organic growth of +5% to +6%, slightly above medium-term average market growth of 4% p.a. Moderately negative foreign exchange effect −3% to −5%	~1,830 to 1,880 Organic growth of around +8% Exchange rate effect −3% to −5%	~1,310 to 1,400
Q3/2018	Organic growth +7% to +8%, considerably above medium-term average market growth of 4% p.a. Moderately negative foreign exchange effect −3% to −5%	~1,830 to 1,880 Organic growth of around +8% Exchange rate effect −3% to −5%	~1,300 to 1,390
Results 2018 in € million	6,185 (+5.2%: +8.8% Organic, 0.0% Portfolio, −3.6% Currency)	1,840 (+3.0%: +7.0% Organic, 0.0% Portfolio, −3.9% Currency)	1,393 −0.7%

[1] The 2018 forecast in the 2017 Annual Report included the Consumer Health business.
Figures in € million unless otherwise specified.

PERFORMANCE MATERIALS

	Net sales	EBITDA pre	Business free cash flow
Actual results 2017 in € million	2,446	980	906
Forecast for 2018 in the 2017 Annual Report[1]	Organically slightly to moderately below the year-earlier level Moderately negative foreign exchange effect	Organic percentage decline in the mid teens range Moderately negative foreign exchange effect	Double-digit percentage decline
Main comments	Volume increase in all businesses; strong dynamics particularly in Advanced Technologies and IC Materials Market share adjustment and price decline in the Liquid Crystals business Negative exchange rate effect, especially due to the forecast development of the U.S. dollar and currencies in key Asian markets	The decline in market shares and prices in the Liquid Crystals business cannot be offset by growth of the other businesses and active cost management Negative foreign exchange effect, particularly owing to the development of the U.S. dollar and currencies in key Asian markets	Decline in EBITDA pre, sustained high investments in property, plant and equipment and higher inventory levels due to volume increases
Forecasts for 2018 in the interim report:			
Q1/2018	Slight to moderate organic decline Moderately negative foreign exchange effect	Organic decline −14% to −16% vs. 2017 Exchange rate effect −8% to −10% ~725 to 765	~480 to 550
Q2/2018	Slight to moderate organic decline −2% to −4% Moderately negative foreign exchange effect −3% to −5%	~745 to 785 Organic decline −14% to −16% Exchange rate effect −6% to −8%	~510 to 580
Q3/2018	Organic sales performance at the level of 2017, i.e. −1% to +1% Moderately negative foreign exchange effect −3% to −5%	~745 to 785 Organic decline −14% to −16% Exchange rate effect −6% to −8%	~510 to 580
Results 2018 in € million	2,406 (−1.7%: +1.7% Organic, 0.0% Portfolio, −3.4% Currency)	786 (−19.8%: −12.9% Organic, 0.0% Portfolio, −6.9% Currency)	588 −35.1%

[1] The 2018 forecast in the 2017 Annual Report included the Consumer Health business.
Figures in € million unless otherwise specified.

CORPORATE AND OTHER

	EBITDA pre	Business free cash flow
Actual results 2017 in € million	–292	–429
Forecast for 2018 in the 2017 Annual Report[1]	Low double-digit percentage increase	–
Main comments	The increase in costs is attributable to investments in innovation and digitalization initiatives; these costs were previously incurred in the business sectors and are now recorded centrally under Corporate and Other In contrast, expected currency hedging gains should have a compensating effect in 2018	
Forecasts for 2018 in the interim report:		
Q1/2018	~ –360 to –320	~ –490 to –440
Q2/2018	~ –400 to –360	~ –500 to –550
Q3/2018	~ –400 to –360	~ –500 to –450
Results 2018 in € million	–381 30.6%	–497 15.9%

[1] The 2018 forecast in the 2017 Annual Report included the Consumer Health business.
Figures in € million unless otherwise specified.

Course of Business and Economic Position

Group

Overview of 2018

- Group net sales increased to € 14.8 billion; strong organic growth (6.1%) was reduced by negative exchange rate effects (–3.9%)
- All business sectors contributed to the Group's organic sales growth
- EBITDA pre declined by –10.5% and came to € 3.8 billion (2017: € 4.2 billion)
- At 25.6% (2017: 29.3%), EBITDA pre margin of the Group did not achieve prior-year profitability
- Earnings per share pre declined to € 5.10 (2017: € 5.92)
- Decrease in business free cash flow to € 2.5 billion (2017: € 3.2 billion)
- Net financial liabilities reduced by –33.9% to € 6.7 billion (December 31, 2017: € 10.1 billion)

GROUP

Key figures[1]

€ million	2018	2017	Change € million	Change in %
Net sales	14,836	14,517	319	2.2%
Operating result (EBIT)[2]	1,727	2,423	–696	–28.7%
Margin (% of net sales)[2]	11.6%	16.7%		
EBITDA[2]	3,528	4,164	–636	–15.3%
Margin (% of net sales)[2]	23.8%	28.7%		
EBITDA pre[2]	3,800	4,246	–446	–10.5%
Margin (% of net sales)[2]	25.6%	29.3%		
Profit after tax	3,396	2,615	781	29.9%
Earnings per share (€)	7.76	5.99	1.77	29.5%
Earnings per share pre (€)[2]	5.10	5.92	–0.82	–13.9%
Business free cash flow[2]	2,508	3,193	–685	–21.4%

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

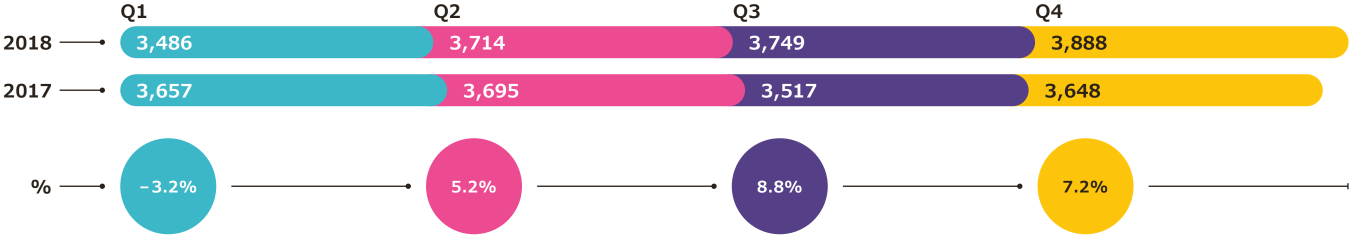
The presentation of net sales refers to the continuing business areas of the Group. Net sales of the Consumer Health business were no longer reported in Group sales, as this business was to be classified as a discontinued operation pursuant to IFRS 5. The prior-year periods were adjusted accordingly (further information on the sale of the Consumer Health business is included in Note (5) "Acquisitions and divestments" in the notes to the Note to the Consolidated Financial Statements.

In 2018, net sales of the Group increased by € 319 million or 2.2% to € 14,836 million (2017: € 14,517 million). This rise was attributable to organic sales growth of € 882 million, or 6.1%, to which all business sectors contributed. The stronger euro led to negative exchange rate effects of € –563 million or –3.9% in 2018, which affected all regions. In particular, this affected the regions North America due to the exchange rate development of the U.S. dollar, as well as Asia-Pacific as a result of negative exchange rate effects of the Chinese renminbi, the Korean won and the Taiwan dollar, and the region of Latin America.

The net sales in the individual quarters as well as the respective organic growth rates in 2018 are presented in the following graph:

GROUP

Net sales and organic growth[1] by quarter[2,3]
€ million/organic growth in %

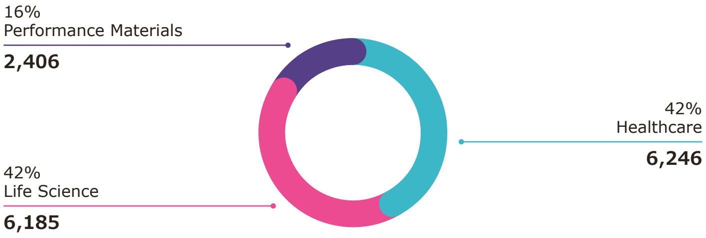


[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.
[3] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

Based on organic sales growth of 5.2%, net sales of the Healthcare business sector rose by € 56 million, or 0.9%, to € 6,246 million (2017: € 6,190 million). Healthcare therefore remained the strongest business sector in terms of sales with a share of 42% (2017: 43%) of Group sales. In 2018, the share of Group sales accounted for by Life Science increased by 2 percentage points to 42% (2017: 40%). With organic growth of 8.8% and a total increase in net sales of 5.2% to € 6,185 million (2017: € 5,882 million), the Life Science business sector recorded the sharpest rise in sales. Net sales of the Performance Materials business sector declined by –1.7% to € 2,406 million in 2018 (2017: € 2,446 million), as organic growth of 1.7% was more than offset by negative exchange rate effects of –3.4%. Performance Materials thus accounted for 16% (2017: 17%) of Group net sales.

GROUP

Net sales by business sector – 2018
€ million/% of net sales



GROUP

Net sales by business sector[1]

€ million	2018	Share	Organic growth[2]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Healthcare	6,246	42%	5.2%	–4.3%	–	0.9%	6,190	43%
Life Science	6,185	42%	8.8%	–3.6%	–	5.2%	5,882	40%
Performance Materials	2,406	16%	1.7%	–3.4%	–	–1.7%	2,446	17%
Group	**14,836**	**100%**	**6.1%**	**–3.9%**	**–**	**2.2%**	**14,517**	**100%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

In 2018, the Group recorded the following regional sales performance:

GROUP

Net sales by region[1]

€ million	2018	Share	Organic growth[2]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Europe	4,559	31%	4.9%	–1.5%	–	3.5%	4,406	30%
North America	3,818	26%	4.7%	–4.5%	–	0.2%	3,810	26%
Asia-Pacific (APAC)	4,965	33%	7.8%	–3.5%	–	4.3%	4,761	33%
Latin America	950	6%	10.2%	–14.8%	–	–4.6%	996	7%
Middle East and Africa (MEA)	544	4%	2.9%	–2.9%	–	–	544	4%
Group	**14,836**	**100%**	**6.1%**	**–3.9%**	**–**	**2.2%**	**14,517**	**100%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

The consolidated income statement of the Group is as follows:

GROUP

Consolidated Income Statement[1]

					Change	
€ million	2018	in %	2017	in %	€ million	in %
Net sales	**14,836**	**100.0%**	**14,517**	**100.0%**	**319**	**2.2%**
Cost of sales	–5,382	–36.3%	–5,071	–34.9%	–311	6.1%
Gross profit	**9,454**	**63.7%**	**9,446**	**65.1%**	**8**	**0.1%**
Marketing and selling expenses	–4,384	–29.5%	–4,349	–30.0%	–35	0.8%
Administration expenses	–993	–6.7%	–899	–6.2%	–95	10.5%
Research and development costs	–2,225	–15.0%	–2,108	–14.5%	–117	5.6%
Remaining operating expenses and income	–126	–0.8%	332	2.3%	–458	> 100.0%
Operating result (EBIT)[2]	**1,727**	**11.6%**	**2,423**	**16.7%**	**–696**	**–28.7%**
Financial result	–266	–1.8%	–294	–2.0%	28	–9.6%
Profit before income tax	**1,461**	**9.8%**	**2,129**	**14.7%**	**–668**	**–31.4%**
Income tax	–368	–2.5%	428	3.0%	–796	> 100.0%
Profit after tax from continuing operations	**1,093**	**7.4%**	**2,557**	**17.6%**	**–1,464**	**–57.3%**
Profit after tax from discontinued operation	**2,303**	**15.5%**	**57**	**0.4%**	**2,246**	**> 100.0%**
Profit after tax	**3,396**	**22.9%**	**2,615**	**18.0%**	**781**	**29.9%**
Non-controlling interests	–22	–0.2%	–10	–0.1%	–12	> 100.0%
Net income	**3,374**	**22.7%**	**2,605**	**17.9%**	**769**	**29.5%**

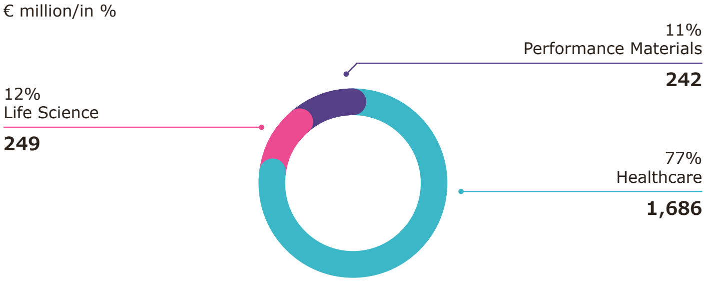
[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

In 2018, gross profit of the Group came to € 9,454 million and thus exceeded the 2017 figure of € 9,446 million only slightly. The positive development of this key indicator for the Life Science business sector, which generated an increase of € 169 million, was eaten up by declining profits in the other two business sectors. The gross margin of the Group, i.e. gross profit as a percentage of net sales, amounted to 63.7% (2017: 65.1%).

Group research and development costs rose by 5.6% to € 2,225 million and led to a research spending ratio (research and development costs as a percentage of net sales) of 15.0% (2017: 14.5%). Accounting for an unchanged 77% of Group R&D spending (2017: 77%), Healthcare remained the most research-intensive business sector of the Group.

GROUP

Research and development costs by business sector[1] – 2018
€ million/in %



[1] Not presented: Research and development costs of € 47 million allocated to Corporate and Other.

Other operating expenses and income showed an expense balance of € 126 million in 2018, after an income balance of € 332 million in 2017. This strong change was mainly due to developments in the Healthcare business sector (see explanations under "Healthcare"). In particular, the gain on the divestment of the Biosimilars business activities amounting to € 319 million had a positive effect in 2017. Detailed information about the development and composition of other operating expenses and income can be found in Note (12) "Other operating income", Note (13) "Other operating expenses" and Note (38) "Management of financial risks" in the Notes to the Consolidated Financial Statements.

The increase in provisions for obligations from long-term variable compensation programs (Long-Term Incentive Plan) negatively impacted the operating result in 2018; the increase in the intrinsic value of the Share Units of Merck KGaA, Darmstadt, Germany – depending on the fields of activity of the eligible participants – was reflected in the respective functional costs (see Note (26) "Other provisions").

The improvement in the negative financial result by € 28 million or 9.6% to € –266 million (2017: € –294 million) resulted mainly from higher interest income. Details with respect to the development of finance income and finance expenses of the Group are shown in Note (32) "Financial result/net profit and losses from financial instruments" in the Notes to the Consolidated Financial Statements.

Income tax expense came to € 368 million in 2018 and resulted in a tax ratio of 25.2%. The income balance of € 428 million in 2017 was due to one-time effects from deferred taxes in connection with the tax reform in the United States. Further information on income taxes are included in Note (14) "Income taxes" in the Notes to the Consolidated Financial Statements.

Profit after tax from discontinued operation of € 2,303 million (2017: € 57 million) included the Consumer Health business, which must be reported separately in the Group income statement pursuant to IFRS 5. In 2018, this profit figure also includes the gain on the divestment of the Consumer Health business amounting to € 2,244 million. Further information on the divestment of the Consumer Health business is found in Note (5) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements.

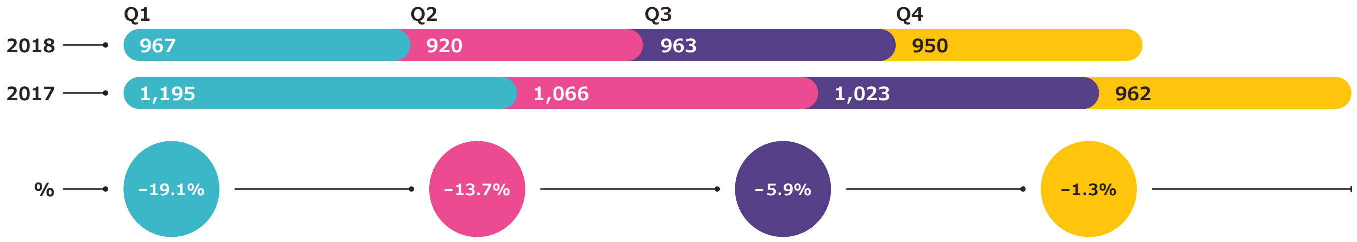
Thanks to the gain on the divestment of the Consumer Health business, in particular, net income rose by € 769 million to € 3,374 million (2017: € 2,605 million). In 2017, an exceptional tax income in connection with the tax reform in the United States of € 906 million boosted net income. Earnings per share increased accordingly to € 7.76 (2017: € 5.99).

EBITDA pre, the key financial indicator used to steer operating business, declined by € –446 million or –10.5% to € 3,800 million (2017: € 4,246 million). Unfavorable foreign exchange effects lowered EBITDA pre by –8.9%. Relative to net sales, the EBITDA pre margin was 25.6% in 2018 (2017: 29.3%). 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 2017 as well as the respective growth rates are presented in the following overview:

GROUP

EBITDA pre[1] and change by quarter[2,3]
€ million/change in %

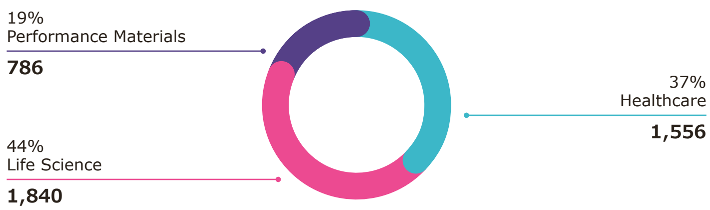


[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.
[3] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

The decrease in Group EBITDA pre was attributable to the Healthcare and Performance Materials business sectors. By contrast, in Life Science the good business development had a positive effect on this key figure. Consequently, at € 1,840 million (2017: € 1,786 million) the business sector for the first time generated the highest EBITDA pre of all the business sectors within the Group. This meant that the share of Group EBITDA pre accounted for by Life Science (not taking into account the € –381 million reduction due to Corporate and Other) rose to 44% (2017: 39%). EBITDA pre of Healthcare declined by –12.2% to € 1,556 million. The business sector thus contributed 37% (2017: 39%) to EBITDA pre for the Group. With an EBITDA pre of € 786 million (2017: € 980 million), the share of this Group key performance indicator attributable to Performance Materials decreased to 19% (2017: 22%).

GROUP

EBITDA pre[1] by business sector[2] – 2018
€ million/in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Not presented: Decline in Group EBITDA pre by € –381 million due to Corporate and Other.

GROUP

Balance sheet structure

	Dec. 31, 2018		Dec. 31, 2017		Change	
	€ million	in %	€ million	in %	€ million	in %
Non-current assets	**27,652**	**75.0%**	**28,166**	**79.1%**	**–513**	**–1.8%**
of which:						
Goodwill	13,764		13,582		183	
Other intangible assets	7,237		8,317		–1,080	
Property, plant and equipment	4,811		4,512		299	
Other non-current assets	1,840		1,755		85	
Current assets	**9,236**	**25.0%**	**7,455**	**20.9%**	**1,781**	**23.9%**
of which:						
Inventories	2,764		2,632		133	
Trade accounts receivable	2,931		2,923		8	
Current financial assets	24		90		–66	
Other current assets	1,345		1,221		124	
Cash and cash equivalents	2,170		589		1,582	
Total assets	**36,888**	**100.0%**	**35,621**	**100.0%**	**1,267**	**3.6%**
Equity	**17,233**	**46.7%**	**14,066**	**39.5%**	**3,167**	**22.5%**
Non-current liabilities	**11,138**	**30.2%**	**12,919**	**36.3%**	**–1,782**	**–13.8%**
of which:						
Provisions for pensions and other post-employment benefits	2,336		2,257		80	
Other non-current provisions	780		788		–7	
Non-current financial liabilities	6,681		8,033		–1,352	
Other non-current liabilities	1,340		1,842		–502	
Current liabilities	**8,517**	**23.1%**	**8,635**	**24.2%**	**–117**	**–1.4%**
of which:						
Current provisions[1]	600		457		143	
Current financial liabilities	2,215		2,790		–576	
Trade accounts payable/Refund liabilities	2,238		2,195		43	
Other current liabilities[1]	3,464		3,191		273	
Total equity and liabilities	**36,888**	**100.0%**	**35,621**	**100.0%**	**1,267**	**3.6%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

The total assets of the Group amounted to € 36,888 million as of December 31, 2018 (December 31, 2017: € 35,621 million), representing an increase of 3.6% or € 1,267 million. One main reason for this rise was the cash inflow from the sale of the Consumer Health business amounting to € 3,052 million. Details of this transaction and its impact on the consolidated balance sheet are included in Note (5) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements. Due to exchange rate developments, total assets rose by around € 0.8 billion. This development was primarily the result of the trend of the exchange rate between the euro and the U.S. dollar, which had an impact on intangible assets, in particular.

The rise in net working capital of 2.9% to € 3,486 million (2017: € 3,387 million) was mainly attributable to the slight build-up in inventories.

GROUP

Working capital[1]

€ million	Dec. 31, 2018	Dec. 31, 2017	Change € million	Change in %
Trade accounts receivable	2,931	2,923	8	0.3%
Receivables from royalties and licenses	29	28	1	1.8%
Inventories	2,764	2,632	133	5.0%
Trade accounts payable/Refund liabilities	–2,238	–2,195	–43	1.9%
Working capital[1]	**3,486**	**3,387**	**99**	**2.9%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

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

GROUP

Net financial debt[1]

€ million	Dec. 31, 2018	Dec. 31, 2017	Change € million	Change in %
Bonds and commercial papers	7,286	8,213	–927	–11.3%
Bank loans	620	1,653	–1,034	–62.5%
Liabilities to related parties	824	767	57	7.4%
Loans from third parties and other financial liabilities	72	73	–1	–1.4%
Liabilities from derivatives (financial transactions)	90	113	–23	–20.6%
Finance lease liabilities	4	4	–	11.4%
Financial liabilities	**8,896**	**10,823**	**–1,928**	**–17.8%**
less:				
Cash and cash equivalents	2,170	589	1,582	>100.0%
Current financial assets	24	90	–66	–72.9%
Net financial debt[1]	**6,701**	**10,144**	**–3,443**	**–33.9%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

GROUP

Reconciliation of net financial debt[1]

€ million	2018	2017
January 1	**10,144**	**11,513**
Currency translation	126	–429
Dividend payments to shareholders and to E. Merck KG, Darmstadt, Germany[2]	768	624
Acquisitions[2]	–	17
Payments from the disposal of assets held for sale and from other divestments[2]	–3,129	–167
Free cash flow[1]	–1,301	–1,433
Other	93	19
Dec. 31	**6,701**	**10,144**

[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] According to the consolidated cash flow statement.

In 2018, equity of the Group rose by 22.5% or € 3,167 million to € 17,233 million (December 31, 2017: € 14,066 million). The increase reflected mainly the strong profit after tax of € 3,396 million (2017: € 2,615 million). In addition, the currency translation of foreign currency assets to the reporting currency (euro) had a positive effect. Dividend payments and the profit transfer to E. Merck KG, Darmstadt, Germany, reduced consolidated net equity accordingly (see "Consolidated Statement of Comprehensive Income" and "Consolidated Statement of Changes in Net Equity" in the Consolidated Financial Statements). The increase in equity led to an improvement in the equity ratio by 7 percentage points to 46.7% (December 31, 2017: 39.5%).

The composition of free cash flow as well as the development of the relevant items are presented in the following table:

GROUP

Free cash flow[1]

€ million	2018	2017	Change € million	Change in %
Cash flow from operating activities according to the cash flow statement	2,219	2,696	–477	–17.7%
Payments for investments in intangible assets	–106	–392	286	–72.9%
Payments from the disposal of intangible assets	67	4	62	> 100.0%
Payments for investments in property, plant and equipment	–910	–919	9	–0.9%
Payments from the disposal of property, plant and equipment	31	44	–12	–28.0%
Free cash flow[1]	**1,301**	**1,433**	**–132**	**–9.2%**

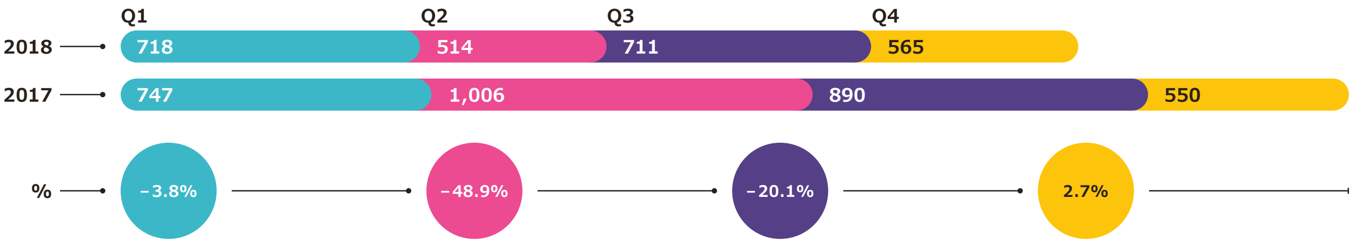
[1] Not defined by International Financial Reporting Standards (IFRSs).

Business free cash flow of the Group declined to € 2,508 million in 2018 (2017: € 3,193 million). This development was primarily due to the lower EBITDA pre, the increase in inventories and higher receivables as of the 2018 balance sheet date. The composition of this financial indicator is presented under "Internal Management System".

The distribution of business free cash flow across the individual quarters and the percentage changes in comparison with 2017 were as follows:

GROUP

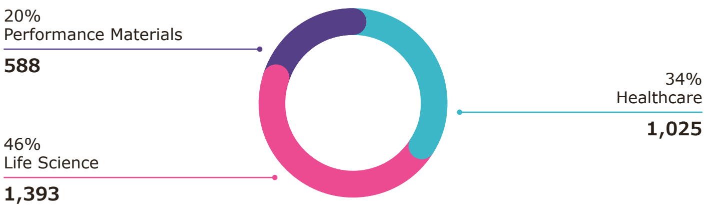
Business free cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

GROUP

Business free cash flow[1] by business sector[2] – 2018
€ million/in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Not presented: Decline in Group business free cash flow by € –497 million due to Corporate and Other.

The contributions of the operating business sectors to business free cash flow of the Group in 2018 developed as follows: Life Science generated business free cash flow amounting to € 1,393 million (2017: € 1,402 million). Consequently, with a 46% share (2017: 39%) of Group business free cash flow (excluding the decline of € –497 million due to Corporate and Other), Life Science was the business sector with the highest cash inflows. In 2018, the Healthcare business sector showed a decline of 22.0% to € 1,025 million (2017: € 1,314 million), thus contributing a share of 34% to Group business free cash flow (2017: 36%). With business free cash flow of € 588 million (2017: € 906 million), Performance Materials contributed 20% (2017: 25%) to this Group key performance indicator.

The investments in property, plant, equipment and software as well as advance payments for intangible assets included in the calculation of business free cash flow decreased in 2018 by –7.9% to € 932 million (2017: € 1,012 million). The investments in property, plant and equipment included therein amounted to € 890 million in 2018 (2017: € 936 million), of which € 480 million (2017: € 438 million) was attributable to strategic investment projects each with a project volume of more than € 2 million; the remainder was attributable to smaller investment projects.

Strategic investments made in 2018 included € 161 million (2017: € 212 million) to expand the Darmstadt site, of which the Healthcare business sector invested € 68 million, among other things in a new packaging center (€ 29 million).

Outside Germany, high levels of strategic investments were made particularly in China (€ 70 million) and the United States (€ 67 million). In China, the Healthcare business sector invested € 15 million in new production facilities and € 17 million in a new logistics center; the Life Science business sector invested € 29 million in new production facilities in China. In the United States, Life Science invested € 51 million, of which € 26 million in the expansion of the Sheboygan site in Wisconsin.

Our credit ratings from the independent rating agencies did not change in 2018. Our company 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

in %		**Dec. 31, 2018**	Dec. 31, 2017	Dec. 31, 2016	Dec. 31, 2015	Dec. 31, 2014
Equity ratio[1]	Equity / Total assets	46.7%	39.5%	36.7%	33.8%	45.4%
Asset ratio[1]	Non-current assets / Total assets	75.0%	79.1%	80.0%	80.7%	59.7%
Asset coverage[1]	Equity / Non-current assets	62.3%	49.9%	45.9%	41.8%	76.0%
Finance structure[1]	Current liabilities / Liabilities (total)	43.3%	40.1%	37.5%	37.2%	46.5%

[1] Not defined by International Financial Reporting Standards (IFRSs).

OVERALL ASSESSMENT OF BUSINESS PERFORMANCE AND ECONOMIC SITUATION

2018 was a year of transition for our company in terms of the operating business activities of the Group. We generated solid results amid a challenging market environment. At the same time, important strategic decisions were made to allow us to generate profitable growth again in the future. The financial targets that we had set ourselves for 2018 were achieved. Satisfying organic growth of 6.1% enabled Group net sales to increase to € 14,836 million (2017: € 14,517 million). In 2018, EBITDA pre amounted to € 3,800 million (2017: € 4,246 million) and recorded an organic decline of –1.6% over the prior year.

Our Healthcare business sector benefited from the approval of Bavencio® and Mavenclad® in 2017. The steady further development and optimum use of our promising pipeline remains a high priority. In 2018, we also pushed ahead with the forming of alliances for selected active substances, such as the collaboration agreement with the SFJ Pharmaceuticals Group to develop abituzumab. The disposal of the Consumer Health business was successfully completed in 2018. The cash inflow it generated helped reduce net debt substantially and thereby strengthen our financial flexibility. As a result, despite investment activity remaining strong, we reduced our net financial debt by € –3,443 million to € 6,701 million (2017: € 10,144 million).

Net sales in Life Science showed a very strong performance in 2018. Following the integration of Sigma-Aldrich, which we completed in 2018, and our growth initiatives we are well-equipped for the future.

Our Performance Materials business sector launched the “Bright Future” transformation program in 2018 in order to pave the way for future growth.

Our key balance sheet figures showed a further improvement in 2018. For instance, the equity ratio rose by 7 percentage points to 46.7% (2017: 39.5%) and has thus reached a very good level. We will continue to assign high priority to the planned reduction of our financial liabilities. In 2018, there were no changes to our credit ratings by the independent rating agencies Standard & Poor’s (A with a stable outlook), Moody’s (Baa1 with a stable outlook) and Scope (A– with a stable outlook).

The economic position and business development of the Group can be assessed positively overall. A foundation has been laid for profitable organic growth going forward. We are seeking to help shape the important technological developments for our business sectors and take optimum advantage of the opportunities this creates.

Healthcare

HEALTHCARE

Key figures[1]

€ million	2018	2017	Change € million	Change in %
Net sales	6,246	6,190	56	0.9%
Operating result (EBIT)[2]	731	1,337	–605	–45.3%
Margin (% of net sales)[2]	11.7%	21.6%		
EBITDA[2]	1,492	2,028	–536	–26.4%
Margin (% of net sales)[2]	23.9%	32.8%		
EBITDA pre[2]	1,556	1,773	–217	–12.2%
Margin (% of net sales)[2]	24.9%	28.6%		
Business free cash flow[2]	1,025	1,314	–289	–22.0%

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

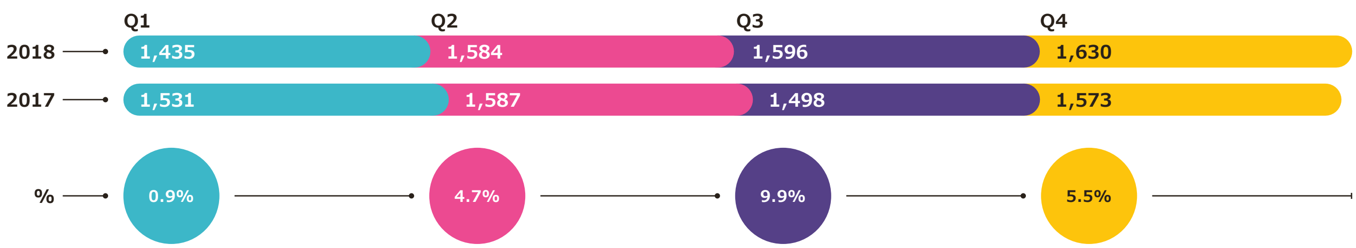
DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2018, generated organic sales growth of 5.2%. After negative foreign exchange effects of –4.3%, net sales rose to € 6,246 million (2017: € 6,190 million). The foreign exchange effect resulted essentially from the development of the U.S. dollar, the Turkish lira, the Russian ruble and a number of Latin American currencies.

The net sales in the individual quarters as well as the respective organic growth rates in 2018 are presented in the following graph:

HEALTHCARE

Net sales and organic growth[1] by quarter[2,3]
€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.
[3] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

Net sales of the key product lines and products developed as follows in 2018:

HEALTHCARE

Net sales by major product lines/products[1]

€ million	2018	Share	Organic growth[2]	Exchange rate effects	Total change	2017	Share
Oncology	**944**	**15%**	**4.2%**	**–4.5%**	**–0.3%**	**946**	**15%**
of which: Erbitux®	816	13%	0.4%	–4.8%	–4.3%	853	14%
of which: Bavencio®	69	1%	>100.0%	–10.8%	>100.0%	21	0%
Neurology & Immunology	**1,529**	**24%**	**–1.1%**	**–4.2%**	**–5.4%**	**1,616**	**26%**
of which: Rebif®	1,438	23%	–6.5%	–4.1%	–10.7%	1,611	26%
of which: Mavenclad®	90	1%	>100.0%	–33.3%	>100.0%	5	0%
Fertility	**1,162**	**19%**	**11.1%**	**–5.0%**	**6.2%**	**1,094**	**18%**
of which: Gonal-f®	708	11%	5.3%	–4.8%	0.5%	704	11%
General Medicine & Endocrinology	**2,341**	**38%**	**5.8%**	**–4.4%**	**1.5%**	**2,308**	**37%**
of which: Glucophage®	733	12%	15.1%	–4.4%	10.7%	662	11%
of which: Concor®	475	8%	11.2%	–4.5%	6.7%	444	7%
of which: Euthyrox®	363	6%	1.9%	–3.8%	–1.9%	370	6%
of which: Saizen®	234	4%	–3.1%	–6.3%	–9.4%	259	4%
Other	**270**	**4%**				**226**	**4%**
Healthcare	**6,246**	**100%**	**5.2%**	**–4.3%**	**0.9%**	**6,190**	**100%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

Sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw an organic sales decline of –6.5% in 2018. Including negative exchange rate effects of –4.1%, sales of € 1,438 million were recorded (2017: € 1,611 million). Sales in the biggest market, North America, declined by –5.0% in organic terms due to the persistently difficult competitive situation in the interferons market. A price increase made in February 2018 only partly offset this development. Consequently, sales in North America fell to € 920 million (2017: € 1,012 million). Competitive pressure in Europe was responsible for the organic sales decline of –11.7%. Taking into account slightly negative exchange rate effects, sales came to € 395 million (2017: € 456 million). The sales declines in the other regions, which generated total Rebif® sales of € 123 million (2017: € 142 million), were primarily due to negative exchange rate developments.

Sales of the oncology drug Erbitux® were stable in organic terms, and after negative exchange rate effects of –4.8%, sales decreased to € 816 million (2017: € 853 million). The negative organic development in Europe of –0.8% was the result of the difficult competitive setting and some price reductions. Erbitux® sales in the European market amounted to € 437 million (2017: € 447 million). Net sales of the oncology drug in the Asia-Pacific region were stable in organic terms (–0.3%). The drop in sales to € 255 million (2017: € 263 million) was attributable to negative exchange rate effects. Organic growth in Latin America was more than offset by very strong, negative foreign exchange rate effects, leading to a decline in sales to € 71 million (2017: € 87 million). In the Middle East and Africa, organic sales were at last year's level at € 54 million (2017: € 56 million).

HEALTHCARE

Sales and organic growth[1] of Rebif® and Erbitux® by region – 2018

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	1,438	395	920	12	48	62
	Organic growth[1] in %	–6.5%	–11.7%	–5.0%	–10.2%	–3.5%	4.3%
	% of sales	100%	28%	64%	1%	3%	4%
Erbitux®	€ million	816	437	–	255	71	54
	Organic growth[1] in %	0.4%	–0.8%	–	–0.3%	8.7%	0.1%
	% of sales	100%	53%	–	31%	9%	7%

[1] Not defined by International Financial Reporting Standards (IFRSs).

With the product Mavenclad®, a medicine for the oral short-course treatment of highly active relapsing multiple sclerosis, sales of € 90 million were generated in 2018 (2017: € 5 million). The product was approved in Europe in August 2017. Sales of Bavencio®, an immuno-oncology medicine, increased to € 69 million (2017: € 21 million).

Gonal-f®, the leading recombinant hormone used in the treatment of infertility, generated organic growth of 5.3%, to which the trend in the North America region, in particular, contributed with double-digit organic growth rates. Taking into account currency headwinds of –4.8%, global sales amounted to € 708 million (2017: € 704 million). The other products from the fertility portfolio also contributed to the increase in net sales with double-digit organic growth rates across all regions.

The General Medicine & Endocrinology franchise (including CardioMetabolic Care), which commercializes products to treat cardiovascular diseases, thyroid disorders, diabetes and growth disorders, among other things, generated organic growth of 5.8%. After negative foreign exchange effects of –4.4%, net sales rose to € 2,341 million (2017: € 2,308 million). Diabetes drug Glucophage®, the best-selling product in this area, made a significant contribution to this development with organic growth of 15.1%. While all regions reported positive growth, the Asia-Pacific region was the main driver of higher Glucophage® sales. A negative exchange rate effect of –4.4% reduced growth and resulted in total sales of € 733 million (2017: € 662 million). Double-digit organic growth rates (11.2%) were also achieved with beta-blocker Concor®. Despite adverse exchange rate effects (–4.5%), net sales of this medicine increased to € 475 million (2017: € 445 million). All regions contributed to this gratifying organic development, primarily Europe and Asia-Pacific. Euthyrox®, a medicine to treat thyroid disorders, recorded organic growth of 1.9%. However, this was not able to offset the exchange rate effect (–3.8%). As a result, sales at € 363 million fell slightly short of the prior-year figure (2017: € 370 million). Saizen®, the top-selling product in the Endocrinology franchise, generated sales of € 234 million (2017: € 259 million).

Net sales of the Healthcare business sector by region in 2018 developed as follows:

HEALTHCARE

Net sales by region[1]

€ million	2018	Share	Organic growth[2]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Europe	2,203	35%	4.6%	–2.2%	–	2.4%	2,152	35%
North America	1,432	23%	0.1%	–4.2%	–	–4.1%	1,494	24%
Asia-Pacific (APAC)	1,501	24%	8.7%	–3.1%	–	5.6%	1,421	23%
Latin America	661	11%	10.9%	–14.5%	–	–3.7%	687	11%
Middle East and Africa (MEA)	448	7%	5.9%	–3.2%	–	2.8%	436	7%
Healthcare	**6,246**	**100%**	**5.2%**	**–4.3%**	**–**	**0.9%**	**6,190**	**100%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

The results of operations developed as follows:

HEALTHCARE

Results of operations[1]

€ million	2018	in %	2017	in %	Change € million	Change in %
Net sales	**6,246**	**100.0%**	**6,190**	**100.0%**	**56**	**0.9%**
Cost of sales	–1,425	–22.8%	–1,340	–21.6%	–85	6.4%
Gross profit	**4,820**	**77.2%**	**4,850**	**78.4%**	**–30**	**–0.6%**
Marketing and selling expenses	–2,339	–37.4%	–2,373	–38.3%	34	–1.4%
Administration expenses	–301	–4.8%	–271	–4.4%	–30	11.0%
Research and development costs	–1,686	–27.0%	–1,600	–25.8%	–86	5.4%
Remaining operating expenses and income	237	3.8%	731	11.8%	–494	–67.6%
Operating result (EBIT)[2]	**731**	**11.7%**	**1,337**	**21.6%**	**–605**	**–45.3%**
Depreciation/amortization/impairment losses/reversals of impairment losses	761	12.2%	691	11.2%	69	10.0%
(of which: adjustments)	*(11)*		*(–51)*		*(63)*	*(>100%)*
EBITDA[2]	**1,492**	**23.9%**	**2,028**	**32.8%**	**–536**	**–26.4%**
Restructuring expenses	12		17		–5	–31.9%
Integration expenses/IT expenses	18		27		–9	–34.5%
Gains (–)/losses (+) on the divestment of businesses	26		–316		342	>100%
Acquisition-related adjustments	–		–		–	–
Other adjustments	8		16		–8	–51.0%
EBITDA pre[2]	**1,556**	**24.9%**	**1,773**	**28.6%**	**–217**	**–12.2%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

Gross profit of the Healthcare business sector was weighed down by foreign exchange rate effects in 2018. At € 4,820 million (2017: € 4,850 million) it remained flat, resulting in a gross margin of 77.2% (2017: 78.4%).

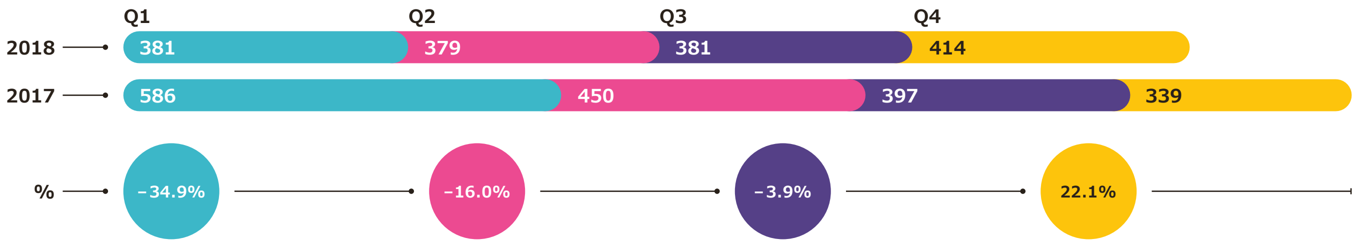
The decrease in marketing and selling expenses was due mainly to foreign exchange effects. Research and development costs reflected continued investments in the Biopharma development pipeline and amounted to € 1,686 million (2017: € 1,600 million). The decline in other operating expenses and income was due to multiple factors in both 2018 and 2017. Thus the 2017 figure included the gain on the divestment of the Biosimilars business amounting to € 319 million, which was adjusted when calculating EBITDA pre. The previous year's figures also included milestone payments for the approval of Bavencio® (€ 124 million) as well as income from an agreement on a one-time payment for future license payments (€ 116 million). The year 2018 included receipt of a milestone payment of € 50 million from BioMarin Pharmaceutical Inc., United States, in connection with the sale of PALYNZIQ® (Peg-Pal) in 2016. Moreover, income from license agreements and from the transfer of rights had a positive effect on the fourth quarter of 2018. The following impairments and reversals of impairment losses were also included in remaining other expenses and income. In 2017, the reversals of impairment losses on the intangible asset for cladribine of € 17 million as a result of the marketing authorization of Mavenclad® had boosted other operating expenses. In 2018, a reduction in the fair value of contingent consideration from the sale of the Biosimilars business led to expenses of € –27 million.

After eliminating depreciation, amortization, impairments and reversals of impairment losses as well as adjustments, EBITDA pre decreased by –12.2% to € 1,556 million (2017: € 1,773 million) in 2018. Negative foreign exchange effects of –10.7% had a material effect on the development of this key figure. The EBITDA pre margin relative to sales came to 24.9% (2017: 28.6%).

The development of EBITDA pre in the individual quarters in comparison with 2017 is presented in the following overview:

HEALTHCARE

EBITDA pre[1] and change by quarter[2,3]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.
[3] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In 2018, business free cash flow amounted to € 1,025 million (2017: € 1,314 million). The decline was primarily attributable to lower EBITDA pre and a rise in receivables.

HEALTHCARE

Business free cash flow[1,2]

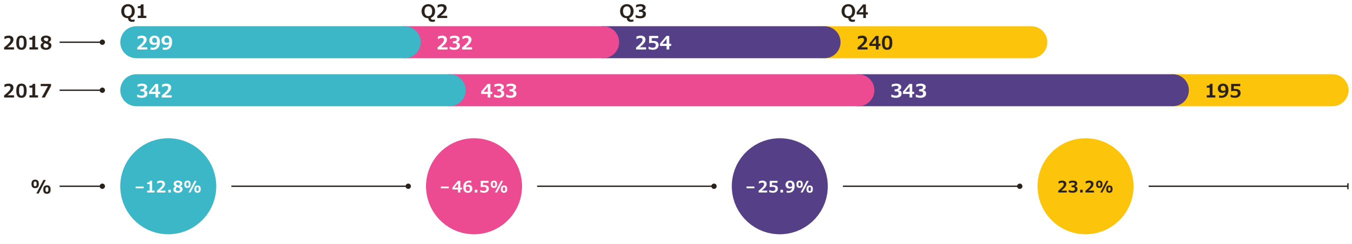
€ million	2018	2017	Change € million	Change in %
EBITDA pre[2]	1,556	1,773	−217	−12.2%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	−395	−375	−19	5.2%
Changes in inventories	−55	−34	−21	63.1%
Changes in trade accounts receivable as well as receivables from royalties and licenses	−81	−49	−32	64.6%
Business free cash flow[2]	**1,025**	**1,314**	**−289**	**−22.0%**

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

The development of business free cash flow items in the individual quarters in comparison with 2017 is presented in the following overview:

HEALTHCARE

Business free cash flow[1] and change by quarter[2,3]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.
[3] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.

Life Science

LIFE SCIENCE

Key figures

€ million	2018	2017	Change	
			€ million	in %
Net sales	6,185	5,882	304	5.2%
Operating result (EBIT)[1]	1,036	834	202	24.2%
Margin (% of net sales)[1]	16.7%	14.2%		
EBITDA[1]	1,755	1,580	175	11.1%
Margin (% of net sales)[1]	28.4%	26.9%		
EBITDA pre[1]	1,840	1,786	54	3.0%
Margin (% of net sales)[1]	29.8%	30.4%		
Business free cash flow[1]	1,393	1,402	–9	–0.7%

[1] Not defined by International Financial Reporting Standards (IFRSs).

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2018, Life Science posted organic sales growth of 8.8%, partially offset by negative foreign exchange effects of –3.6%. Net sales rose overall by 5.2% to € 6,185 million (2017: € 5,882 million).

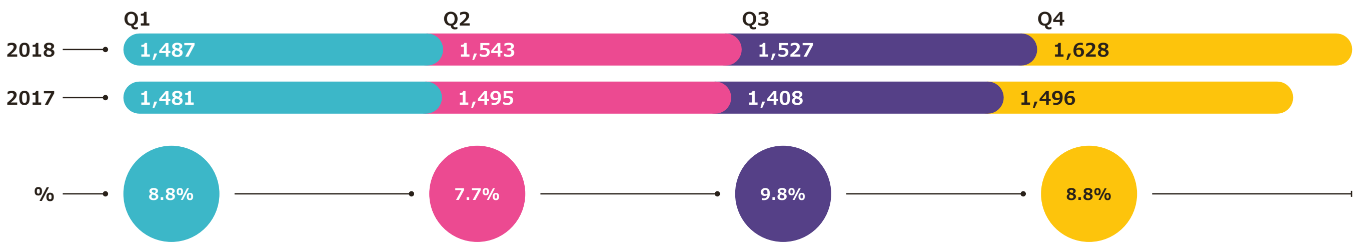
All three business units of the business sector contributed favorably to the organic sales growth of Life Science. Process Solutions generated double-digit organic sales growth of 14.8%, attributable to high demand across the portfolio and was thus again the business sector's main growth driver in 2018. Applied Solutions continued to perform very well, posting organic growth of 6.3% and the Research Solutions business unit reported an organic sales increase of 4.1%.

The development of sales in the individual quarters in comparison with 2017 as well as the respective organic growth rates are presented in the following graph:

LIFE SCIENCE

Net sales and organic growth[1] by quarter[2]

€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

LIFE SCIENCE

Net sales by business unit[1]

€ million	2018	Share	Organic growth[2]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Process Solutions	2,487	40%	14.8%	–3.5%	–	11.3%	2,234	38%
Research Solutions	2,048	33%	4.1%	–3.6%	–	0.5%	2,038	35%
Applied Solutions	1,650	27%	6.3%	–3.8%	–	2.5%	1,609	27%
Life Science	**6,185**	**100%**	**8.8%**	**–3.6%**	**–**	**5.2%**	**5,882**	**100%**

[1] Previous year's figures have been adjusted due to an internal realignment.
[2] Not defined by International Financial Reporting Standards (IFRSs).

The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, generated double-digit growth of 14.8% and net sales of € 2,487 million (2017: € 2,234 million) in 2018. This means that Process Solutions accounted for 40% (2017: 38%) of Life Science net sales. All business areas of Process Solutions contributed to this strong performance. The key driver was the BioProcessing business unit, particularly in the Asia-Pacific and North America regions.

The Research Solutions business unit, which provides products and services to support life science work in pharmaceutical, biotechnology and academic research laboratories, recorded a moderate organic sales increase of 4.1% in 2018. Strong performance by both Lab & Specialty Chemicals and Reagents & Kits in particular led to the growth in net sales of Research Solutions, which increased to € 2,048 million (2017: € 2,038 million), representing 33% (2017: 35%) of the business sector's net sales. In regional terms, Asia-Pacific was the strongest growth driver for Research Solutions in 2018.

The Applied Solutions business unit generated strong organic sales growth of 6.3% with its broad range of products for researchers as well as scientific and industrial laboratories. Net sales increased to € 1,650 million (2017: € 1,609 million). Accordingly, the business unit contributed 27% (2017: 27%) to net sales of the Life Science business sector. The sales performance of Applied Solutions was driven by all business fields, and primarily by the North America and Asia-Pacific regions.

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

LIFE SCIENCE

Net sales by region

€ million	2018	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Europe	2,136	35%	6.4%	–0.8%	–	5.6%	2,022	34%
North America	2,173	35%	8.4%	–4.6%	–	3.8%	2,093	35%
Asia-Pacific (APAC)	1,532	25%	13.6%	–3.8%	–	9.8%	1,395	24%
Latin America	256	4%	10.5%	–16.5%	–	–6.0%	273	5%
Middle East and Africa (MEA)	88	1%	–8.7%	–1.7%	–	–10.4%	98	2%
Life Science	**6,185**	**100%**	**8.8%**	**–3.6%**	**–**	**5.2%**	**5,882**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

The results of operations of the Life Science business sector developed as follows:

LIFE SCIENCE

Results of operations

€ million	2018	in %	2017	in %	Change € million	Change in %
Net sales	**6,185**	**100.0%**	**5,882**	**100.0%**	**304**	**5.2%**
Cost of sales	−2,723	−44.0%	−2,588	−44.0%	−135	5.2%
Gross profit	**3,463**	**56.0%**	**3,294**	**56.0%**	**169**	**5.1%**
Marketing and selling expenses	−1,775	−28.7%	−1,734	−29.5%	−41	2.4%
Administration expenses	−282	−4.6%	−261	−4.4%	−22	8.3%
Research and development costs	−249	−4.0%	−241	−4.1%	−8	3.4%
Remaining operating expenses and income	−121	−2.0%	−224	−3.8%	104	−46.2%
Operating result (EBIT)[1]	**1,036**	**16.7%**	**834**	**14.2%**	**202**	**24.2%**
Depreciation/amortization/impairment losses/ reversals of impairment losses	719	11.6%	746	12.7%	−27	−3.6%
(of which: adjustments)	*(23)*		*(3)*		*(20)*	*(>100%)*
EBITDA[1]	**1,755**	**28.4%**	**1,580**	**26.9%**	**175**	**11.1%**
Restructuring expenses	3		5		−2	−45.0%
Integration expenses/IT expenses	86		114		−29	−25.0%
Gains (−)/losses (+) on the divestment of businesses	−8		1		−9	>100%
Acquisition-related adjustments	2		63		−61	−97.2%
Other adjustments	3		22		−19	−86.5%
EBITDA pre[1]	**1,840**	**29.8%**	**1,786**	**30.4%**	**54**	**3.0%**

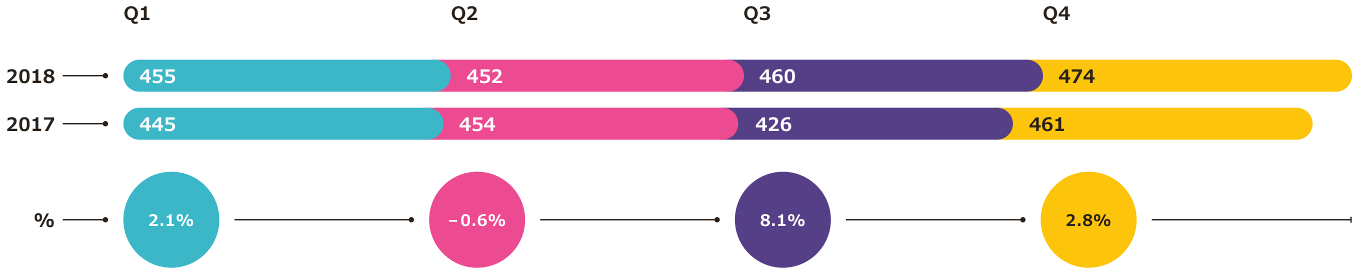
[1] Not defined by International Financial Reporting Standards (IFRSs).

Gross profit increased by 5.1% to € 3,463 million (2017: € 3,294 million). Despite currency headwinds, the strong increase was driven by organic growth in sales across all business units. Marketing and selling expenses increased by 2.4% to € 1,775 million (2017: € 1,734 million), while R&D expenses increased by 3.4% to € 249 million (2017: € 241 million). The decline in other operating expenses and income of −46.2% to € −121 million (2017: € −224 million) was the result of lower acquisition-related adjustments and a fall in adjustments for integration expenses/IT expenses that were included in this item. In comparison with 2017, the operating result (EBIT) of Life Science rose by € 202 million to € 1,036 million (2017: € 834 million). After eliminating depreciation and amortization as well as adjustments, EBITDA pre – the key indicator to assess the earning power – increased by 3.0% to € 1,840 million (2017: € 1,786 million). EBITDA pre improved by 7.0% over the prior year in organic terms, whereas negative foreign exchange rate effects depressed this key indicator by −3.9%.

The development of EBITDA pre in the individual quarters in comparison with 2017 is presented in the following overview:

LIFE SCIENCE

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In 2018, the business free cash flow of the Life Science business sector remained stable at the previous year's level at € 1,393 million (2017: € 1,402 million). Essentially, the inventory build-up to support sales growth was offset by higher EBITDA pre and lower investments.

LIFE SCIENCE

Business free cash flow[1]

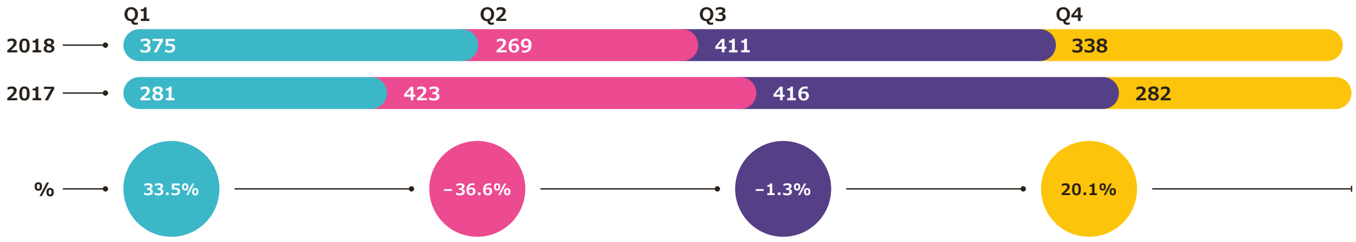
€ million	**2018**	2017	Change € million	Change in %
EBITDA pre[1]	1,840	1,786	54	3.0%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	−315	−371	56	−15.1%
Changes in inventories	−116	28	−144	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	−17	−41	24	−59.3%
Business free cash flow[1]	**1,393**	**1,402**	**−9**	**−0.7%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

The development of business free cash flow items in the individual quarters in comparison with 2017 is presented in the following overview:

LIFE SCIENCE

Business free cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

Performance Materials

PERFORMANCE MATERIALS

Key figures

€ million	2018	2017	Change € million	Change in %
Net sales	2,406	2,446	–40	–1.7%
Operating result (EBIT)[1]	508	689	–181	–26.3%
Margin (% of net sales)[1]	21.1%	28.2%		
EBITDA[1]	769	947	–178	–18.8%
Margin (% of net sales)[1]	32.0%	38.7%		
EBITDA pre[1]	786	980	–194	–19.8%
Margin (% of net sales)[1]	32.7%	40.1%		
Business free cash flow[1]	588	906	–318	–35.1%

[1] Not defined by International Financial Reporting Standards (IFRSs).

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2018, net sales of the Performance Materials business sector decreased by –1.7% to € 2,406 million (2017: € 2,446 million). This drop was mainly attributable to adverse exchange rate effects of –3.4% or € 83 million. They resulted primarily from a weaker U.S. dollar over the previous year and declining Asian currencies such as the Taiwan dollar and the Japanese yen.

The Semiconductor Solutions business unit, which pools the business for materials to produce integrated circuits, generated strong organic sales growth in 2018, as expected.

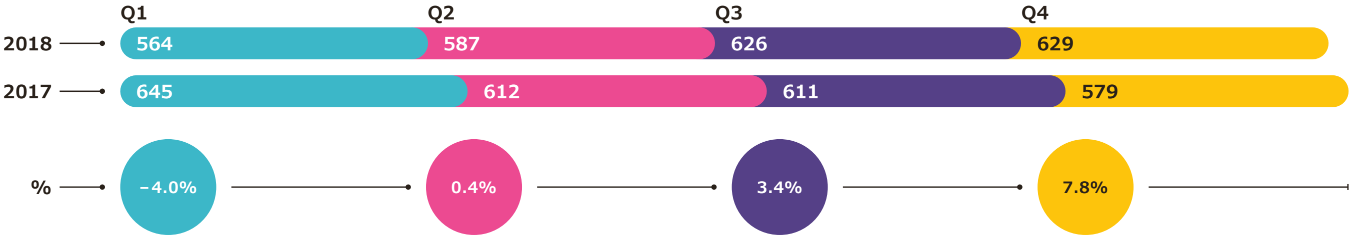
Sales in the Surface Solutions business unit fell short of expectations and were below the prior year's figure due to factors including the decline in demand for automobiles in Europe, North America and China.

The Display Solutions business unit recorded organic sales that were just positive owing to rising demand and strong growth in the OLED area and to non-recurring project-related liquid crystal sales, above all in the third and fourth quarters of 2018.

The net sales in the individual quarters as well as the respective organic growth rates in 2018 are presented in the following graph:

PERFORMANCE MATERIALS

Net sales and organic growth[1] by quarters[2]
€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

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

PERFORMANCE MATERIALS

Net sales by region

€ million	2018	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	2017	Share
Europe	220	9%	–4.8%	–0.3%	–	–5.0%	231	9%
North America	214	9%	0.3%	–4.6%	–	–4.3%	223	9%
Asia-Pacific (APAC)	1,932	80%	2.9%	–3.5%	–	–0.7%	1,945	80%
Latin America	32	2%	–3.8%	–8.3%	–	–12.1%	37	2%
Middle East and Africa (MEA)	8	0%	–18.4%	–1.6%	–	–20.0%	10	0%
Performance Materials	**2,406**	**100%**	**1.7%**	**–3.4%**	**–**	**–1.7%**	**2,446**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

The development of results of operations is set out below:

PERFORMANCE MATERIALS

Results of operations

€ million	2018	in %	2017	in %	Change € million	Change in %
Net sales	**2,406**	**100.0%**	**2,446**	**100.0%**	**–40**	**–1.7%**
Cost of sales	–1,231	–51.2%	–1,145	–46.8%	–86	7.5%
Gross profit	**1,175**	**48.8%**	**1,301**	**53.2%**	**–127**	**–9.7%**
Marketing and selling expenses	–255	–10.6%	–242	–9.9%	–13	5.2%
Administration expenses	–90	–3.7%	–72	–2.9%	–18	25.1%
Research and development costs	–242	–10.1%	–225	–9.2%	–17	7.5%
Remaining operating expenses and income	–81	–3.3%	–73	–3.0%	–7	9.8%
Operating result (EBIT)[1]	**508**	**21.1%**	**689**	**28.2%**	**–181**	**–26.3%**
Depreciation/amortization/impairment losses/ reversals of impairment losses	261	10.9%	258	10.5%	3	1.3%
(of which: adjustments)	*(21)*		*(26)*		*(–5)*	*(–19.1%)*
EBITDA[1]	**769**	**32.0%**	**947**	**38.7%**	**–178**	**–18.8%**
Restructuring expenses	1		5		–4	–78.5%
Integration expenses/IT expenses	15		20		–6	–27.1%
Gains (–)/losses (+) on the divestment of businesses	–		1		–1	–
Acquisition-related adjustments	–		–		–	–
Other adjustments	1		7		–6	–89.5%
EBITDA pre[1]	**786**	**32.7%**	**980**	**40.1%**	**–194**	**–19.8%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

In 2018, gross profit was € 127 million below the previous year's level and amounted to € 1,175 million (2017: € 1,301 million), resulting in an expected reduction in the gross margin to 48.8% (2017: 53.2%). The development of the gross margin is essentially explained by the price declines observed in the display industry and by falling sales in the Surface Solutions business unit.

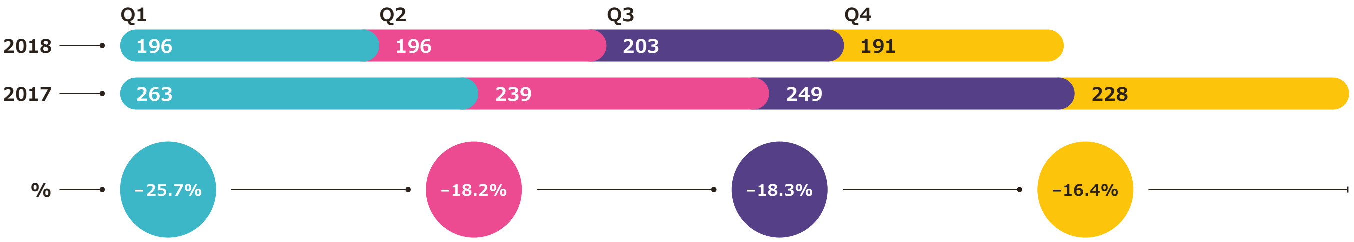
The operating result (EBIT) decreased to € 508 million in 2018 (2017: € 689 million). In addition to the sales and margin-related decline in gross profit, this was due to higher marketing and selling expenses as well as additional research and development costs. While the rise in marketing and selling expenses was primarily attributable to logistics costs, the increase in research costs was chiefly due to the tapping of new growth areas in materials for the production of integrated circuits.

EBITDA pre of the business sector declined by −19.8% to € 786 million (2017: € 980 million). The negative foreign exchange impact of −6.9% lowered this key performance indicator. Consequently, at 32.7%, the EBITDA pre margin was below the prior-year figure (2017: 40.1%).

The development of EBITDA pre in the individual quarters in comparison with 2017 is presented in the following overview:

PERFORMANCE MATERIALS

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

At € 588 million, the business free cash flow of the Performance Materials business sector in 2018 fell short of the prior-year figure (2017: € 906 million). This resulted from the reduction in EBITDA pre, a rise in receivables as of the 2018 balance sheet date that was primarily due to one-time project-related sales of liquid crystals in the fourth quarter of 2018, and higher inventories in the Surface Solutions business unit.

PERFORMANCE MATERIALS

Business free cash flow[1]

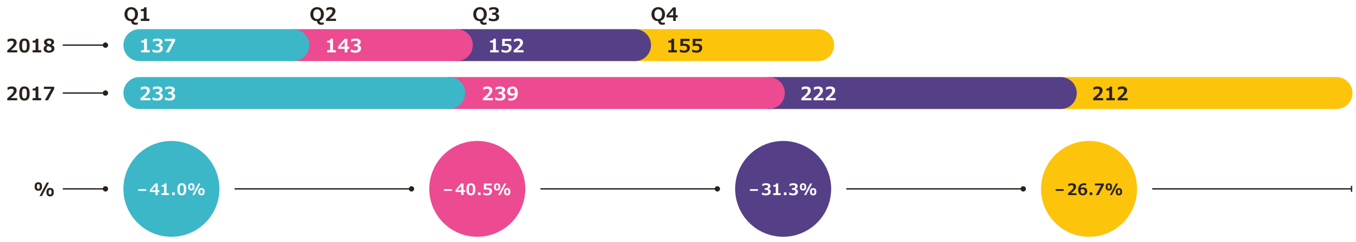
			Change	
€ million	**2018**	2017	€ million	in %
EBITDA pre[1]	786	980	−194	−19.8%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	−118	−125	7	−5.6%
Changes in inventories	−44	−14	−30	>100.0%
Changes in trade accounts receivable and receivables from royalties and licenses	−36	65	−101	>100.0%
Business free cash flow[1]	**588**	**906**	**−318**	**−35.1%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

The development of business free cash flow items in the individual quarters in comparison with 2017 is presented in the following overview:

PERFORMANCE MATERIALS

Business free cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRSs).
[2] Quarterly breakdown unaudited.

Corporate and Other

Corporate and Other comprises Group administration 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[1]

			Change	
€ million	**2018**	2017	€ million	in %
Operating result (EBIT)[2]	–548	–437	–111	25.5%
EBITDA[2]	–488	–391	–97	24.8%
EBITDA pre[2]	–381	–292	–89	30.6%
Business free cash flow[2]	–497	–429	–68	15.9%

[1] Previous year's figures have been adjusted, see Note (49) "Effects from new accounting standards and other presentation and measurement changes" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRSs).

In 2018, administration expenses reported under Corporate and Other increased to € 320 million (2017: € 295 million). Cross-business research and development costs amounting to € 47 million in 2018 (2017: € 42 million), such as expenses for the Innovation Center, were allocated to Corporate. Other operating expenses (net) rose to € –197 million (2017: € –101 million), due among other things to a deterioration in the foreign exchange result. A reversal of an impairment loss for other receivables amounting to € 37 million had a positive effect on the operating result. The reversal was made in connection with contractual refund claims from the sale of the Generics business in 2007. After eliminating depreciation, amortization and adjustments, EBITDA pre amounted to € –381 million in 2018 (2017: € –292 million). The increase in negative business free cash flow to € –497 million (2017: € –429 million) was mainly due to the development of EBITDA pre.