German enterprises' profitability and financing in 2016

The profitability of non-financial corporations improved significantly in the favourable overall economic environment of 2016, having dipped in the previous year, partly as a result of one-off effects. With demand in the sales markets strong, enterprises' gross revenue rose further, although sales growth slowed. However, enterprises' exceptionally good average return on sales – the highest since the Great Recession of 2008-09 – is partly the result of sectoral developments and other one-off effects. These include, in particular, valuation gains due to a change in the way that the provisions that need to be made for pension obligations are calculated, which brought down interest expenditure and personnel expenses in 2016. In addition, the cost of materials fell relative to sales, reflecting developments in prices for domestic and foreign intermediate goods; this boosted non-financial corporations' annual results. Looking at the individual sectors, service enterprises, especially, benefited from the good business conditions and sharply expanded sales and total income. By contrast, income in manufacturing fell as sales stagnated.

The upward trend seen in enterprises' equity ratio over the past few years is likely to have stabilised at its elevated level in 2016. In any case, firms' equity ratio has recently neither increased nor decreased substantially, with a factor being the temporary valuation gains on provisions for pensions in the reporting year. However, the equity ratio of enterprises without pension obligations also stabilised at its previous level in 2016.

On the assets side of non-financial corporations' balance sheet, the trend towards an increased build-up of financial assets compared to tangible fixed capital formation continued, and the increase in absolute fixed assets was somewhat smaller than in the preceding years. Energy companies also again effected large write-downs on their power plants in the reporting year. Not only did enterprises trim their capacity expansion last year, they also modified their strategy of expanding by purchasing shareholdings. However, German enterprises' growing interconnectedness is also reflected in the significant proportion of funds that were used to purchase financial assets. Given that the German economy is still growing rapidly and in view of the group accounts available so far, the profitability of non-financial corporations is likely to have continued to strengthen in 2017.

Underlying trends

Very favourable macroeconomic environment

In 2016, the strong upturn of the German economy continued apace despite weaker impetus from foreign trade. Dynamic private and public consumption and the strong increase in housing investment helped the real gross domestic product (GDP) grow faster than in the previous year, at 1.9%. Aggregate output consequently again outpaced potential output. Aggregate capacity utilisation rose further and considerably exceeded normal capacity utilisation. In addition to the favourable developments in sales markets, prices for intermediate goods fell again. Moreover, wage growth made a smaller contribution to enterprises' cost increases than a year earlier. The extremely favourable overall economic environment helped non-financial corporations further improve their earning power. At 4.7%, their return on sales before tax reached its highest level since the Great Recession of 2008-09, not least because enterprises were able to further boost gross revenue.[1] Another important factor was the relief provided by valuation gains on provisions for pensions.

Recalculation of the discount rate for pension provisions affecting profit and loss account and balance sheet

The way in which the discount rate for pension provisions is calculated was revised at the beginning of 2016. The reference period for the average discount rate, which is the basis, amongst other things, for long-term provisions for pension liabilities towards active and former employees, was extended from seven to ten years. This meant that the discount rate rose in 2016, as interest rates were higher in the three extra years that are now included than in the seven years of the original reference period. The necessary provisions for pension obligations were consequently much lower in 2016 in some cases, resulting in additional income. This had a dampening impact on interest expenditure and personnel expenses in enterprises' profit and loss accounts and also affected balance sheet ratios.

Equity ratio strengthened further

In the reporting year, the equity ratio in the aggregate balance sheet of the non-financial corporations sector, in essence, stabilised at the elevated level it has stood at since 2014. The slight lift in the equity ratio reported for non-financial corporations overall can be attributed, in particular, to valuation gains on provisions for pensions. One reason for the increase in equity held by enterprises with pension liabilities is probably that the distribution of any additional calculatory income resulting from the revaluation of the required provisions is prohibited.[2] Another reason is that the revaluation of pension provisions meant that external funds on enterprises' balance sheets grew significantly less than in the preceding year. In addition, the equity ratio of enterprises without pension liabilities also stabilised at its previous level. While the ratio between external funds and equity is stable, there is a trend on the assets side for companies to expand financial assets more than tangible fixed assets. The change in percentages given continuous balance sheet growth was in 2016 again reflected mainly in a weaker expansion of tangible fixed assets as compared to increased growth in claims on affiliated enterprises.

Renewed rise in pension provisions expected in the coming years

After the change in the calculation method raised the discount rate in the reporting year, a renewed decline in the discount rate is nonetheless on the cards in the following years; the necessary provisions are, however, unlikely to hit enterprises as hard as in 2015. Nonetheless, the equity ratio among enterprises obliged by falling interest rates to form additional pension provisions again following the 2016 financial year will probably be strained. However, enterprises with pension obligations could tend to increase savings going forward in order to balance out this effect by retaining more earn-

1 The analyses for 2016 are based on some 25,000 financial statements, which were roughly extrapolated based on the evaluation of aggregate sales data from the company register. For details on the current procedure, see Deutsche Bundesbank, Financial statements statistics with broader sectoral coverage and a new basis of extrapolation, Monthly Report, December 2011, pp 32-33.
2 However, profits may be distributed if the distributable reserves (including retained earnings) remaining after the pay-out are at least as high as this additional income.

The emergence of zombie firms in Germany in the low-interest-rate environment

In functioning market economies, outdated production processes are usually gradually replaced by more efficient methods. The corporate sector is a crucial player in this process, with its innovations causing new goods and services, as well as production processes, to be developed, thereby spurring productivity gains. However, direct or indirect subsidies can enable companies that are not really competitive in terms of productivity to remain in the market. The low-interest-rate setting which has prevailed in the euro area for some years now could have been another factor leading to a situation in which undercapitalised lenders, in particular, continue to fund inefficient or even insolvent corporate borrowers – known as zombie firms.[1] The low interest rates could be reducing the opportunity costs for creditors of rolling over non-performing loans (NPLs) or allowing deferment of payments as compared to making write-downs on claims, realising losses or forming provisions.[2] This would mean that economic resources would tend to remain in less productive uses. In macroeconomic terms, productivity and economic growth could be stifled via this channel.

How to define and statistically capture zombie firms

Current empirical research suggests a relationship between a slowdown in productivity growth in some advanced economies over the past few decades and a rise in the number of zombie firms.[3] Firm-level microdata from the Bundesbank's Financial Statement Data Pool can be used to assess the quantitative importance of zombie firms in Germany and their contribution to overall economic developments in the corporate sector.[4]

If firms in the dataset do not exit the market even though their medium-term operating revenue is insufficient to fund major expenditure items, they are classified as zombie firms.[5] In line with the approach pursued in the literature, variant A classifies as a zombie firm one that cannot meet its interest payments (including similar expenses) out of its operating and investment income for three consecutive years. For a zombie firm, the interest coverage ratio, ie the ratio of operating and investment income to interest payments, would be less than one in three consecutive years.[6] Alternatively, variant B defines a zombie firm as one whose cash flow has been negative for three consecutive years.[7]

The results based on the latest available three-year period, which ends in 2015, are compared with two suitable points in time

1 See eg F Schivardi, E Sette and G Tabellini (2017), Credit misallocation during the European financial crisis, CESifo Working Paper No 6406.
2 Another possible effect of low interest rates is to obscure the actual (inferior) quality of the loans and thus the need for write-downs, since the debt is easier to service even for ailing borrowers.
3 See eg M Adalet McGowan, D Andrews and V Millot (2017), The walking dead? Zombie firms and productivity performance in OECD countries, OECD Economics Department Working Paper No 1372.
4 See Deutsche Bundesbank, Financial statements statistics with broader sectoral coverage and a new basis of extrapolation, Monthly Report, December 2011, pp 32-33.
5 See M Adalet McGowan et al (2017), op cit and Bank of Korea (2013), Financial Stability Report, October. For other possible criteria for classifying firms as "zombies", see R Caballero, T Hoshi and A Kashyap (2008), Zombie lending and depressed restructuring in Japan, American Economic Review, Vol 98 (5), pp 1943-1977, or M Storz, M Koetter, R Setzer and A Westphal (2017), Do we want these two to tango? On zombie firms and stressed banks in Europe, IWH Discussion Papers No 13.
6 The reason for choosing a three-year period is to eliminate temporary slumps in individual firms' profitability and to capture only those enterprises with deep-seated productivity issues.
7 For the definition of cash flow, see Deutsche Bundesbank, Special Statistical Publication 5.

Zombie firms in Germany*

%

Variant	2000	2007	2015
	Share of all non-financial corporations		
Variant A1	7.9	4.8	4.7
Variant B2	1.7	1.4	2.2

* The data set covers firms from the following economic sectors: mining and quarrying; manufacturing; electricity, gas and water supply; waste disposal; construction; wholesale and retail trade, transportation and storage; accommodation and restaurants; information and communication technology; and business services. In variant A, the benchmark group of firms contains 46,297 non-financial corporations for the year 2000, 54,286 for 2007 and 48,884 for 2015. In variant B, the figures are 39,360, 44,487 and 42,429 firms respectively. 1 Firms' interest coverage ratio (operating and investment income (EBIT) over interest and similar expenses, including expenditure from discounting) is smaller than one in the reporting year and the two preceding years. 2 Firms' cash flow is negative in the reporting year and the two preceding years.

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prior to the extraordinary slide in interest rates following the financial and economic crisis in the euro area. One of the reference points in time is the year 2007, the last year of the solid upswing in Germany prior to the onset of the Great Recession. The other is the year 2000, in which aggregate capacity utilisation was at a similar level to the evaluation period.[8]

The definition of the measure in variant A incorporates not only conventional interest payments on loans but also expenditure necessitated by the low-interest-rate environment. Such expenditure includes pension entitlement-related interest expenditure over the past few years due to changes to accounting rules.[9] These considerations thus rest on the assumption that servicing overall interest expenditure – and not just interest expenditure based on ongoing lending relationships – is relevant to a firm's financial stability. Income from equity holdings between affiliated firms is also taken into account.[10]

No increase in percentage share of zombie firms in low-interest-rate setting

The results of both approaches show that zombie firms make up a small percentage of all firms in Germany and that this share has not increased in the low-interest-rate setting. In 2000, they accounted for only somewhere near 8% of all firms according to variant A; in 2007 and 2015, this share was even lower, at around 4¾% in each of those years. Variant B yields a similar picture; here, zombie firms make up only around 1½% to 2% of all firms in 2000 and 2007 – even less than in variant A – and the figure for 2015 is only barely higher than in the two reference years. What the analyses therefore show is that, in 2015 – the latest year for which data are available – the quantitative importance of zombie firms in Germany was similarly small as in earlier upswings and has not increased in the low-interest-rate setting.

8 As in the case of the evaluation period, the results for the reference years are based on three-year timespans.
9 Since the German Commercial Code (Handelsgesetzbuch) was amended in 2010, discount rates must be calculated based on average yields over a period of several years. With interest rates persistently low, pension liabilities consequently necessitate additional interest expenses. See also Deutsche Bundesbank, German enterprises' profitability and financing in 2015, Monthly Report, December 2016, pp 57-76.
10 This means that earnings and expenditure metrics are consistently captured together when calculating the interest coverage ratio. Interest expenditure also contains interest on loans taken out by a parent for subsidiaries. The operating result from core business is also augmented to include income from equity holdings in other firms so as, for instance, to factor holdings without self-generated income out of the population of zombie firms. Alternative versions, in which income from equity holdings in other firms or additional interest expenses owing to the setting-aside of provisions for future pension obligations are excluded, produce qualitatively similar results.

Zombie firms: lower profitability, lower investment and more highly leveraged

From a macroeconomic perspective, it is of interest whether and how zombie firms impede the efficient allocation of labour and capital, and to what extent they affect the productivity and investment patterns of all non-financial corporations. Not surprisingly, variant A shows that zombie firms are considerably less profitable than other firms – measured in terms of the ratio of annual result before taxes on income over gross revenue – which, in many cases, is actually negative.[11] In all reporting years, zombie firms' share of sales is low.[12]

The ratio of the gross increase in tangible fixed assets to total assets is smaller for zombie firms than for others in all reporting periods. Consequently, zombie firms tend to underinvest. However, their small share of total fixed assets means that their dampening impact on non-financial corporations' productivity is likely to be small.[13] In addition, the extent of potential capital misallocation is likely to be very limited given the small share of fixed assets tied up in zombie firms.

Moreover, the evaluations show that zombie firms have, on the whole, a significantly lower equity ratio and are more dependent on external funding than other firms. In all evaluation periods, they are generally more highly indebted to affiliated enterprises and, in some cases, to credit institutions.

No signs of dampening effects on growth or productivity

It must be noted that the analyses are subject to constraints which make it difficult to draw conclusions regarding the universe of firms. One is that the Financial Statements Data Pool tends to be biased towards more stable firms, which means that zombie firms might be under-recorded. On the other hand, though, the identified sample of zombie firms could also contain young firms and start-ups with a promising economic outlook since the firm age could not be taken into account owing to the absence of information on the year the firm was founded. All in all, the descriptive results do, however, indicate that, for the sample of firms in Germany covered by the analysis, zombie firms are not a significant factor in

German non-financial corporations' balance sheet and P/L metrics*

%

Metric	2000	2007	2015
	Share of all non-financial corporations		
Sales[1]			
Zombie firms	7.1	4.4	5.7
All others	92.9	95.6	94.3
Tangible fixed assets[2]			
Zombie firms	9.0	5.9	8.3
All others	91.0	94.1	91.7
Profitability[3]	Median		
Zombie firms	– 1.8	– 2.2	– 3.8
All others	2.2	3.4	3.6
Gross increase in tangible fixed assets[4]			
Zombie firms	2.1	1.6	1.7
All others	3.3	2.9	2.6
Equity[4]			
Zombie firms	3.8	8.0	11.6
All others	11.7	20.5	28.7
Liabilities[4]			
Zombie firms	87.7	79.8	73.2
All others	77.7	66.0	58.6

* Data refer to the definition of zombie firms according to variant A. 1 As a percentage of total firms' sales. 2 As a percentage of total firms' fixed assets including intangible fixed assets. 3 Ratio of annual result before taxes on income to gross revenue (%). 4 As a percentage of total assets.

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11 For many firms, the size of interest expenditure does not appear to determine whether the firm is classified as a zombie firm. Other cost components, such as the cost of materials and staff or write-downs, as well as earnings components seem to play a more prominent role.
12 The groups of zombie firms and non-zombie firms show a similar size structure in the underlying reference data set.
13 This finding also holds if the respective previous year is assessed, mitigating the potential impact of clustered investment. In addition, variant B produces, on the whole, a qualitatively similar picture.

terms of their number, sales or tangible fixed assets held.[14] Their weight has not increased in the low-interest-rate setting, either. As they lack significance, zombie firms are currently unlikely to be having any perceptibly dampening effect on productivity and economic growth in Germany. This finding is consistent with the assessment that the German corporate sector has been in largely good shape for several years now.

14 This finding is reinforced by the fact that a relatively large number of companies classified as "zombies" are part of a corporate group. In these cases, overriding considerations could encourage parent enterprises to assume reported losses in the long term.

ings.[3] Overall, it is therefore unlikely that such provisions will lower the capital adequacy of many enterprises with pension obligations to such an extent as to cause funding difficulties, for example.

Moderate sales growth

At just over 1%, companies' sales growth was weaker in the reporting year than in the two preceding years. The sharp decline in sales among energy suppliers, as a consequence of both smaller trading volumes and lower prices, had a dampening effect. Excluding energy supply, sales would have risen by approximately 2% in aggregate. Moreover, one-off effects in connection with the new accounting rules under the German Accounting Directive Implementation Act *(Bilanzrichtlinie-Umsetzungsgesetz)* have an impact on the way sales are reported and on the expense items. First, parts of other operating income were, for the first time, allocated to sales in 2016 and, second, excise duties have, since then, no longer been reported under sales and thus not under operating taxes. In the reporting year, these two opposing effects resulted, overall, in a slight increase in sales as reported in enterprises' aggregate profit and loss accounts.

Net inflow of funds lower

Non-financial corporations' cash flow grew sharply again in 2016, although the net inflow of funds as a whole declined. However, externally financed capital injections for corporations were comparatively small as well. A considerable proportion of the incoming funds was – as in the previous year – used to acquire financial assets. In this context, companies granted loans mainly in the context of trade payables and within their corporate group. The percentage of enterprises' funds used to acquire liabilities was roughly three times as high

3 A simulation-based quantification suggests that this effect could be a factor in non-financial corporations' increased saving. See Deutsche Bundesbank, Potential effects of the increase in pension provisions as a result of changes to the discount rate on non-financial corporations' savings, Monthly Report, December 2016, pp 60-63.

as that used to expand the stock of tangible fixed assets. The pace of corporate expansion through the acquisition of shareholdings slowed down in the reporting year, falling short of the very high levels seen in the two previous years.

Corporate insolvencies at historical low

The number of corporate insolvencies continued to decline in 2016 and hit a new all-time low. The continued strong increase in cash flows and favourable conditions for debt restructuring have probably improved non-financial corporations' prospects. By and large, sectoral trends reflected macroeconomic developments. In manufacturing, the construction sector as well as in the services sector, the number of insolvencies fell sharply again. However, some sectors exhibited something of a slowdown in business activity. For example, the number of bankruptcies in accommodation and food services increased, and business conditions in transportation and storage did not appear to improve either.

Sales and income

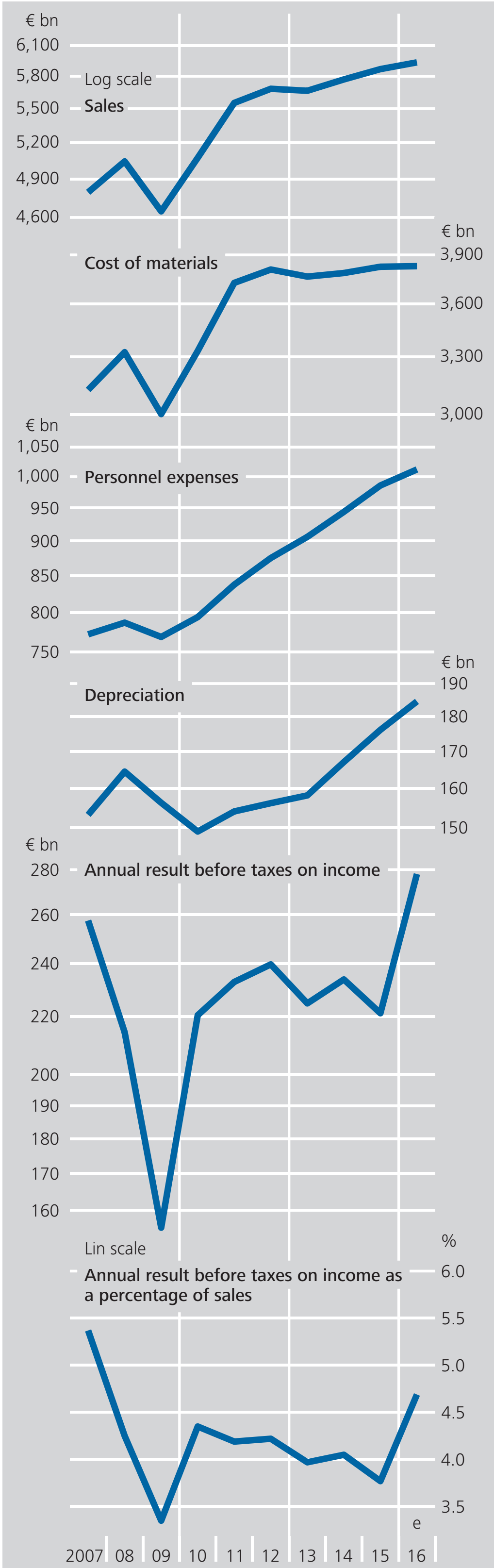
Moderate nominal sales momentum understates the marked increase in volume

At just over 1%, non-financial corporations' sales growth was slightly weaker in 2016 than in the previous year, when it was almost 2%. However, this probably understates growth in the volume of goods and services, as sales prices moderated further in the reporting year. For instance, prices of manufactured goods sold domestically fell by 1.8% and those intended for export came down by 0.8% as compared with the previous year, in which domestic producer prices had declined at a similar pace, but export prices rose moderately, by 0.8%.

Domestically oriented sectors with higher sales growth

At the sectoral level, there were again relatively large differences in terms of the integration in international value chains in the year under review. This is clear from the fact that sectors that focus on domestic markets tended to exhibit higher sales growth than those active in international trade. Whereas sales growth was

Selected indicators from German enterprises' income statement*



* Extrapolated results from corporate financial statements statistics.
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Enterprises' income statement*

Item	2014	2015	2016e	Year-on-year change 2015	Year-on-year change 2016e
Income	€ billion			%	
Sales	5,770.0	5,868.7	5,934	1.7	1
Change in finished goods[1]	22.3	30.1	32.5	35.2	7.5
Gross revenue	5,792.3	5,898.8	5,966.5	1.8	1
Interest and similar income	17.0	17.4	17.5	2.2	0.5
Other income[2]	249.5	291.6	222	16.9	– 24
of which					
from long-term equity investments	31.7	45.7	41	44.1	– 10
Total income	6,058.8	6,207.8	6,205.5	2.5	0
Expenses					
Cost of materials	3,785.8	3,825.0	3,828.5	1.0	0
Personnel expenses	943.9	985.7	1,012	4.4	2.5
Depreciation	167.0	176.1	184.5	5.4	5
of tangible fixed assets[3]	155.0	156.9	166	1.2	6
Other[4]	12.0	19.2	18.5	59.6	– 3
Interest and similar expenses	65.1	78.7	55.5	20.8	– 29.5
Operating taxes	69.1	69.3	9.5	0.4	– 86
of which					
Excise duties	64.7	64.9	5	0.3	– 92.5
Other expenses[5]	794.1	851.8	837	7.3	– 1.5
Total expenses before taxes on income	5,825.0	5,986.6	5,927.5	2.8	– 1
Annual result before taxes on income	233.8	221.2	278	– 5.4	25.5
Taxes on income[6]	51.8	50.1	57	– 3.2	13.5
Annual result	182.0	171.1	221	– 6.0	29.5
Memo item					
Cash flow[7]	378.2	404.2	427.5	6.9	5.5
Net interest paid	48.1	61.3	38	27.5	– 37.5
	As a percentage of sales			Percentage points	
Gross income[8]	34.8	35.3	36.0	0.6	0.7
Annual result	3.2	2.9	3.7	– 0.2	0.8
Annual result before taxes on income	4.1	3.8	4.7	– 0.3	0.9
Net interest paid	0.8	1.0	0.6	0.2	– 0.4

* Extrapolated results; differences in the figures due to rounding. **1** Including other own work capitalised. **2** Excluding income from profit transfers (parent company) and loss transfers (subsidiary). **3** Including write-downs of intangible fixed assets. **4** Predominantly write-downs of receivables, securities and other long-term equity investments. **5** Excluding cost of loss transfers (parent company) and profit transfers (subsidiary). **6** In the case of partnerships and sole proprietorships, trade earnings tax only. **7** Annual result, depreciation, and changes in provisions, in the special tax-allowable reserve and in prepaid expenses and deferred income. **8** Gross revenue less cost of materials.

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moderate to strong in all observed services sectors – with the exception of the import and export-heavy wholesale trade – sales in the industrial sector fell perceptibly, by just over 1%, in 2016. Besides the change in the way in which excise duties are reported, sharply lower import prices – especially for energy – are likely to have been a major factor.[4] The resulting savings in the cost of materials were, in part, passed on in the form of lower sales prices. This relationship is reflected in the electricity, gas and water supply sector, which contributes some 10% to sales. As a result of the lower cost of materials (-10%), domestic prices there also declined sharply (-6%) in a business environment characterised by low margins.[5] Overall, revenues in this sector were considerably down from the previous year's level (-8.5%). In addition, sales momentum in the industrial sector, which is heavily geared towards exports, eased off noticeably, and revenues more or less stag-

4 The decline in sales as a result of the change in the way in which excise duties are reported is relevant mainly for enterprises in the production sector.
5 The cost of materials as a percentage of sales is 85% in this sector, compared with 66% for all surveyed enterprises. As a consequence, sales in this sector are particularly sensitive to changes in the cost of materials.

nated in the year under review.[6] By contrast, sales in the construction sector, which mainly serves domestic markets, expanded sharply in the reporting year (6%) following moderate growth in the previous year (3%).

Enterprises' other income strongly influenced by one-off effects

Enterprises' other income, which mainly comprises income from non-core-business activities as well as income from participating interests, fell sharply in the reporting year. Again, one-off factors had a role to play. The Accounting Directive Implementation Act means that parts of the sums which had, up until 2015, been reported as other operating income have since been allocated to sales.[7] As a result, other operating income – and thus other income as a whole – fell sharply on paper in the reporting year (-27.5%). Even so, in relation to gross revenue, other operating income still represented the largest item under other income. Moreover, the reallocation of other operating income to sales meant that sales growth was just over 1 percentage point stronger in 2016 than it would have been if the reporting change had not taken place. This did not affect income developments as a whole, however, as it merely represents a reorganisation among different earnings items. Another dampening factor was income from long-term equity investments, which fell by just under one-tenth in the reporting year, after having grown very strongly in the previous year (+44%). Non-financial corporations' interest and similar income has been at a fairly steady low level since 2013.

Calculatory decline in total expenditure due to legislative change

In the reporting year, non-financial corporations' total expenditure decreased slightly by 1%. This was due mainly to changes made in the context of the German Accounting Directive Implementation Act, as a result of which reported operating taxes in particular and, to a lesser extent, other expenditure were lower compared with the previous year.

The largest item in the expenditure account, ie cost of materials, remained virtually unchanged on the year. The share of this item in gross revenue, which has been declining since 2012, fell further to just over 64% at last count. The favourable evolution of prices of intermediate goods and raw materials in this period is likely to have played a key role here. However, there are major differences at the sectoral level. On the one hand, a number of economic sectors – such as the industrial sector or electricity, gas and water supply – continued to benefit from the more favourable prices of raw materials in 2016 compared with a year earlier. On the other hand, significant increases were recorded in the cost of materials in the construction sector (7%) and a number of areas of the services sector, especially business services (6.5%), the information and communications sector (8%) and motor vehicle trade (8.5%).

Favourable developments in intermediate goods prices reduced corporate expenditure

Smaller increase in personnel costs

Mirroring the share of the cost of materials, the importance of the second-largest expenses item, ie personnel costs, continued to expand in 2016. However, the increase in this cost item, at 2.5%, was weaker than the average across the five preceding years. Against the backdrop of the favourable economic situation, this somewhat unusual low expansion is also linked to the increase in the statutory reference rate for pension provisions as from the 2016 financial year. Consequently, non-financial corporations were able in 2016 to make lower pension provisions or dissolve those previously set aside. Some companies record such relief under personnel expenses, while others book it under interest expenditure; in the reporting year, this meant that the alleviating effect of provisions was felt in both items. Firms without pension reserves saw personnel costs rise considerably, whereas firms with pension reserves recorded only a slight increase. However, given that interest expenditure excluding pension liabilities represents a relatively small cost item,

6 At a more deeply disaggregated level, it is evident, however, that revenues in vehicle manufacture rose particularly sharply – as in the preceding years; gains of 8.5% in 2014 and 9.5% in 2015 were followed by a plus of 5% in the year under review. The motor vehicle trade also benefited, with sales picking up by 8.5% in 2016, following 6.5% in 2015.

7 Other operating income includes exchange gains and write-ups as well as revenue from the release of provisions or the sale of tangible fixed assets.

the new method of calculating the reference rate in this case led to a fairly sharp decline of 29.5%. By contrast, interest expenditure remained virtually unchanged for firms without pension provisions.

Decline in other expenses also due to legislative changes

Following a strong previous year (+7.5%), growth in the third large expenses item, ie other expenses, dropped by just over 1.5% in the reporting year. Besides one-off expenses in the case of some large firms in the previous year, in the year under review, this was also attributable – as mentioned above – to changes in reporting based on the Accounting Directive Implementation Act at the expense of other operating expenses and in favour of the cost of materials, which mirrored the changes in other operating income and in sales. Moreover, with regard to operating taxes, the 2016 income statement for enterprises reflected the fact that excise duties are no longer included in sales, rendering the corresponding expenditure item obsolete. Hence, expenditure on operating taxes decreased by 86% in the reporting year.[8] Without this reform, growth in sales, total income and expenditure would have been just under 1 percentage point higher.[9] On balance, this does not affect the annual result.

Corporate profitability probably largely unchanged

Resulting from an essentially unchanged total income and a decline in total expenses, the return on sales before tax improved from 3.8% in the previous year to 4.7% in the reporting year. However, in 2015, the emissions scandal weighed heavily on profits in motor vehicle manufacturing. If, in addition, the relief provided by the reduced requirements for pension provisions is taken into account, the profitability of non-financial corporations in the reporting year should not differ substantially from the previous year's level.

Sources and uses of funds

Sources of funds remain abundant

In the light of the ongoing economic recovery, internal financing remained at a high level despite the slight drop in 2016. Concerning external funding, non-financial corporations' confidence in the sustainability of the healthy economy is probably also reflected in the increased build-up of long-term obligations. Overall, external financing decreased slightly amidst reduced capital injections. This development could also have something to do with reduced purchase volumes for long-term equity investments following the one-off effects in the two preceding years, particularly as a result of the consolidation in the telecommunications sector and the chemical industry.

Little change in tangible fixed assets

As in the preceding year, around half of the available funds were used for investment in tangible fixed assets. The gross increase in tangible fixed assets was somewhat higher than the subdued level a year earlier. However, adjusted for replacement investment and depreciation, the increase in tangible fixed assets was lower than the year before. This was attributable, in particular, to the information and communications sector; in 2016, activity in this sector was, amongst other things, characterised by the slowdown in broadband network expansion. In addition, negative impulses emanated from transport and energy companies, which continued to record substantial write-downs on their power plants.

Calming of expansionary strategy in some sectors

Following the consolidation of enterprises in the telecommunications sector and the chemical industry in 2014 and 2015, during which an above-average increase in purchases of long-term equity investments was recorded, the pace of corporate expansions calmed in the reporting year. After a boost to the acquisition of long-term equity investments in the two preceding years, expansionary activities in motor vehicle manufacturing were likewise scaled

8 The excise taxes recorded for 2016 are essentially attributable to enterprises whose financial year differs from the calendar year and started as early as 2015. For these enterprises, the aforementioned effect does not occur until the following year.
9 At the sectoral level, the areas of the manufacturing sector "manufacture of food products, beverages and tobacco products" as well as "manufacture of coke and refined petroleum products" were particularly affected by the changes due to the Accounting Directive Implementation Act.

Enterprises' sources and uses of funds*

€ billion

Item	2014	2015	2016e	Year-on-year change 2015	Year-on-year change 2016e
Sources of funds					
Capital increase from profits and contributions to the capital of non-corporations[1]	68.7	38.0	55	– 30.7	17
Depreciation (total)	167.0	176.1	184.5	9.1	8.5
Increase in provisions[2]	28.0	57.6	21	29.5	– 36.5
Internal funds	263.8	271.6	260.5	7.9	– 11
Increase in capital of corporations[3]	15.9	23.3	10	7.5	– 13.5
Change in liabilities	52.9	77.5	85.5	24.6	8
Short-term	48.7	73.8	62.5	25.1	– 11.5
Long-term	4.2	3.7	23	– 0.5	19.5
External funds	68.8	100.9	95.5	32.1	– 5.5
Total	332.6	372.5	356	39.9	– 16.5
Uses of funds					
Increase in tangible fixed assets (gross)[4]	194.0	186.2	189	– 7.8	3
Memo item					
Increase in tangible fixed assets (net)	39.0	29.2	23	– 9.7	– 6.5
Depreciation of tangible fixed assets	155.0	156.9	166	1.9	9
Change in inventories	19.3	26.0	21.5	6.7	– 4.5
Non-financial asset formation (gross investments)	213.3	212.2	210.5	– 1.1	– 1.5
Change in cash	7.4	12.2	22.5	4.9	10
Change in receivables[5]	29.8	72.1	72	42.3	– 0.5
Short-term	15.2	70.3	59.5	55.0	– 10.5
Long-term	14.5	1.8	12	– 12.7	10.5
Acquisition of securities	8.0	5.6	3	– 2.4	– 2.5
Acquisition of other long-term equity investments	74.2	70.5	48.5	– 3.8	– 22
Financial asset formation	119.3	160.3	145.5	41.0	– 14.5
Total	332.6	372.5	356	39.9	– 16.5
Memo item					
Internal funds as a percentage of gross investments	123.7	128.0	124	.	.

* Extrapolated results; differences in the figures due to rounding. **1** Including "GmbH und Co KG" and similar legal forms. **2** Including change in the balance of prepaid expenses and deferred income. **3** Increase in nominal capital through the issue of shares and transfers to capital reserves. **4** Change in tangible fixed assets (including intangible assets) plus depreciation. **5** Including unusual write-downs of current assets.

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back. By contrast, manufacturers of machinery and equipment, energy suppliers and retailers increasingly invested in equity stakes.

Balance sheet developments

Stable growth in total assets

The good economic situation in 2016 was also reflected in the development of the aggregate balance sheet of the non-financial corporations sector, which grew to much the same extent, on average, as it had in the preceding five years. This was in part due to the interconnectedness of companies, which could be observed in balance sheet developments. The rate at which companies became more interconnected in the reporting year hardly dropped; this was mirrored by the increase in claims and liabilities vis-à-vis affiliated companies. Against this backdrop, long-term positions, in particular, grew perceptibly in almost all sectors. Overall, financial obligations to affiliated enterprises continued to make the largest contribution to the increase in external funds. In the reporting year, the expansion of enterprises' balance sheets was also reflected in the greater use of trade credits. Both short-term receivables and accounts payable rose a great deal more across all sectors than in previous years.

Enterprises' balance sheet*

Item	2014	2015	2016e	Year-on-year change 2015	Year-on-year change 2016e
Assets	€ billion			%	
Intangible fixed assets	85.3	89.4	89	4.8	− 0.5
Tangible fixed assets	939.9	965.0	988.5	2.7	2.5
Inventories	631.2	657.2	679	4.1	3.5
Non-financial assets	1,656.4	1,711.6	1,756	3.3	2.5
Cash	271.6	283.8	306	4.5	8
Receivables	1,249.0	1,317.0	1,383	5.4	5
of which					
Trade receivables	394.8	395.7	416	0.2	5
Receivables from affiliated companies	694.1	758.7	795.5	9.3	5
Securities	86.1	91.7	94.5	6.5	3.5
Other long-term equity investments 1	653.1	708.4	744.5	8.5	5
Prepaid expenses	20.1	20.5	21.5	2.0	4.5
Financial assets	2,279.8	2,421.4	2,549.5	6.2	5.5
Total assets 2	3,936.2	4,133.0	4,305.5	5.0	4
Capital					
Equity 2, 3	1,159.4	1,220.7	1,285.5	5.3	5.5
Liabilities	2,110.8	2,188.3	2,274	3.7	4
of which					
to banks	469.7	475.8	470	1.3	− 1
Trade payables	304.4	307.4	320	1.0	4
to affiliated companies	831.7	885.3	932	6.4	5.5
Payments received on account of orders	220.2	230.6	234.5	4.7	1.5
Provisions 3	637.8	693.6	714	8.8	3
of which					
Provisions for pensions	212.3	234.7	231	10.5	− 1.5
Deferred income	28.2	30.4	32.5	7.7	6.5
Liabilities and provisions	2,776.8	2,912.3	3,020	4.9	3.5
Total capital 2	3,936.2	4,133.0	4,305.5	5.0	4
Memo item					
Sales	5,770.0	5,868.7	5,934	1.7	1
Sales as a percentage of total assets	146.6	142.0	138	.	.

* Extrapolated results; differences in the figures due to rounding. **1** Including shares in affiliated companies. **2** Less adjustments to equity. **3** Including half of the special tax-allowable reserve.

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Further decline in financing via credit institutions

While liabilities arising from trading activities and to affiliated companies showed dynamic growth, the significance of credit institutions in the external financing of non-financial corporations continued to wane in 2016. The share of obligations to the banking sector in liabilities fell from just over 30% in the early 2000s to around 20% in 2016.[10] The reduction in long-term liabilities to banks in the reporting year took place, for the most part, in the energy supply and the information and communications sectors.

Corporate bonds become even more important

The downward trend in borrowing through credit institutions was counterbalanced by a strong expansion in liabilities in the form of bonds.[11] The share of issued bonds in corporations' total liabilities tended to increase in the period between 2011 and 2016, though this form of financing played a fairly minor role for non-corporations. This can probably be explained by the prolonged period of low interest

10 This decline was offset by a build-up of liabilities to affiliated companies in connection with cash pooling and financing entities.

11 The fact that the share of bonds in total assets remains relatively low is, amongst other things, due to the fact that bonds are often issued via foreign financing entities and that intra-group funding is, in this case, recorded under obligations to affiliated enterprises. The actual volume of financing generated via bonds is thus higher than indicated in the category of bonds.

rates and investors pursuing higher yields. In 2016, the issuance of both short-term and long-term bonds rose, with the strong increase confined to just a few sectors. In the case of long-term bonds, more than half of the growth was down to the manufacture of motor vehicles, while around half of the increase in short-term bonds was attributable to the energy sector.

Equity ratio stabilised at elevated level

In 2016, external funds grew at a more moderate rate than in the previous year. While the volume of liabilities expanded by roughly the same measure as total assets, the increase in reserves was distinctly lower on the year owing to the recalculation of the discount rate for pension provisions. Provisions for pensions even fell on aggregate, with manufacturers of motor vehicles, in particular, experiencing a significant decline. In the reporting year, enterprises again reported higher equity ratios. However, adjusted approximately for the valuation gains from pension provisions, the equity ratio of non-financial corporations remained more or less constant at what is now a clearly elevated level.

Growth trend in liquid funds persists

On the assets side, the trend increase in liquid funds relative to total assets observed across several sectors since the early 2000s continued. In the case of non-financial corporations as a whole, the share of cash and bank balances in total assets (7%) was 2 percentage points higher in 2016 than at the beginning of the millennium. On the one hand, this appears to indicate non-financial corporations' higher preference for liquidity. On the other hand, however, this balance sheet item could also reflect the fact that interest rate spreads between short and long-term yields have been relatively narrow due to the low-interest-rate setting.

No additional growth in tangible fixed assets

The increase in tangible fixed assets was somewhat lower compared with previous years and failed to keep pace with the expansion of total assets in the year under review. Mirroring the development of financial assets, the importance of tangible fixed assets for investment continued to decrease, with the trend increase in long-term equity holdings also a relevant factor. In addition, growth in intangible assets was weak on the whole.[12] However, the traditionally relatively volatile goodwill in some sectors came into play here. Excluding the damper emanating from this sub-item, total intangible assets increased sharply again.

Enterprises' balance sheet ratios*

Item	2014	2015	2016e
	As a percentage of total assets[1]		
Intangible fixed assets	2.2	2.2	2
Tangible fixed assets	23.9	23.3	23
Inventories	16.0	15.9	16
Short-term receivables	29.1	29.3	29.5
Long-term equity and liabilities[2]	49.8	49.5	49.5
of which			
Equity[1]	29.5	29.5	30
Long-term liabilities	14.7	14.1	14
Short-term liabilities	38.9	38.8	38.5
	As a percentage of tangible fixed assets[3]		
Equity[1]	113.1	115.8	119.5
Long-term equity and liabilities[2]	191.1	194.1	198
	As a percentage of fixed assets[4]		
Long-term equity and liabilities[2]	107.0	106.5	107
	As a percentage of short-term liabilities		
Cash resources[5] and short-term receivables	94.9	95.6	97
	As a percentage of liabilities and provisions[6]		
Cash flow[7]	15.1	15.4	15.5

* Extrapolated results; differences in the figures due to rounding. 1 Less adjustments to equity. 2 Equity, provisions for pensions, long-term liabilities and the special tax-allowable reserve. 3 Including intangible fixed assets. 4 Tangible fixed assets, intangible fixed assets, other long-term equity investments, long-term receivables and long-term securities. 5 Cash and short-term securities. 6 Liabilities, provisions, deferred income and half of the special tax-allowable reserve less cash. 7 Annual result, depreciation, and changes in provisions, in the special tax-allowable reserve and in prepaid expenses and deferred income.
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12 Despite the weight of this balance sheet item being relatively small, it increasingly comprises production-relevant capital goods such as software and databases.

Net assets, financial position and results of operations of listed German non-financial groups in 2016

In 2016, the roughly 240 German non-financial groups listed in the Prime Standard segment saw their sales decline slightly by 0.4% from the previous year. The positive impact of the slight global GDP growth was counteracted by negative exchange rate effects.[1] Groups active primarily in the services sector reported an increase in sales of 2.4%, whereas groups from the industrial sector saw their earnings go down by 1.1%. Various groups were forced to contend with increased competitive pressure in their sales markets, which meant that price reductions, especially of commodity inputs for low-value-added products, were passed on to purchasers.

Operating results, measured in terms of earnings before interest, tax, depreciation and amortisation (EBITDA) as well as after depreciation (EBIT), were up significantly, at 7.8% and 9.2%, respectively, on the year; provisioning by the Volkswagen group and write-downs by E.ON had weighed heavily on the previous year's figures. Distinct reductions in personnel and distribution costs by some large groups played a role in the positive growth. At €112.1 billion, groups achieved the highest EBIT figure since statistics were first collected in 2007.

The year 2016 saw significant extraordinary expenses as well. For instance, the motor vehicle industry set aside further provisions for legal risk (Volkswagen group) and posted substantial expenditure in connection with defective airbags supplied by a now insolvent Japanese supplier. The energy supply sector, which is assigned to the industrial sector, once again posted a weak operating result. The aftermath of the decision to phase out nuclear energy and the energy U-turn, as well as ongoing provisioning in conjunction with falling crude oil and gas prices, have been weighing distinctly on the operating result. In 2016 alone, expenditure on provisioning totalled more than €13 billion. On balance, the industrial sector increased its EBIT by 4.4%. By contrast, corporate groups in the services sector posted a much higher operating result of 24.7%.

For the universe of groups, the strong rise in results, amidst a slight decline in sales, means that profitability was higher than the average of previous years. For all of 2016, the weighted return on sales across all sectors rose by 0.5 percentage point to 6.9%. Here, too, the positive result was driven mainly by groups in the services sector, which generated a return of 8.8%, the highest since 2007 and up by 1.6 percentage points on the year. Measured against previous years, the return generated by groups in the industrial sector was, at 6.4%, more on the average side.

German groups' total assets were up by 6.5% compared with 2015. On the assets side, non-current assets contributed 3.8 percentage points to the increase, while current assets accounted for 2.7 percentage points.

On the liabilities side, debt and equity grew at around the same rate. It was specifically short-term financial liabilities which, on aggregate, grew increasingly significant relative to total assets. This reflects the use of favourable short-term funding terms. In particular, large groups with access to global financial markets took advantage of international bank loans and commercial paper as sources of funding. Short-term

1 Foreign subsidiaries' sales are denominated in euro, which means that, even in the short term, earnings are heavily dependent on foreign exchange rate fluctuations.

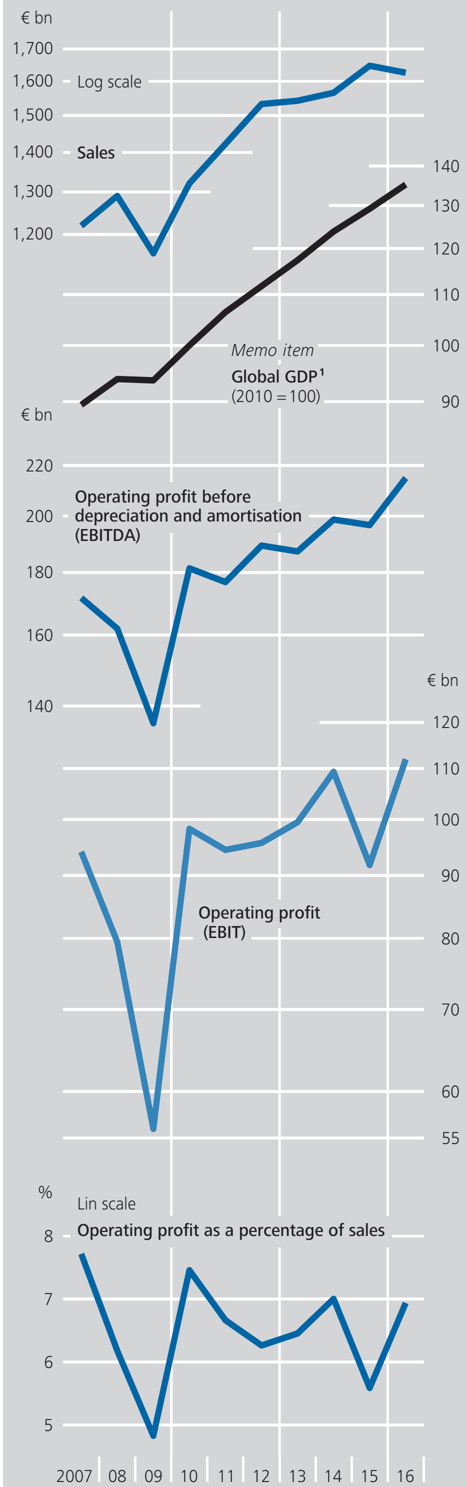
liabilities continued to be fully covered by current assets.

The equity ratio remained, on balance, largely unchanged in 2016 at 28.5%. This is due to a combination of counterbalancing effects. On the one hand, one-off effects in the case of E.ON depressed this figure by around 0.8 percentage point. The increase in provisioning for pension obligations also had a negative effect on account of a further decrease in end-of-period interest rates, with the 15-year discount rate standing at 1.7% at the end of 2016, as against 2.4% a year earlier.[2] This is the primary reason why German groups' pension obligations are estimated to have gone up by more than €24 billion to around €178 billion.[3]

On the other hand, the overall positive earnings development among the reporting groups – with isolated exceptions – increased equity, since these groups were usually able to retain large amounts of their earnings and transfer them to their reserves. Capital increases and balance sheet effects relating to the hedging of future cash flows, along with earnings from currency translation differences, likewise impacted positively on the reported level of equity.

The equity ratio of groups focused mainly in the industrial sector fell slightly by 0.3 percentage point to 26.9%, whereas that of groups in the services sector, owing in particular to retained profits, increased by a significant 1.6 percentage points to 35%, the highest aggregate value since figures

Sales, earnings and return on sales of German non-financial groups*



* The reporting population comprises approximately 230 non-financial groups listed in Germany in the Prime Standard segment. **1** GDP of selected industrial countries and emerging market economies which together make up four-fifths of global economic output, calculated using purchasing power parities.
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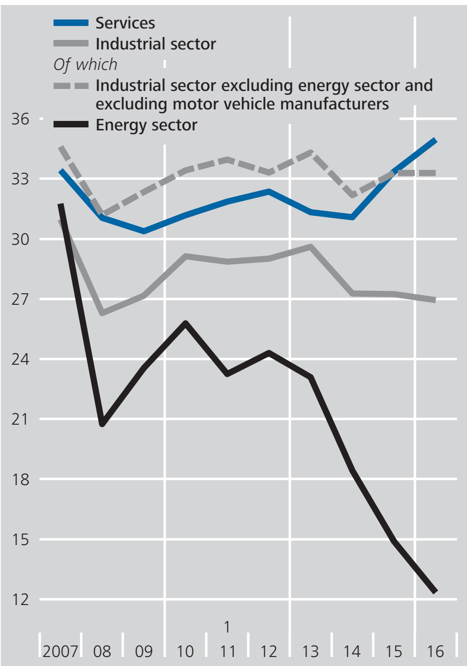
2 For valuations according to international accounting standards (IFRS/US GAAP/FRS), the end-of-period interest rate is to be identified according to the maturity of the liability based on "high quality corporate bonds".
3 Extrapolated from the largest non-financial groups of enterprises listed in the Prime Standard to all Prime Standard-listed non-financial groups. It should be noted here that not only changes in interest rates but also new claims, changes in claims and disbursements are the factors dictating the changes in pension provisions.

Capital ratios of German non-financial groups

%



1 Decision to phase out nuclear energy.
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were first collected in 2007. At the end of 2014, the equity ratio of groups in the services sector was merely 31%.

On aggregate, the equity ratio of groups in the industrial sector is lower than that of groups in the services sector, owing primarily to motor vehicle manufacturers' funding business (customer financing and financial leasing), which impacts heavily on the funding structure at group level. In 2016, moreover, the adverse effects on energy suppliers' equity of, first and foremost, impairments on assets made themselves felt. Excluding the large car manufacturers and one-off developments in the energy sector, the aggregated equity ratio of groups in the industrial sector would be comparable to that of groups in the services sector. Overall, German non-financial groups are in good shape, both in terms of their net assets and financial position as well as in terms of their earnings position.

Trends for 2017

Signs of improvement in corporate profitability

With regard to the persistently high growth levels of the German economy in the current year, non-financial corporations' sales are likely to have risen significantly. Enterprises' earnings may improve as the broad-based economic recovery now also encompasses positive stimuli from investment in machinery and equipment. By contrast, the costs of intermediate goods and raw materials in 2017 probably again exceeded the preceding year's level, after having fallen – in relation to sales – to an all-time low in 2016. Given the excellent state of the labour market, enterprises' personnel costs in 2017 are also likely to have risen somewhat more strongly than in 2016.

Noticeable rise in groups' return on sales in 2017

Overall, the profitability of groups in the current year can be regarded as good; this is also reflected by the solid growth in sales. In the first three quarters of the current year, the gross return on sales of German groups for which final data are already available increased to 8%.[13] This significant rise is based, first, on a countermovement to the depressed level a year earlier, which had been induced by extraordinary burdens.[14] Second, the listed groups have not yet reported any exceptional burdens on the aggregate for 2017. On the contrary, the energy sector benefited from the Federal Constitutional Court ruling that the Nuclear Fuel Tax Act *(Kernbrennstoffsteuergesetz)* of October 2010 is incompatible with the German constitution. Groups of corporations in this sector therefore received repayments amounting to €4.6 billion.

Groups improve equity ratio

The good earnings position is one of the main reasons for the increase in the equity ratio of

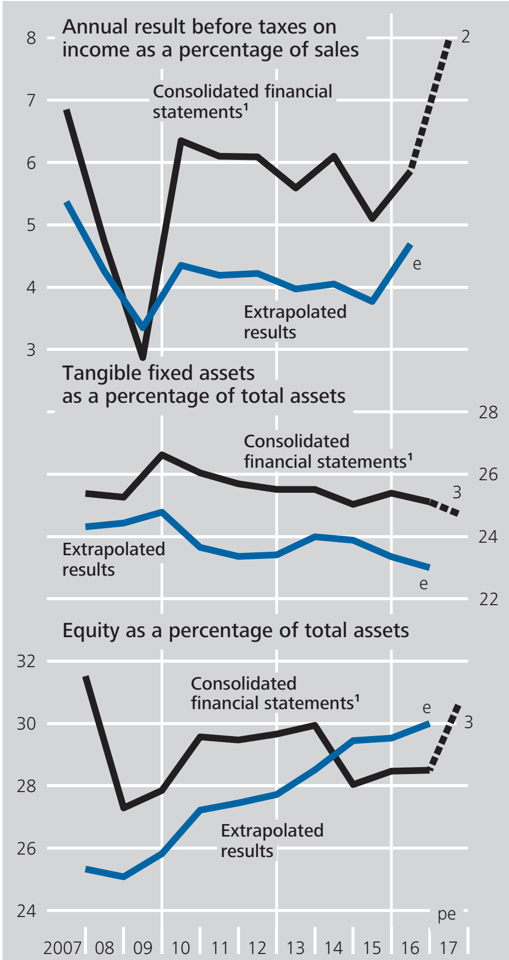
13 The figures from the consolidated financial statement statistics as at 30 September 2017 are based on data provided by the 35 largest groups listed in the Prime Standard segment of the Frankfurt Stock Exchange.
14 For more on trends in German non-financial groups' net assets, financial position and results of operations in 2016, see the box on pp 48-50.

listed groups. While individual components of items with no effect on profit or loss led to significant changes in equity in the first nine months, on balance, these changes were largely offset by the end of the third quarter. The revaluation of groups' pension obligations as a result of the end-of-period interest rate being increased at the end of the third quarter as well as the revaluation of hedges of future cash flows had a positive impact on equity in this context. By contrast, converting the balance sheets of subsidiaries from foreign currency to euro led to an exchange rate-induced loss. Besides the good earnings position, capital increases among individual groups of enterprises caused equity to increase further.

Growing propensity to invest

Concerning assets, it is likely that the long-observed trend of a declining tangible fixed assets ratio in favour of intangible assets continued in the current year. However, experience has shown that this decline cannot be used as a guide as to the general development of non-financial corporations' holdings of tangible fixed assets, as groups' financial figures are often shaped by outsourcing or acquisitions. On the other hand, the earnings situation of groups, which is expected to improve greatly in 2017, suggests that non-financial corporations' sales growth gained further momentum in the current year. The already very high level of aggregate capacity utilisation, too, might have boosted enterprises' willingness to expand their productive capacities.

Selected ratios from consolidated and individual financial statements



1 The reporting population comprises approximately 230 Prime Standard listed groups of non-financial corporations in Germany. **2** Seasonally adjusted average for the 2017 Q1 to Q3 period. **3** Reporting date: 30 September 2017.

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Long series of extrapolated results from the corporate financial statement statistics are available online at http://www.bundesbank.de/Navigation/EN/Statistics/Enterprises_and_households/Corporate_financial_statements/Tables/table.html