Trends in the financing structures of German non-financial corporations as reflected in the corporate financial statements statistics

The funding structures of German non-financial corporations have changed discernibly since the turn of the millennium. From a longer-term perspective, the strong increase in intra-group liabilities and the declining importance of trade credits are striking, as are the trends towards convergence in terms of both higher equity ratios and lower bank debt ratios. The effects are partly the result of macroeconomic trends such as the internationalisation of the German economy and the creation of complex value chains. On balance, the German non-financial corporations sector has seen a considerable across-the-board improvement in its financial viability and hence its resilience to exogenous shocks.

Based on a microdataset from the Bundesbank's corporate financial statements statistics, the results show that the trend among non-financial corporations towards strengthening their own funds base continued between 2010 and 2015. The marked observable differences in the past in the equity ratios according to sector and size category have decreased significantly. In addition, there was a marked reduction in bank loans and trade payables during the observation period. At the same time, particularly small and medium-sized enterprises as well as non-affiliated enterprises saw an expansion of liquidity reserves on the asset side of their balance sheets. This could be interpreted as losses of flexibility in short-term funding in some segments of the corporate sector being offset by increased holdings of cash. Intra-group financing, which has now emerged as the second most important source of funding for non-financial corporations, continues to make advances. In this context, the funds are often raised by group financing companies on the international financial markets in the form of syndicated loans and securities issues.

Changes in the underlying economic and financial conditions as a challenge for corporate financing

Increase in equity ratio since late 1990s

Since the turn of the millennium, there have been marked changes in the underlying economic and financial conditions for German non-financial corporations. This has also left a lasting mark on how enterprises make decisions on the nature and structure of funding. Besides shifts in debt financing, it has been chiefly the strengthening of the own funds base that has been striking. After the German corporate sector was deemed to be undercapitalised by international standards in the late 1990s, within a period of ten years, non-financial enterprises had increased their equity ratio by 5 percentage points on average to 25% in 2008.[1] The associated strengthening of financial resilience in conjunction with other measures was a key prerequisite for German enterprises emerging unharmed from the "endurance test" provided by the severe recession in the fourth quarter of 2008 and the first quarter of 2009, without reduced output in the medium to long-term and protracted job losses.

Return to decent earnings level after recession

As global demand bounced back in 2010 and 2011, German enterprises returned relatively swiftly to the decent level of profitability of the pre-crisis period. Initially, the crisis-induced adjustments in the balance sheets, which focused mainly on safeguarding liquidity, were gradually reduced. Moreover, the underlying trends in corporate funding from the pre-crisis years have persisted into the current decade. For example, equity capital now makes up an average of 30% of non-financial corporations' total assets.

Evaluations based on balanced sample of enterprises …

Possible explanations for the ongoing strengthening of the equity base and the interaction with other funding-related developments are discussed below. This is based on empirical analyses using granular data from the Bundesbank's financial statement statistics between 2000 and 2015. Balanced samples of enterprises for which annual accounts are available at the beginning and the end of each observation period are formed. This is done to ensure that the observed changes in the balance sheet items are due to economic effects and not to changes in the composition of the sample. However, in return, it has to be accepted that representativeness is limited to a certain extent.

… to analyse longer-term convergence trends in equity and bank debt …

In a first step, there is an examination of the hypothesis of whether the development in the current decade towards higher equity ratios and lower bank debt ratios can be regarded as part of an ongoing convergence process since at least the end of the 1990s. This implies the notion that the extent of the adjustments depends on the company-specific starting points in terms of the two balance sheet variables. Heterogeneity in the corporate sector may be explicitly taken into consideration through distribution analyses and microeconometric studies.

… and changes in financing structures between 2010 and 2015 …

In a second step, changes in the funding structure during the period from 2010 to 2015 are examined in the context of the balance sheet. In this regard, it is worth taking a look at individual sectors or enterprises of different size categories and legal forms. The disaggregated analysis is also linked to the fact that the economic upturn since 2010 has been based more strongly on domestic forces of growth than the expansionary phase between 2003 and 2008. Most recently, for example, construction, trade and some services sectors experienced a comparatively strong economic tailwind, which helped make balance sheet adjustments that had been carried out mainly by industrial enterprises in the more strongly export-led upswing of the previous decade.

The funding patterns in the current decade also reflect changes in the underlying financial con-

1 See Deutsche Bundesbank, Extrapolated results from financial statements of German enterprises 1997 to 2016, Special Statistical Publication 5, December 2017.

… against the backdrop of new financial conditions

ditions. Given exceptionally low lending rates, the sustained trend towards reducing the share of liabilities to credit institutions in total assets can only be explained in the context of additional key determinants such as the financial implications of the internationalisation of the German economy and the creation of value chains, especially as credit supply-driven constraints beyond the point when the financial crisis reached its peak are unlikely to have hurt the greater part of the German corporate sector to a major extent.[2] Specifically, the evaluations indicate that the increase in intra-group liabilities[3] in the corporate balance sheets may be attributable not only to operational processes but also, to a large extent, to funding operations in the international financial markets.

German enterprises' financing behaviour from a longer-term perspective

Longer-term trends in enterprises' financing behaviour

The financing behaviour of German non-financial corporations in terms of their balance sheets since the turn of the millennium is essentially characterised by four trends.[4]

- Sustained strengthening of the equity capital base
- Substantial reduction in bank debt
- Declining funding opportunities from suppliers
- Strong expansion of intra-group liabilities

The considerable growth rate of intra-group liabilities (and, in parallel with them, the corresponding claims) is related to trend factors in the real economy, such as the creation of value added processes based on the division of labour[5] and the increasing internationalisation of the German economy,[6] as well as the deployment of group financing companies to raise funds in the international financial markets.

Analysis of trends towards convergence based on balanced samples of enterprises …

The existence of trends towards convergence in terms of a higher equity ratio and a lower bank debt ratio suggests that the corporate sector's financial resilience and, hence, internal capital adequacy has increased across the board. Studies on the longer-term adjustment processes, the scale of which depends on the company-specific starting positions, are based on a balanced sample of around 15,600 enterprises for which balance sheet data are available for 2000 and 2015. For this purpose, the enterprises are grouped into deciles according to their equity ratio or bank debt ratio in 2000.

… in terms of the equity ratio …

As the chart at the top of the next page shows using the decile-specific medians, the increase in the equity ratio between 2000 and 2015 tended to be all the stronger, the lower the starting level was. Furthermore, there were striking developments at the borders of the distribution. Thus, the median of the enterprises in the lowest decile increased from negative territory to 16% in 2015. By contrast, the enterprises in the highest decile slimmed down their comparatively generous equity base somewhat in 2000.

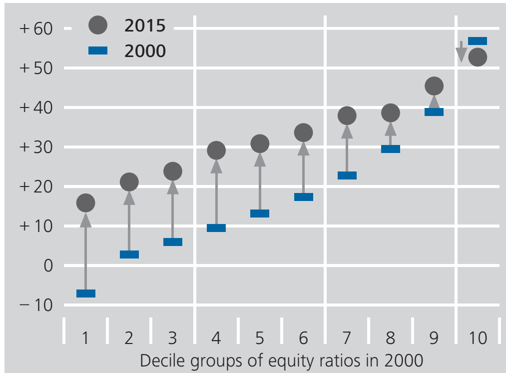
… and regarding the bank debt ratio

Convergence trends were even more pronounced regarding the bank debt ratio. In the chart at the bottom of the next page this can be seen, for instance, by the fact that the gap

2 See Deutsche Bundesbank, Developments in corporate financing in the euro area since the financial and economic crisis, Monthly Report, January 2018, pp 53-71.
3 Recorded on the liabilities side, these are liabilities to affiliated enterprises as well as liabilities to other long-term investees and investors.
4 The development of financing structures in the first decade of the 21st century has already been the subject of earlier Bundesbank analyses. See, for example, Deutsche Bundesbank, Long-term developments in corporate financing in Germany – evidence based on the financial accounts, Monthly Report, January 2012, pp 13-27; and Deutsche Bundesbank, Capital base of non-financial enterprises in Germany sustainably strengthened, Monthly Report, December 2013, pp 44-26.
5 See Deutsche Bundesbank, The German economy in the international division of labour: a look at value added flows, Monthly Report, October 2014, pp 27-42; and Deutsche Bundesbank, Structure and dynamics of manufacturing production depth as reflected in the financial statements of German enterprises, Monthly Report, June 2016, pp 56-58.
6 See Deutsche Bundesbank, The impact of the internationalisation of German firms on domestic investment, Monthly Report, January 2018, pp 13-26.

Comparison of non-financial corporations' equity ratios in 2000 and 2015*

as a percentage of total assets, decile group medians

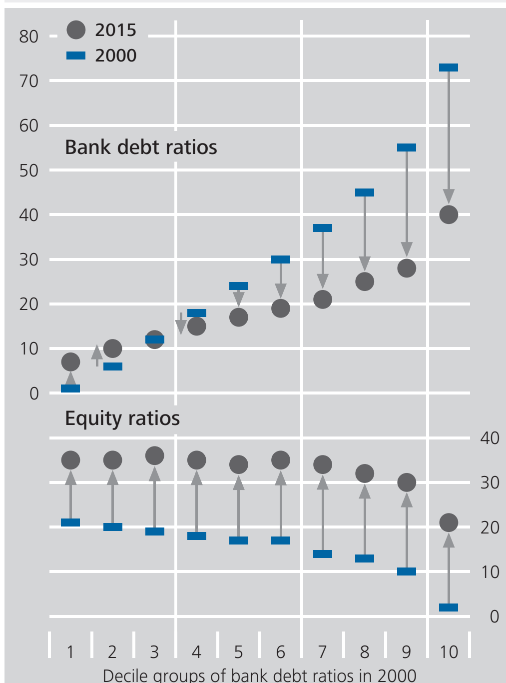


* Balanced sample of 15,582 enterprises.
Deutsche Bundesbank

between the medians of the first and tenth deciles more than halved from 72 percentage points in 2000 to 32 percentage points in 2015.[7] The degree of downward adjustment also tended to be all the greater, the higher the debt ratio was in 2000. Moreover, the hypothesis of a convergence process is additionally supported by the fact that the fifth of enterprises with the lowest initial values slightly increased bank liabilities as a percentage of total assets in the period under review.

Convergence in the equity and bank debt ratios of non-financial corporations between 2000 and 2015*

as a percentage of total assets, decile group medians



* Balanced sample of 12,615 enterprises.
Deutsche Bundesbank

Equity ratios now hardly correlated with bank debt

Looking at the equity ratios in the period from 2000 to 2015 in the deciles grouped by the bank debt ratio, it is possible to discern substantial increases in all group-specific medians. In addition, the medians for all groups except the decile of enterprises with the highest debt ratio were in the quite narrow range of an equity ratio between 30% and 35%, whereas the starting positions in 2000 had been spread a great deal more widely. Furthermore, the findings of the distribution analysis underline the fact that the size of the equity ratio was clearly negatively correlated with the share of bank liabilities in total assets at the time. First, the enterprises which counted among the 10% with the highest bank debt ratios in 2000 had considerably increased their equity ratios from a very depressed level by 2015, but failed to match the level of the other enterprises with a median of just over 20%. Second, the enterprises in this decile reduced their bank debt more than others.

Convergence trends also confirmed by convergence tests

Further indications of equity and bank debt converging – each in relation to total assets – are provided by microeconometric studies of convergence hypotheses, which are taken from empirical research into growth and development economics (see the box on page 62).

Capital structures in the non-financial corporations sector from 2010 to 2015

In order to shed some light on the question of what changes occurred in the structural fund-

7 Around 20% of the enterprises in the balanced sample show no bank liabilities in their balance sheets in 2000. The analyses based on the decile groups sorted by bank debt ratio are therefore supported by a sample of around 12,600 enterprises.

Study of the structural financing patterns based on financial statement data from 2010 and 2015, …

ing patterns of German non-financial corporations once they had recovered from the severe recession of the final quarter of 2008 and the first quarter of 2009, we analyse balance sheet data of a balanced sample of around 39,000 enterprises for which financial statement statistics are available for 2010 and 2015.

… which account for more than 50% of the total turnover of all enterprises

The enterprises included in the study account for more than 40% of the financial statements used in the extrapolated data in the corporate financial statement statistics. With regard to overall turnover, which is recorded for all enterprises by the Federal Statistical Office, the compiled dataset for 2015 represents a share of more than 50%. Clearly underrepresented, above all, are small enterprises at just under 7%, compared with large enterprises at 68%.[8] Owing to the high degree of correlation between the two corporate characteristics, this also applies, albeit to a lesser extent, to the coverage of non-affiliated enterprises (34%). Of the aggregated economic sectors, only construction has a particularly unfavourable coverage at just under 24%. On the whole, however, for an empirical study based on microdata, the analysis has a relatively comprehensive database.

Equity

Distinct increase in median values of equity ratio between 2010 and 2015 …

The results of the study clearly show that the non-financial enterprises from the balanced sample further increased their stocks of equity capital in the period from 2010 to 2015. According to the median values, the equity ratio rose during the observation period by more than 5 percentage points from 24.2% to 29.4% of total assets (see the table on page 64). By contrast, based on the arithmetic mean,[9] there was only a minor increase from 31.9% to 32.4%. This shows that large enterprises have, in the past few years, been significantly more restrained in increasing their liabilities by raising new funds, while some enterprises have even reduced their liabilities.[10]

… especially in the case of small enterprises, …

A size-category-specific analysis of movements in equity ratios confirms this finding. In the five years up to 2015, small enterprises increased their equity capital based on the median from 21.7% to 28.3% of total assets, ie by more than 6.5 percentage points. Somewhat less marked was the increase in liable funds in the case of medium-sized enterprises, where the ratio went up from 26.1% to 30.6% during the period under review. In the case of large enterprises, the equity ratio in the median was boosted by no more than 2.6 percentage points to 29.8%.

… as a result of which the gap in equity financing to larger enterprises has virtually disappeared

The results thus show that the earlier clear gap between the equity ratios of small and large enterprises in the non-financial corporations sector in Germany has now largely disappeared. The group of medium-sized enterprises, in fact, currently stands at the top of the non-financial corporations sector's equity pyramid.

Still major disparities between the equity bases of corporations and non-corporations …

Such a convergence of equity ratios cannot be seen in the breakdown of enterprises by legal form, however. The median equity capital of corporations saw dynamic growth, rising from 28.0% to 34.2% of total assets. While the liable capital of non-corporations also grew over the five-year observation period, the ratio went up by no more than 2.1 percentage points, meaning that – measured by the median – non-corporations' equity ratio in 2015, at 17.1%, was exactly half of the figure for corporations, and that remaining disparities in the en-

8 Enterprises are grouped into size categories based on their turnover. In line with the classification recommended by the EU, small enterprises have a turnover of below €10 million, medium-sized enterprises have a turnover of between €10 million and below €50 million, and large enterprises have a turnover of €50 million and more.
9 In this report, the term "arithmetic mean" always refers to the arithmetic mean weighted by total assets, which takes account of the differing sizes of enterprise; at the same time, the ratios are in relation to total assets.
10 While the extrapolated results of the Bundesbank's financial statement statistics are generally presented as weighted arithmetic means, this particular study chiefly uses (unweighted) median values. These are much less prone to outliers and are not determined by the recognisable size effects in the cross-sections, which represents a greater robustness in statistical terms.

Microeconomic findings on the convergence of non-financial corporations' equity and bank debt ratios in the period from 2000 to 2015

The concepts of beta and sigma convergence are well known from the empirical literature on convergence processes in growth and development economics.[1] Generally, these are statistical parameters indicating that, for a large number of observation units, the path of a variable over time may be interpreted as an adjustment process towards a standardising target value. The econometric verification manages without the specification of the target value. In the case under consideration, the observation units are those 15,600 enterprises for which balance sheet data are available for 2000 and 2015. The presence of convergence is investigated here for the equity ratio and bank debt ratio.

Beta convergence characterises an adjustment that takes place all the more quickly, the smaller the initial value is. Given a very high level at the beginning, a reduction should occur. In the case of equity ratios, the upward movement is likely to dominate, whereas the bank debt ratios are predominantly adjusted downwards. Irrespective of the main direction of movement, the test for beta convergence is based on the following regression:

$$\Delta x_i^{2000/2015} = \alpha + \beta x_i^{2000} + \epsilon_i,$$

where $\Delta x_i^{2000/2015}$ is the change in the balance sheet ratio of enterprise i under consideration between 2000 and 2015, x_i^{2000} is the balance sheet ratio of 2000, α is a constant and ε_i the error term.

Using the simple ordinary least squares method (OLS), β is estimated at -0.60 in the case of the equity ratio and at -0.63 for the bank debt ratio. As the standard errors of the coefficient estimates each stand at 0.01, the condition for the presence of beta convergence ($\beta<0$) is fulfilled. Estimating the model, for the purpose of a robustness check, also using the LAD method,[2] produces results of -0.48 and -0.52 respectively, which are of a similar magnitude.

Sigma convergence, in this context, refers to the narrowing of the dispersion of the equity ratios and bank debt ratios respectively between 2000 and 2015. Beta convergence is a necessary, but not sufficient, condition for sigma convergence. It is for that reason that this criterion is additionally investigated. Moreover, a distinction is to be made between an absolute narrowing of the dispersion as measured, for instance, by the standard deviation, and a reduction in the dispersion relative to the mean value, expressed, for example, by the coefficient of variation.

In the case of the equity ratio, the standard deviation increased slightly from 26 percentage points to 28 percentage points between 2000 and 2015. Given the fact that there was a sharp rise in the mean value during this period, the coefficient of variation decreased substantially from 1.5 to 0.9. As a result, the dispersion of the own funds ratio declined in relative terms rather than in absolute terms. The opposite is true of the bank debt ratio. In this case, the standard deviation declined from 26 percentage points to 22 percentage points between 2000 and 2015. However, the sharply reduced mean value during this period led to an increase in the coefficient of variation from 0.8 to 1.1.

1 For further information, see, for example, X Sala-i-Martin (1996), The classical approach to convergence analysis, Economic Journal, 106, pp 1019-1036, and A Young, M Higgins and D Levy (2008), Sigma convergence versus beta convergence: Evidence from US country-level data, Journal of Money, Credit and Banking 40, 5, pp 1083-1093.
2 The LAD estimate is based on the absolute deviations being minimised (least absolute deviation: LAD). As these are amount-related deviations, the estimation results are typically more robust to outliers than in the case of minimum square deviations. With regard to the distribution of residuals in the regressions, this property proves to be an advantage.

terprises' equity bases in fact became even larger.

… due to different liability rules

Differing statutory liability rules are a key factor affecting persistent legal form-specific differences in the provision of enterprises with own funds. Whereas only the equity capital and any additional collateral provided can be drawn on in the event of a corporation's bankruptcy, in the case of non-corporations, the company owner's liability is unlimited and includes all personal assets. The equity holdings in the balance sheet therefore lose their importance as the sole measure of the amount of liable capital as well as for the acquisition of funds.[11]

Lower equity bases in the case of group enterprises given ability to obtain funds centrally within group

The results also suggest that enterprises which are structured as group enterprises in an economic and organisational sense normally have a lower equity base than those that are not affiliated with a group, although it was possible to derive this enterprise characteristic in the present study only indirectly from the existing balance sheet data.[12] In groups, funds are often obtained centrally through the parent company, a holding company or a special financing company. In this way, the management of intra-group financing needs is optimised and the financial autonomy of groups vis-à-vis banks is strengthened.[13] According to the results obtained from the present study, non-affiliated enterprises saw relatively large increases in their equity ratios in the observation period; in the median, they rose relatively sharply from a comparatively low level of 22.7% to 30.3%. The level and dynamics of capitalisation at affiliated enterprises, on the other hand, were significantly lower, with the ratio only rising from 24.8% to 28.9%.

Structural analysis confirms the increase in equity capital in large segments of the non-financial corporate sector, …

The trend towards a further increase in equity and a levelling of the differences in equity ratios can also be seen if the results are broken down by economic sector. In the manufacturing sector, the median values increased from 29.3% to 33.9%; in energy and water, the figure went up from 28.2% to 35.8%; and there was a similar development in wholesale and retail trade, with a rise from 24.6% to 29.6% (with corresponding increases in their mean values). Thus, equity ratios of just over 30% on average are now the norm in large segments of the non-financial sector.

… with equity ratios in the construction sector still just over one-third below those of other sectors

One exception is construction, which traditionally has low equity ratios. The results show that the liable capital situation in this sector, which has been strained for many years, saw a further marked improvement during the observation period, which is evidently due to the rebound in construction activity since 2010 and resulting growth in profitability. Over the five years observed, the increase in equity ratios was relatively clear, with the median climbing from 14.0% to 18.4%. However, this means that they are still just over one-third below the comparable figures of the other sectors.[14] The weak capitalisation of the construction industry is partly related to its operational structure, as most construction firms are owner-operated small and medium-sized enterprises with the legal form of non-corporations,[15] and hence they generally hold less equity capital for liability purposes.[16] Furthermore, statistically, advance payments are usually fairly high in the

11 See Deutsche Bundesbank, Verhältniszahlen aus Jahresabschlüssen deutscher Unternehmen von 2014 bis 2015, Special Statistical Publication 6, May 2018, p 6.
12 Enterprises are classified as affiliated with a group if data are reported for at least one of the asset or liability items relating to participating interests or affiliated companies.
13 See H Friderichs, Unternehmensanalyse im Zeichen zunehmender Internationalisierung der deutschen Wirtschaft, Wirtschaftsdienst, Vol 94, No 11, November 2014, pp 11ff.
14 The results for the services sector buck the trend somewhat, as the median values here indicate a strong increase from just 21.5% to 26.1%, while the arithmetic means even suggest a decline from 38.2% to 36.2%, with the latter very clearly reflecting particular developments in the case of large enterprises.
15 In 2011, just over two-thirds of all operations in the construction sector were registered as a sole proprietorships. See Federal Institute for Research on Building, Urban Affairs and Spatial Development, Konsequenzen veränderter Finanzierungsbedingungen für die Bauwirtschaft, Bonn, 2016, p 15.
16 According to the extrapolated data from the corporate financial statement statistics, non-corporations in the construction sector recorded an equity ratio of just under 11% in 2015, while the equity capital of corporations as a percentage of total assets was almost twice as high.

Developments in non-financial corporations' equity capital*

As a percentage of total assets

Classification	2010 Median	2010 Weighted average	2015 Median	2015 Weighted average
All enterprises	24.2	31.9	29.4	32.4
By turnover size category				
Less than €10 mn	21.7	28.7	28.3	33.8
€10 mn to less than €50 mn	26.1	33.4	30.6	36.5
€50 mn or more	27.2	31.9	29.8	32.0
By economic sector				
Manufacturing	29.3	31.7	33.9	31.7
Electricity and water supply and waste management	28.2	29.9	35.8	33.9
Construction	14.0	16.2	18.4	18.5
Wholesale and retail trade and repair of motor vehicles and motorcycles	24.6	27.5	29.6	31.3
Service activities[1]	21.5	38.2	26.1	36.2
By group affiliation				
Affiliated	24.8	31.9	28.9	32.3
Not affiliated	22.7	32.0	30.3	38.5
By legal form				
Corporations	28.0	32.8	34.2	33.4
Non-corporations	15.0	25.8	17.1	25.9

* Mining and quarrying; manufacturing; electricity and water supply and waste management; construction; wholesale and retail trade; and service activities. Results of the two-year balanced sample for 2010 and 2015. 1 Transportation and storage; accommodation and food service activities; information and communication; and business service activities.

Deutsche Bundesbank

construction sector, which has the effect of squeezing the equity ratio.[17]

Bank debt

Lower bank debt ratio

Bank debt as a percentage of total assets ran counter to the trend in equity ratios in the period under review. According to the results obtained here and based on median values, the debt ratio vis-à-vis credit institutions fell from 9.1% in 2010 to 7.6% in 2015. In the case of average values, the decline given similar sizes was significantly lower, however, at only 0.4 percentage point (see the table on page 65). The scale on which debt to credit institutions was reduced, though, is especially visible when the results are broken down by the maturity of the loans. Over the five-year observation period, short-term bank debt (with a residual maturity of up to one year), showed a further fall from a very low level of 1.9% to 1.6% of total assets.[18] Based on mean values, by contrast, it increased slightly to just under 3%, however, mainly because of the financial operations of enterprises not affiliated with a group. With regard to long-term bank debt, the median was close to zero in both years, while the average values, which are strongly influenced by large enterprises, showed a further decline in the ratio from 5.5% to 5.1%. The vast majority of enterprises were thus increasingly allowing their long-term bank loans to expire in the period under review.

Importance of bank loans dependent on enterprises' size and group affiliation

Despite these declining trends in bank debt, the present study findings also make it clear that bank loans still play an important role for a considerable number of enterprises in the non-financial corporate sector. Small and medium-sized enterprises, in particular, still rely quite heavily on bank loans for their funding; the bank debt ratios for small firms, based on the median, came to 13.5% in 2010 and 12.2% in 2015. The corresponding figures for medium-sized enterprises were 7.5% in 2010 and 6.1% in 2015. Another thing that stands out is the fact that firms operating in wholesale and retail trade and firms which are not affiliated with a group make substantial use of bank loans, which is especially true of short-term loans, but also of long-term funding operations through credit institutions in some cases. Here, the conditions have remained relatively stable over the past five years, with only minor declines of around 1 percentage point in each year.

Trade credit

Decline in trade payables and receivables

The observable broad-based decline in trade payables as a percentage of total assets is also similarly apparent in the corresponding claims

17 Since gross figures are used in the statistics to ensure consistency of measurement, any outstanding advance payments against assets are reported on the liabilities side in the individual financial statements. This leads to an increase in total assets and thus reduces the equity ratio.
18 The low median ratio values relative to the ratio for total liabilities to banks broken down by maturity stem from the fact that, for many enterprises, only either the short-term or the long-term value is recorded, meaning that the aggregate value produces a different distribution.

on the assets side of the balance sheet. The scope for borrowing from suppliers, as measured by the median, was reduced quite noticeably in the observation period, with a fall in the ratio from 8.8% to 7.0%. The associated restriction of inter-company funding between enterprises mainly affects smaller enterprises, wholesale and retail traders (where this form of short-term funding traditionally plays a major role) and enterprises not affiliated with a group. Based on the median, these areas consistently recorded declines of between 2 and 3 percentage points in this respect. Survey findings suggest that the decline in trade credit might partly be connected with enterprises' heightened risk sensitivity in the wake of the financial and economic crisis, which may have led to a sustained reduction in collection periods and have significantly curtailed enterprises' short-term funding through suppliers.[19]

Developments in non-financial corporations' liabilities*

As a percentage of total assets

Classification	2010 Median	2010 Weighted average	2015 Median	2015 Weighted average
Liabilities to banks	9.1	8.4	7.6	8.0
of which				
Short-term	1.9	2.8	1.6	2.9
Long-term	0.0	5.5	0.0	5.1
By turnover size category				
Less than €10 mn	13.5	26.0	12.2	22.6
€10 mn to less than €50 mn	7.5	17.2	6.1	15.8
€50 mn or more	1.3	7.1	0.3	6.8
By group affiliation				
Affiliated	7.0	8.1	5.4	7.7
Not affiliated	14.5	21.3	13.2	18.9
Trade payables	8.8	6.8	7.0	6.3
By turnover size category				
Less than €10 mn	9.1	10.1	6.9	8.5
€10 mn to less than €50 mn	8.7	9.4	7.2	8.2
€50 mn or more	8.1	6.4	6.9	6.1
By group affiliation				
Affiliated	8.0	6.6	6.6	6.2
Not affiliated	11.5	12.1	8.4	10.6
Liabilities to affiliated companies	0.0	16.8	0.0	19.8

* Mining and quarrying; manufacturing; electricity and water supply and waste management; construction; wholesale and retail trade; and service activities. Results of the two-year balanced sample for 2010 and 2015.

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Intra-group liabilities

Increase in liabilities to affiliated companies, especially at large enterprises …

Finally, the present study shows that there was a steep rise in intra-group liabilities during the reporting period. Viewed as a whole, these are now the second most important source of funding for non-financial corporations in Germany after equity capital. The ratio for intra-group liabilities went up from an average of 16.8% in 2010 to 19.8% in 2015,[20] with the increase in liabilities to affiliated companies being particularly concentrated on large enterprises.[21]

… partly because of the development of global value chains

Under German balance sheet legislation, intra-group liabilities include not only financial obligations from intra-group relations, but also trade payables in the context of group affiliates. The sharp growth in intra-group items cannot therefore be attributed solely to the increasing importance of intra-group funding sources. Rather, the construction of global value chains and networks provides a further explanation.

19 See in this connection the surveys of Creditreform for European countries, most recently: Creditreform, Corporate insolvencies in Europe, 2014/15. According to these results, collection periods in Europe have declined sharply in recent years, although the implementation of the EU Late Payment Directive of 2011 is likely to also have played a part in some countries. Even in Germany – a country which, owing to the accompanying legal provisions for trade credits with comprehensive reservation of ownership rights, already has by far the lowest collection periods in Europe – collection periods have fallen since 2007.
20 In this context, it should be borne in mind that the funding shares of these items stem mainly from syndicated loans as well as short and long-term securities issuance, which are often obtained through special group-specific financing companies on international credit, money and capital markets. These cross-border bank and capital market-based funding processes can only be seen in group balance sheets, however. In this respect, the disintermediation of German non-financial corporations is actually considerably less advanced than the individual financial statement data might suggest.
21 Many smaller enterprises have no intra-group liabilities, which means that the median values are zero in these cases. For this reason, the more meaningful average values are used here instead.

Developments in non-financial corporations' cash holdings*

Cash balances and bank deposits as a percentage of total assets

Grouping criterion	Enterprises in the … bottom half of the distribution according to criterion: 2010	2015	Change between 2010 and 2015[1]	… top half of the distribution according to criterion: 2010	2015	Change between 2010 and 2015[1]
Short-term liabilities to banks in 2015						
Total	8.2	10.5	2.4	2.9	2.9	− 0.1
By turnover size category						
Less than €10 mn	11.3	15.9	4.6	3.0	3.0	0.0
€10 mn to less than €50 mn	7.1	8.9	1.8	3.1	3.0	− 0.1
€50 mn or more	3.8	3.6	− 0.2	2.5	2.2	− 0.3
By group affiliation						
Affiliated	5.9	7.5	1.5	2.6	2.5	− 0.1
Not affiliated	15.2	19.4	4.2	3.5	3.7	0.2
Trade payables in 2015						
Total	5.7	6.9	1.2	3.9	4.3	0.4
By turnover size category						
Less than €10 mn	6.8	9.2	2.4	4.4	5.1	0.7
€10 mn to less than €50 mn	5.4	6.3	0.9	3.7	4.0	0.3
€50 mn or more	3.5	2.9	− 0.6	2.8	2.7	− 0.2
By group affiliation						
Affiliated	4.7	5.2	0.6	3.2	3.3	0.2
Not affiliated	8.9	12.2	3.3	5.5	6.4	0.9

* Mining and quarrying; manufacturing; electricity and water supply and waste management; construction; wholesale and retail trade; and service activities. Results of the two-year balanced sample for 2010 and 2015. **1** In percentage points.

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Interaction between enterprises' short-term debt and their cash holdings

Increase in cash holdings in order to safeguard liquidity …

All other things being equal, a reduced level of short-term bank and trade credits might imply a loss of flexibility with regard to short-term funding options. Enterprises are in a position, however, to protect themselves against the associated refinancing risks by increasing their cash holdings and bank deposits.[22] The extrapolated data from the corporate financial statement statistics indicate a slight tendency towards increased cash holdings, with cash holdings and bank deposits as a percentage of total assets amounting to just over 7% in 2016. Following a temporary decline in the first few years of the current decade, the ratio thus returned to the heightened level it had reached in 2009 and 2010 in order to safeguard liquidity as a result of the recessionary phase of the financial and economic crisis.

… as short-term debt positions are reduced …

In order to establish more accurately that enterprises which were supporting fewer of their funding needs through short-term debt positions had been tending to increase their cash holdings in the preceding years, the balanced sample based on the median short-term liabilities to banks in 2015 or short-term trade payables is split into a lower and an upper category (see the table above). While enterprises that showed larger percentages of short-term debt items in their balance sheets in 2015 altered their liquidity holdings hardly at all or only moderately between 2010 and 2015, the enterprises with corresponding ratios below

22 For more information on the transmission mechanism in the context of categorising alternative funding strategies (bank-oriented versus autonomous), see, for example, J Hicks, The Crisis in Keynesian Economics, Oxford, 1974, pp 50 ff. According to this theory, as long as they have sufficient working capital loans and other short-term loans at their disposal, companies need not maintain their own liquidity buffers internally in the form of cash holdings and bank deposits.

the median recorded an above-average increase in their cash holdings during this period.

… especially in the case of small and medium-sized enterprises and non-affiliated enterprises

The link between short-term debt positions and cash holdings is more pronounced in the case of small and medium-sized enterprises as well as enterprises not affiliated with a group, as they have limited options for securing liquidity through other channels, such as through group affiliates, when needed. For example, small enterprises with lower short-term bank debt boosted their share of cash holdings and bank deposits from 11% in 2010 to 16% in 2015, while medium-sized enterprises increased the size of their balance sheet holdings of these assets from 7% to 9%. By contrast, large enterprises were tending in this period to further scale back their liquidity buffers as a share of total assets from what was already a lower starting percentage of the balance sheet. Non-group-affiliated enterprises with lower short-term bank debt ratios in 2015 stepped up their cash holdings and bank deposits between 2010 and 2015 by just over 4 percentage points to almost 20% of total assets. Even non-group-affiliated enterprises which had smaller balance sheet holdings of supplier liabilities showed a marked rise in their cash ratio during this period.

Summary and conclusions

Convergence of equity bases at a high level

The funding patterns of non-financial enterprises in Germany have changed markedly in recent years. The sustained improvement in equity ratios, for example, continued in the period observed here from 2010 to 2015, with profit retention likely to have made a substantial contribution in this regard. In addition, there was a considerable reduction in the differences in the extent to which enterprises are equipped with liable capital depending on firm size and economic sector. This means that the idea of a significant equity capital gap between small and large enterprises, to which many of the economic problems of small and medium-sized enterprises were regularly attributed in the past, is now largely outdated.

Deleveraging occasionally leads to increased cash holdings

On the other hand, there was a marked reduction in debt, primarily as a result of a decrease in liabilities to banks, although funding in the form of bank loans still plays an important role for a large number of small and medium-sized enterprises in Germany. The increase in cash holdings in the balance sheets of enterprises over the past few years can be explained in the context of a declining share of trade credit. Small and medium-sized enterprises as well as enterprises not affiliated with a group, in particular, are tending to offset the decline in funding buffers at banks and suppliers with higher liquidity provisions of their own. Despite the opportunity costs, this then affords them more security and greater flexibility in decision-making. The renewed growth in cash holdings over the past few years therefore need not necessarily be associated with a more or less involuntary reaction to a lack of sufficiently lucrative investment opportunities, but could also be interpreted as a deliberate decision to mitigate risk, at least in the case of enterprises which are keeping their short-term debt positions at a comparatively low level.

Growing importance of intra-group financing companies

What particularly stands out is the strong growth in intra-group liabilities that has come about as a result of the German economy's greater international focus and the establishment of value added processes based on the division of labour. This balance sheet item largely reflects funding through syndicated loans and securities issuance, which is mainly obtained through special intra-group financing companies on the international credit, money and capital markets. In this respect, the actual deleveraging taking place in Germany's non-financial corporate sector would appear, if anything, to be overstated when looking at enterprises' individual financial statements.

Altered funding patterns contribute to enterprises' increased resilience to crisis

All things considered, the adjustments in both the financing structures and in liquidity-holding bring considerable advantages for non-financial corporations' viability in the face of exogenous shocks and are likely to help make the German corporate sector more resilient to crisis.