

Developments in corporate financing in the euro area since the financial and economic crisis

In the wake of the financial crisis, the financing structure of non-financial corporations in the euro area as a whole and in the four large member countries (Germany, France, Italy and Spain) in particular, has changed significantly. Three main developments have been observed. First, in all of the countries considered in this article, a shift has occurred from funds raised externally (external financing) to financing with internally generated financial surpluses (internal financing). Against the backdrop of somewhat subdued investment overall, this development has been driven by relatively weak inflows through external financing and by, in some cases, a marked expansion of internal financing, which has largely been attributable to the fall in interest payments. Second, external financing has experienced a move away from borrowed capital towards equity capital, notably in Spain and Italy. In these countries, this shift can be seen as a reaction to the debt overhangs accumulated in the run-up to the financial and economic crisis and the European debt crisis. In doing so, enterprises addressed the rise in the risk of insolvency resulting from deteriorating sales opportunities and asset positions. Third, financing through bank loans, not least in Italy and Spain, has been substituted by other forms of debt such as loans from non-banks and debt securities. This development has mainly been caused by temporary supply constraints at banks.

The shift towards a higher share of internal and equity financing combined with a more diversified debt financing structure is likely to help make the financing of non-financial corporations as a whole less vulnerable to temporary financial constraints at individual sources of financing, particularly banks. The envisaged creation of a European capital market union could further advance this process. For monetary policy, it is important with regard to the transmission of monetary policy impulses through the various transmission channels to continuously monitor and analyse changes in financing behaviour and the associated financing structure of non-financial corporations.

■ Introduction

Financing conditions for non-financial corporations shape developments in the real economy ...

Financing conditions for non-financial corporations have a significant impact on their investment behaviour, which is of great importance for both the short-term and the long-term development of the economy. Business investment, which is much more volatile than other components of gross domestic product (GDP), has a major impact on the business cycle. Moreover, through the development of the capital stock, it also plays a part in shaping the growth potential of the economy.

... and are, inter alia, affected by monetary policy

Financing conditions, for their part, are affected by factors such as monetary policy. A change in the monetary policy stance impacts on the overall financing environment and thus also on enterprises' financing costs. Changes in financing costs, in turn, have an impact on the profitability of investments and thus on demand for financing. At the same time, constraints at capital providers can affect the supply of financing for non-financial corporations, thereby impairing their investment activity. The interplay of these factors is ultimately reflected in the financing structure of enterprises.

Financing structure of euro area non-financial corporations changed since the financial and economic crisis

In the context of the financial and economic crisis, the financing structure of euro area non-financial corporations has in some cases shifted significantly. Against the backdrop of rather weak investment activity overall, three main trends have emerged despite a certain degree of country-specific heterogeneity.

- First, there has been a shift away from funds raised externally (external financing) to the use of surpluses generated through enterprises' operations (internal financing).
- Second, external financing has tended to experience a shift from borrowed capital to equity capital.
- Third, bank loans have lost some of their importance as a debt financing instrument

compared with other forms of debt such as loans from non-banks and debt securities.

These three developments are described in detail and placed in context below. As the euro area aggregate in some cases masks different national changes, developments at the country level are also examined. Remarks are confined to the four large member countries of the euro area, ie Germany, France, Italy and Spain. Because of their economic importance, these four countries account for the majority of changes at the euro area level and at the same time reveal country-specific differences. The primary data source for the following remarks are the results of the financial accounts. The period under review is divided into two periods: the acute phase of the financial and economic crisis together with the subsequent recovery (2008 Q1 to 2011 Q2) and the subsequent period from the third quarter of 2011 up to the current end (2017 Q2). This breakdown is based on the business cycle in the euro area and comprises a complete upturn and downturn in each case.¹ Finally, possible macroeconomic and economic policy implications of a change in financing structure are discussed.

■ Theory of corporate financing

The theory of corporate financing distinguishes between two complementary main approaches to explaining the financing behaviour of non-financial corporations: the pecking order theory

Main approaches of the theory of corporate financing

¹ For information on dating the business cycle, see <http://cepr.org/content/euro-area-business-cycle-dating-committee>

and the trade-off theory.² The former posits that non-financial corporations gear their financing along a hierarchy. Thus, they make use, first, of their internally generated payment surpluses (internal financing) and then use external funds in the form of borrowed capital only if the internal funds are insufficient to realise the targeted volume of non-financial asset formation.³ Only as a last resort, according to this theory, do enterprises finance themselves through equity. The financing hierarchy is justified by the higher cost of the types of financing along the hierarchy; these, in turn, are mainly attributed to information and incentive problems between capital providers and the management of enterprises.⁴ Amongst other things, this approach implies that when it comes to external financing, non-financial corporations chiefly make use of debt financing instruments.

to be more dependent on bank loans or other equity, such as business shares and participating interests.

In addition to these demand-side factors, supply-side conditions can generally also affect the choice between various debt instruments through changes in the relative financing costs. In this context, the interest payable by non-financial corporations depends on the financing costs and the risk premiums demanded by lenders. These, for their part, are closely linked to the balance sheet constraints and the risk appetite of investors.⁷ Changes in these factors or adjustments to the regulatory framework, which affect the various capital providers in different ways, can have a crucial impact on their refinancing conditions and on the pricing of the funds they provide to non-financial corporations. This subsequently influences the relative attractiveness of the various financing instruments, which may ultimately lead to a change

... and by supply-side conditions

Equity as a capital buffer to avoid insolvency

Conversely, enterprises which largely finance themselves through borrowed capital show only a low level of equity. This gives rise to the danger that even small losses may erode the enterprise's capital buffer, potentially resulting in its insolvency. This aspect is addressed by the trade-off theory, which states that enterprises build up a capital buffer to avoid the costs of a possible insolvency and, at the same time, to give them flexibility in increasing their leverage for future investment decisions.⁵ This approach involves a conflict of objectives in that borrowed capital is preferable to equity because interest costs are tax-deductible. These two factors are weighed up to produce the optimal equity ratio. In this context, the (perceived) risk of insolvency very much depends on macro-economic conditions, meaning that the optimal equity ratio may vary over time.

Choice of financing affected by structure of the corporate sector ...

Shifts within and between the two categories of borrowed capital and equity may be attributable, *inter alia*, to structural and institutional factors such as, for instance, the size, age or business sector of an enterprise.⁶ For example, it is easier for established large enterprises to place shares and debt securities on the capital markets, whereas young, small enterprises tend

2 See M Frank and V Goyal (2011), Trade-off and pecking order theories of debt, *Handbook of empirical corporate finance: empirical corporate finance*, S Elsevier, pp 135-202; J Berk and P DeMarzo (2014), *Corporate finance*, 3rd edition, chapters 15 and 16; and Deutsche Bundesbank, Long-term developments in corporate financing in Germany – evidence based on the financial accounts, *Monthly Report*, January 2012, pp 13-27. Empirical studies come to the conclusion that both explanatory approaches may be validated. See, for example, A De Jong, M Verbeek and P Verwijmeren (2011), Firms' debt-equity decisions when the static trade theory and the pecking order theory disagree, *Journal of Banking and Finance*, 35 (5), pp 1303-1314.

3 Both theories are therefore limited to the need for external financing in order to form non-financial assets. Furthermore, however, external financing can, in principle, also be raised to build up financial assets, for example in the form of equity investments.

4 See S Myers and N Majluf (1984), Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics*, 13 (2), pp 187-221. For more on the significance of information asymmetries for the financing of banks, see Deutsche Bundesbank, The importance of bank profitability and bank capital for monetary policy, *Monthly Report*, January 2018, pp 27-52.

5 See E Fama and K French (2002), Testing trade-off and pecking order predictions about dividends and debt, *Review of Financial Studies*, 15 (1), pp 1-33.

6 These factors, in turn, also have an impact – through the profitability and the form of fixed asset formation – on the relative importance of internal financing, financing with borrowed capital and equity financing.

7 See Deutsche Bundesbank, The importance of bank profitability and bank capital for monetary policy, *Monthly Report*, January 2018, pp 27-52.

in demand. Moreover, financial and regulatory restrictions at capital providers may completely deny non-financial corporations access to certain financing instruments, forcing them – where they can – to substitute them with other forms of financing.

regard to equity capital, a distinction can be made between listed shares, unlisted shares and other equity such as business shares and participating interests. Listed shares and debt securities are often also subsumed under the term “market financing”.

Development of corporate financing

Total financing

The chart on page 56 provides an overview of total financing, broken down by internal and external financing, of non-financial corporations. It shows flow figures which, in the case of external financing, correspond to transaction-related changes in outstanding liabilities. Internal financing derives from the economic activity of the business sector and corresponds to the sum of retained earnings and the equivalent of the depreciation of the capital stock.⁸ In the case of external financing, external capital providers make funds available to enterprises in the form of both borrowed capital and equity capital. Borrowed capital can be further subdivided into debt instruments – bank loans, loans from non-banks, trade credits and advances, insurance technical reserves and debt securities – as well as other borrowed capital. With

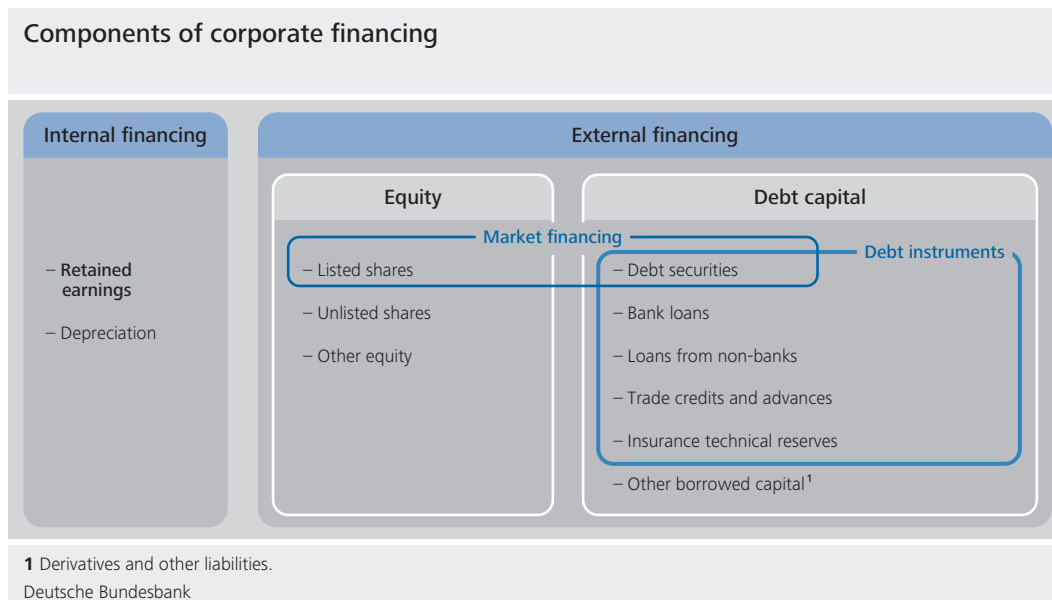
The internal financing of euro area non-financial corporations has grown steadily since the end of the 1990s and accounted for 67% of total financing at mid-2017 (see the chart on page 57).⁹ The main contribution came from the steady growth in depreciation, which accounted for an average of over 85% of total internal financing over the entire period under review.¹⁰ On the other hand, internal financing fluctuated considerably in the wake of the recessions of 2008-09 and 2011-13 due to swings in retained earnings. Growth of internal financing gathered momentum slightly from 2008 as a result, in particular, of an accelerated expansion of retained earnings. This pushed the share of internal financing accounted for by

Accelerated growth in internal financing since 2008

⁸ Depreciation of the capital stock represents expenses and thus part of the sales proceeds. It contributes to internal financing through the payment flows generated in this way.

⁹ In the interest of better comparability and adjustment of price effects, financing flows are expressed as a percentage of gross value added.

¹⁰ In the national accounts, depreciation is always calculated on a linear basis. This implies constant growth given an increasing capital stock.



depreciation down to well below 80% at the current end.

Internal financing in Germany and Spain exceeding investment volume from 2009 onwards

At the country level, internal financing was stepped up in all four of the countries under review compared to the pre-crisis years, whereby the increases were especially pronounced in Germany and, even more so, in Spain. From the end of 2009, internal financing fully covered gross investment in both countries, which – according to the pecking order theory – in principle limits the need for external financing. This surplus of internal funds through investment expenditure implies that, contrary to what is commonly assumed in macroeconomic theory, the non-financial corporate sector provided the other sectors of the economy, including sectors abroad, with financing in net terms.

France and Italy with fundamental need for external financing

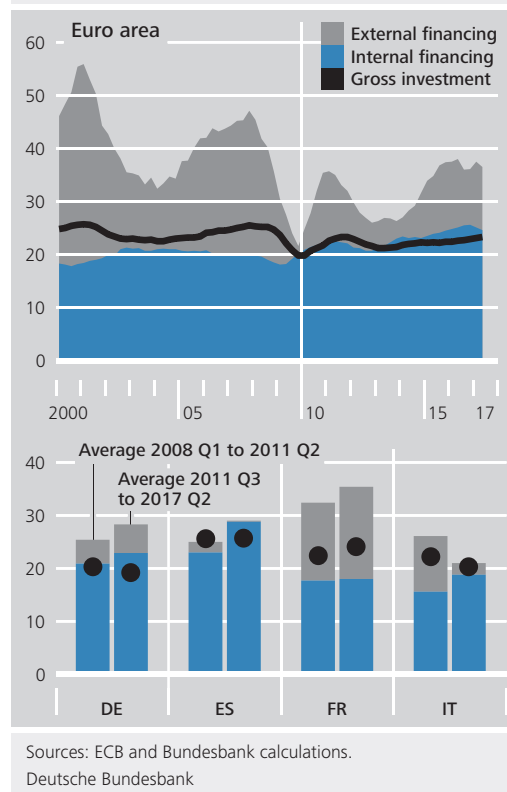
By contrast, gross investment in France and Italy exceeded internal financing on average over the entire period under review, implying a fundamental need for external financing for fixed asset formation. Whereas in France this was primarily due to strong investment activity by historical and international standards, in Italy it was mainly down to the comparative weakness of internal financing. That said, non-financial corporations in Italy steadily increased their internal financing from mid-2012, covering gross investment in its entirety from mid-2016.

External financing significantly weaker from 2008, notably in Spain

The external financing of euro area non-financial corporations has experienced significantly stronger cyclical fluctuations than internal financing; at the current end it stood at around 12% of gross value added, which was well below the levels recorded during previous upturns. Moreover, compared to the years before the global financial and economic crisis, the momentum has been considerably weaker as a whole since 2008. The decline was seen to be especially pronounced in Spain and, to a lesser extent, in Italy. The debt overhangs accumulated in both countries in the run-up to the financial and economic crisis, and the European

Financing and investment in the euro area and selected member countries

As a percentage of gross value added, four-quarter moving sums



debt crisis probably played a significant role in this.¹¹ As a result, the financing structure experienced a shift from external to internal financing. Moreover, within external financing as a whole there were, in some cases, opposing developments and marked shifts (for details, see the remarks on pages 60 to 71).

Components of internal financing

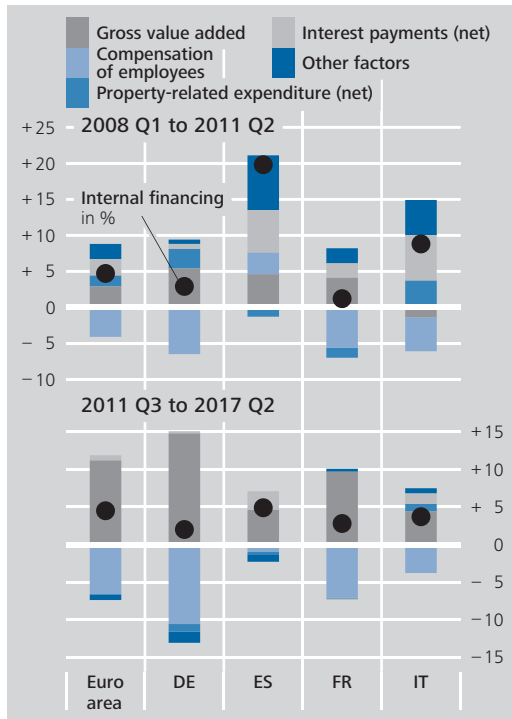
In order to identify the factors that contributed to the rise in growth of internal financing, it is broken down into its contributions to growth. The key components of internal financing in the national accounts (NA) are gross value added and the compensation of employees. Moreover, net interest payments (difference

Constituent components of internal financing

¹¹ See Deutsche Bundesbank, Recent developments in the indebtedness of the private non-financial sector in selected euro area countries, Monthly Report, January 2017, pp 41-58.

Contributions to percentage change in internal financing

Average annual rate of change in percentage points



Sources: ECB and Bundesbank calculations.
 Deutsche Bundesbank

between interest payments and interest income), other net property-related expenditure (difference between distributions to shareholders and revenue from participating interests) as well as a number of other factors such as taxes, transfers and social security contributions can affect the scope for internal financing.¹² The above chart shows the average change in internal financing in the two periods defined above, together with the individual components' contributions to growth.

Gross value added and compensation of employees as the main factors

For the euro area as a whole and for Germany and France in particular, gross value added provided the most significant positive contribution, whereas the compensation of employees made clearly negative contributions to the development of internal financing. Unlike in the other countries considered here, the compensation of employees paid by non-financial corporations in Spain declined significantly given the tense labour market situation despite the increase in gross value added, and thus had a

positive impact on internal financing. In Italy, by contrast, the compensation of employees continued to rise between 2008 and 2011 and, viewed in isolation, reduced internal financing, while gross value added stagnated and consequently did not constitute a positive contribution to growth.

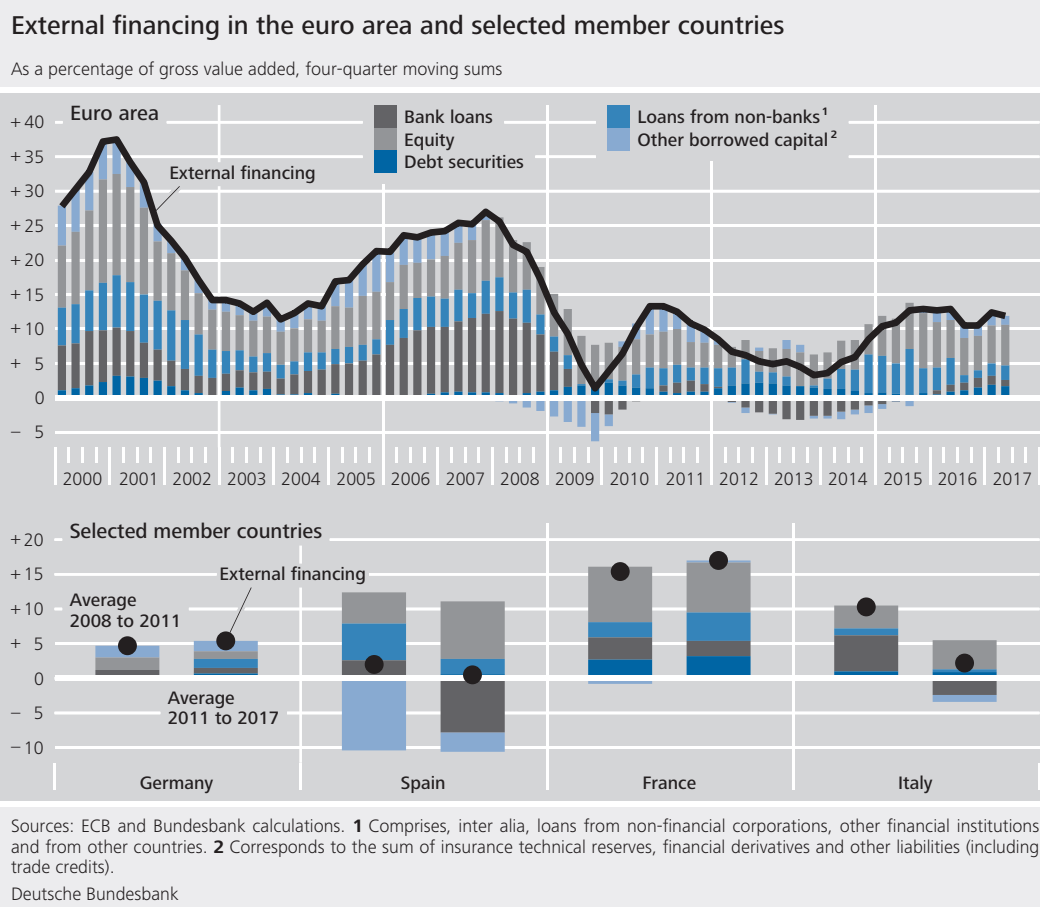
Especially in the period following the onset of the financial and economic crisis, the internal financing of euro area non-financial corporations grew, above all in Italy and Spain, as a result of the accommodative monetary policy measures not least due to a reduction in net interest payments. However, this effect was only very small in Germany due both to the great importance that borrowers attached to fixed-rate loans and to the low debt levels. Lower net property-related expenditure likewise contributed to the rise in non-financial corporations' internal financing in Germany and, above all, in Italy between 2008 and 2011. In Italy, this effect was mainly due to a reduction in profit distributions. In addition, a decrease in taxes paid led to a significant increase in internal financing in Italy and Spain.

Net interest payments reduced by accommodative monetary policy

Combined, internal financing in the euro area as a whole and at the country level in Germany, France and Spain has therefore gone up since the financial and economic crisis as a result, mainly, of an increase in value added compared with the compensation of employees.¹³ By contrast, the marked rise in internal financing at non-financial corporations in Italy is primarily driven by financial factors, first and foremost the low interest rates. This means that their potential for internal financing could decline again in an environment of rising interest rates.

¹² A distinction has to be made between the determinants according to the NA and the economic determining factors of internal financing (eg shocks to aggregate demand or the technology used by enterprises, or changes in factor costs), which require a structural model to derive them.

¹³ There was, for example, a significant shift in value added towards export-oriented and productive enterprises in Spain from the outbreak of the crisis. For more information, see Banco de España, Annual Report 2014, chapter 3, Growth and reallocation of resources in the Spanish economy, pp 33 ff.



Development of external financing

Fall in external financing due to weak investment and abundant internal financing

The external financing of non-financial corporations in the euro area weakened considerably following the onset of the financial and economic crisis (see the above chart). While the inflows between 1999 and 2008 still averaged around 22% of gross value added and were driven, above all, by dynamic (albeit unsustainable) bank loan growth, they dropped by roughly half following the onset of the financial and economic crisis. According to the pecking order theory, this development should have been due to the lower demand for external financing as a result of subdued investment and higher availability of internal financing. However, restricted access to bank loans is also likely to have played a temporary role and, taken in isolation, may in turn have contributed to the weak investment dynamics (for further details, see the remarks on pages 60 to 71).

Against the background of very high inflows in the pre-crisis years, the decline in external financing is very pronounced, notably in the case of non-financial corporations in Spain. The reduction in external funds raised may be interpreted as a consequence of weaker investment, the marked rise in internal financing opportunities and an active deleveraging process. In the case of non-financial corporations in France, by contrast, inflows remained comparatively strong. According to the pecking order theory, this can be explained by the development of internal financing, which was weak compared with the strong investment by historical and international standards. In Italy, external financing decreased markedly from 2008 and in the wake of the European sovereign debt crisis even experienced significant outflows. Whereas low investment activity by historical and international standards, when viewed in isolation, dampened the need for external financing, the fact that internal financing was also weak led to positive net demand for

Developments at country level show considerable heterogeneity

external financing. With the exception of the second half of 2009, non-financial corporations in Germany recorded a consistently positive development in external financing, albeit somewhat weaker than before the crisis. The reduced recourse to external financing is attributable to the increase in internal financing paired with moderate investment growth which, taken in isolation, lowered the need for external financing.

Shift from financing with borrowed capital to equity financing

Shift from borrowed capital to equity in Italy and Spain

From the onset of the financial and economic crisis, the structure of external financing in euro area non-financial corporations shifted from borrowed capital to equity. This contrasts, in part, with the shifts seen in other highly developed currency areas (for details, see the box on pages 61 to 63). This change was driven mainly by developments in Italy and Spain; in both countries it can be interpreted as a reaction to the debt overhangs accumulated prior to the crisis.¹⁴ While this adjustment process got underway in Spain following the onset of the financial and economic crisis, in the case of non-financial corporations in Italy it only began in the wake of the European sovereign debt crisis and was significantly less pronounced.¹⁵ The take-up of equity capital took place, in particular, in the form of unlisted shares as well as of business shares and participating interests. According to the trade-off theory, enterprises reacted to an increase in the risk of insolvency resulting from deteriorating sales opportunities and asset positions in the wake of the crises.

Slight increase in leverage in Germany

In Germany, by contrast, the structure of external financing has shifted slightly in favour of borrowed capital since 2008. The increased use of borrowed capital can be interpreted, on the one hand, as a response to the improved solvency of non-financial corporations in Germany in light of the favourable economic developments which, generally speaking, allow

for higher leverage. On the other hand, the low financing costs for borrowed capital are also likely to have played a part. With regard to non-financial corporations in France, inflows of equity and borrowed capital roughly balanced each other out, as they had done pre-crisis. The financing structure was therefore unchanged.

Substitution by debt instruments

Debt financing experienced, at times, countervailing developments. In 2009 and between 2012 and 2015, there were net outflows of bank loans at the euro area level, contrasting with simultaneous inflows of funds through other debt instruments. At the country level, this constellation was particularly pronounced in Italy and Spain. Non-financial corporations in Italy mainly raised funds through debt securities and loans from other financial institutions. In addition to the latter, Spain also made large-scale use of loans from foreign capital providers. Considered together with the findings of the empirical literature, this suggests that, in both time periods, supply-side restrictions probably made it harder for non-financial corporations in Italy and Spain to access bank

Temporary outflows for bank loans; at the same time, inflows of other debt instruments

¹⁴ See Deutsche Bundesbank, Recent developments in the indebtedness of the private non-financial sector in selected euro-area countries, Monthly Report, January 2017, pp 41-58.

¹⁵ Thus, empirical analyses based on aggregated data and individual company data suggest that non-financial corporations in Italy have the highest leverage in the euro area in structural terms. See A De Socio and P Russo (2016), The debt of Italian non-financial firms: an international comparison, Banca d'Italia Occasional Paper, No 308.

Development of the financing structure of non-financial corporations: an international comparison

The financial and economic crisis was of global proportions and had an impact not only on the financing structure of non-financial corporations in the euro area, but also on other major currency areas. Just as the financing structures had already differed prior to the crisis, the nature of the shifts brought about as a result of the crisis also varied to some extent.

The chart on page 62 shows the development of selected external financing instruments for non-financial corporations in the euro area, the United Kingdom, the United States and Japan. Whilst equity financing has, when viewed in isolation, decreased in all the currency areas under consideration since the financial crisis, the change in the importance of equity in the different currency areas in relation to the likewise declining trend in overall external financing varies. On the one hand, equity has consistently served as a relevant financing instrument in the United Kingdom and the euro area and also, to a lesser extent, in Japan and has gained in importance since 2008 as an external financing instrument, especially in the euro area, not least as a result of the need for deleveraging which became apparent during the crisis.¹ On the other hand, no additional equity was raised in the United States. On the contrary, the transactions related to equity resulted, on average, in a decline both before and after the crisis. One of the main reasons for this is likely to have been share buy-backs, which have played a major role in the United States in recent years, partly financed by borrowed capital.² Overall, the United States – unlike the other currency areas – has seen a shift from equity capital to financing by means of borrowed capital since the year 2000.

The heterogeneous nature of developments in the various currency areas is also reflected in financing through borrowed capital, which alongside bank loans comprises other borrowed capital, including loans from other lenders and debt securities, but also other accounts payable that are difficult to interpret from an economic perspective. While net inflows in the form of other borrowed capital in the euro area have dwindled since the financial and economic crisis and have even reverted to outflows in Japan, other borrowed capital in the United Kingdom and the United States has largely remained stable. In the United Kingdom, this was due, among other things, to loans from non-banks such as other non-financial corporations, and in the United States to debt securities. In the case of the latter, in particular, other accounts payable throughout the entire period under review also contributed significantly to the fact that other borrowed capital played an exceptionally important role compared with other countries.

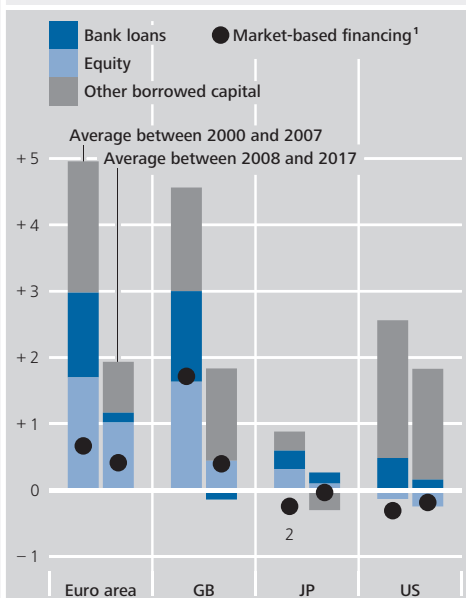
A somewhat more homogenous picture emerges with regard to financing via bank loans, which has been significantly lower in all countries since 2008 than in the pre-crisis period. At the same time, the inflows between 2008 and 2017 remained positive

¹ For information on the debt situation in the euro area, see, for example, Deutsche Bundesbank, Private debt – status quo, need for adjustment and policy implications, Monthly Report, January 2014, pp 53-65; and Deutsche Bundesbank, Recent developments in the indebtedness of the private non-financial sector in selected euro area countries, Monthly Report, January 2017, pp 41-58.

² For information on the significance and potential implications of share buy-backs, see, for example, J Gruber and S Kamin (2017), Corporate buybacks and capital investment: an international perspective, IFDP Note, 11 April; or G Gutierrez and T Philippon (2016), Investment-less growth: an empirical investigation, NBER Working Paper No 22897.

Selected forms of financing

As a percentage of the outstanding liabilities, four-quarter moving sums



Sources: ECB, Bank of Japan, Federal Reserve and Bundesbank calculations. **1** Market-based financing includes debt securities and listed shares. **2** Data on bank loans to non-financial corporations (and thus also other debt financing) are only available from 2005 onwards for Japan.

Deutsche Bundesbank

on average across the board, with the exception of the United Kingdom. This general observation does, however, conceal the large-scale slumps in financing via bank loans that occurred around the year 2009 in all the currency areas under consideration. This was partly due to temporary bank loan supply restrictions in the context of the financial and economic crisis.³ Against this backdrop, equity financing in the United Kingdom and the euro area has gained slightly in importance since the financial crisis, which – consistent with the trade-off theory – is likely to have been prompted by the increased risk of insolvency following the crisis. That said, however, this stood in contrast to developments in the United States. While financing via bank loans to non-financial corporations in the United Kingdom and the euro area was still lagging behind the pre-crisis trend at the current end, the recovery in bank lending following the crisis was comparatively quick and strong in Japan and the United

States. In this setting, the sustained great importance of total debt financing, especially in the United States, has generated a gradual increase in the debt ratio since 2012.⁴

As a subtype of external financing, non-financial corporations also have recourse to funding via financial instruments traded on the capital market, such as listed shares and debt securities. With regard to market-based financing, the United Kingdom and the euro area differed fundamentally from Japan and the United States. In the United Kingdom and the euro area, inflows via market-based funding in the years leading up to the financial crisis, and in particular at the start of the millennium, were comparatively strong, but later flattened out somewhat between 2008 and 2017. Measured in terms of overall external financing, however, inflows rose in both regions and continued to account for a significant share, especially in the United Kingdom.⁵ In Japan and the United States, on the other hand, market-based liabilities were scaled back on balance over much of the period under consideration, which in the case of the United States, in particular, was mainly caused by share buy-backs, compounded

³ For the United States, see, for example, V Ivashina and D Scharfstein (2010), Bank lending during the financial crisis of 2008, *Journal of Financial Economics* 97, pp 319-338; and for the United Kingdom, for example, S Akbar, S Rehman and P Ormrod (2013), The impact of recent financial shocks on the financing and investment policies of UK private firms, *International Review of Financial Analysis* 26, pp 59-70. For a study on enterprises in the United States, Europe and Asia, see M Campello, J Graham and C Harvey (2010), The real effects of financial constraints: evidence from a financial crisis, *Journal of Financial Economics* 97, pp 470-487.

⁴ For long time series on total credit to the private non-financial sector, see Bank for International Settlements, BIS total credit statistics, available at: <https://www.bis.org/statistics/totcredit.htm>

⁵ For more details on the importance of market-based financing for non-financial corporations in the United Kingdom, especially in the aftermath of the financial crisis, see A Pattani, G Vera and J Wackett, Going public: UK companies' use of capital markets, *Bank of England Quarterly Bulletin* 2011 Q4, pp 319-330.

by the decline in the number of initial public offerings since the turn of the millennium.⁶ Since the financial crisis, however, outflows have decreased on average in both Japan and the United States (in the case of the latter, this arose, in particular, from an increase in the issuance of debt securities).⁷

Although the evolution of external financing in the non-financial corporate sector in the euro area is in some ways similar to the situation in other currency areas, an international comparison reveals a clear heterogeneous pattern on the whole. While equity funding in the United Kingdom and the euro area was consistently positive, the United States has seen a shift from equity capital to borrowed capital since the year 2000, which has not reversed in the wake of the financial and economic crisis. Enterprises in the United Kingdom and the euro area also responded to temporary restrictions on access to bank loans in the context

of the financial and economic crisis by, *inter alia*, building up equity, whereas in Japan and the United States bank loans played a more important role and recovered more quickly and strongly in the aftermath of the crisis. Parallel to this, in contrast to the situation in the United Kingdom and the euro area, non-financial corporations in Japan and the United States did not record any positive inflows of capital from market-based funding instruments over the entire observation period.

⁶ See, for example, C Doidge, G Karolyi and R Stulz (2013), The U.S. left behind? Financial globalization and the rise of IPOs outside the U.S., *Journal of Financial Economics* 110, pp 546-573; and OECD (2015), Strengthening market-based financing of corporate investments, *Business and Finance Outlook*, pp 201-227.

⁷ For information on the importance of market-based financing in general and debt securities in the United States, see, in particular, OECD (2015), *op cit*.

loans, and that these were substituted by other debt instruments.¹⁶

In line with this, the Eurosystem's quarterly Bank Lending Survey (BLS) shows that credit standards for loans to enterprises were tightened in 2009 as well as in 2011-12. The majority of enterprises participating in the European Central Bank (ECB) Survey on the access to finance of enterprises (SAFE) also reported a deterioration in their access to bank loans during this period.

This situation generally prevailed in all of the four major euro area economies.¹⁷ In 2012, however, bank supply constraints were especially marked in Italy and Spain. Unlike French and German banks, Italian and Spanish credit institutions were experiencing particular strains owing to the debt crisis. For example, since the onset of the financial crisis – and particularly when the European debt crisis was raging – banks' financing costs had been rising mark-

edly due to the interconnectedness of the government and banking sectors in both Italy and Spain.¹⁸ Added to this were the large amounts

¹⁶ See C Altavilla, M Darracq Paries and D Nicoletti (2015), Loan supply, credit markets and the euro area financial crisis, ECB Working Paper Series, No 1861; and A Ferrando and K Mulier (2015), The real effects of credit constraints: evidence from discouraged borrowers in the euro area, ECB Working Paper Series No 1842. A similar development was also observed in the United States during the financial and economic crisis. For more information, see T Adrian, P Colla and H Shin (2013), Which financial frictions? Parsing the evidence from the financial crisis of 2007-9, D Acemoglu, J Parker and M Woodford (eds), *NBER Macroeconomics Annual*, Volume 27, pp 159-214, The University of Chicago Press; and B Becker and V Ivashina (2014), Cyclicalities of credit supply: firm level evidence, *Journal of Monetary Economics* 62 (C), pp 76-93. For international evidence, see R Levine, C Lin and W Xie (2016), Spare tire? Stock markets, banking crises, and economic recoveries, *Journal of Financial Economics*, Vol 120 (1), pp 81-101; and T Grjebinea, U Szczerbowicz and F Tripiet (2018), Corporate debt structure and economic recoveries, *European Economic Review*, Vol 101, pp 77-100.

¹⁷ For Germany, the BLS and SAFE survey results in 2011-12 do not point to restrictive adjustments of the loan supply.

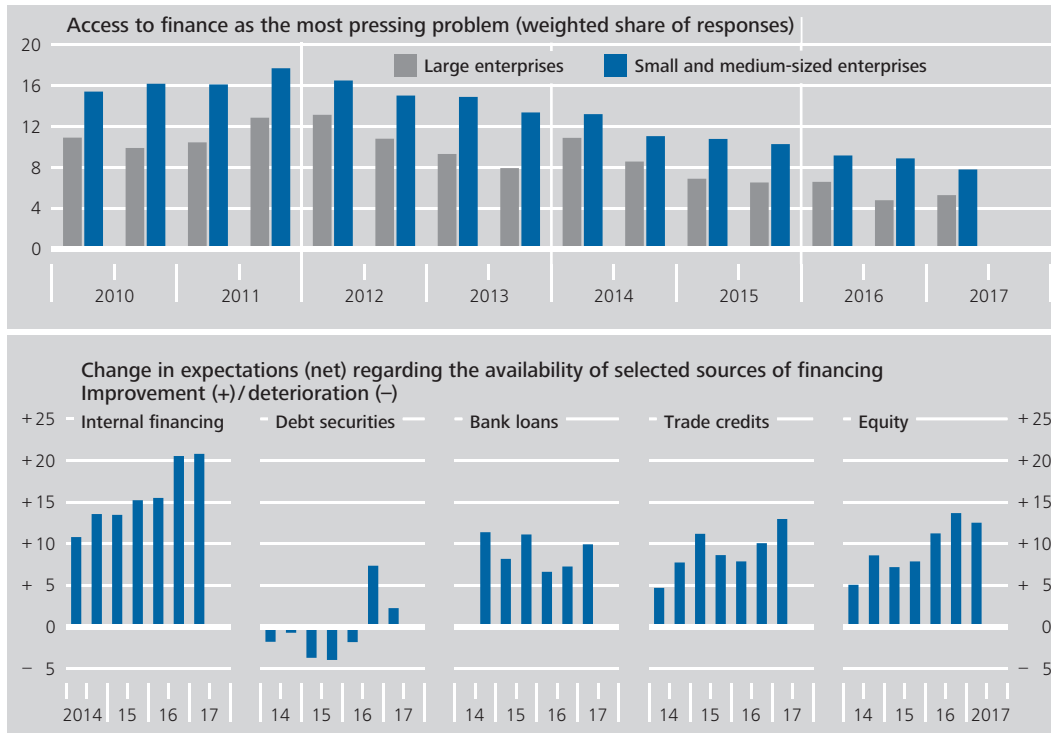
¹⁸ See Deutsche Bundesbank, Recent developments in loans to euro area non-financial corporations, *Monthly Report*, September 2015, pp 15-39.

BLS shows poorer access to bank loans for 2009 and 2011-12

Bank supply constraints mainly in Italy and Spain during European debt crisis

Access to finance of non-financial corporations in the euro area*

As a percentage of surveyed enterprises (weighted)



Sources: Survey on the Access to Finance of Enterprises in the Euro Area (SAFE). * Data comparable only to a limited extent through time owing to the fact that the questions were subject to revision over the duration of the survey.

Deutsche Bundesbank

of non-performing loans in their banking systems, which had an adverse impact on the banking industry's financing conditions.¹⁹ Since the end of 2012 there has been a steady improvement in the general financing situation in the periphery countries. Along with the lowering of monetary policy rates, the non-standard monetary policy measures adopted by the Eurosystem, in particular, also helped to bring down financing costs.

Temporary bank supply restrictions on financing conditions and the availability of external financing are likely to have had a stronger impact on small and medium-sized enterprises (SMEs) than on larger firms. This is due to the fact that SMEs typically have only limited access to alternative sources of financing, such as debt securities. The ECB's SAFE survey on enterprises' access to finance confirms the suspicion that SMEs are exposed to significantly larger financial constraints than large enterprises (see the above chart). This situation was

particularly pronounced in the case of very small, unproductive and highly indebted enterprises.²⁰ At the same time, a number of empirical studies indicate that SMEs were able to substitute banks loans, above all, by means of increased recourse to trade credits.²¹ This

¹⁹ For information on the high levels of non-performing loans, see Deutsche Bundesbank, The importance of banks' profitability and capital for monetary policy, Monthly Report, January 2018, pp 27-52.

²⁰ See A Ferrando and N Griesshaber (2011), Financing obstacles among euro area firms. Who suffers the most?, ECB Working Paper, No 1293; C Artola and V Genre (2011), Euro area SMEs under financial constraints: belief or reality?, CESifo Working Paper No 3650; as well as A Ferrando and K Mulier (2015), Firms' financing constraints: do perceptions match the actual situation?, The Economic and Social Review, Vol 46 (1), pp 87-118.

²¹ See E Cayes and CO'Toole (2014), Bank lending constraints, trade credit and alternative financing during the financial crisis: evidence from European SMEs, Journal of Corporate Finance, Vol 27, pp 173-193; M Psillaki and K Eleftherious (2015), Trade credit, bank credit, and flight to quality: evidence from French SMEs, Journal of Small Business Management, Vol 53 (4), pp 1219-1240; as well as S Carbo-Valverde, F Rodríguez-Fernández and G Udell (2016), Trade credit, the financial crisis, and SME access to finance, Journal of Money, Credit and Banking, Vol 48 (1), pp 113-143.

Small and medium-sized enterprises switch to trade credits

means that, at least in some cases, SMEs were in a position to substitute bank loans with alternative forms of financing.

Bank supply-side constraints have become less important

Bank supply-side constraints at the aggregate level now appear to have become markedly less important in all the four large member states. Since 2016, positive inflows of bank loans have been seen again in the euro area, with this development being driven mainly by non-financial corporations in France and Germany. As a result of the Eurosystem's Corporate Sector Purchase Programme (CSPP), there was also a rebound in the net issuance of debt securities.²² The most significant inflows in this instance were likewise recorded for the non-financial corporations in France, which were already strongly active in the capital market.

The maturity of borrowed capital

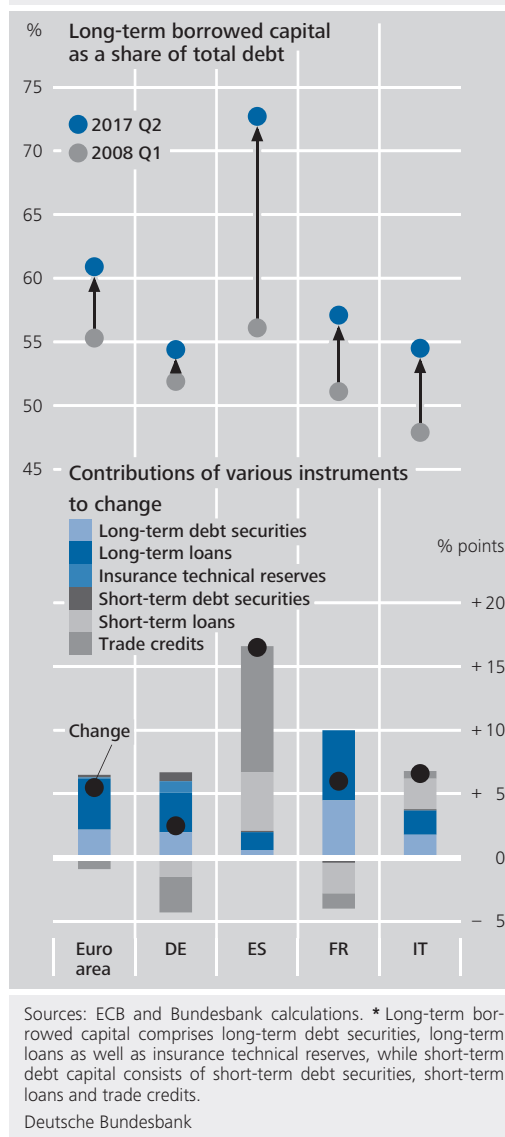
Increase in the maturity of borrowed capital ...

Besides the changes in the financing structure discussed above, there have latterly also been marked adjustments to the maturity of the borrowed capital. The adjacent chart shows the share of long-term borrowed capital in relation to the total amount of borrowed capital at the beginning and the end of the observation period (2008 Q1 to 2017 Q2).²³ An increasing percentage of long-term debt is apparent at the euro area level. While the increase in Germany was smaller than in the euro area as a whole, there has been a marked rise in this percentage above all in Spain and, according to the latest data available, it was also at a higher level than in the other countries under consideration here.

... driven by differing factors at the country level

The increases are due in each case to country-specific developments with regard to the financing instruments. In the euro area as a whole and at the country level in France and Germany, the growing share was due principally to stronger recourse to long-term loans and debt securities. In France and Germany, there was, in addition, also an expansion of short-term debt

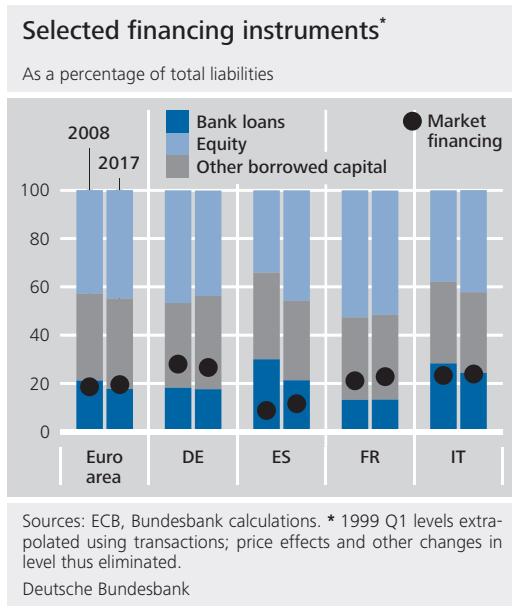
Maturity of borrowed capital*



instruments, although this was not as great as the increase in long-term debt financing. In Italy and Spain, on the other hand, the rising percentage was driven in large part by a perceptible decline in short-term debt instruments. In this context, the lower overall amount of borrowed capital, particularly in Spain, is also

²² See Deutsche Bundesbank, The market for corporate bonds in the low-interest-rate environment, July 2017, pp 17-32.

²³ In line with the definition of maturity in the financial accounts, short-term debt securities, short-term loans as well as trade credits and advances are deemed to be short-term sources of borrowed capital. By contrast, long-term debt securities, long-term loans as well as insurance technical reserves are summarised as long-term financing instruments.



the liabilities being divided into bank loans, other debt capital and equity capital.²⁵ Additionally, the share of market-based funding – the sum of debt securities and listed shares – is shown.

At the euro area level, bank loans accounted for less than 18% of total liabilities in mid-2017.²⁶ This means that, at the euro area level, bank loans have a significant but, at least in terms of quantity, not a dominant position in the structure of non-financial corporations' liabilities. This holds true not only for big non-financial corporations but also for SMEs.²⁷ With the exception of France, bank loans have also become less important at the country level, with this development being especially marked in Spain. By contrast, market-based financing gained slightly in importance except in the case of non-financial corporations in Germany, with this being attributable primarily to an increase in debt securities. In both France and Germany, market-based instruments played a larger part than bank loans in the financing of non-financial corporations. In Italy and Spain, on the other hand,

Bank loans becoming less important, market-based borrowing more important

to be seen, not least, against the backdrop of the marked increase in internal financing. With regard to the interest rate fixation period for bank loans, given very low long-term interest rates, it is apparent that bank loans with variable interest rates declined as a percentage of total borrowed capital in the euro area.²⁴

Interest expenditure might increase somewhat more slowly as a result of monetary policy normalisation

The highlighted trends in maturity and interest rate fixation could ultimately also have repercussions for the structure of corporate financing. Owing to the longer maturities with simultaneous longer fixation of the current low rates of interest, the interest expenditure of the non-financial corporations might increase somewhat more slowly during the monetary policy normalisation process and thus, taken in isolation, reduce internal financing only to a lesser extent.

Implications for the balance sheet structure

Shift in the funding structure also impacts on the stocks of liabilities

A persistent shift in the relative importance of various external financing instruments is reflected over the medium term in the stocks of liabilities, too. Against this background, the above chart shows the structure of the liabilities of non-financial corporations in the euro area and in its four large member states, with

²⁴ According to the ECB's monetary financial institutions balance sheet statistics, compared with 2014 Q1 variable interest bank loans as a share of total debt had fallen by 2.6 percentage points to 57.0% in 2017 Q2. In this context, variable interest loans comprise loans with an original or residual maturity of less than 12 months as well as loans with an interest rate adjustment date of 12 months.

²⁵ Initial stocks extrapolated by cumulative transactions are used for this purpose. This avoids price fluctuations distorting the importance of individual liabilities. The category of other debt capital is produced by the difference between total liabilities and the individually considered instruments.

²⁶ If the liabilities are measured at market prices, bank loans as a share of total liabilities amount to around 13%.

²⁷ The data of the BACH database of the European Committee of Central Balance-Sheet Data Offices (ECCBSO) confirm that even the balance sheets of small and medium-sized enterprises display a structure similar to that of large enterprises and that bank loans do not have a pre-eminent position. Accordingly, in 2015 SMEs' share of bank loans in total liabilities was just over 25%, with corresponding figures of just under 17% in France, 18% in Italy and 19% in Spain. See also Deutsche Bundesbank, An international comparison of the importance of bank credit as a debt financing instrument for non-financial corporations, November 2014, pp 42-43; and H Friedrichs and T Körting (2011), Die Rolle der Bankkredite im Finanzierungsspektrum der deutschen Wirtschaft, Wirtschaftsdienst, Vol 91 (1), pp 31-38.

bank loans continued to play a more important role than market-based financing.

Increase in the share of equity capital, primarily though non-market-based instruments

At the euro area level, there has been an increase in equity capital as a percentage of total liabilities, although this development was shaped by non-market-based equity instruments, such as shares and investments and was heterogeneous in form at the country level. The percentage declined slightly in the case of non-financial corporations in France and Germany, but showed a marked rise in Italy and, especially, in Spain.

Macroeconomic and economic policy implications of a changed financing structure

Financial development can be conducive to growth, ...

The preceding comments have highlighted the fact that euro area non-financial corporations have seen a shift in their external financing and balance sheet structure from borrowed to equity capital. At the same time, there has been a marked reduction in the importance of bank loans and market-based borrowed capital has become slightly less important. What impact could this have on the medium-term growth outlook for the euro area and its largest member states? Answers to this question are provided by the literature on the connection between financing and growth. Here, there had long prevailed the view that the size of the total volume of funding made available to the private non-financial sector has a unambiguously positive impact on economic growth, irrespective of whether it is provided by banks or markets.²⁸

... but too much debt turns the positive relationship into a negative one

More recent studies, however, come to the conclusion that it is only up to a certain point that economic growth can be boosted by an increase in debt. Stepping over a certain threshold of debt turns the positive relationship into a negative one, with this being irrespective of whether the debt comprises bank loans or other debt instruments.²⁹ This is mostly attrib-

uted to the fact that increasing debt leads to a misallocation of resources, which ultimately reduces productivity growth.³⁰ These results imply that, starting from a level of debt beyond the threshold value, a reduction in debt is likely to foster growth over the medium term. A comparison of current figures for debt as a ratio of GDP, for example, with the threshold value of 90%, calculated by Cecchetti et al (2011), above which debt has a negative effect on economic growth, shows that the non-financial corporations in the euro area and in all four observed countries lie markedly above it in some cases.³¹ At the same time, debt ratios

²⁸ See R Levine (2002), Bank-based or market-based financial systems: which is better?, *Journal of Financial Intermediation* 11, pp 398-428. From a theoretical perspective, too, it is unclear whether banks or markets ensure higher growth. See R Levine (2005), *Finance and growth: theory and evidence*, in P Aghion and S Durlauf (eds), *Handbook of Economic Growth*, Vol 1A. More recent studies highlight the fact that bank-based financial systems have a stabilising impact on real economic activity in normal recessions. If the recession is accompanied by a financial crisis, however, economic recovery sets in earlier in market-based financial systems. See L Gambacorta, J Yang and K Tsatsaronis (2014), *Financial structure and growth*, *BIS Quarterly Review*, March 2014. At the same time, the positive effect of securities markets becomes stronger with the level of economic development, while it weakens for bank loans. See A Demirgüç-Kunt, E Feyen and R Levine (2012), *The evolving importance of banks and securities markets*, *The World Bank Review*, Vol 27 (3), pp 476-490.

²⁹ See S Cecchetti, M Mohanty and F Zampolli (2011), *The real effects of debt*, *BIS Working Papers* No 352; R Beck, G Georgiadis and R Straub (2014), *The finance and growth nexus revisited*, *Economics Letters*, Vol 124, pp 382-385; S Law and N Singh (2014), *Does too much finance harm economic growth?*, *Journal of Banking & Finance*, Vol 41, pp 36-44; as well as J Arcand, E Berkes and U Panizza (2015), *Too much finance?*, *Journal of Economic Growth*, Vol 20 (2), pp 105-148.

³⁰ There is, furthermore, a related literature which is concerned with the significance of debt for the economic cycle. In this it is argued that excessive debt is accompanied by the build-up of a debt overhang. This leads to the economic actors actively reducing their debt, which dampens economic growth because of weakened demand. See A Mian, K Rao and A Sufi (2013), *Household balance sheets, consumption, and the economic slump*, *The Quarterly Journal of Economics*, Vol 128 (4), pp 1687-1726; as well as A Mian, A Sufi and E Verner (2017), *Household debt and business cycles worldwide*, *The Quarterly Journal of Economics*, Vol 132 (4), pp 1755-1817.

³¹ The results of Cecchetti et al (2011), loc cit, are deliberately singled out, as a separate value for non-financial corporations is calculated in this instance. Other studies, such as Beck et al (2014), Law and Singh (2014) and Arcand et al (2015), loc cit, however, calculate threshold values for the non-financial private sector as a whole. Taking into consideration the fact that different definitions of indebtedness are used in some cases, all the studies nevertheless arrive at similar results.

have shown a very obvious decline from their peaks in Spain and, to a lesser extent, in Italy.³² The reduction in debt that has taken place over the past few years combined with the shift in corporate financing towards equity, taken in isolation, could therefore have strengthened the medium-term growth potential.³³

Capital markets union could be used to expand equity markets

This is also the context in which to see the European Commission's plan, launched in 2015, to create a capital markets union, which is designed to promote the development of a single market for financing instruments in the European Union.³⁴ In light of the findings regarding the connection between financial developments and economic growth, it seems reasonable to focus on the expansion and cross-border integration of markets for equity capital. Besides the potential positive growth impulses, this should strengthen non-financial corporations' resilience to negative shocks, as the value of equity capital and profit distributions – unlike in the case of borrowed capital – can adjust directly to changed economic conditions.³⁵

Diversification of the financing structure makes enterprises less dependent on constraints in the supply of bank loans ...

The diversification of the financing structure of non-financial corporations that has taken place over the past few years could also have a stabilising impact with regard to short-term cyclical fluctuations. Theoretical studies, for instance, show that the possibility of substituting bank loans by using other financing instruments, such as debt certificates, mitigates the real economic consequences of restrictions on the supply of bank credit.³⁶ In line with this, empirical analyses for the euro area indicate that a bank loan supply shock has a clearly negative effect on real corporate investment only if there is no possibility of substituting bank loans with other financing instruments (see the box on pages 69 to 71).

... and probably changes the relative importance of individual monetary policy transmission channels

The shifts in the financing structure of non-financial corporations might also have implications for the transmission of monetary policy. The reduced importance of bank loans in corporate financing combined with a more diversified financing structure is likely, taken on its

own terms, to weaken the direct transmission of monetary policy measures through bank credit.³⁷ At the same time, however, the strengthened role of other sources of financing and the slight increase in the direct provision of funds via the financial markets imply that market-related variables, especially asset prices, have a greater importance in monetary policy transmission.³⁸ In turn, when viewed in isolation, this should heighten the effectiveness of monetary policy measures to the extent that changed asset prices are reflected in the quality of the financial intermediaries' balance sheets and, through this, in their funding costs. Taken altogether, there is likely to have been a change in the relative importance of individual transmission channels owing to developments in enterprises' financing structure.³⁹

32 Cecchetti et al (2011), loc cit, calculate their threshold value of 90% of GDP based on a very broad definition of debt, which comprises all borrowed capital. The following values can be recorded for 2017 Q2: Germany 96%, Spain 139%, France 166%, Italy 116% and the euro area 139%. The highest levels were 105% in Germany (2009 Q1), 188% in Spain (2007 Q4) and 128% in Italy (2012 Q4). For non-financial corporations in France, the value at the current end is the highest level. For the euro area, the value has been fluctuating around 140% since early 2008.

33 Empirical studies come to the conclusion that well-developed stock markets have a monotonically positive impact on real per capita income. For more information, see L Gambacorta, J Yang and K Tsatsaronis (2014), loc cit, as well as O Peia and K Roszbach (2015), Finance and growth: time series evidence on causality, *Journal of Financial Stability* 19, pp 105-118. It is nevertheless unclear whether these findings with regard to stock markets can be transferred to equity capital in the wider sense.

34 For details, see European Commission (2015), Building a capital markets union, Green Paper, COM(2015) 63 final.

35 See the Deutsche Bundesbank's reply to the European Commission's Green Paper "Building a capital markets union", available online at https://www.bundesbank.de/Redaktion/EN/Downloads/Topics/2015_05_21_statement_capital_market_union_background.pdf?__blob=publicationFile

36 See F De Fiore and H Uhlig (2015), Corporate debt structure and the financial crisis, *Journal of Money, Credit and Banking*, Vol 47 (8), pp 1571-1598.

37 Examples of important papers on the role of bank loans in the transmission of monetary policy are B Bernanke and M Gertler (1995), Inside the black box: the credit channel of monetary policy transmission, *Journal of Economic Perspectives* 9 (4), pp 27-48; as well as P Disyatat (2011), The bank lending channel revisited, *Journal of Money, Credit and Banking* 43 (4), pp 711-734.

38 See T Adrian and H Shin (2010), Liquidity and leverage, *Journal of Financial Intermediation*, 19 (3), pp 418-437.

39 See Deutsche Bundesbank, The shadow banking system in the euro area: overview and monetary policy implications, *Monthly Report*, March 2014, pp 15-34.

Substitution of bank loans and investment activity in the euro area

During the financial and economic crisis as well as the European debt crisis, the euro area saw bank loans being substituted by other debt instruments and equity. This raises the question as to whether the option of having recourse to alternative financing instruments is, in principle, able to mitigate the negative effects of restrictive bank loan supply shocks on the real economy.¹ This question can be examined by means of a vector autoregression (VAR) method. This time series model is based on the simultaneous estimation of several equations of the endogenous variables to be examined, which are described by means of their own historical values and by the historical values of the other endogenous variables. This makes it possible to estimate the interdependencies between a large number of variables. The residuals calculated on the basis of individual equations are then converted into shocks that can be interpreted economically by setting theory-motivated restrictions. These shocks can then be used as a basis for estimating how the variables in the model respond to exogenous changes, such as changes to the supply of bank loans. The model used here employs Bayesian methods for estimation, where exogenous shocks are identified by combining sign and zero restrictions.²

In addition to the real investment by non-financial corporations in the euro area, the deflator for aggregate gross fixed capital formation, the overnight interbank rate EONIA and the bank loan rate for non-financial corporations, the empirical model also includes flows of bank loans to non-financial corporations and flows from other financing instruments (calculated as the difference between total external financing

and bank loans).³ The model covers the observation period from the first quarter of 2000 to the first quarter of 2017.⁴

The effects of two bank loan supply shocks which have been identified differently are compared: while for one of the shocks it is assumed that bank loans are substituted by other financing instruments, such a substitution is not permitted for the other shock. Comparing how real investment by enterprises responded to these two shocks may indicate whether a substitution of bank loans by other financing instruments is able to mitigate the negative real economic repercussions.

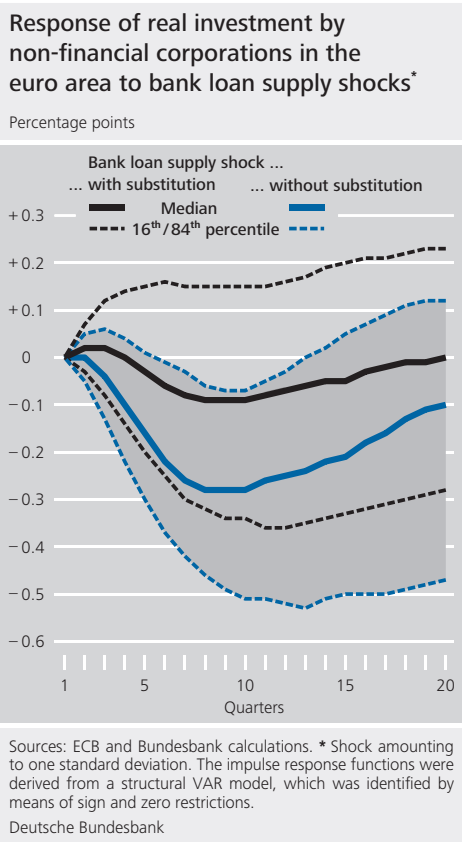
A restrictive bank loan supply shock with substitution effects is identified by a decline in the flows of bank loans, a rise in lending rates and an increase in the flows of other financing instruments. The identification of a bank loan supply shock via opposing sign restrictions in bank lending rates and bank lending volume can be deduced from a

1 The following deliberations are based on I Aldasoro and R Unger (2017), External financing and economic activity in the euro area – why are bank loans special?, Deutsche Bundesbank Discussion Paper, No 04/2017.

2 The estimations are made using the BEAR toolbox. For more information, see A Dieppe, R Legrand and B van Roye (2016), The BEAR Toolbox, ECB Working Paper Series No 1934. Both prior and posterior distributions are of the frequently used normal-inverse-Wishart type. The sign restrictions set out below apply contemporaneously.

3 The other financing instruments thus include, amongst others, shares, other equity, debt securities, loans from non-banks, trade credits and advances.

4 The number of lags is two periods. Except for the flows of bank loans and other means of financing, the variables are entered into the equation in the (log) level. Unlike in the existing literature, the financing variables are used as the first differences of the log level. The level variables are calculated by extrapolating the base level with transactions in order to exclude non-transaction-related changes in the financing instruments.



large number of theoretical models and is widespread in the empirical literature.⁵ The positive sign restriction on the other financing instruments is inspired by the work of Becker and Ivashina (2014), who postulate that a negative bank loan supply shock necessarily goes hand in hand with an increase in demand for other sources of financing.⁶ This is compared with a bank loan supply shock in which the decline in bank loans is not simultaneously substituted by other financing instruments. This is implemented technically by imposing an additional zero restriction to the flows of other financing instruments.⁷

The chart above shows the response of real investment by enterprises to the bank loan supply shock with and without substitution effects by other financing instruments. The continuous lines show the median and the dotted lines show the 16th and 84th percentiles of the distribution of potential de-

velopments of real investment. The median of the distribution can be regarded as a central trend within the possible developments. If the bulk of the probability distribution, delineated by the 16th and 84th percentiles, runs below (above) zero, it is assumed here that the effect of the shock on the respective variable is with a high degree of probability negative (positive).

The estimation results suggest that a restrictive bank loan supply shock in which bank loans are not substituted by other financing instruments is highly likely to result in a sharp decline in real investment by enterprises. The decline hits bottom after

5 Theoretical models which can be used to derive opposing sign restrictions for bank lending rates and bank lending volumes include, for example, V Cúrdia and M Woodford (2010), Credit spreads and monetary policy, *Journal of Money, Credit and Banking* 42 (S1), pp 3-35; and A Gerali, S Neri, L Sessa and F Signoretti (2010), Credit and Banking in a DSGE model of the euro area, *Journal of Money, Credit and Banking* 42 (S1), pp 107-141. Empirical studies that use these sign restrictions include, for example, U Busch, M Scharnagl and J Scheithauer (2010), Loan supply in Germany during the financial crisis, Deutsche Bundesbank Discussion Paper, No 05/2010; N Hristov, O Hülsewig and T Wollmershäuser (2012), Loan supply shocks during the financial crisis: Evidence for the euro area, *Journal of International Money and Finance* 31 (3), pp 569-592; L Gambetti and A Musso (2016), Loan supply shocks and the business cycle, *Journal of Applied Econometrics*, Vol 32 (4), pp 764-782; and Deutsche Bundesbank, Recent developments in loans to euro area non-financial corporations, Monthly Report, September 2015, pp 15-39.

6 See B Becker and V Ivashina (2014), op cit. In the literature cited above, both financing instruments may in principle move in the same direction in the event of credit supply shocks. Consequently, only a subset of these shocks are covered.

7 In order to distinguish the bank loan supply shock from goods supply and demand shocks, additional zero restrictions are also placed on real investment by enterprises and the deflator for aggregate gross fixed capital formation in both specifications. For a similar approach, see, for example, M Breitenlechner, J Scharler and F Sindermann (2016), Banks' external financing costs and the bank lending channel: Results from a SVAR analysis, *Journal of Financial Stability*, Vol 26, pp 228-246; S Eickmeier and B Hofmann (2013), Monetary policy, housing booms, and financial (im)balances, *Macroeconomic Dynamics* 17 (4), pp 830-860; and G Peersman and W Wagner (2015), Shocks to bank lending, risk-taking, securitization, and their role for U.S. business cycle fluctuations, CEPR Discussion Papers, No 10547.

around nine quarters. The effect of the shock then slowly peters out. If the declining bank loans are substituted by other financing sources, however, the fall in investment becomes less intense in the median of the distribution and is considerably less likely to enter negative territory. Thus, the results of the empirical study indicate that the option of substituting bank loans with other sources of financing could mitigate the negative effects of a restrictive bank loan supply shock on the investment activity of non-financial corporations.⁸

⁸ These results are consistent with the theoretical findings in F De Fiore and H Uhlig (2015), op cit, and the microeconomic findings in B Becker and V Ivashina (2014), op cit, and R Levine, C Lin and W Xie (2016), op cit.

■ Conclusions

Since 2008 shift from borrowed to equity capital and from bank loans to other debt instruments, ...

The financing structure of non-financial corporations in the euro area has clearly changed over the past few years. External financing in the 2000s was marked primarily by inflows of borrowed capital, predominantly in the form of bank loans. With the outbreak of the financial and economic crisis, external financing shifted from borrowed to equity capital and, within borrowed capital, from bank loans to other debt instruments. External financing simultaneously became less important in relation to internal financing.

The shift towards a larger share of internal and equity financing combined with a more diversi-

fied debt financing structure is likely to help make the funding of non-financial corporations as a whole less vulnerable to temporary financial constraints at individual providers of financing, particularly banks. The envisaged creation of a European Capital Market Union could further advance this process. With regard to the transmission of monetary policy impulses through the various transmission channels, it is important for monetary policy that there is a continuous monitoring and analysis of changes in financing behaviour and of the associated financing structure of non-financial corporations.

... which could make non-financial corporations in the euro area more resilient