

Recent developments in the indebtedness of the private non-financial sector in selected euro-area countries

In the 2000s, against the backdrop of optimistic income expectations and favourable financing conditions, there was a marked rise in the debt levels of non-financial corporations and households in some euro-area countries. In the wake of the financial and economic crisis and the European debt crisis, the income situation was reassessed and the financing conditions were tightened. The balance sheet mismatches that this uncovered revealed the need for balance sheet adjustments via a deleveraging process in the private non-financial sector.

While deleveraging did not make much headway in the first few years after the onset of the crisis, it has accelerated considerably since 2012. Although there is a certain heterogeneity in the adjustment progress from country to country and sector to sector, a significant portion of the pre-crisis rise in debt ratios has, for the most part, already been corrected. However, the deleveraging process has not yet been fully completed. The decline in debt has been driven primarily by the active repayment of debt from current income. By contrast, stock-flow adjustments in the form of write-downs have, with few exceptions, played only a minor role. This is currently reflected in the levels of non-performing loans on the books of the national banking systems, which for the most part remain high.

Historical examples suggest that the deleveraging process is faster where active deleveraging is accompanied by stock-flow adjustments. Economic developments in the euro area in recent years, which have been weak by international standards, are therefore likely to be at least partly attributable to the pronounced active repayment of debt from current income and the feedback effects this causes. However, stock-flow adjustments can also be accompanied by the misallocation of financial resources as a result of adverse incentives, as well as by heightened risks to financial stability. Insolvency frameworks are a prerequisite for a swift reduction in unsustainable debt via stock-flow adjustments. As these frameworks have undergone significant reform in recent years in most of the countries concerned, what matters now is their consistent application. An insolvency framework-induced reduction in debt levels, which are still high in some cases, could provide the deleveraging process with additional impetus. At the same time, this would encourage the reallocation of resources and thereby support potential growth, provided institutional reforms are carried out in a manner consistent with the protection of legitimate expectations and legal certainty.

■ Introduction

Sharp rise in pre-crisis debt levels of private non-financial sector in some euro-area countries

In the years prior to the onset of the financial and economic crisis there was an unsustainable rise in the debt levels of the private non-financial sector in some euro-area countries. In the wake of the crisis, a reassessment of income prospects and asset valuations in all countries caught up in the European debt crisis revealed an extensive need for balance sheet adjustments in some cases. Households and non-financial corporations reacted to these balance sheet mismatches by reducing their debt levels.¹

Deleveraging can impact real economic development for a long period and weaken monetary policy measures

Deleveraging is of relevance for economic policy makers in general and for monetary policy makers in particular, above all because of the possible negative repercussions on the real economy and thus also on price developments. For example, historical studies show that recessions accompanied by a necessary reduction in debt overhang are, on average, more prolonged and associated with markedly weaker economic activity.² In this adjustment phase, debtors in the private non-financial sector use their income to a greater extent to reduce their debt. Even if this only results in a redistribution of funds from debtors to creditors, the likely effect is to curb macroeconomic consumption and investment, as creditors generally have a lower propensity to spend than debtors.³ In monetary policy terms, this means that expansionary monetary policy measures to stimulate aggregate demand for goods via consumption and investment can, in such an environment requiring adjustment processes, have a comparatively weak effect or work comparatively more slowly, as long as balance sheet constraints impede demand from the private non-financial sector. In addition to the negative effects on economic activity, the reallocation of the capital stock to more productive value-added areas can be negatively affected by low investment, which in turn could lead to lower potential growth.

Previous analyses of the debt situation of the private non-financial sector in the euro area concluded that the deleveraging process in the countries concerned following the onset of the financial crisis was rather weak in comparison to the typical path of previous deleveraging phases.⁴ Against this backdrop, this article documents how far the reduction in the debt overhang has progressed since 2012 and the adjustment channels through which it has occurred. It also sets out potential implications of deleveraging for the real economy and draws conclusions for economic policy-making.

■ Assessment of the private non-financial sector debt situation

Debt ratio over time

The debt ratio usually serves as the key indicator for assessing the debt situation of the private non-financial sector – not least because of the good data availability and the high international comparability. It places sectoral debt – calculated on the basis of the financial accounts and in the following defined as the sum of loans, debt securities, insurance technical reserves, trade credits and advances – in relation to an income stream such as gross domes-

Debt ratio key indicator for assessing the debt situation

¹ See Deutsche Bundesbank, Private debt – status quo, need for adjustment and policy implications, Monthly Report, January 2014, pp 53-65.

² See O Jordà, M Schularik and AM Taylor (2013), When credit bites back, *Journal of Money, Credit & Banking*, 45(2), pp 3-28; and Deutsche Bundesbank (2014), op cit.

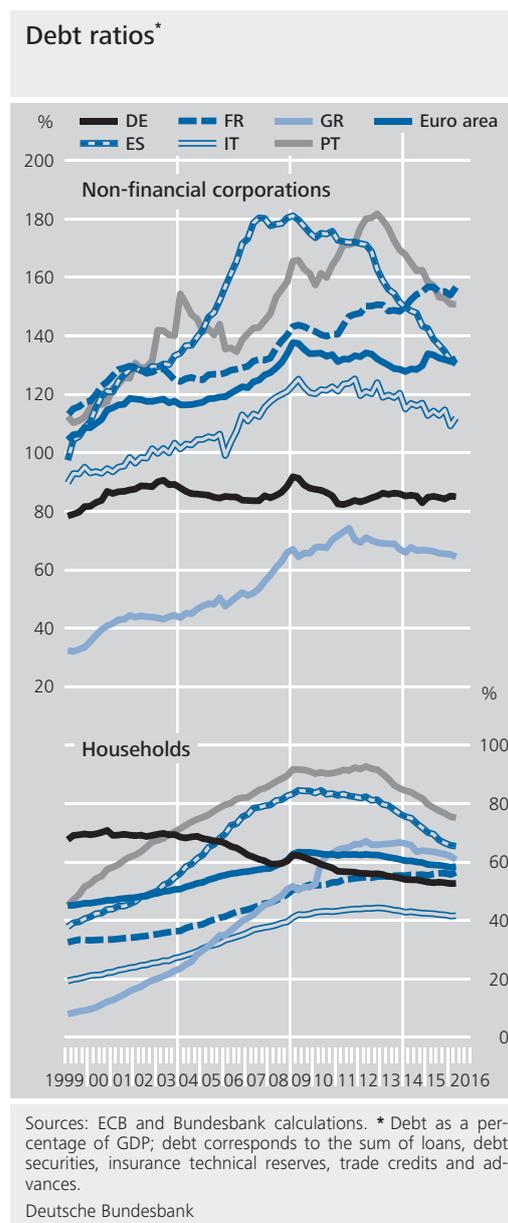
³ See, for example, M Goretti and M Souto (2012), Macro financial implications of corporate (de)leveraging in the euro area periphery, IMF Working Paper No 154; A Mian, K Rao and A Sufi (2013), Household balance sheets, consumption, and the economic slump, *Quarterly Journal of Economics*, pp 1687-1726; B Albuquerque and G Krustev (2015), Debt overhang and deleveraging in the US household sector: gauging the impact on consumption, ECB Working Paper Series, No 1843; A Mian, A Sufi and E Verner (2015), Household debt and business cycles worldwide, mimeo.

⁴ See Deutsche Bundesbank (2014), op cit.

tic product (GDP).⁵ As debt is often repaid from current income, this indicator aims to show the long-term economic sustainability of the debt. A low debt ratio implies that the debt stock of a sector stands in relation to a relatively high income that can be used to repay the debt. The sectoral aggregate data used here therefore do not take into account possible distribution effects relating to debt and assets within the individual sectors.

Strong increase in the 2000s, particularly in Portugal and Spain

The adjacent chart shows the development of debt ratios for non-financial corporations and households in countries heavily affected by the European debt crisis, namely Greece, Italy, Spain and Portugal, as well as in the two largest euro-area countries, Germany and France.⁶ The development of the euro-area aggregate is additionally shown as a benchmark. There was a strong rise in debt in the 2000s, particularly for non-financial corporations and households in Spain and Portugal. Fairly strong upward momentum could also be seen for households in Greece until 2012, albeit starting from an extremely low level. By contrast, non-financial corporations and households in Italy were characterised by a somewhat more modest development and a low debt level compared to other countries. On the other hand, German households, which were still the most indebted



⁵ In earlier publications the debt definition included only loans, debt securities and insurance technical reserves. Since the change-over from the European System of Accounts (ESA) 1995 to ESA 2010, it is now also possible to statistically isolate trade credits and advances, which are also debt instruments. For an account of the change-over to ESA 2010, see Deutsche Bundesbank, Methodological changes in the financial accounts – background, approach and selected results, Monthly Report, October 2014, pp 13-26. The data are taken on an unconsolidated basis and thus include intra-sectoral liabilities such as loans between non-financial corporations. Ideally, the intra-sectoral liabilities should be corrected to exclude intra-group liabilities, as these do not represent a payment obligation in the stricter sense. However, as these cannot be distinguished from the remaining intra-sectoral loans on the basis of existing data sources, the debt level as relevant from an economic perspective tends to be overstated.

⁶ The debt data are taken from the financial accounts compiled according to ESA 2010, as provided by the European Central Bank or the respective national central banks. For Italy, the backdata prior to 2012 are based on ESA 1995. The development in Ireland is not shown here because, in the case of non-financial corporations, it is distorted by the presence of international enterprises.

when the monetary union was founded, have gradually reduced their liabilities.

During the European debt crisis between 2010 and 2013, the debt ratios of the private non-financial sector began to fall, particularly in Spain and Portugal. This process has accelerated markedly since mid-2012. Compared to the respective peaks, there has been a substantial reduction in the debt ratios among non-financial corporations of just over 50 percentage points in Spain and around 30 percentage points in Portugal. Household debt ratios have fallen in each case by nearly 20 percentage points. Thus, in both countries, approximately

Marked decline in Portugal and Spain since mid-2012

half of the increase in debt ratios recorded between the beginning of 2000 and the respective peaks has since been cut back.

Sideways movement in Germany, Italy and Greece; slight but persistent rise in France

By contrast, the debt ratios of the private non-financial sectors in Germany, Italy and Greece, which have rather low debt levels by international standards, as well as in the euro area as a whole have shown a persistent sideways movement in recent years. Only in France has there been a continuation of the slight, but persistent, upward trend. At the current end of the data, non-financial corporations in France have the highest debt ratio among all of the countries considered here.⁷ The sideways trend at the level of the euro area in recent years stands in contrast in part to the developments in other large economies (see box on pages 45 and 46).

Determinants of the change in the debt ratio

Change in the debt ratio ...

In order to be able to draw conclusions on the type of deleveraging process, the change in the debt ratio is broken down into the contributions of its sub-components. The denominator of the debt ratio – GDP – is broken down into the contributions of real GDP and of the GDP deflator, ie an indicator of macroeconomic price developments; the change in the level of debt – the numerator in the debt ratio – is subdivided into three components: transactions, write-downs and other changes.

... attributable to various factors

Transactions correspond to active increases or reductions in debt. Stock-flow adjustments made in the form of write-downs are reductions in the nominal amount of existing liabilities and take place, for example, as a result of loan renegotiations in the case of payment difficulties or outright defaults in the case of insolvency. As write-downs are not listed separately in the financial accounts, the data from the monthly balance sheet statistics of the monetary financial institutions (MFIs) are also taken into account. The information on write-

downs thus relates only to bank loans. However, as these usually make up a large portion of the aggregate indebtedness of the private non-financial sector, a significant share of all write-downs should therefore be covered by this.⁸ Other changes thus encompass all other factors that influence the debt level, except transactions and write-downs. These include market price or exchange rate fluctuations, statistical changes to the debt level, and write-downs on debt instruments other than bank loans. The chart on page 47 shows the contributions to the change in the debt ratio since the deleveraging process began to accelerate in mid-2012.

In all of the countries considered here, except Greece and Italy, both real GDP growth and the increase in the GDP deflator contributed to a reduction in the debt ratios. This means that the deleveraging process was supported by both economic developments and the increase in the price level. In Italy, by contrast, real economic growth did not make any contribution to the fall in the debt ratio, as the economic recovery there has thus far been very weak. In Spain, where, alongside Portugal, the debt ratio of the private non-financial sector has decreased the most over the last few years, a substantial part of the reduction in the debt ratio was due, in addition to active deleveraging, to write-downs on bank loans. This was particularly true for non-financial corporations, and, to a somewhat lesser extent, for households, too. The major importance of write-downs in Spain

Economic growth and debt repayments contribute to a reduction in almost all countries

⁷ As intrasectoral loans are of major significance in the cross-country comparison and consist at least in part of intra-group liabilities that are of no consequence to debt sustainability, the unconsolidated debt shown here should paint a somewhat too negative picture of the debt situation of non-financial corporations in France. However, even after adjusting the debt ratio to exclude intrasectoral loans, a steady upward trend can still be observed and, at the current end of the data, France posts the second-highest value (after Portugal) of all countries under consideration here.

⁸ In the MFI balance sheet statistics, other adjustments are comprised of write-downs and changes to the nominal value. As loans are not subject to market price fluctuations, other adjustments can be equated to write-downs. See Manual on MFI balance sheet statistics, Chapter 1, ECB, April 2012.

Debt – an international comparison

While debt¹ accumulated in the euro area in the 2000s, the United States as well as several major emerging market economies also saw an increase in debt levels, which, in 2008, culminated both in the real estate crisis in the United States and the global financial crisis. However, the euro area, the United States, the United Kingdom, Japan and the group of emerging market economies have experienced very different developments in the wake of the crisis, particularly in recent years.

Debt in the United States accumulated at a similar pace to that in the euro area. However, after peaking in 2008 at a debt ratio of 169%, this trend gave way – earlier than in the euro area – to a phase of deleveraging, which lasted until 2012. In contrast to the situation in the euro area, this deleveraging – like the accumulation of debt before it – was driven mainly by households. Since then, the debt ratio of the private non-financial sector in the United States has remained largely constant, which can, as in the euro area, be attributed to the fact that nominal gross domestic product (GDP) has grown roughly in line with debt. However, back in 2012, the US debt ratio, at just under 150%, was already lower than the current level in the euro area (where it stood at 164% in the second quarter of 2016).

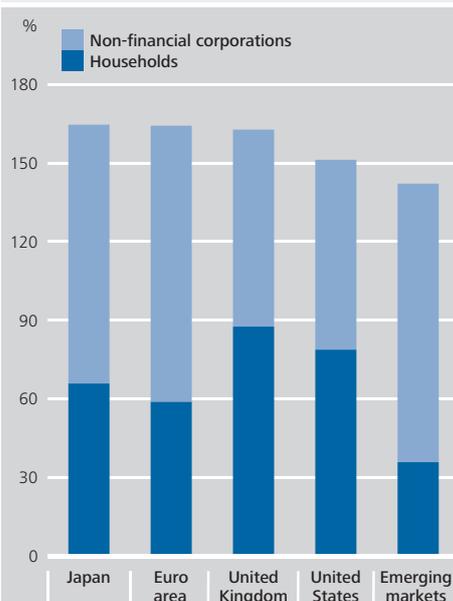
Developments in debt in the United Kingdom were similar to those in the United

States, only more pronounced, on the whole. Households and non-financial corporations in the United Kingdom contributed in roughly equal parts to both the accumulation and the reduction of debt. Somewhat later than in the United States, 2010 saw the beginning of an intensive phase of deleveraging, which started at a debt ratio of 192% and has persisted up to the current end (in the second quarter of 2016, the ratio was 163%). This can be attributed to strong GDP growth and, at times, active deleveraging. Household debt, in particular, is currently still high by international standards, however.

Developments in Japan and in the group of emerging market economies were strikingly different. In Japan, the private non-financial sector, predominantly the part consisting of

Debt ratios* of the private non-financial sectors of selected economic areas

As at 2016 Q2

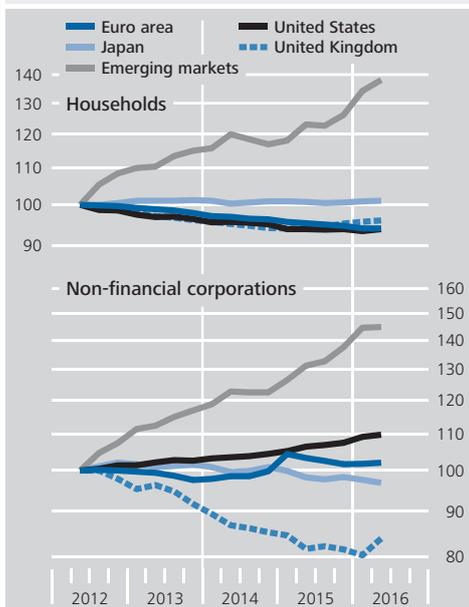


Sources: BIS total credit statistics and Bundesbank calculations.
 * The debt ratio is defined as debt (which here comprises only loans and debt securities due to limited data availability) as a percentage of GDP.
 Deutsche Bundesbank

¹ For the purposes of this international comparison, debt is defined only as loans and debt securities and, therefore, excludes pension provisions and trade credits. This facilitates the international comparability of the data, which are taken from the Bank for International Settlements' total credit statistics. Consequently, the debt ratio cited here is lower than elsewhere in this article.

Debt ratios* of the private non-financial sectors of selected economic areas

2012 Q2 = 100



Sources: BIS total credit statistics and Bundesbank calculations.
 * The debt ratio is defined as debt (which here comprises only loans and debt securities due to limited data availability) as a percentage of GDP.
 Deutsche Bundesbank

non-financial corporations, was very heavily indebted, with debt ratios of up to 220% in the 1980s and 1990s. In the mid-1990s, an adjustment process was set in train, in which the private non-financial sector underwent significant deleveraging, while government debt inversely started to grow and, as a percentage of GDP, currently exceeds other industrial countries' levels. This development meant that Japan, unlike many other countries, experienced a decline in the debt ratio of the private non-financial sector in the run-up to the financial and economic crisis. Even after the onset of the financial crisis, which in Japan was accompanied by a slight increase in debt, a sideways movement started, with debt even, at times, declining somewhat. This was the result of broadly similar developments in debt and GDP. At 165%, the debt ratio of the private non-financial sector in Japan in mid-2016 was, however, still very high by international standards, which

was attributable mainly to non-financial corporations.

Developments in the emerging market economies also diverged significantly from those in the United States, the United Kingdom and the euro-area countries. Whereas debt levels in the private non-financial sector were still very low in the years leading up to the financial crisis and grew relatively slowly, a sharp increase started in 2008, bringing the debt ratio (currently 142%) close to that of the other countries under review. The muted GDP growth experienced in many emerging economies, particularly since 2015, was unable to keep up with the active accumulation of debt. The rise in debt was propelled mainly by non-financial corporations, whose current-end debt ratio, at 106%, has even exceeded that of non-financial corporations in the euro area. Given low interest rates in the industrial countries, large volumes of liabilities denominated in foreign currency were established, thus increasing vulnerability to exchange rate fluctuations and changes in commodity prices. Among the emerging economies, China in particular drove the build-up of debt, with the debt ratio of the private non-financial sector rising from 115% in 2008 to values in excess of 200% at the current end – here, too, driven principally by non-financial corporations. Conversely, the ratios of other large emerging economies, such as Brazil, Russia, India or South Africa, are currently significantly smaller – at less than 75% each – although Russia and Brazil have also experienced a substantial rise in debt from a low level since 2008.

is closely linked to the SAREB bad bank, which took on a substantial volume of non-performing assets from Spanish banks, with significant haircuts on the nominal value, and liquidated them in a value-preserving manner. It therefore contributed to a comprehensive balance sheet restructuring in the Spanish banking sector and, mirroring this, provided relief for the balance sheets of the private non-financial sector.⁹ In Portugal, Italy and Greece, by contrast, write-downs played only a minor role. Here, developments were driven to a greater extent by active deleveraging.

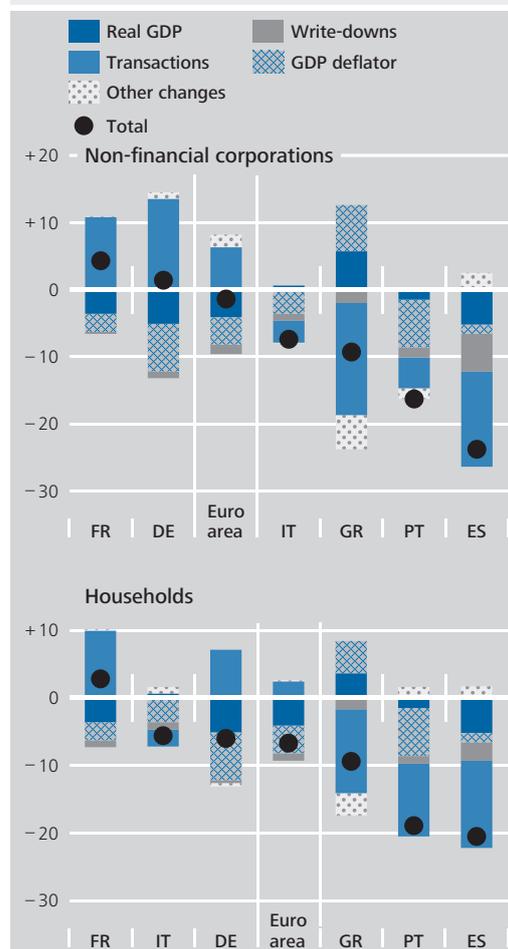
Alternative indicators for assessing the debt situation

Debt service ratio measures the portion of income used to service debt

In addition to the importance of current income in the long term, debt sustainability can also be influenced by other factors in the short term. For example, the actual interest burden associated with servicing the debt can vary temporarily. This is especially the case when the interest payment obligations are variable and linked to a benchmark interest rate that, in turn, is influenced by monetary policy. One indicator that takes this circumstance into account is the debt service ratio. This places the sum of the interest and redemption payments made in a single period in relation to aggregate income in the same period. Unlike the debt ratio, where a stock variable, ie indebtedness, is placed in relation to a flow variable, ie income, in this case the numerator is therefore also a flow variable. The indicator thus measures the share of income that must be used to service debt, ie for interest and redemption payments. All other things being equal, a given debt level will be more sustainable and, in the short term, require fewer balance sheet adjustments in the form of foregoing consumption or scaling back investment when the interest and repayment burden relative to income is low. For a given debt level, this can be the result of low interest rates – for example, owing to an expansionary monetary policy – or of a long borrowing term in which the redemption pay-

Change in the debt ratio* and contributions made by its components

Percentage change between 2012 Q2 and 2016 Q2 and contributions in percentage points

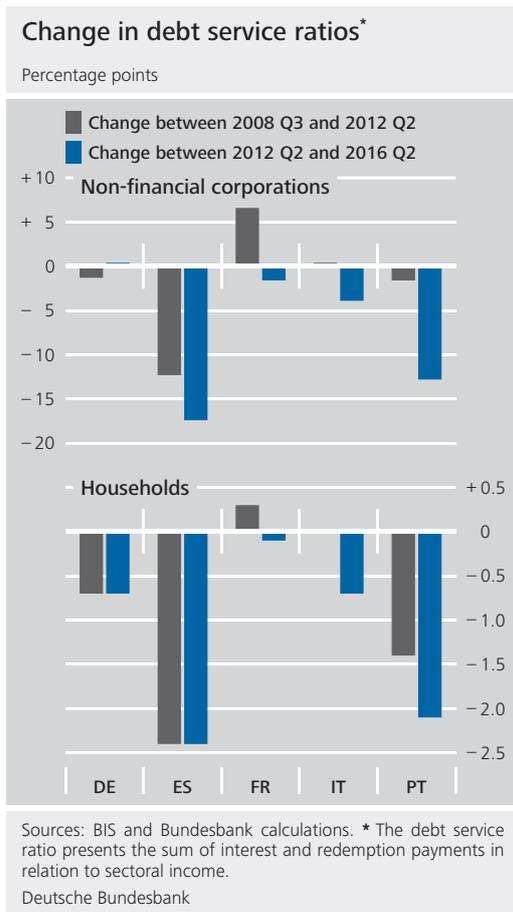


Sources: ECB and Bundesbank calculations. * Debt as a percentage of GDP; debt corresponds to the sum of loans, debt securities, insurance technical reserves, trade credits and advances.

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ments in each period are correspondingly low. The chart on page 48 shows the change in debt service ratios between the second quarter of 2012 (when the deleveraging process began to intensify) and the current end of the data (second quarter of 2016). For the purposes of comparison, the change between the third quarter of 2008 (the onset of the global finan-

⁹ For more information, see Fund for Orderly Bank Restructuring, Asset Management Company for Assets Arising from the Bank Restructuring, 16 November 2012.



cial and economic crisis) and mid-2012 is also shown.¹⁰

Debt service ratio falling in Spain and Portugal even prior to start of deleveraging process

In the case of non-financial corporations and households in Spain and Portugal, which were particularly highly indebted prior to the onset of the crisis, the debt service ratio had already started to fall in the wake of key interest rate cuts by the Eurosystem in the second half of 2008, meaning that it decreased much sooner and to a considerably greater extent than the debt ratio. As the share of income needed for interest payments was subsequently lower, balance sheet constraints were eased in the private non-financial sector and, when viewed in isolation, the decline in consumption and investment via this channel was mitigated.¹¹ This development may be partly due to the fact that loans subject to variable interest rates that move in line with a money market yield are more common in these two countries than in other euro-area countries.¹² By contrast, the

debt service ratios and debt ratios of the remaining countries under review here, in which loans are usually granted on a fixed-rate basis, followed a fairly similar pattern.¹³

While short-term payment obligations are better captured by the debt service ratio than the debt ratio, the former takes no account of the fact that debt can be reduced by selling existing assets to free up funds. Since liquidating the real assets of households (residential properties, in particular) and of non-financial corporations (fixed assets, in particular) as well as certain components of long-term financial assets in times of crisis is usually either difficult

Selling liquid assets can free up funds to service debt

10 The data are based on BIS calculations. See M Drehmann, A Illes, M Juselius and M Santos (2015), How much income is used for debt payments? A new database for debt service ratios, BIS Quarterly Review. The authors assume here that on the macroeconomic level, aggregate interest and amortisations are paid in approximately equal amounts in each period, similarly to an instalment loan. The debt service ratio (DSR) at time t is thus calculated using the following formula: $DSR_t = (i_t * D_t) / ((1 + (1 + i_t)^{-st}) * Y_t$, where i_t corresponds to the average interest that has to be paid on the debt, D_t is the amount of debt, s_t is the average remaining maturity and Y_t is gross disposable income. As no time series are available for Greece, it is excluded from the analysis. Given the assumption for the debt service ratio that the remaining maturity of the debt is constant over time and across countries, all the differences between the debt service ratio and the debt ratio are attributable to divergent developments in interest payments.

11 In addition to having a stabilising effect, this development simultaneously creates incentives to only gradually address the actual issue of excessive indebtedness, which could, all in all, go as far as to render the economy more vulnerable to future shocks.

12 For information on interest rate characteristics for non-financial corporations, see Eurosystem Working Group (2013), Corporate finance and economic activity in the euro area, ECB Occasional Paper, No 151. For households, see ECB (2009), Housing finance in the euro area, Structural Issues Report, p 26.

13 Using the Bank's econometric estimates, the extent to which interest rate changes prompted by monetary policy are passed through to the interest rate on the outstanding debt of households and non-financial corporations was examined. In the context of the global financial crisis and the sovereign debt crisis in the euro area, such an analysis comes with various caveats. For instance, the effects arising from possible changes in financing patterns or in the transmission mechanism can only be approximately estimated at the current juncture. That said, the findings tend to suggest that monetary policy stimulus has, first and foremost, a greater and swifter impact on the debt servicing of households and non-financial corporations in Portugal, Spain and – albeit to a lesser extent – Italy than those in Germany or France. With respect to possible changes in the interest rate pass-through, see Deutsche Bundesbank, The interest rate pass-through in the crisis, Monthly Report, September 2015, p 33.

or entails heavy markdowns, making them unlikely to be readily available to service debt, this article focuses solely on liquid financial assets. These are assets in the form of cash, deposits, shares, investment funds and debt securities that can be liquidated or sold without incurring significant costs.¹⁴ Debt and liquid financial assets therefore serve as two stock variables that can be compared in a ratio. A low ratio of debt to liquid financial assets means that, all other things being equal, the debt is set against sizeable assets that could be used to service the debt, irrespective of current income. The adjacent chart shows the change in this indicator for non-financial corporations and households between mid-2012 and the current end of the data, with the overall change also broken down into the contributions made by debt and liquid assets.

Ratio of debt to liquid assets down in most countries and sectors under review

With the exception of non-financial corporations in Greece, all countries and sectors under review have recorded a fall in the ratio of debt to liquid assets since mid-2012. In both sub-sectors of the private non-financial sector in Spain and Portugal, as well as in the case of non-financial corporations in Italy, this development was attributable to both active debt reduction and a rise in liquid assets. Debt reduction therefore goes hand in hand with a higher volume of assets that can be liquidated at short notice, which ought to increase resilience to any negative income and asset price shocks. There was a disproportionately sharp rise in liquid assets in the case of the private non-financial sectors in Germany and France, which led to the ratio dwindling despite an accumulation of debt over the past few years.¹⁵ By contrast, liquid assets – particularly deposits – held by non-financial corporations and households in Greece fell. Based on this development, it can be assumed that the private non-financial sector has temporarily used its liquid assets here for debt-servicing purposes. While this has reduced the debt burden, it has also lessened the private non-financial sector's ability to absorb any future adverse income and asset price

Change in the ratio of debt to liquid assets and contributions made by its components*

Percentage change between 2012 Q2 and 2016 Q2 and contributions in percentage points



Sources: ECB and Bundesbank calculations. * Debt corresponds to the sum of loans, debt securities, insurance technical reserves, trade credits and advances. Liquid assets comprise the sum of cash, deposits, shares, investment funds and debt securities.

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¹⁴ Other, illiquid assets, such as claims against insurance corporations and pension funds or unlisted equity instruments, can usually only be converted into cash at great expense and are therefore poorly suited to mobilisation at short notice. In qualitative terms, the results discussed in this article would be virtually identical if a narrow definition of liquid (current) assets limited to cash, deposits, short-term loans and debt securities were chosen.

¹⁵ Looking at the level of, rather than change in, the ratio of debt to liquid assets, it differs significantly from the debt ratio with respect to relative positioning in the case of non-financial corporations in France. While, according to the latest data available, their debt ratio rose steadily to become the highest debt ratio among the countries and sectors under review, debt was at the second-lowest level relative to liquid assets and has remained more or less constant, both over the longer term and in recent years. The high debt levels are thus accompanied by sizeable liquid financial assets.

Indicators for assessing the debt situation of the private non-financial sector*

Change between 2012 Q2 and 2016 Q2 in percentage points

Item	Germany	Spain	France	Italy	Greece	Portugal
Debt ratio						
Non-financial corporations	1.2	- 40.8	6.5	- 9.0	- 6.6	- 29.3
Households	- 3.3	- 16.9	1.5	- 2.5	- 6.3	- 17.6
Debt service ratio						
Non-financial corporations	0.4	- 17.4	- 1.6	- 3.9	-	- 12.8
Households	- 0.7	- 2.4	- 0.1	- 0.7	-	- 2.1
Ratio of debt to liquid assets						
Non-financial corporations	- 18.1	- 171.3	- 10.3	- 60.8	29.6	- 124.1
Households	- 5.4	- 19.0	- 2.4	- 1.4	- 7.5	- 11.8

Sources: BIS, ECB and Bundesbank calculations. * The debt ratio presents debt (sum of loans, debt securities, insurance technical reserves, trade credits and advances) as a percentage of GDP. The debt service ratio presents the sum of interest and redemption payments as a percentage of sectoral income. Liquid assets comprise the sum of cash, deposits, shares, investment fund shares and debt securities.

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shocks.¹⁶ The table above summarises the change in the three indicators under review.

The ability to service debt is mirrored in creditors' balance sheets. Creditors are almost exclusively from the domestic banking sector in the case of households and largely from said sector in the case of non-financial corporations. The share of non-performing loans as a percentage of banks' total loans provides insight into whether borrowers are making their interest and redemption payments as contractually agreed. A high percentage of delinquent loans may be deemed indicative of an unsustainable level of indebtedness on the part of the private non-financial sector.

Particularly in Greece, but also in Italy and Portugal, the high and rising share of non-performing loans as a percentage of total loans is a sign that, as a result of weak income growth, it remains difficult for many borrowers in the private non-financial sector to service their debt. The Spanish banking system was likewise initially weighed down by a sharp rise in non-performing loans in the wake of the crisis. However, the volume of non-performing loans has dropped discernibly since the transfer of legacy loan portfolios to a resolution agency at the turn of 2012-13 and the country's significant economic recovery.¹⁷ In Germany and

France, non-performing loans are at a moderate and stable level and testify to the high credit quality of borrowers from the private non-financial sector.

The volume of non-performing loans may also restrict banks' credit supply. As loan impairments are recognised in banks' profit or loss, they have a negative impact on their earnings and hinder their efforts to build up capital internally. This, in turn, may increase their funding costs and limit their access to funding. These two factors did indeed deteriorate significantly against the backdrop of strains on the European banking sector during the acute phase of the European debt crisis; together with the necessary balance sheet adjustments in the private non-financial sector, they contributed to a sharp drop in loan dynamics, to which the Eurosystem responded with a series of non-standard monetary policy measures.¹⁸

... and may lead to banks imposing restrictions on lending

Banks' non-performing loans as a mirror image of debt situation in private non-financial sector

High and rising share of non-performing loans indicative of problems servicing debt in Greece, Italy and Portugal ...

¹⁶ To a certain extent, the decline in deposits is likely also attributable to withdrawals in the wake of the uncertainties surrounding negotiations concerning the third Greek bailout package.

¹⁷ See Deutsche Bundesbank, Recent developments in loans to euro-area non-financial corporations, Monthly Report, September 2015, pp 15-39.

¹⁸ See Deutsche Bundesbank (2015), op cit.

Final assessment of the debt situation

Mapping developments in historical context

In the following, debt reduction in the countries affected by the crisis is compared with several typical developments that have been observed in the past, with the aim of making it possible to assess changes in the private non-financial sector's debt situation. To this end, the chart on page 52 shows the course of the debt ratio for the private non-financial sector as a whole before and after the GDP peak was reached at the end of 2008 for the countries under review here compared with two historical scenarios cited in the relevant literature: a typical business cycle and a typical private sector debt crisis. The classification of each business cycle is based on a dataset of 15 industrial countries between 1960 and 2012: Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. All in all, 40 typical business cycles and five debt crises (Spain in 1978, Norway in 1987, Finland in 1991, Sweden in 1991 and Japan in 1992) can be identified in the dataset.¹⁹ Private sector debt crises differ from typical business cycles in that they are preceded by a sharp rise in the debt ratio that, once the GDP peak has been reached, decreases just as clearly again in the medium term. Typical business cycles are characterised by a weak but persistent upward movement of the debt ratio both before and after the GDP peak has been reached.

Deleveraging process in Spain already appears to be well underway

While the rise in the debt ratio for the private non-financial sector in Spain and Greece was considerably more dynamic than in comparable periods that culminated in a private sector debt crisis, developments in Italy and Portugal, on the other hand, were very similar to those arising during a typical debt crisis. With respect to the debt ratio's period of decline, it is evident that, in Spain, this set in significantly more quickly than in previous private sector debt crises and the decline was much more extensive. Even taking into account the somewhat

stronger momentum during the debt build-up phase, it can therefore be concluded that the deleveraging process in Spain already appears to be well underway. While the debt ratio initially fell with a considerable time lag in Portugal, it has now reached a level that corresponds to developments in comparable historical periods. In each of these countries, this process is underpinned by a decline in the debt service ratio that is disproportionately large in comparison with the debt ratio. Resilience to negative shocks has also risen recently as a result of holdings of liquid assets being expanded relative to debt levels. However, the comparatively rapid adjustment of lending rates to move in line with money market developments is also likely to make the non-financial sectors of these countries more vulnerable to any normalisation of the monetary policy stance.

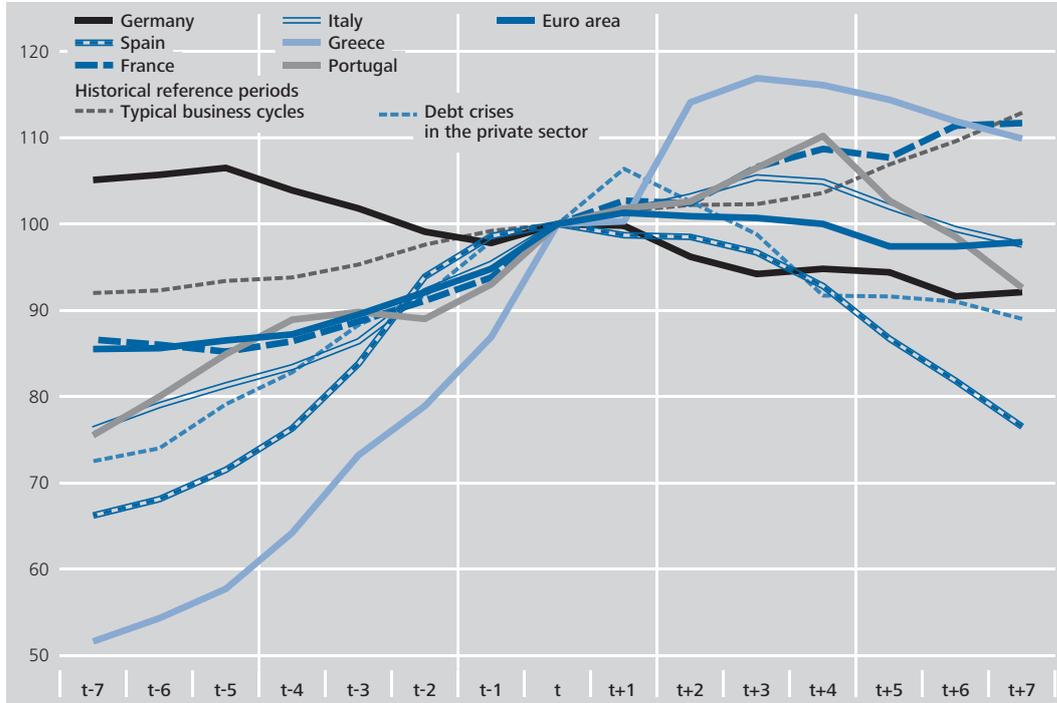
By contrast, the decline in the debt ratio for the private non-financial sector in Italy, and particularly in Greece, is lagging behind what would typically be expected. In Greece's case, this is primarily on account of the sharp fall in economic output in the wake of the Greek sovereign debt crisis. In Italy's case, weak economic performance – which has been persisting for years now – is also hampering a more significant fall in the debt ratio. To put matters into perspective, however, it may be concluded for both countries that, in a cross-country comparison, their debt ratios are rather low, meaning that the need for deleveraging could accordingly be lower than indicated by developments prior to the crisis. Strain is placed on non-financial corporations in Italy, however, due to the buffer of liquid assets being rather low, leaving them with only limited opportunities to service their debt by selling assets in the event of adverse shocks. Households in Italy,

Sluggish economic performance hampering deleveraging process in Greece and Italy

¹⁹ The data pool comprises data from the BIS, ECB and M Schularik and AM Taylor (2012), Credit booms gone bust: monetary policy, leverage cycles and financial crises: 1870-2008, *American Economic Review*, 102(2), pp 1029-1061. For details on the country sample and classification of historical cycles, see Eurosystem Working Group (2013), Corporate finance and economic activity in the euro area, ECB Occasional Paper, No 151.

Debt ratio* of the private non-financial sector by historical standards

GDP peak = 100



Sources: BIS, ECB and Bundesbank calculations. For details on the country sample and classification of historical cycles, see Eurosystem Working Group, Corporate finance and economic activity in the euro area, ECB Occasional Paper 151, August 2013. * Debt as a percentage of GDP; debt corresponds to the sum of loans, debt securities, insurance technical reserves, trade credits and advances.

Deutsche Bundesbank

on the other hand, find themselves in a relatively comfortable position with respect to liquid assets. The private non-financial sector in Greece has increasingly used liquid assets over the past few years to service its debt, thereby depleting existing reserves. That said, from a cross-country perspective, the ratio of debt to liquid assets remains at a high level, particularly in the case of non-financial corporations.

Developments in France most closely represent typical business cycle; stable debt situation in Germany

With respect to the private non-financial sector in France, it may be concluded that the persistent, but only moderate, increase in the debt ratio most closely represents developments during a typical business cycle and therefore marks a significant departure from the strong growth recorded in the countries affected by the crisis. While, according to the latest data available, non-financial corporations in France have a relatively high debt ratio, this is put into perspective by the fact that the ratio of debt to liquid assets is very low compared with that of other countries. Germany is the only country

under review here in which there was no phase of marked upward movement for the private non-financial sector's debt ratio during the observation period in the case of both non-financial corporations and households. This phase of debt reduction can, in part, be interpreted as a countermovement to the debt overhang of the 1990s. Growing profitability was another factor that helped non-financial corporations, as it facilitated a shift towards internal financing.²⁰ The course of the debt ratio over recent years and decades therefore attests to the fact that developments in Germany have diverged greatly from those in other euro-area member states and can, at the same time, be taken as evidence of a now relatively stable debt situation.

²⁰ For non-financial corporations, see Deutsche Bundesbank, Long-term developments in corporate financing in Germany – evidence based on the financial accounts, Monthly Report, January 2012, pp 13-27.

Developments also need to be viewed with euro-area circumstances in mind

The hitherto sluggish pace of adjustment in some countries must, however, also be assessed against the backdrop of the economic situation in the euro area. Compared with the average course of a private sector debt crisis, developments in the euro area were also shaped, *inter alia*, by balance of payments problems, the lack of private capital flows, the fact that price competitiveness can no longer be improved by making nominal exchange rate adjustments, and strained public finances. It cannot be ruled out that the private and/or public sector would not have been capable of fully bearing the financial burden of broader stock-flow adjustments, with the result that long-lasting active debt repayments came to the fore.

Macroeconomic implications of debt reduction

Debt reduction can have a negative impact on economic developments

Debt reduction is of relevance to economic policy makers in general and monetary policy makers in particular, above all because of the possible negative repercussions for the real economy. A particularly adverse scenario that can arise as a result of the deleveraging process is known as debt deflation.²¹ This occurs when the private non-financial sector, finding itself in a state of overindebtedness, reduces its liabilities. As a result of highly pronounced negative feedback loops in the real economy, however, this scenario gives rise to a disproportionately large reduction in real income and prices, which runs counter to debt reduction and culminates in the debt ratio going up. Despite actively reducing debt, balance sheet constraints are tightened in such an extreme scenario.

Successful deleveraging in Greece, Italy, Portugal and Spain

The chart on page 54 shows that this adverse scenario has not occurred in any of the countries under review here.²² Debt deflation occurs when debt is reduced in a country but the debt ratio increases (upper left quadrant). The private non-financial sectors in Greece, Italy, Portugal and Spain can be found in the lower left quadrant of the successful debt reduction scenario. This is characterised by the fact that the

active debt reduction was accompanied by a reduction in the debt ratio and, as a result, balance sheet constraints were removed. The debt ratio fell even in Greece despite a decline in its real GDP and price level. This implies that nominal income fell in the wake of the deleveraging process, albeit to a lesser extent than the debt.

One reason for the comparatively weak impact of deleveraging on the (domestic) economic performance of these countries could be that the reduction in debt was reflected, at least in part, in a decline in imports, which is having a dampening effect on the decline in domestic demand.²³ At the same time, the deleveraging process in the private non-financial sector was reflected, at least in part, by an increase in public debt resulting from the crisis-related measures taken to stabilise the financial sector and to stimulate economic developments.²⁴ However, it can be said for most of the countries hit by the European debt crisis that even the total debt ratios of non-financial sectors – thus in-

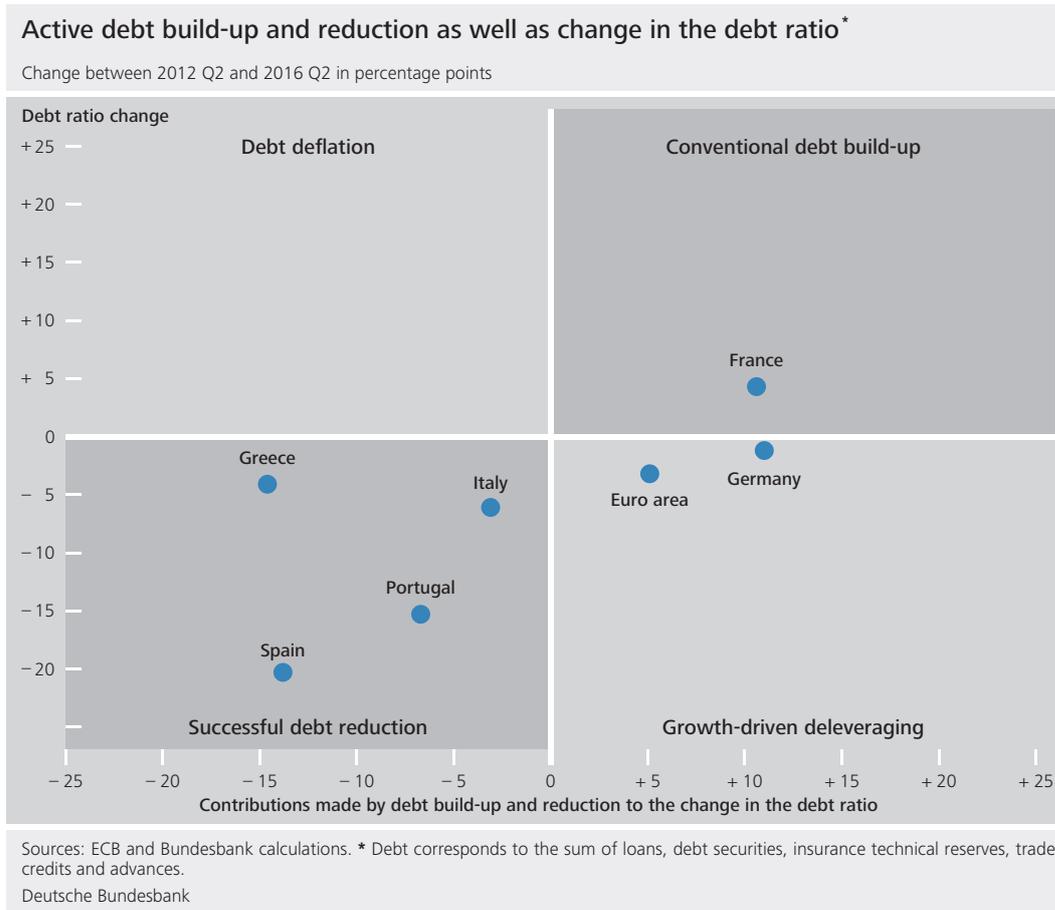
Debt ratios in most countries under review below 2014 peak

²¹ The idea of debt deflation dates back to the work of Irving Fisher. See I Fisher (1933), The debt-deflation theory of great depressions, *Econometrica* 1, pp 337-357. The approach has been further developed by Hyman Minsky and Richard Koo, among others. See HP Minsky (1981), Debt deflation processes in today's institutional environment, Hyman P Minsky Archive, Paper No 299, and R Koo (2009), The holy grail of macroeconomics – lessons from Japan's great recession, Wiley, Singapore. A formalised version of these approaches can be found in GB Eggertsson and P Krugman (2012), Debt, deleveraging, and the liquidity trap: a Fisher-Minsky-Koo approach, *The Quarterly Journal of Economics* 127(3), pp 1469-1513.

²² The chart is based on a graph in European Commission, Private sector deleveraging: where do we stand?, Quarterly report on the euro area, Vol 13 (3), October 2014. The calculations focus on changes in recent years because most of the active deleveraging only took place over this period. With the exception of Greece, the results are almost identical if the starting point for the review period is pushed further back into the past. The case of Greece shows that active deleveraging causes an increase in the debt ratio. However, the sharp decline in economic activity should not be attributed primarily to active deleveraging in the private non-financial sector but rather to the Greek sovereign debt crisis.

²³ Empirical studies show that changes in the private non-financial sector's level of debt had a significant impact on the current accounts of the countries affected by the crisis. See R Unger (2017), Asymmetric credit growth and current account imbalances in the euro area, *Journal of International Money and Finance*, forthcoming.

²⁴ See L Buttiglione, P Lane, L Reichlin and V Reinhart (2014), Deleveraging, what deleveraging?, The 16th Geneva Report on the World Economy.



cluding the public sector – have now fallen below their record highs, most of which were reached towards the end of 2014. This macro-economic deleveraging was, in turn, reflected in lower net external liabilities, thus reducing dependence on cross-border funding.

Despite active leveraging, the debt ratio decreased for the private non-financial sector in Germany and across the euro area as a whole. This is because income rose more sharply in the wake of the credit expansion (lower right quadrant). In France, on the other hand, the active build-up of debt ended in a slight increase in the debt ratio (upper right quadrant).

Developments in the real economy during the deleveraging period in crisis countries significantly weaker than in historical reference periods

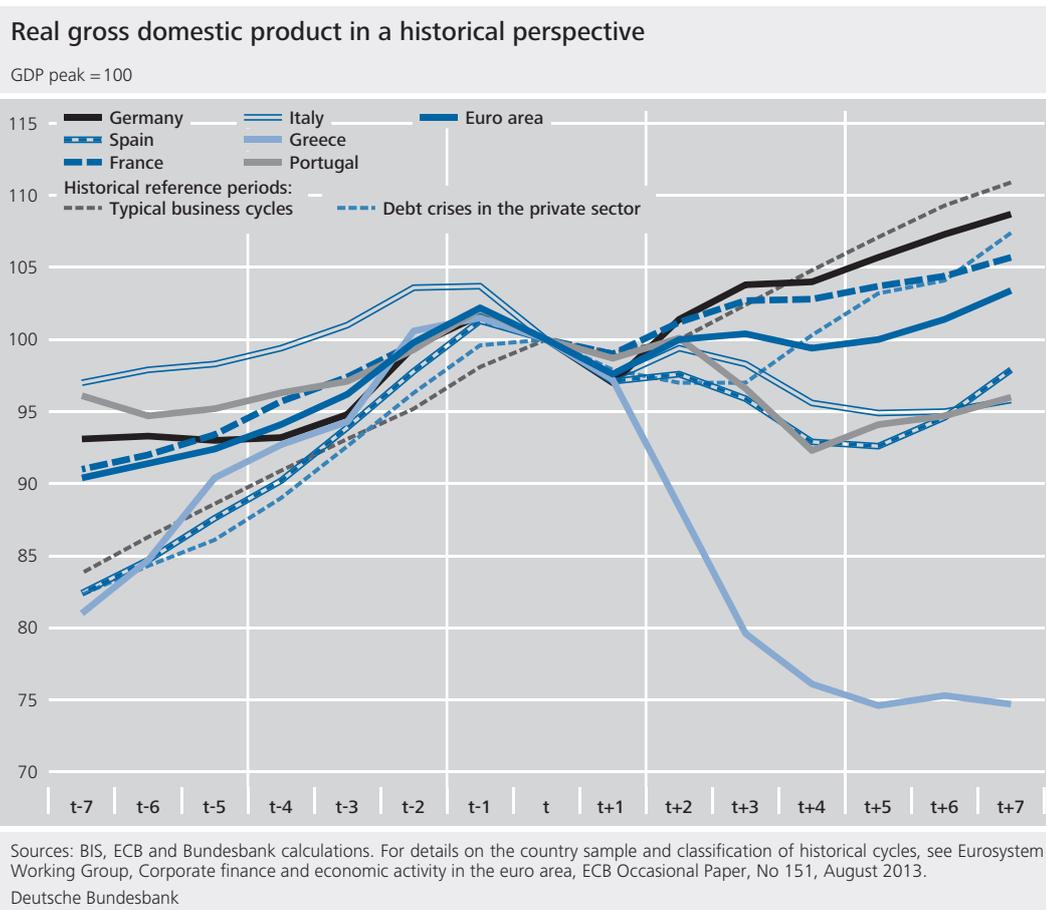
When comparing developments in the real economy with the course of the reference scenarios defined above, however, it becomes apparent that real GDP recovery was significantly weaker in the countries most affected by the European debt crisis, namely in Italy, Spain and Portugal, and especially in Greece (see

chart on page 55). By contrast, previous debt crises in the private sector were characterised by the fact that a strong economic recovery took hold around three years after reaching peak GDP.

Policy implications

Classification of the deleveraging process

As the previous comments showed, the deleveraging process in the private non-financial sector has now picked up speed and in some cases it is at an advanced stage. While the deleveraging process has not ended in dangerous debt deflation in any of the countries under review, economic recovery in the euro area as a whole and especially in the countries affected by the crisis has been relatively weak, however, by international standards.



Comparatively weak economic development in the absence of stock-flow adjustments

This development is likely due, among other things, to the high importance of active deleveraging. Historical experience shows that a phase of debt reduction goes faster if the active debt reduction is accompanied by stock-flow adjustments.²⁵ On the one hand, this is due to the fact that, when there are stock-flow adjustments, debtors have to use a lower share of their income to service the debt. As a result, balance sheet constraints on debtors are eased and there is a correspondingly lower strain on aggregate demand. On the other hand, creditors experience an immediate restructuring of their balance sheets. In principle, this will encourage lending and will thus prompt structural adjustments in the wake of a reallocation of resources within the economy.²⁶

Need to avoid moral hazard and destabilisation following stock-flow adjustments

It should be noted, however, that stock-flow adjustments in the private non-financial sector are also passed on to their creditors' balance sheets. Further financial turmoil may occur as a result of contagion effects, which could, for in-

stance, make it necessary to take recapitalisation measures or to wind up ailing financial institutions. Moreover, moral hazard such as taking on excessive risk when granting loans or misuse of funds should be avoided to ensure that real resources are handled responsibly.

With the exception of Spain, stock-flow adjustments did not play a significant role in any of the countries heavily affected by the debt crisis. Developments in the euro area therefore stand in contrast to those in the United States, where

²⁵ A classic example of successful deleveraging is the Nordic countries at the end of the 1980s and the beginning of the 1990s. After the debt-financed house price bubbles burst, unsustainable debt in the private non-financial sector was quickly written off and the banking systems were subsequently recapitalised. See Deutsche Bundesbank (2014), op cit, pp 63-64 and the literature cited there.

²⁶ Without stock-flow adjustments, on the other hand, there is the danger that insolvent enterprises will be kept alive artificially, tying up real resources and preventing the emergence of new productive enterprises. See R Caballero, T Hoshi and A Kashyap (2008), Zombie lending and depressed restructuring in Japan, American Economic Review, 98(5), pp 1943-1977.

the debt level of households in particular fell following defaults on real estate loans.²⁷ While this directly triggered losses for the banks, they were recapitalised early on and were therefore able to accommodate a renewed increase in demand for credit once the economy recovered.²⁸

Minor importance of stock-flow adjustments reflected in high stocks of non-performing loans

A reflection of the comparatively low importance of stock-flow adjustments in the euro area is the continuing high stocks of non-performing loans on the balance sheets of most countries' banks. While the comprehensive assessment of the European Single Supervisory Mechanism (SSM) provided greater clarity regarding the volume of exposures in default, so far this has not led to a significant reduction in most countries. On the one hand, write-downs on the stocks of non-performing loans would accelerate the private non-financial sector's deleveraging process. On the other hand, the rehabilitation of banks' balance sheets and the improved opportunities to find funding on the market would encourage lending and thereby enable the reallocation of resources. In the event that individual credit institutions might be unable to meet the regulatory capital requirements as a result of these write-downs, the "bail-in" provisions in force since 1 January 2016 facilitate the institutions' proper recovery or resolution while minimising the impact on the real economy and public finances.²⁹

The importance of effective insolvency frameworks

Effective insolvency frameworks facilitate the reduction of bad debts, support the reallocation of real resources ...

The manner in which insolvent debtors and the associated reduction of debt are handled depends on how the insolvency framework is structured, including, in particular, the conditions under which insolvency proceedings are initiated, the rights and obligations of the lenders and borrowers and the role of jurisdiction.³⁰ The costs and time frame of the proceedings are also relevant in this context. Insolvency proceedings primarily regulate how recoverable receivables are repaid and unrecoverable debts

are settled. Unlike solutions that are negotiated *ad hoc*, insolvency proceedings ensure lower friction losses and promote the efficient allocation of resources from a macroeconomic perspective. In the case of enterprises, insolvency proceedings generally aim to maintain as far as possible the value of the productive part of a business and, if need be, to liquidate it in a manner that preserves its value. For personal insolvency, the realisation of collateral such as real estate is standard practice and is supported, if necessary, by debt renegotiations or restructuring.

Structuring an insolvency framework appropriately is very complex because many factors and influences play a role. For example, the presence of an insolvency framework already affects the willingness of the private sector to borrow and lend even before any insolvency proceedings are initiated. Comprehensive creditor protection may also help best protect the interests of creditors in the event of a borrower's insolvency. Nevertheless, it should not go so far as to encourage creditors to take on excessive risk. At the same time, clear liability principles for borrowers mean that investment risks are sufficiently taken into account, thereby avoiding the risk of the funds provided being misused (moral hazard). Borrowers should not,

... and affect the willingness of private sectors to borrow and lend

²⁷ See Banco de España, Private-sector deleveraging channels: an international comparison, Economic Bulletin, November 2013, pp 19-29.

²⁸ Since the securitised real estate loans of US households were held by investors worldwide, a significant proportion of the losses due to write-offs was able to be "exported" abroad, thereby reducing the US banking system's need to be recapitalised. By contrast, exposures to the private non-financial sector in the euro-area countries worst affected by the crisis were primarily held by their domestic banking sectors, which in turn obtained funding from banks in European core countries. This led to a concentration of losses at the national level which, when viewed in isolation, made balance sheet restructuring more difficult in the banking sector.

²⁹ See Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms.

³⁰ For an overview of the economic importance of insolvency frameworks, see, for example, J-C Bricongne, M Demertzis, P Pontuch and A Turrini (2016), Macroeconomic relevance of insolvency frameworks in a high-debt context: an EU perspective, European Commission Discussion Paper No 32.

however, be barred from profitable investment projects from the outset. In addition to these effects, which could arise even before insolvency occurs, insolvency frameworks that avoid placing an excessive and prolonged burden on borrowers may also give them the incentive to continue their business activities even after insolvency. All in all, suitable insolvency frameworks can thus help bring unproductive activities to an end and redirect the resources that are freed up to an efficient use.

average. While the indicator for France has greatly improved in recent years, the value for Greece remains at a very low level. Italy's insolvency framework stands out due to the fact that the costs of settling non-performing loans are very high by global standards. The related reforms, which have been initiated multiple times since 2012, could soon make any necessary stock-flow adjustments in this regard easier – provided these reforms target inadequate provisions and increase confidence in the legal framework – and thus contribute to a quicker reduction in non-performing loans.

Insolvency frameworks in the euro area heterogeneous despite recent reforms

Individual countries in the euro area display a high degree of heterogeneity in the structure of their existing insolvency frameworks. For example, Germany's insolvency framework is characterised by a comparatively varied set of measures, for both businesses and households. In France, the insolvency framework aims especially at maintaining business activities and retaining jobs. However, the situation in countries heavily affected by the crisis is rather different. For example, most insolvent companies in Spain are traditionally wound up. Recently, however, restructuring programmes and personal insolvency have been made increasingly easier. While Greece has relatively well-developed insolvency legislation, which has been reformed several times since 2010, the structural nature of the debt and the comparatively lengthy processes involved in institutional implementation mean that the reduction of non-performing business loans has so far been sluggish. Similarly, non-performing loans rose sharply in Italy in the wake of the crisis, prompting the initiation of previously lacking legal and institutional reforms to increase the effectiveness of the insolvency framework.

In this context, however, it should generally be noted that changes to insolvency frameworks do represent an encroachment on existing debtor-creditor relationships. These should be carried out carefully so as not to damage trust in the underlying conditions and to avoid causing ultimately avoidable risk premiums with their corresponding feedback effects on macro-economic demand.

■ Conclusion

On the whole, it can be said that noticeable progress has been achieved in recent years with regard to the deleveraging process in the private non-financial sector in countries especially hit by the crisis. Compared to historical reference periods, the reduction of debt has been heavily driven by debt repayment – stock-flow adjustments played only a minor role in most countries. Only in Spain were the comparatively extensive write-downs accompanied by government takeovers and the value-preserving resolution of commercial banks' distressed assets, contributing to balance sheet restructuring in the private financial and non-

Significant progress in the reduction of debt, reduction of non-performing loans still needed

This heterogeneity in insolvency frameworks can also be seen in the data from the World Bank's Doing Business report, which includes an indicator of the general quality of various countries' insolvency frameworks.³¹ According to this comprehensive indicator, Germany and Portugal have especially effective insolvency frameworks compared to the rest of the euro area, while Spain and France are just above

³¹ The World Bank's Doing Business project develops measures of various aspects of regulation and general conditions regarding the business activities of small and medium-sized enterprises in 190 countries. Sources of information especially include relevant legislation, World Bank surveys, the respective government authorities and World Bank employees. See World Bank, Doing Business 2017: equal opportunity for all, report, October 2016.

financial sector. The lesser importance of stock-flow adjustments in the remaining countries is likely to have contributed to the sluggishness of the economic recovery, however.

It is expected that the adjustment processes in the private sector's sectoral balance sheets will continue. In this context, stock-flow adjustments addressing the stocks of non-performing loans, which are still high in some cases, in the

banking systems concerned could provide considerable support to the deleveraging process. However, it must be ensured that the macro-economic burden of stock-flow adjustments can be borne in principle. To take into account liability principles, funding should be provided by the private sector as far as possible. Reform measures regarding insolvency frameworks and consolidation efforts in euro-area countries should especially be considered in this context.