



**Brussels, 28 November 2017  
(OR. en)**

**15067/17  
ADD 2**

**EF 317  
ECOFIN 1050  
SURE 54**

**COVER NOTE**

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From: Secretary-General of the European Commission,  
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 21 November 2017

To: Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of  
the European Union

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Subject: COMMISSION STAFF WORKING DOCUMENT  
Coping with the international financial crisis at a national in a European  
context  
Impact and financial sector policy responses in 2008-2015

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Delegations will find attached document **SWD(2017)373 PART 3/3**.

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Encl.: **SWD(2017)373 PART 3/3**



Brussels, 21.11.2017  
SWD(2017) 373 final

PART 3/3

**COMMISSION STAFF WORKING DOCUMENT**

**Coping with the international financial crisis at the national level in a  
European context  
Impact and financial sector policy responses in 2008 – 2015**

## 2. THE FLOW OF CREDIT TO THE ECONOMY

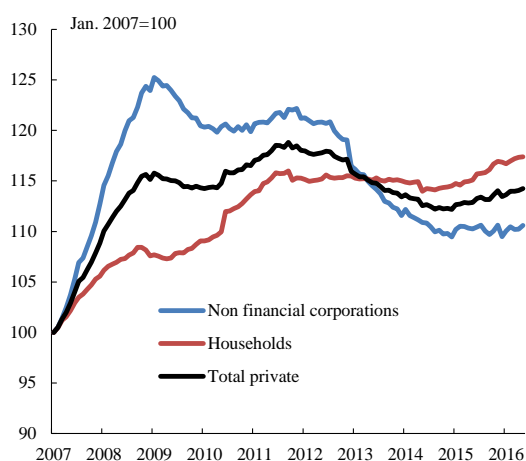
This chapter looks at lending developments through the crisis years. The focus is on financial intermediation in the EU Member States and how financing became increasingly fragmented along national borders. The policy response is explored to alleviate credit supply strains on the small and medium-sized enterprises and whether and how alternative financing mechanisms have supplemented bank credit. This is more thoroughly addressed in the Commission Action Plan to establish a Capital Markets Union (European Commission, 2015b).

### 2.1. LENDING CONDITIONS IN A FRAGMENTED MARKET

#### 2.1.1. Deleveraging needs dominate lending developments during the crisis years

The weak economic activity during the financial crisis led to a further rise in debt ratios (see chapter II.7), which are slow to come down. The debt-to-GDP ratio of non-financial corporations started moderately to decline at the end of 2009 from a peak at 81% compared to 57% of euro area GDP in 1999. Households' debt-to-GDP ratio continued to increase up until the first half of 2010 (67%) when it started to stabilise and slightly decrease.

Graph III.2.1: Recent changes in the stock of credit provided to the private sector in the euro area



Source: ECB

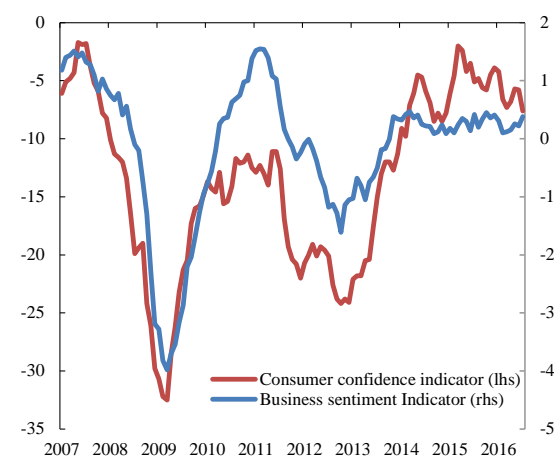
Following a banking crisis it takes time to reduce the debt overhang (Tang and Upper, 2010) and clean up balance sheets which are pre-conditions

before there is any significant resumption of lending. As a consequence, new credit to the economy, in particular to firms, fell sharply in the aftermath of the Lehmann Brothers crisis in 2008-09 and again following the sovereign debt crisis in 2012-13 (Graph III.2.1) and has remained subdued since.

#### 2.1.2. The lack of demand weighs on credit growth

The strong decline in economic activity over 2008-2009 and the loss of confidence among firms and consumers (Graph III.2.2) led to a substantial fall in demand for credit for investments and working capital by non-financial corporations and a slowdown in mortgage requests by households (Dées *et al.*, 2011). Mergers and acquisitions, which are traditionally debtfinanced, declined considerably over the same period, also contributing to firms' reduced demand for external financing and new loans from banks (Graph III.2.2).

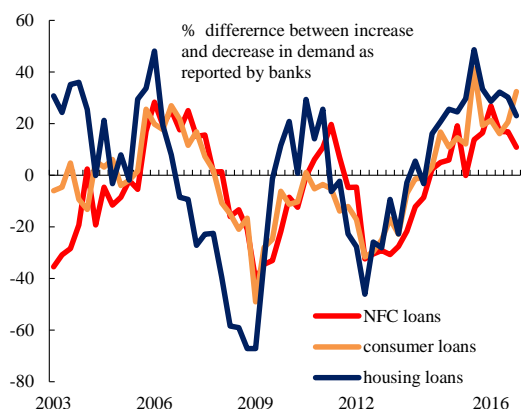
Graph III.2.2: Business and consumer confidence indicators in the EU



Source: European Commission

The missing demand for credit is also apparent when looking at the euro area bank lending surveys (Graph III.2.3). Banks surveyed reported a decline in demand for corporate loans in the timeframe 2008 until the first half of 2010 and again in the second half of 2011, when the sovereign debt crisis became acute.

Graph III.2.3: Demand for loans in the euro area

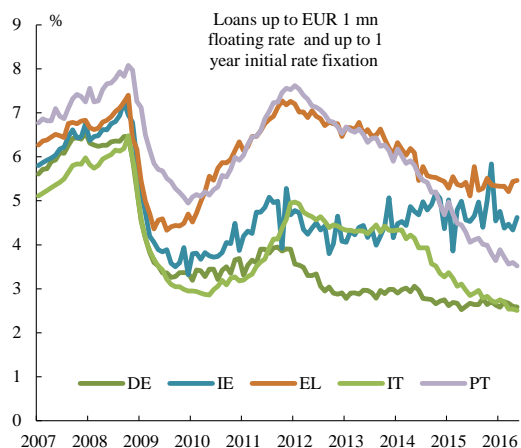


Source: ECB

### 2.1.3. A fragmented euro area financial market

In addition to demand factors, which were heavily influenced by the divergent growth developments across countries, the divergences in bank lending trends reflect heterogeneous supply-side factors such as the heightened risk aversion of banks, increasing non-performing loans, scarce capital and the financial solidity of the sovereign.

Graph III.2.4: Diverging borrowing rates made it difficult to finance new ventures



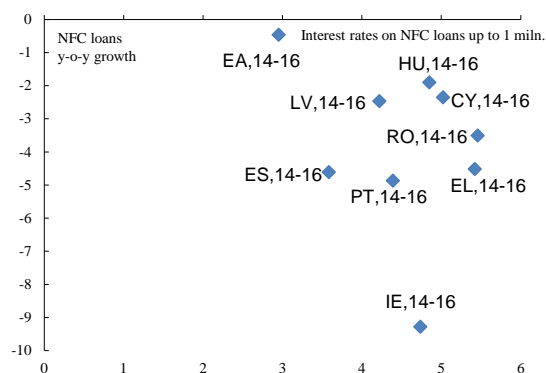
Source: ECB

Bottlenecks in the supply of credit dampens economic activity because viable and profitable business ventures cannot be financed, which would

otherwise help the economy to grow. Banks tightened terms and conditions on bank credit mainly by asking borrowers for shorter maturity and better collateral leading corporations to respond by cutting fixed investment and destocking in an effort to improve their financial balance.

Higher yields on public debt spill-over to increased funding costs for banks. In parallel, the monetary transmission in stressed markets inside and outside the euro area remained impaired for a relatively long period, starting back in 2009 and even increasing during the peak of the sovereign debt crisis in 2011-2012 because risk considerations impeded the transmission of lower interest rates through the banking sector to the real economy. In consequence, lending rates in these economies have been substantially higher relative to the euro area average. The divergence in borrowing rates between German and Spanish, Italian, and Portuguese corporates was significant and reached levels from 100 to 400 basis points (Graph III.2.4), between others reflecting increased liquidity and credit risks.

Graph III.2.5: Loan growth and interest rates, a story of fragmented markets



Source: ECB

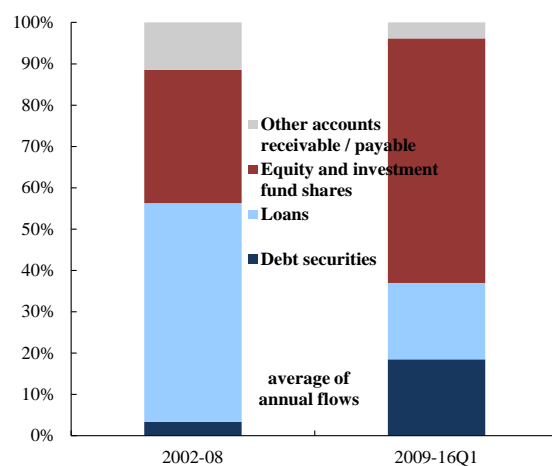
This fragmentation in lending conditions has led to a strong rise in cross-country heterogeneity in credit and growth developments, especially between stressed and non-stressed euro area economies (Altavilla et al, 2015). Compared to the average in the euro area, programme countries experienced a notably sharper contraction in credit growth linked to, among other, diverging trends in borrowing costs (Graph III.2.5).

## 2.2. LOOKING FOR EXTERNAL FINANCING

### 2.2.1. The crisis as catalyst to move away from bank credit

Over the past decades European firms have typically relied on bank lending to finance their fixed investment and working capital needs. Before the financial crisis, the share of bank financing in total non-financial corporations' annual funding stood at around 50% on average in the euro area (Graph III.2.6). Since the banking crisis credit availability became scarcer and firms were pushed to look for alternative ways of financing their business. As a consequence, the share of bank lending over the financial crisis years dropped to about 20% of total corporate funding, implying that alternative financing sources gained momentum in many Member States.

Graph III.2.6: Comparing consolidated financing flows to firms in the euro area before and after the crisis



Source: Eurostat

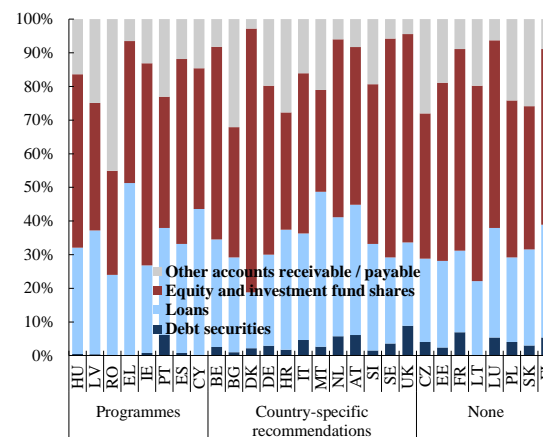
The primary form of financing of European firms became market and non-market-based equity financing i.e. reinvestment of earnings, owner's equity financing which in total doubled in importance to almost 60% of annual financing needs compared to the period before the financial crisis. Also, the issuance of debt securities increased remarkably between the pre-crisis period, when it stood at less than 5% and the crisis and immediate post-crisis period, when it accounted for almost 20% of corporate financing.

Similarly, accounts receivable and payable, including trade credits and intercompany loans is a relevant source of finance. Looking at the relative importance of this financing source it has decreased in importance since the crisis. Trade credit is directly linked to the exchange of goods and services and as such, generally its flows are closely related to the economic cycle. Loans from non-financial intermediaries include lending by leasing companies or financial subsidiaries set up to issue debt securities on behalf of the enterprise group. These loans have played a very mixed role across euro area countries. At an aggregated level, this type of loans declined in the first phase of the financial crisis and recovered starting from 2011 playing a role in the replacement of bank credit.

### 2.2.2. Different patterns in EU Member States

Depending on the financing structure, the effect of seeking alternative sources of financing differed noticeably across euro area countries. Notwithstanding many difficulties faced by credit institutions, in programme countries bank credit remains a relatively important source of finance (Graph III.2.7). Equity and extensive use of previously accumulated profits was in turn particularly relevant to Irish, French, Belgian, Danish, Swedish and UK companies. Debt securities in turn, increased substantially in Portugal, France, the Netherlands and Austria whereas inter-company lending temporarily became more significant in Germany.

Graph III.2.7: The funding structure of corporates in EU Member States, 2015



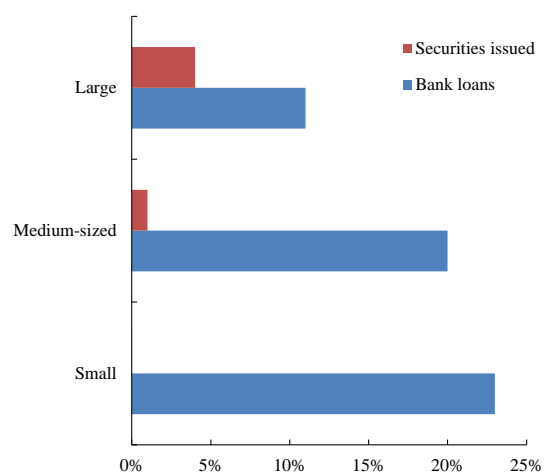
Source: Eurostat

Trade credit appears to have acted overall as a buffer in some countries, often in Central Europe, mostly through extended payables/receivables timeframes. Besides the typically circumstantial factors this divergent developments are related to structural factors that vary across countries, such as the importance of micro enterprises and small firms with limited access to market financing notably in some Central and East European Countries as well as Portugal, Cyprus and Italy, the importance of financial linkages between firms and differences in traditional corporate financing patterns.

### 2.2.3. The small and medium-sized enterprises remain dependent on banks

The decline in bank financing was primarily driven by large enterprises looking for diversifying their funding structure away from loans provided by financial intermediaries. By contrast, small and medium-sized enterprises, which are the backbone of the European economy and represent over 99% of firms in the EU, continued to be financed predominantly through bank credit as most of them found few alternatives to loans and were not able to tap the capital market directly (Kaya, 2014). The share of bank loans as percentage of balance sheet is inversely related with size of the firm (Graph III.2.8). While bank loans constitute close to one fourth of small and 20% of medium-sized firms' balance sheets they represent only 10% of the balance sheet total of large firms. By contrast, debt securities issued account for barely 1% of medium-sized firms' balance sheet against 4% for larger non-financial corporations illustrating the difficulty of small and medium-sized enterprises to raise funds directly from investors. Small companies do not issue market debt.

Graph III.2.8: Bank loans and securities as percentage of balance sheet in 2013



Source: BACH database, Deutsche bank research

Tapping bond or organised equity markets was therefore not a viable option for the overwhelming majority of small and medium-sized enterprises. The narrow set of financing sources made therefore small and medium-sized enterprises more vulnerable to changing conditions in credit markets. According to the SAFE survey on the access to finance of small and medium-sized enterprises in the euro area (Doove *et al.*, 2015) 16% of small and medium-sized enterprises considered that collateral requirements imposed by banks increased and were high but outright rejection rates on loan applications dropped. Nevertheless, rejection rates remain elevated, in particular in some euro area countries such as the Netherlands (25% of bank loan applications were rejected), Ireland (17%), Greece (16%) and Lithuania (15%) against a euro area average of about 8%. In addition to the problem of collateral requirements some businesses still received less financing than requested or had to decline loan offers due to their high costs and/or tight conditions. As a result, over a quarter of small and medium-sized enterprises did not get all of the financing they asked for from their banks in 2015.

### 2.3. POLICY ACTIONS TO DIVERSIFY FINANCING OPTIONS FOR SMALL AND MEDIUM SIZED ENTERPRISES

The crisis left a major mark on the small and medium-sized enterprises. Nearly all EU countries have seen aggregate company numbers fall over

the crisis years (Vetter *et al.*, 2014). Insolvencies, voluntary liquidations have reached record levels, in particular in programme countries. According to Eurostat, out of 100 enterprises with at least 10 employees doing business in 2008, by 2012 only 69 remained operational in Spain, 79 in Portugal and 77 in Ireland.

The financing problems of small and medium-sized enterprises have led to public authorities interventions to overcome the obstacles and enable the survival of viable companies. The regulatory activity has taken place notably in those countries where bank lending to small and medium-sized enterprises worsened the most during the crisis (Holton *et al.*, 2013). Policy measures can be classified either as measures aiming to improve the flow of bank credit or policies aiming to stimulate the development of non-bank sources of finance for small and medium-sized enterprises (Table III.2.1). These policy actions have been further accelerated and streamlined in the Commission's Action Plan for creating a Capital Markets Union, launched at the end of 2015.

Table III.2.1: Policy measures to boost financing small and medium-sized enterprise as two separate clusters

Policies stimulating bank credit flows	Policies directed to non-bank funding
Government guarantees on default risk in SME loans	Peer-to-peer lending platforms, crowdfunding
Lending targets assigned to banks	Fostering the development of retail bond markets
Credit mediation	Direct government lending to SMEs
Guarantees for exporting companies	Direct export financing
Enabling/facilitating securitisation of SME loans	Address the debt bias in taxation

Source: European Commission

The most widespread measure has been enhancing loan guarantee systems to support credit or targeted equity financing to small and medium-sized enterprises. The vast majority of these loan guarantee systems were in place before the financial crisis. Member States have often broadened the scope of existing schemes and increased the allocation of public funds, in some cases with the participation of the European Investment Bank or the European Bank for Reconstruction and Developments for Member States in Eastern Europe, or sometimes through state owned banks and other public companies (Infelise, 2014). The aim of these loan guarantees

is to enable banks to offer loans at favourable rates to struggling small and medium-sized enterprises.

Governments also provided funding directly to the sector of small and medium-sized enterprises either through a state owned or partially state owned financial institution, or through the provision of funds which are leveraged by private sector investors. Both forms of intervention are common across EU Member States (Darvas, 2013). Portugal set up a development financial institution by the end of the programme (2014), whereas in other countries existing promotional banks took an active role in directing funding to small and medium-sized enterprises. A small scale example of direct provision of funds is Microfinance Ireland (2012), with total funding of EUR 90 million over a 10 year project horizon. It was established to provide loans of EUR 25,000 or less to small Irish enterprises.

Other and less widespread policy measures at national level have addressed the corporate bond markets and alternative financial instruments for small and medium-sized enterprises. The ExtraMOT PRO segment of the Italian stock exchange was created in February 2013 in order to promote external financing of small and medium-sized enterprises through bond issuance. Italy introduced fiscal incentives for the issuance of minibonds by unlisted firms in 2012. Similarly, in October 2013, Spain initiated the Alternative Fixed-Income Market (Mercado Alternativo de Renta Fija – MARF) specifically for trading bonds of small and medium-sized enterprises, whereas Portugal simplified its legislative framework around the issuance of commercial paper to open this financing avenue for its small and medium-sized enterprises.

The efficiency of public financing solutions to small and medium-sized enterprises can be leveraged through private sector involvement, namely by banks to overcome the lack of skills and experience in assessing and managing risks. Private involvement reduces incentive problems and moral hazard that otherwise may arise in the distribution of loans. Public intervention may lead to misallocation of funds where credit decisions are politically driven instead of commercially. Overall, as confirmed by the OECD and the World Bank, initiatives that share the commercial risk of loans between the private and the public sector or

in which the authorities grant loans through banks seem to be more likely to reach the viable and creditworthy small and medium-sized enterprises. In order to ensure that banks have a sufficient financial interest in monitoring the loans, it appears important that they hold a portion of the securitized assets backed by small and medium-sized enterprise on their balance sheet.

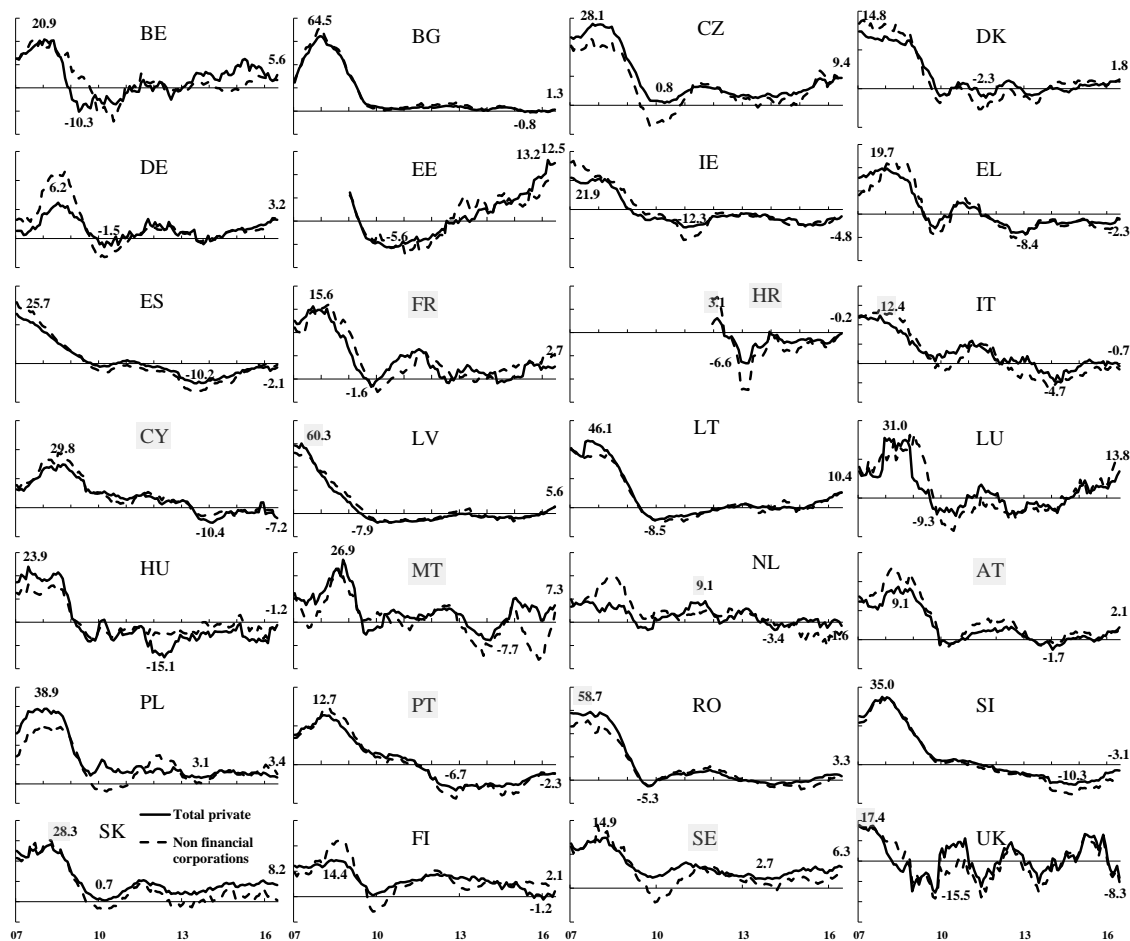
and Sweden) were saved from an overall credit contraction and none escaped a reduction in corporate lending (Graph III.2.9). Bank credit to firms sharply contracted or was for a long period declining not only in the programme countries such as Spain, Ireland, Portugal, Hungary, Cyprus and Greece, but also in Belgium, Croatia, Italy, Malta, Slovenia and the United Kingdom.

#### 2.4. CONCLUDING REMARKS: LENDING GROWTH REMAINS SUBDUED AND ALTERNATIVES ARE SLOW TO PICK UP

Overall, lending growth remains subdued in 2016 trailing behind pre-crisis levels and displaying great diversity among EU Member States. In about 10 countries credit to households and firms is still declining, while in about an equal number (including the Baltics, Sweden and some East European countries) credit is already expanding at an annual rate of more than 5% (Graph III.2.9).

In the aftermath of the banking crisis, only few Member States (Czech Republic, Poland, Slovakia

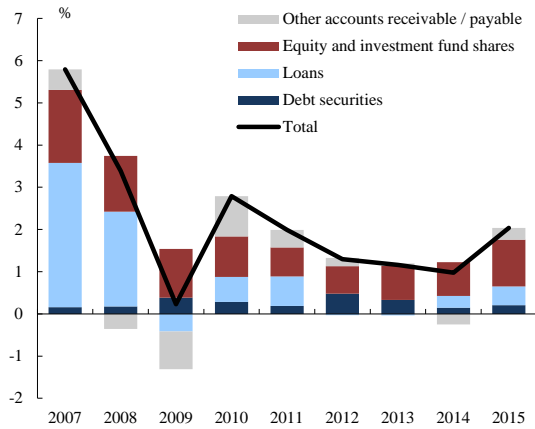
Graph III.2.9: Total credit growth in EU Member States



Source: ECB



Graph III.2.10: Flows of corporate financing in the euro area



Source: Eurostat

Against the faltering availability of bank credit, other forms of corporate financing gained in importance, but could not compensate for poor loan growth (Graph III.2.10). In 2015, funding for firms increased by 2%, up from 1% in the previous three years. Nevertheless, this is still far below the annual increase of 6% observed in 2007. The larger contribution came from owners' equity financing, self-financing, trade finance and intercompany loans. With its project to establish a Capital Markets Union the Commission tries to foster a further development of non-bank finance.

### 3. TRADE-OFFS BETWEEN STABILISATION AND GROWTH

A stable financial sector is necessary to ensure sustainable growth, but is this consistent with attaining the highest possible output level? Financial deepening and credit expansion have traditionally been considered in the literature as important contributors to higher growth rates. However, a change of heart seems to have occurred since the beginning of the "Great recession" in 2007. More and more empirical studies refocus on the negative effects of high credit growth as a key driver of both financial crises and regular business recessions, with a negative impact on long-term growth. Rapid financial deepening and excessive levels of private debt start to be recognized as serious macro-economic risks, including for developed economies. It is interesting to note that these conclusions supported by quantitative research are very much in line with the findings of the traditional monetary theory of the business cycle<sup>(1)</sup>, thus reinforcing each other.

At the same time, before the introduction of the Basel III reforms, several analysts – in particular from the financial industry - had argued that strengthening the banking sector prudential indicators could delay the recovery from the current recession with significant negative consequences for economic growth, particularly in the short-term. This view was challenged by the quantitative analysis performed by central bankers, showing a more modest impact on growth. Moreover, the financial sector programmes implemented in Europe during the crisis not only helped vulnerable countries recapitalise their banks, but also deal with legacy assets, as a prerequisite for the resumption of lending to viable borrowers and return to sustainable growth. This chapter analyses the potential trade-off between banking sector stabilisation, balance-sheet clean-up and growth.

#### 3.1. A STABLE BANKING SECTOR FOSTERS LONG-TERM SUSTAINABLE GROWTH

Until the crisis, there seemed to be an unchallenged consensus that financial deepening, i.e. a larger financial sector relative to GDP, was beneficial for growth. If there were any doubts

<sup>(1)</sup> The theory was primarily developed by Ludwig von Mises and subsequently improved by other economists, such as the Nobel Prize winner Friedrich von Hayek.

about the role of credit growth on macro-economic stability, they were mainly confined to emerging markets (see, for example, Kaminsky and Reinhart 1999). This intellectual framework together with the financial sector deregulation that started in the 1980s underpinned a dramatic increase in the size of the financial sector in the world's advanced economies. Banks almost doubled in size relative to GDP, as measured by their lending activity, and almost tripled, according to the size of their balance-sheets since the 1980s until the peak of the crisis (Taylor 2012). This process was accompanied by an important increase in leverage, both in monetary and financial terms: (i) the increase in banks' balance-sheet decoupled from broad money, as the fast increase in assets was financed to a large extent by wholesale and inter-bank funding<sup>(2)</sup> (Taylor 2012), and (ii) the banks' capital buffers relative to their assets became thinner and thinner<sup>(3)</sup> (Haldane 2009 and 2011). This leverage resulted in both higher returns and risk-taking for banks<sup>(4)</sup>. Today, many analysts regard this evolution as the main contributor to the recurrent financial crises plaguing mainly emerging countries in the last two decades. It all culminated with the current global financial and economic crisis, when the paradigm of financial deepening as a prerequisite for growth started to be seriously questioned. The main arguments run as follows:

First of all, Taylor (2012) finds a counterfactual example to the alleged dependency of growth to financial deepening. Advanced economies managed to intermediate sufficient volumes of savings that underpinned high growth rates for about three decades after World War 2, with small and repressed financial sectors, while avoiding the current financial sector instability.

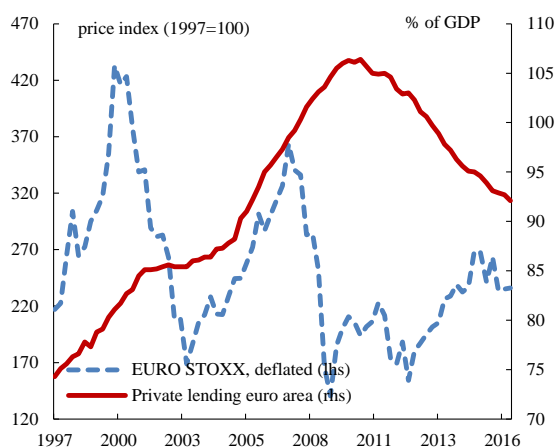
<sup>(2)</sup> The increased monetary leverage measured as bank assets or loans relative to stable funding or deposits weakened banks' liquidity ratios and their capacity to refinance in case of a liquidity squeeze.

<sup>(3)</sup> In the United Kingdom e.g., according to Haldane, since the turn of the 20<sup>th</sup> century, the (non-risk-weighted) bank capital decreased by about five times to around 3% at its low-water mark.

<sup>(4)</sup> In the United Kingdom e.g., Haldane estimates that the return on banks' equity more than doubled from below 10% on average between 1920 and 1970 to over 20% since the 1970s and was even close to 30% at the height of the boom.

Several recent quantitative analyses identify excessive (private) credit growth – in nominal terms or as a share of GDP - as the number one predictor for financial crises (Jorda, Schularick and Taylor 2012, Drehmann and Juselius 2013, Alessi and Detken 2009, Borio and Lowe 2002<sup>(1)</sup>). As showed by Borio and Lowe, in combination with other indicators, such as asset prices, the prediction power of credit can increase even further (Graph III.3.1 for a simple illustration of the built-up of the asset bubble in parallel with credit growth). Moreover, rapid credit growth is not only a major contributor to financial crisis, but also plays an important role in shaping any business cycle, i.e. the intensity of recessions and output volatility (Jorda et al 2012). This calls for a redesign of the monetary and financial regimes as the previous single focus on credible inflation targeting seems discredited as a policy framework that can ensure macroeconomic stability.

Graph III.3.1: Lending developments and asset bubbles



Source: Bank of International Settlements, Datastream

Above a certain level of credit to GDP (estimated at about 90% of GDP by Cecchetti and Kharroubi 2012, see graph III.3.1), financial deepening, is likely to become a drag on economic growth. Although a more developed financial system is supposed to reduce transaction costs and enhance the allocation of capital and risk across the

<sup>(1)</sup> It is interesting to note that, by focusing on the importance of asset price developments, Borio and Lowe stressed that financial imbalances can even build up in periods of disinflation or low inflation. They also identified an on-going strong upswing, in particular in equity markets. This could have represented a useful warning signal for decision-makers back in 2002.

economy, it also competes for resources with the rest of the economy and in particular for highly skilled workers. In a similar type of analysis, Aizenman et al (2013), show that the higher the growth rate of value added by the financial sector relative to the other sectors of the economy, the greater the likelihood of a subsequent financial contraction.

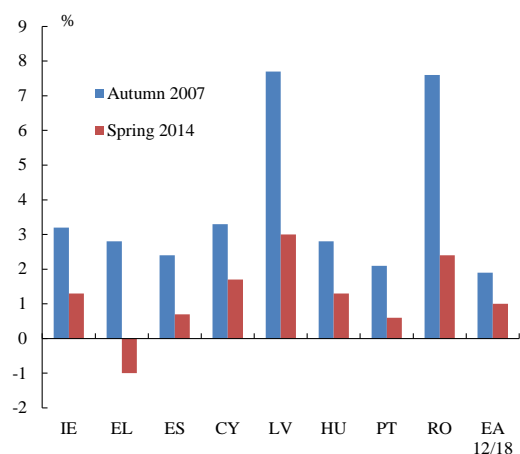
If credit and financial expansion are among the best explanatory variables for financial crises, then what is the impact of the latter on long-term or trend growth? Recent empirical research is less equivocal in this respect. Recessions combined with financial crises are much more costly than normal recessions in terms of lost output (Taylor 2012, Jorda et al 2012, Drehman et al 2012, etc.) Moreover, the loss of output in systemic banking crises seems to have long-term consequences, as economic contractions are not followed by offsetting fast recoveries. Thus, on average, trend output lost in the crises is not regained afterwards (Cerra and Saxena 2005, Cecchetti et al 2009). These recent findings complement more mixed findings by previous empirical literature on whether financial crises affect output in the long-term.

The likely reasons why financial crises are generally associated with permanent output losses are summarised by Bech et al (2012): (i) misallocation of capital during the boom phase, which cannot be fully reconverted in the recovery; (ii) the depressing growth effect of the subsequent debt burden; and (iii) disruptions to financial intermediation and investment in the recovery.

We can illustrate the loss of output that occurs during a financial crisis with data about mid-term potential real GDP, as calculated by the Commission Services for their regular forecasts. Graph III.3.2 shows how the growth rate of potential real GDP in the euro area has almost halved during the crisis. Nevertheless, the decline has been much more pronounced in programme countries, where potential growth has more than halved in all programme countries, the worst affected being Latvia, Romania, Greece, Spain and Portugal. This is not surprising, given the fact that the misallocation of resources in the boom years has been more pronounced in the programme countries and consequently both the pre-crisis potential output was overestimated and the

necessary medium-term adjustment of economic activity proved to be more onerous.

Graph III.3.2: Annual growth rate of medium-term potential real GDP (after 5 years)



Source: European Commission

There is a high likelihood of financial sector crises, followed by deep and costly recessions, if credit and money creation has been excessive. According to the Monetary Theory of the Business Cycle, systematic business errors occur when commercial banks unexpectedly increase the quantity of credit and push interest rates below the level consistent with sustainable inter-temporal preferences. As a result, interest rates do not reflect time preference and real savings in the economy anymore and entice businesses to overinvest in long-term and capital-intensive projects. If entrepreneurs fail to recognize this, a misallocation of factors of production is likely to result in the boom. As more long-term investments are embarked upon while the demand for consumer goods has not concomitantly decreased, there are not enough real savings in the economy to ensure the finalization of all projects financed by credit expansion. Malinvestments are liquidated and the structure of production is brought in line with consumer preferences with considerable welfare costs and social pain in an economic recession which is bound to follow.

In conclusion, both empirical and theoretical research concur that financial sector stability is key to ensure long-term sustainable growth and avoid damaging cyclical volatility. In the crisis, the successful restoration of banking sector stability in

Europe via financial sector programmes and other policies at European and national level will contribute therefore to maximizing Europe's long-term growth potential. However, it remains to be investigated in this chapter whether these stabilisation measures are equally growth supportive in the short-run, i.e. whether they are not slowing down the recovery from the crisis.

### 3.2. A TRADE-OFF BETWEEN FINANCIAL STABILISATION AND GROWTH?

Despite emerging consensus that financial stability benefits long-term economic growth, there were analysts emphasising the potential costs to growth, in particular in the short term, from the banking sector stabilisation. Two main transmission channels were envisaged: (i) the introduction of the new more demanding Basel III prudential rules, that could restrict lending, and (ii) the restructuring of the banking sector which often implies a shrinkage of the balance sheet, deleveraging and likely disruptions in the traditional relationships with SMEs if the banks are requested to divest branches and reduce their presence in certain market segments.

The banking industry claimed that the negative impact of Basel III reforms on growth would be significant and would be particularly felt in the short-term (International Institute of Finance, 2011). The cumulated loss of output was estimated at around 3.2% lower level of real GDP within five years, via two main transmission channels. First, the higher capital and liquidity needs were assumed to translate into higher costs for banks to raise capital or debt. In turn, this would prompt bank managers to pass most of these higher (marginal) funding costs to the borrowers in the form of higher lending rates. Second, banks were likely to respond to higher capital and liquidity requirements by trimming risky assets and lending. Under both scenarios, the volume of lending in the economy would be affected and growth restricted below its natural path. However, the International Institute of Finance conceded that if equity investors and bank creditors perceived the reforms as enhancing bank stability, then the negative growth implications of the Basel III reforms could be modest.

Bank supervisors – the Financial Stability Board and the Basel Committee on Banking Supervision

– have produced their own estimates regarding the impact on growth of strengthening bank prudential regulations by establishing a "Macroeconomic Assessment Group". The report revealed a more modest loss of output in the short-term, peaking at about 0.22% of GDP below baseline forecasts, followed by a recovery of GDP towards the baseline level after 35 quarters (Bank for International Settlements, 2010a). Unlike the International Institute of Finance report which quantified the impact of the entire Basel III package, this report, based on the unweighted median estimate across 97 simulations, focused only on the transitional costs of stronger capital requirements and may as such underestimate the impact.

The long-term benefits of a stable banking system in terms of reduced risk and cost of financial crises were analysed separately by the Basel Committee on Banking Supervision (Bank for International Settlements, 2010b). The report shows a range of estimates for the annual net benefits from reducing the probability of crises via tighter capital and liquidity requirements. The net benefits are measured in terms of the long-run change in the yearly level of output from its pre-reform path. Thus, economic benefits are calculated via the reduced probability of banking crises (no estimate of the reduced severity of crisis is made) and economic costs are estimated by mapping changes in regulatory requirements into higher lending spreads (it is assumed that banks' additional costs are fully passed on to borrowers, maintaining pre-reform levels of return on equity, costs of liabilities and operating expenses). The core results show that long-term net benefits remain positive for a broad range of capital ratios (tangible common equity over risk-weighted assets from 8% to about 15%), despite the conservative assumptions made.

In addition, work by the European Commission accompanying the legislative proposal of a Capital Requirements Directive and Regulation in 2011 also concluded that the macro-economic costs of the transition to stronger liquidity and capital requirements would have only a limited impact on the aggregate output (European Commission, 2011a). As regards SME financing, the assessment of the European Commission found that small and medium-sized enterprises, which are rather dependent on bank credit, are expected to be the

primary beneficiaries of the enhanced countercyclical properties of the EU bank capital regulation. Moreover, when the European Commission introduced a new package of proposals to further strengthen the resilience of EU banks in 2016, special attention was given to the financing of small and medium-sized enterprises. The impact assessment (European Commission, 2016a) released on the occasion of the introduction of the changes to the prudential requirements of banks emphasized that the proposed recalibration of the capital requirements for bank exposures to small and medium-sized enterprises, the improved resilience of banks to future crises and the reduction of compliance costs for credit institutions, in particular the smaller and less complex ones, are expected to have a positive effect on bank financing of small and medium-sized enterprises.

The banking sector reform in Europe went beyond the strengthening of bank regulatory ratios and implied also a cleaning-up of the banks' balance-sheets, in particular for countries engaged in financial assistance programmes. The latter were asked to boost up provisions by recognizing balance-sheet losses and manage their legacy assets either internally or via their transfer to independent bad banks, such as NAMA in Ireland or SAREB in Spain. The ECB and EBA's stress tests which are conducted on a regular basis are extending this process to all European banks. Repairing bank balance sheets and restoring capital positions are a prerequisite for the resumption of a sound flow of new lending in the economy (Darvas 2013, Cohen 2013, Caballero et al 2008).

Quite often the example of Japan's "lost decade(s)" is associated with the failure of curtailing credit flowing to otherwise insolvent borrowers via sham loan restructurings. This prevented Schumpeter's process of "creative destruction" that would free up resources for the expansion of the viable part of the economy. The ECB's comprehensive analysis supports the recovery by encouraging creative destruction in the banking sector (speech by the President of the ECB Draghi at the presentation ceremony of the Schumpeter Award<sup>(1)</sup>).

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(1) Central Bank of the Republic of Austria, Vienna, 13 March 2014: <http://www.bis.org/review/r140314a.htm>

### 3.3. MITIGATING THE COST OF DELEVERAGING

When a financial bubble bursts, stabilising the economy is a painful exercise accompanied by recession and deleveraging of the banking sector if confidence is lost. The question is whether this adjustment process can be made more bearable.

The sacrifice ratio (Box III.3.1) is a metric that has been often used to quantify the trade-off between disinflation and output loss and the same technique can be applied to analyse the trade-off between stabilisation of the banking sector (measured by the repayment of central bank funding) and deleveraging (measured by the reduction in the balance sheet). It appears that the size of the banking sector and the level of government debt increase the sacrifice ratio, because of the contingent liabilities that the former represents for the latter. Consolidation of public finances facilitates bank stabilisation through the favourable effect a credible sovereign has on market funding for the banks. Similarly, sounder banks regain quicker the confidence of depositors, which allows to repay the Eurosystem borrowing without excessive deleveraging. Finally, the impact of the adjustment pace is not clear cut with some countries benefiting from frontloading the deleveraging (prompting a quick adjustment of expectations and return of confidence), while other from spreading it (to smoothen the impact of the balance sheet reduction).

### 3.4. STABILISATION, THE COST OF BANKING AND THE RECOVERY

During the debate about strengthening the stability of the financial sector and avoiding a repeat of the global financial crisis it has been argued that banking sector stabilisation may impact negatively the recovery from the crisis, as it would act pro-cyclically. The size of such a potential pro-cyclical effect of the Basel III reform depends significantly on whether the stabilisation measures result in increased investor confidence that could off-set an increase in the cost of capital and funding for banks in the short-run.

As more than five years have passed since the publication of the impact estimates of the banking industry and supervisors, one can have a cursory look at what happened with the cost of funding and

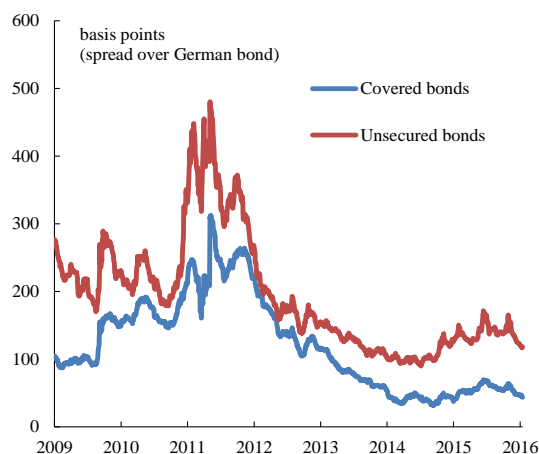
capital for European banks in the meantime. The implementation of CRD IV was not the only factor impacting investor confidence in banks. An additional impact on banks' capital and funding cost may come from the Bank Recovery and Resolution Directive which makes compulsory bailing-in up to senior unsecured creditors, if needed. Furthermore, the ECB monetary policy announcements and its quantitative easing stance, together with the economic recovery have all boosted investor confidence and reduced funding and capital costs.

The compliance with the Basel III (CRD IV) requirements was frontloaded to a large extent. Since the beginning of the crisis, euro-area banks have raised EUR 225 billion of new capital from private sources, while government injections amounted to EUR 275 billion over the period (ECB, 2013). This has led to an improvement of the core tier1 ratio from 10% to 11.7% between December 2011 and June 2013 for the 64 most significant EU banks surveyed by the European Bank Authority. This was due to both an increase in capital by 7.3% and a decrease of risk-weighted assets by 8.4%. As regards non-core capital (i.e. subordinated debt), annual issuance declined sharply since 2008, but stabilised over 2011-2013.

The latest EU-wide stress test conducted by the European Bank Authority and Single Supervisory Mechanism in 2016<sup>(1)</sup> showed a further improvement of the capital position of the banks since the exercise conducted in 2014. The 51 banks in the stress test sample increased their capital position by about EUR 180 billion between December 2013 and December 2015 and by more than EUR 260 billion since December 2010. Thus the starting weighted average common equity tier1 capital ratio in the sample as of December 2015 was 13.2%. It was significantly higher than the equivalent starting value of common equity tier1 for the first stress test carried out by the European Bank Authority in 2011, i.e. 8.9% and 11.1% level recorded at end -2013 which served as a starting point for the 2014 exercise.

<sup>(1)</sup> See the results of the stress test at: <https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2016>

Graph III.3.3: Spreads of bank covered and unsecured bonds



Source: Markit iBoxx

The strong issuance of bank equity in the markets since 2010 took place at gradually improving prices, as proven by the strong recovery of bank stock prices since mid-2011, despite some inherent volatility (see chapter III.1 on bank stabilisation). A notable deterioration in market sentiment took place at the beginning of 2016 when rising risk aversion impacted negatively euro area banks' share prices. Euro area bank shares have recovered some of the losses since, but they were still trailing their UK and US peers. More market pressure came after the announcement of the results of Brexit referendum.

In parallel, the cost of issuing debt gradually improved since 2010, with a significant decline taking place starting with the second half of 2012. The cost for the banks of issuing both covered and unsecured bonds decreased considerably (Graph III.3.3). Since the peak recorded in 2011, bond spreads declined significantly by about 350 basis points for the unsecured bonds and by around 250 basis points for the covered ones. A pick-up in the yields can be noted over the last twelve months, but this is not changing the longer-term evolution. Also the issuance of subordinated debt became cheaper as illustrated by the decline of the index for 5-year European subordinated debt starting from 2010, which accelerated since mid-2012 (Graph III.3.4). The recent pick-up of this risk measure of banks' debt reflects the worsening of banks' profitability prospects in a low growth and interest rate environment, but also the entry into

force of the bail-in requirements of Bank Recovery and Resolution Directive.

Graph III.3.4: CDS index of bank subordinated debt



Source: Bloomberg, ITraxx SUBFIN CDS index

Another issue related to the procyclicality of financial sector stabilisation refers to the possibility of having a creditless recovery. First, one should clarify what "creditless" means, because indeed, a decline in the stock of credit can still be compatible with new lending flows growing at acceptable rates, in particular if a credit boom took place previously and legacy assets are being provisioned or written-off on banks' balance sheets. As a matter of fact, this would be the preferred option in countries where deleveraging should take place. Second, historical evidence shows that a recovery without credit is possible as on average recessions end two quarters before the credit crunch ends (Claessens et al, 2009). At the same time, if the availability of credit is limited, the recovery will be driven by consumption, which eventually leads to a shallower recovery as investment will not follow suit.

*Box III.3.1: The sacrifice ratio, a measure of the cost of stabilisation in terms of deleveraging*

The sacrifice ratio is a metric that has been often used to quantify the trade-off between disinflation and output loss and in this context the impact has been assessed of factors like price and wage rigidity, the credibility of monetary policy, the speed of adjustment or the openness of the economy (e.g. Ball 1994, Chortareas et al. 2002, De Roux and Hofstetter 2012). The same method has been applied to deficit reduction and unemployment (Hishow 2011) to gauge the consequences of a public debt brake eventually constitutionally enshrined as requested by some Member States.

When a financial bubble bursts, stabilising the economy is a painful exercise accompanied by recession and deleveraging of the banking sector if confidence is lost. It seems an inevitable process after every period of overheating and excessive expansion of the financial system. In some countries (see Graph) banks' balance sheets have doubled in 2009/10 in little over half a decade after which a correction took place.

Several techniques have been pursued to estimate the sacrifice ratio including sophisticated regression analysis, but the ratio has also been calculated as a simple division which is the approach that will be followed here. First, a measure has to be found for financial stabilisation in the denominator. While many indicators can be thought of, the repayment of the central bank borrowing is the statistic selected as this variable is easily available. It is to represent the return to normal funding conditions after access to the wholesale market dried up at the height of the financial crisis and was replaced by significant central bank borrowing. The stabilisation period ends when central bank borrowing has reached a low and can be of variable length. Second, sacrifice in the numerator has to be defined. For this, the reduction in the banks' balance sheet has been selected. Formulating the trade-off in this way is based on the need for some reduction in the banks' balance sheet, if the lack of confidence prevents funding on the market. Thus, the sacrifice ratio can be interpreted as the amount of balance sheet reduction in billion EUR that has to be accepted to reimburse EUR 1 billion to the central bank. A ratio below one means that at least part of the central bank borrowing could be replaced by deposits or market funding and a negative ratio indicates that the balance sheet could expand during the period of the repayment of the central bank implying no sacrifice in this context because confidence in the banking sector was returning permitting to attract deposits or market funding in excess of the returned borrowing from the central bank.

The focus is on the eight programme Member States and the eleven countries that received a Country-specific recommendation in the financial domain. Bulgaria is not included because of its currency board arrangement which prevents the banks borrowing from the central Bank. The sacrifice ratio varies from 5.1 in Cyprus to -4.5 in Sweden (Panel A: Stabilisation reached), but these numbers have to be interpreted with care as not the same level of stabilisation has been reached. In Hungary, only the first spike in central bank borrowing and its reduction in 2008-2010 has been considered. It was accompanied by an expanding balance sheet, partially thanks to the Vienna Initiative which encouraged foreign parent banks to maintain exposure to their subsidiaries. Greece has a sacrifice ratio of only 0.8, but its central bank borrowing is still high. Ireland at 4.2 appears to have paid a relatively large deleveraging price, but together with Austria moved further ahead in returning to more normal levels of borrowing from the central bank and the stabilisation of the banking system.

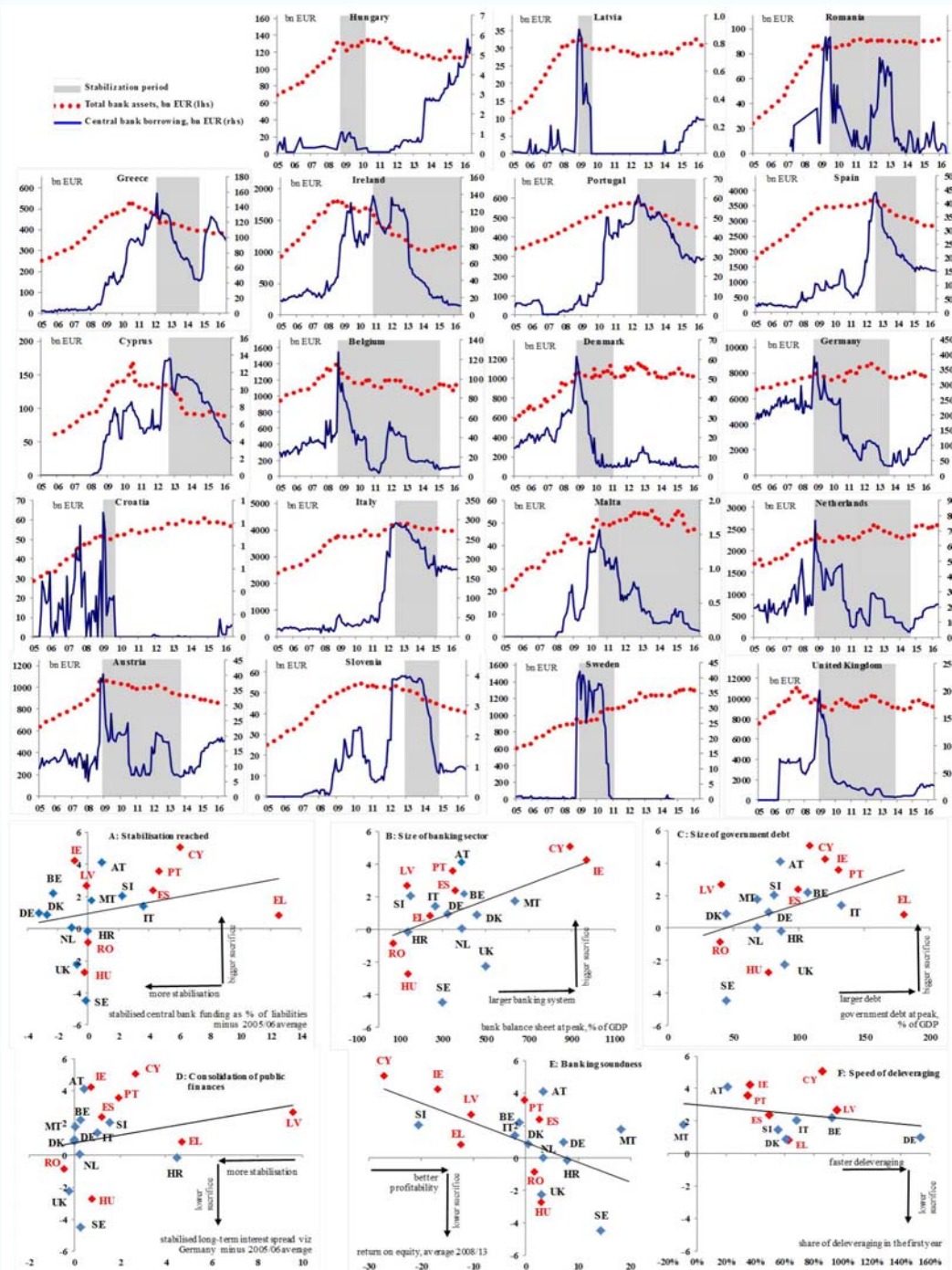
Besides the degree of stabilisation reached, there is some evidence that the price of stabilisation increases with the size of the banking sector and the level of government debt, while consolidation of public finances reduces the sacrifices to be made as well as sounder banks and a faster pace of deleveraging. The high stabilisation cost in Ireland and Cyprus appears to be in particular

*(Continued on the next page)*



Box (continued)

Graph 1: Trade-off between deleveraging and stabilisation



(1) Sacrifice ratio = banks balance sheet reduction divided by central bank funding reduction. The balance sheet reduction is calculated from peak to trough in central bank borrowing.

Source: European Commission

(Continued on the next page)

*Box (continued)*

explained by the large banking sector (Panel B: Size of the banking sector). In Italy and Greece, government debt (Panel C: Size of government debt) of which a large part is held by the banks is a main driver of the sacrifice ratio which remained after all contained in both countries, also because of the moderate size of the banking system.

The influence of public finances is further highlighted by the lowering impact a decline in government interest rates has on the sacrifice ratio, presumably via the link of cheaper funding costs for the banks for which government yields could stand as a proxy (D: Consolidation of public finances). Of the programme countries, Romania, Ireland and Hungary succeeded in reducing the most government interest rate spreads. Greece failed to consolidate public finances and interest rate spreads remained high weighing on the stabilisation of the banking system. Latvia is an outlier in this context as during the short stabilisation period of 2009 interest rate spreads increased sharply to reverse only afterwards. Also financial strength of banks as reflected in their profitability (Panel E: Banking soundness) softens the trade-off through confidence effects of which Sweden, Malta, United Kingdom but also Hungary, Romania and Croatia seem to have benefited.

Finally, frontloading the balance sheet adjustment appears to have eased the stabilisation pain in some countries (Germany, Latvia, Greece and Belgium), while spreading the adjustment in other (Austria, Ireland), increased the sacrifice ratio (Panel E: Speed of deleveraging). However, the impact of the adjustment pace is not clearcut with Malta combining a low sacrifice ratio and slow balance sheet reduction and in the same vein Cyprus is characterised by a speedy adjustment and a relatively high stabilisation cost. The time dimension is also important. In the case of Ireland e.g., the deleveraging which took place before central bank borrowing reached its peak and pointing at some frontloading, is not taken into account in the measurement. By contrast, the progress made with stabilisation in Greece between 2012 and mid-2014 was completely reversed. This uncertainty of the role played by the deleveraging speed mirrors the debate on the pace of disinflation in order to minimise output loss with Sargent (1982) arguing that quick disinflation is cheaper thanks to a rapid adjustment of expectations against the opposite view that allowing time for prices and wages to adapt lowers the pain of disinflation.

### 3.5. CONCLUSION

Overall, stabilisation of the banking sector together with the implementation of the new Basel III capital and liquidity requirements will support growth in the long run.

Furthermore, short-term costs of banking stabilisation in terms of deleveraging of the balance sheet are mitigated with a smaller and healthier banking sector and consolidation of public finances, while the impact of the pace of deleveraging is not clear cut, with some countries benefiting from frontloading and other from a spread adjustment. The increase in investor confidence helped lowering the cost of bank funding with a positive impact on the reduction of lending rates to both households and firms. These findings do not point to a meaningful negative impact on economic growth in the short-run

stemming from increased regulatory requirements for capital and liquidity.

Finally, it is not clear whether in the absence of reform the additional growth dividend that could have been reaped would have been sustainable going forward. Indeed, potential output in programme countries recorded a sharper decline during the crisis relative to the EU average. This confirms that an unbalanced growth pattern greatly damages the growth potential in the medium-term, which can only be restored with painful economic adjustment and structural reforms.

## GLOSSARY AND REFERENCES

### Glossary

**Asset management company (AMC):** generally speaking, an asset management company is a company that invests its clients' pooled funds into securities that match declared financial objectives. In the specific context of NPL and bank restructuring, an AMC more narrowly refers to a company receiving NPL from banks that cannot deal with impaired assets on their own and/or wish to quickly remove them from their balance sheets. The term "bad bank" is often used as a synonym for AMC, although the vast majority of AMC are not banks (i.e. they do not have a banking license).

**Asset protection scheme (APS):** a scheme in which the portfolio of impaired assets remains on the balance sheet of the bank, but losses on the portfolio are guaranteed by the state beyond a first tranche of losses fully borne by the beneficiary bank. The state commits to cover the losses that exceed a first tranche either fully or partially, and typically up to a certain level.

**Asset quality review (AQR):** a review of (samples of) selected bank asset portfolios aimed at enhancing the transparency of bank exposures, including the adequacy of asset and collateral valuation and related provisions. AQRs are often conducted by independent consultants as a preparatory step before banking stress tests.

**Bad bank:** see Asset Management Company.

**Bail-in:** rescuing a financial institution on the brink of failure by making its creditors and/or depositors take a loss on their holdings.

**Bail-out:** rescuing a financial institution on the brink of failure by external parties, typically governments using taxpayers' money.

**Basel III:** "Basel III" is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source; improve risk management and governance; strengthen banks' transparency and disclosures.

**Book value:** see net value.

**Collateral:** property or other asset that a borrower offers as a way for a lender to secure the loan.

**Common equity tier 1 capital (CET1 capital):** the most reliable capital of a bank as introduced by BaselIII/CRDIV package. CET1 items are capital instruments that fulfil strict criteria set by the CRR. Supervisors also need to deduct certain items from this capital like DTAs, minority interest in banking subsidiaries when calculating supervisory own funds.

**Contingent convertibles (CoCos):** bonds similar to traditional convertible bonds in that there is a strike price, which is the cost of the stock when the bond converts into stock. What differs is that there is another threshold in addition to the strike price, which triggers the conversion when certain capital conditions are met, e.g. the bank capital adequacy falls below a predefined level. Issuing contingent bonds is more advantageous to companies than issuing regular convertibles.

**CRD IV package:** the Basel III agreement was transposed via a Regulation (CRR) and a Directive (CRD) into EU law in 2013. The rules apply from 1 January 2014 and tackle some of the vulnerabilities shown by the banking institutions during the crisis. The package added new rules on e.g.: governance, remuneration, systemic buffers on top of Basel III rules.

**Credit default swap (CDS):** a financial contract where the seller of the CDS compensates the buyer in the event of a default of the reference loan in the contract.

**Deferred tax asset (DTA):** an asset on a company's balance sheet that may be used to reduce taxable income. It is the opposite of a deferred tax liability, which describes something that will increase income tax. Both are found on the balance sheet under current assets. Deferred tax assets are created due to taxes paid or carried forward but not yet recognized in the income statement. Its value is calculated by taking into account financial reporting standards for book income and the jurisdictional tax authority's rules for taxable income. For example, deferred tax

assets can be created due to the tax authority recognizing revenue or expenses at different times than that of an accounting standard. This asset helps reduce the company's future tax liability. It is important to note that a deferred tax asset will only be recognized when the difference between the loss-value or depreciation of the asset is expected to offset future profit.

**Eligible asset:** asset accepted as collateral by the Eurosystem. Typically, collateral refers to marketable financial securities, such as bonds, or other types of assets, such as non-marketable assets or cash.

**Expected losses:** as opposed to incurred losses, expected losses are recognised before they are incurred. Expected losses are based on probability-weighted possible outcomes of maximum estimated losses in a time specific horizon and based on historical exposures.

**Exposure at default (EAD):** a parameter used in the calculation of regulatory capital under Basel II (and Basel III) for a banking institution. It can be defined as the gross exposure upon default.

**Forborne exposure (EBA definition):** forborne exposures are modified debt contracts (their terms, conditions, refinancing) of debtors, which would not have been granted had the debtor not been in financial difficulties.

**Going concern:** Currently operating business that is expected to continue to function as such and remain viable in the foreseeable future.

**Gone concern:** Defunct firm or one in the process of being wound up. Debts of such firms become due immediately in full, their market value is determined on the basis of auction or liquidation value of their tangible assets, and their goodwill counts for nothing.

**Gross value (or nominal value) of a loan:** the gross value of a loan corresponds to the outstanding amount due by the borrower to the bank.

**Hybrid capital instruments:** this type of capital has both debt and equity features. These instruments are generally either long dated or perpetual and have pre-defined deferral

mechanisms to suspend interest payments. This covers a variety of instruments, such as preference shares, convertible bonds, etc.

**Impaired loan:** a loan is impaired when it is not likely the lender will collect the full value of the loan because the creditworthiness of a borrower has fallen.

**Incurred losses:** as opposed to expected losses, an incurred loss model assumes that all loans will be repaid until evidence to the contrary (known as a loss or trigger event) is identified. Only at that point is the impaired loan written down to a lower value.

**International financial reporting standards (IFRS):** a single set of accounting standards, developed and maintained by the International Accounting Standards Board (IASB) with the intention of being applied on a globally consistent basis thus providing investors and other users with the ability to compare the financial performance of publicly listed companies across borders. IFRS were formerly known as International Accounting Standards (IAS).

**Loss given default (LGD):** the proportion of Exposure At Default (EAD) that will be lost if default occurs. It is derived by taking account of any collateral or security that applies to the transaction/facility and the degree of subordination in insolvency ranking of a facility. The LGD on a debt is impacted by characteristics of the debt, characteristics of the issuer of the debt, the firm's industry and the geographic region, and the stage of the credit cycle.

**Market value (of a loan):** the value at which a loan can be sold to a third party in an arm's length transaction.

**Moral hazard:** occurs when one person takes more risks because someone else bears the cost of those risks.

**Net present value:** expectation of the sum of present and future discounted cash-flows.

**Net value (or book value) of a loan:** the net value of a loan is equal to the difference between the gross value and the impairments made on this loan.

Loans are recorded at their net value in the balance sheet statement.

**Nominal value:** see gross value.

**Non-performing exposure (NPE) (EBA definition):** non-performing exposures are those that satisfy either or both of the following criteria: (a) material exposures which are more than 90 days past due; (b) the debtor is assessed as unlikely to pay its credit obligations in full without realisation of collateral, regardless of the existence of any past-due amount or of the number of days past due.

**Non-performing loan (NPL):** non-performing loans are typically exposures with more than 90 days past due. All exposures to a debtor are non-performing when on-balance sheet exposures more than 90 days past-due are larger than 20% of the on-balance sheet exposures to the debtor. A broader definition of NPL can also include exposures that are likely to default, even if they have less than 90 days past due. The definition of NPL can greatly vary from one country/organisation to another. The EBA has tried to harmonize the NPL definition across Member States.

**Probability of default (PD):** the likelihood that a loan will not be repaid by its due date and falls into default. A PD is calculated for each counterparty and each exposure. The credit history of the counterparty and nature of the investment are all taken into account to calculate the PD figures.

**Provision:** a loan loss provision is an expense set aside as an allowance for bad loans. It is a synonym of impairment.

**Resolution:** occurs at the point when the authorities determine that a bank is failing or likely to fail, that there is no other private sector intervention that can restore the institution back to viability within a short timeframe and that normal insolvency proceedings would cause financial instability. Resolution means the restructuring of a bank by a resolution authority, through the use of resolution tools, to ensure the continuity of its critical functions, preservation of financial stability and restoration of the viability of all or part of that institution, while the remaining parts are put into normal insolvency proceedings.

**Restructuring plan:** one of the conditions imposed by the Commission to approve State aid. The restructuring plan aims at (1) restoring long-term viability without further need for State support in the future, by restoring sustainable profitability and reducing risk; (2) minimising the use of taxpayers' money, through appropriate burden-sharing measures, including aid remuneration and contributions by the bank, shareholders and junior creditors; (3) limiting distortions of competition through proportionate remedies. Its implementation is monitored through a monitoring trustee.

**Risk-weighted asset (RWA):** a bank's assets, weighted in relation to their relative credit risk. Different types of assets carry different type of risk, therefore weightings vary. The Basel regulations provide precise guidance as to which weighting applies to which asset.

**Systemically important financial institution (SIFI):** a financial institution regarded as so important to the economy that its failure could lead to a widespread economic crisis.

**Small and medium-sized enterprise (SME):** an enterprise that employs fewer than 250 persons and has an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

**State ownership:** also called public ownership and government ownership, it refers to property interests that are vested in the state or a public body representing a community as opposed to an individual or private party. State ownership can be direct, or indirect, via other state-owned enterprises. The controlling power can be "de jure" if the state ownership is higher than 50% but also "de facto" if the stake is lower than 50% but is sufficient to obtain a systematic majority in the general assembly in practice.

**Stress testing:** stress testing is a risk management technique used to evaluate the potential effects on a bank's financial condition of a specific event and/or movement in a set of financial variables. The traditional focus of stress testing relates to exceptional but plausible events.

**Subordinated debt:** subordinated debt ranks lower than ordinary depositors and other (senior)

bonds of the bank. Only those with a minimum original term to maturity of five years can be included in the calculation of this form of capital.

**Tier 1 capital:** consists of the sum of the Common Equity Tier 1 capital and Additional Tier 1 capital of the institution. Additional Tier 1 instruments rank below Tier 2 instruments in the event of and have less strict criteria by the CRR as CET1 in terms of e.g. issuance, dividend payments, redemption etc.

**Tier 2 capital:** the second most reliable form of capital from a regulatory point of view. It is divided into two tiers. The upper tier includes undisclosed reserves, revaluations reserves, and undated subordinated debt. The lower tier includes hybrid instruments and subordinated debt.

**Tier 3 capital:** includes short term subordinated debt and undisclosed reserves and general loss reserves. It is used to cover market risk, commodity risk and foreign risk exposure. It used to be included in the minimum capital requirements under Basel II. It was removed from the capital adequacy ratio definition under Basel III.

**Transfer value of a loan:** the value at which a loan is transferred from a bank to an asset management company. Typically, in a situation where the transfer implies some State aid, the following relations hold: gross value > net value > transfer value > market value, but < real economic value (the underlying economic value of the loan derived from a prudent estimation of the cash flows generated from this loan).

**NPL work-out:** refers to the active management of NPLs in order to recover as much value as possible.

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