Macroprudential approaches to non-performing loans

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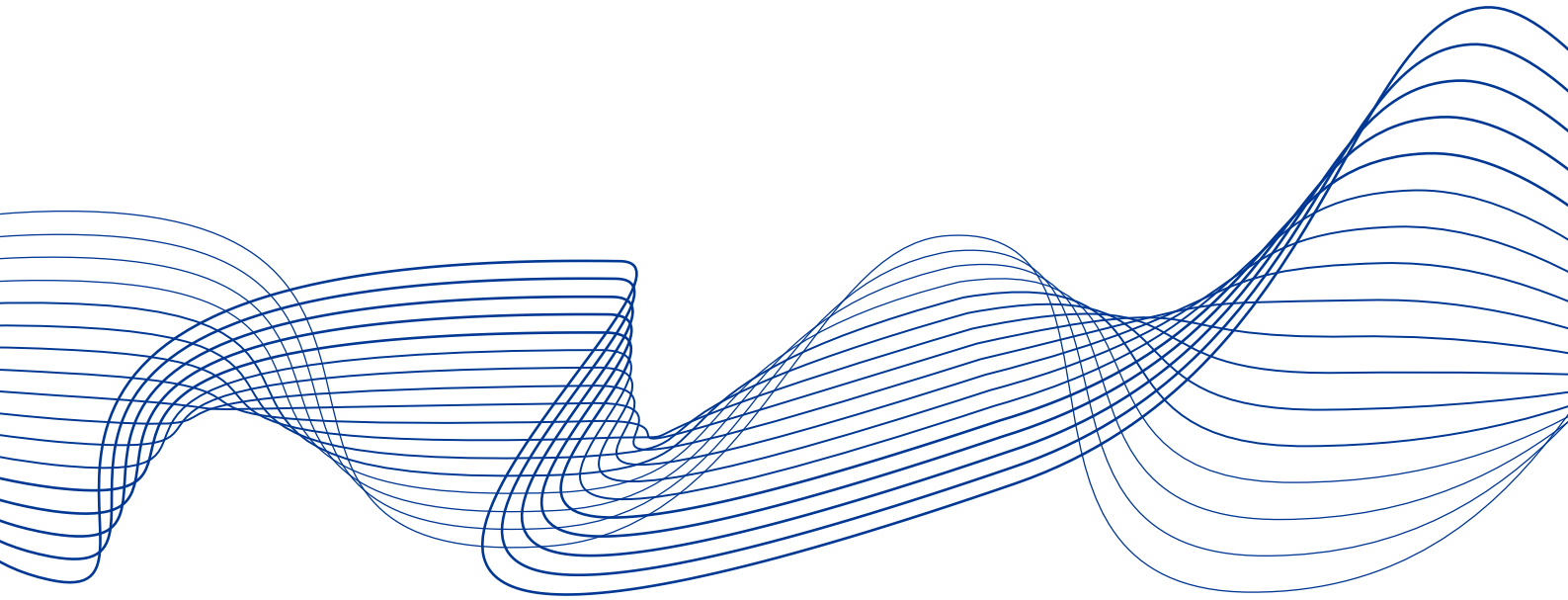

ESRB
European Systemic Risk Board
European System of Financial Supervision

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Executive Summary

This report presents an analysis carried out by the ESRB in response to a Council of the European Union request to develop "macroprudential approaches to prevent the emergence of system-wide NPL problems, while taking due consideration of procyclical effects of measures addressing NPLs' stocks and potential effects on financial stability". Relying on the experience and expertise of ESRB members, especially those from Member States in which system-wide increases in non-performing loans (NPLs) were observed in the aftermath of the recent crisis, the report begins by identifying the main triggers, vulnerabilities and amplifiers that can drive system-wide increases in NPLs. With these drivers in mind, the report then focuses on the role that macroprudential policy can play in preventing system-wide increases in NPLs and/or in increasing banks' resilience in the face of such increases.

The emergence and accumulation of NPLs can become a systemic problem when this affects a considerable part of the financial system, threatening its stability and/or impairing its core function of facilitating financial intermediation. A significant increase in NPLs throughout the system can have a negative impact on the resilience of the banking sector to shocks, thus increasing systemic risk. NPLs may also be associated with higher funding costs and a lower supply of credit to the real economy. This may result from negative market sentiment towards banks with high levels of NPLs, which decreases banks' ability to access liquidity and capital markets (potentially leading to credit supply constraints). In the European Union, systemic concerns arose from the abnormally high proportion of NPLs which accumulated on banks' balance sheets during the crisis, and their persistence after the crisis.

The report identifies business cycle and asset price shocks as two of the main drivers of system-wide increases in NPLs. A downturn of the business cycle and/or negative asset price shocks, particularly in sectors to which the banking sector is significantly exposed (e.g. residential real estate (RRE) and commercial real estate (CRE)), may trigger a system-wide increase in NPLs. In some cases such increases may also be associated with instances of significant resource reallocation within the economy.

The role played by vulnerabilities that built up before the crisis, i.e. (i) high indebtedness and excessive credit growth and (ii) underlying bank practices and governance, is also highlighted, as well as the role played by the judicial and legal systems. The increase in debt levels seen in some EU Member States before the crisis made non-financial corporations (NFCs) and households particularly vulnerable to negative shocks, especially when accompanied by a low capacity to generate internal capital and/or by low savings rates. Banks' internal incentives, culture and practices also played an important role in explaining their exposure to imbalances that had built up before the crisis, as well as the impact of the crisis on their balance sheets.

Macroprudential policy messages

No fundamental changes to the existing macroprudential toolkits seem to be required, although a number of refinements should be considered. In particular, further work is needed in areas relating to the use of sectoral capital buffers and the development of borrower-based measures (which are not harmonised at the European level).

- **Macroprudential authorities should develop early warning systems (EWSs) to monitor the risks of credit portfolio deterioration from a macroprudential perspective.** Significant advances have been made in recent years in the development of EWSs for financial crises, although their focus is not specifically on signalling, at an early stage, potential system-wide increases in NPLs. The use of crisis prediction indicators might not, therefore, be the most appropriate way to monitor the risks of credit portfolio deterioration. Further research is thus warranted, both at EU and Member States level, to identify the systemic risk signals relating to a potential build-up of NPLs. The use of micro-datasets, at both bank and borrower level, can be a particularly useful way to identify vulnerabilities building up in specific sectors, or subsets of borrowers, that might become problematic in the future. The setting up of an EWS will also be crucial in that it will allow macroprudential authorities to communicate their views regarding the risks underlying potential system-wide increases in NPLs, and the need to address these at an early stage.

- **All Members States should include borrower-based measures in their national macroprudential toolkits, given the important role these instruments play in mitigating the vulnerabilities underlying the first stage of the lifecycle of a potential NPL, and their potential to lessen the adverse effects associated with credit misallocation.** Nonetheless, so that borrower-based measures can mitigate different types of risk, and despite the need to guarantee a certain degree of harmonisation of definitions, decision-making should be kept at national macroprudential authority level. This will ensure flexibility with regard to the design, calibration and implementation of the most suitable set of tools.

- **Further exploratory work should be carried out on borrower-based measures for NFCs, notably at ESRB and European Central Bank (ECB) levels.** The development of the aforementioned EWSs should be a good starting point for assessing whether borrower-based measures for NFCs can actually be developed further, given the underlying challenges in designing, calibrating and implementing them. This draws attention to the need to collect reliable data on borrowers' income (and sources of income), and to guarantee adequate collateral valuation. Given the absence of borrower-based measures for NFCs, macroprudential responses may, for the moment, make use of capital-based measures that target NFC exposures.

- **Capital-based instruments should also be considered for addressing vulnerabilities that might later result in system-wide increases in NPLs.** The choice among existing capital tools will depend on to the degree to which the latent vulnerability is system-wide and accompanied by excessive credit growth, or affects only specific borrowing sectors or groups of lending institutions.

- **Macroprudential authorities should use the countercyclical capital buffer (CCyB) to prevent the systemic build-up of macro-financial imbalances and/or increase banks' resilience when dealing with NPL-related vulnerabilities.** Additionally, releasing the buffer during a downturn phase, in order to ensure that lending continues to flow to the economy, is consistent with the need for banks to have more room for manoeuvre to clean up potential NPLs at an early stage. The financial cycle should be taken into consideration when choosing between capital and borrower-based instruments: there is an ongoing discussion with regard to the tightening of borrower-based measures earlier in the cycle (as their focus is mainly on preventing the origination of high-risk loans) and the use of the CCyB when there is a shift in

the financial cycle to a phase of stronger credit growth accompanied by an easing of credit standards (thus supporting banks' resilience and the cleaning up of NPLs at an early stage).

- **Macroprudential authorities should consider using the systemic risk buffer (SyRB) when the potential systemic increase in NPL flows is associated with developments in specific market segments or types of debtors as opposed to situations of generalised excessive credit growth.** The SyRB can be tailored to become a targeted instrument, better suited to dealing with the cross-section structural nature of systemic risk which constitutes the main sources of system-wide increases in NPLs. The implementation of the so-called "banking package" is expected to further increase the flexibility of the SyRB, notably through the introduction of the sectoral SyRB and the removal of the reference to its "long-term, non-cyclical" nature. Sufficient flexibility should be provided – notably in EU-related regulation – in the definition of credit segments that can be targeted using the sectoral SyRB, as the source of a system-wide NPL build-up can change over time.

- **Macroprudential authorities can also use capital measures aimed at addressing excessive exposure concentrations when systemic risk appears to be building up in specific sectors/asset classes.** Tightening large exposure requirements may mitigate concentration risk and the risk of shock propagation through the financial system, although it can also have an indirect impact by mitigating and preventing excessive credit growth. Additionally, higher own funds requirements can be applied by the designated authority in order to target asset bubbles in the residential and commercial property sector, and higher risk weights for RRE and CRE, or stricter loss given default (LGD) parameters, can be applied by national competent authorities on the basis of financial stability considerations.

- **When macroprudential authorities apply more targeted measures, they should follow a prudent approach in order to avoid procyclical effects and negative spillovers.** Some capital-based measures may have (i) procyclical features, since they depend on the level of own funds and (ii) a significant procyclical impact if applied when risks have already materialised. Borrower-based measures may allow some potential procyclical effects to be avoided, as they do not apply to the stock of existing loans while, at the same time, they contribute to preventing a system-wide increase in NPLs. Borrower-based measures may, in fact, be particularly suitable for addressing vulnerabilities related to credit misallocation at an early stage of development (or in a preventive manner). In addition, since they do not have an impact on the stock of existing loans (they only target new loans) they may allow potential procyclical effects to be avoided. Macroprudential authorities should seek to follow a comprehensive approach by assessing and avoiding this kind of procyclical feature and, if necessary, by combining different measures with different activation and release timings. With regard to the potential negative spillover effects underlying the more targeted macroprudential measures, special attention should be paid to: (i) whether the heterogeneity underlying NFCs does or does not hinder the design of effective borrower-based measures applicable to this sector; (ii) whether adopting such measures may, in the end, simply shift the risk to other sectors not targeted by the measure and; (iii) whether these measures may lead to spillovers to non-bank financial institutions, notably by substituting bank-based financial intermediation with non-bank intermediation, and which measures should be adopted to avoid such spillovers. A more targeted approach may even lead to the reallocation of lending across

different jurisdictions and, consequently, to cross-border competition problems, highlighting the need for reciprocity in order to guarantee its effectiveness.

As the current stock of NPLs within the EU is still well above pre-crisis levels, procyclicality may be increased, in the event of an economic downturn, due to the negative economic effects of new NPL flows. However, this report focuses on measures aimed at dealing with new flows of NPLs, as macroprudential policy is of limited effectiveness when dealing with the stock of NPLs, i.e. after the materialisation of the risk. In addition, policies focusing on the stock of NPLs are addressed by other initiatives (notably by the SSM/ECB Banking Supervision at microprudential level). That said, and as a result of the recent financial and economic crisis, an assessment of the risks resulting from new NPLs and the potential role of macroprudential policy in this context cannot be made in isolation from the pre-existing stock.

The role of macroprudential policy in mitigating system-wide increases in NPLs and/or increasing banks' resilience to such increases should become part of the "ESRB handbook on operationalising macroprudential policy in the banking sector". The negative consequences of a system-wide increase in NPLs, both for the financial sector and for economic activity, could be significant. The relevance of this topic to financial stability thus justifies its consideration in the ESRB handbook.

Key areas to address falling outside the scope of macroprudential policy

Some of the vulnerabilities and structural factors identified as triggers of system-wide NPL problems fall outside the scope of macroprudential policy – notably the legal and judicial framework and banks' governance structures. Nevertheless, they determine the circumstances under which any macroprudential policy approach must be developed, potentially conditioning the need for it as well as its effectiveness and, as such, merit consideration in the design of macroprudential approaches to NPLs. The absence of sufficient action in these two areas should be appropriately taken into account by macroprudential authorities, in particular to ensure that banks are resilient when facing the aforementioned problems and to preserve their capacity to finance the economy.

- **Inefficiencies in legal and judicial frameworks that remain in some Member States should be addressed.** Additionally, and despite efforts already made at both national and EU levels, it is important to agree on the minimum standards of debt enforcement and collateral foreclosure to be adopted by all Member States, including those which do not currently experience high levels of NPLs.

- **Macroprudential authorities should monitor developments in risk taking in the financial system, in particular those resulting from banks' governance structures, and should try to anticipate the build-up of future NPL problems.** While acknowledging that it is the banks' responsibility to adequately manage their loan portfolios, to adopt best practices and to comply with existing regulation, both microprudential supervisors and macroprudential authorities have a role to play in this context. Microprudential supervisors should thoroughly understand the specific risks of individual banks, avoid a tick-in-the-box approach to regulation and have access to effective enforcement powers. Macroprudential authorities should pay particular attention to potential competitive pressures across banks that could lead to excessive risk appetite and a lack of effective internal oversight controls across the whole

system. They should be proactive in warning the competent authorities of the underlying risks and/or in following a reinforced macroprudential approach.

Keywords: non-performing loans (NPL), non-performing exposures (NPE), macroprudential policy, systemic risk, banks, governance, legal system, borrower based measures, capital measures, financial crisis, countercyclical capital buffer (CCyB), systemic risk buffer (SyRB), loan to value (LTV), loan to income (LTI), households, non-financial corporations (NFC), credit risk.

JEL codes: E6, G01, G21,G28, G34, H12, K4.

1 Introduction

This report presents the ESRB response to the Council of the European Union request to develop "macroprudential approaches to prevent the emergence of system-wide NPL problems, while taking due consideration of procyclical effects of measures addressing NPLs' stocks and potential effects on financial stability". Relying on the experience and expertise of ESRB members, especially those from Member States where system-wide increases in NPLs were observed in the aftermath of the recent crisis, the report starts by identifying the main triggers, vulnerabilities and amplifiers that can drive system-wide increases in NPLs. With these drivers in mind, the report then focuses on the role that macroprudential policy can play in preventing system-wide increases in NPLs and/or in increasing banks' resilience in the face of such increases.

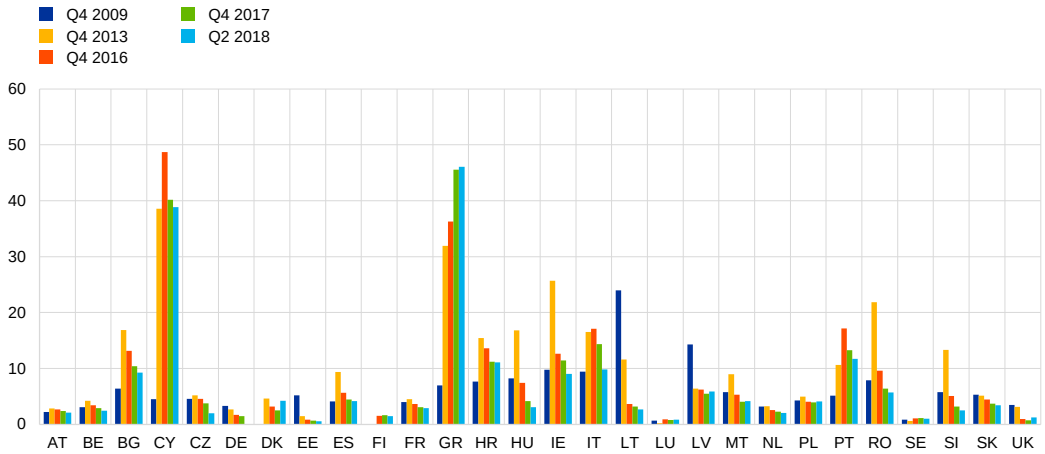
The emergence and accumulation of NPLs can become a systemic problem when this affects a considerable part of the financial system, threatening its stability and/or impairing its core financial intermediation function.[1] A significant increase in NPLs throughout the system can have a negative impact on the resilience of the banking sector to shocks, thus increasing systemic risk. NPLs may be associated with higher funding costs and a lower supply of credit to the real economy. This may result from negative market sentiment towards banks with high levels of NPLs, thereby decreasing banks' ability to access liquidity and capital markets (potentially leading to credit supply constraints).

In the European Union, systemic concerns arose from the abnormally high proportion of NPLs that accumulated on banks' balance sheets during the crisis, and their persistence after the crisis (see Chart 1). The underlying financial stability implications were already identified in the 2017 ESRB report entitled "Resolving non-performing loans in Europe" and further developed, from a conceptual perspective, in the 2018 ESRB ASC report "Approaching non-performing loans from a macroprudential angle".

[1] A risk is considered systemic when a potential future event may cause disruption to the financial system as a whole, with potentially material consequences for the internal market and the real economy.

Chart 1

Evolution of the total NPL ratio by EU Member State



Source: IMF Financial Soundness Indicators.
Notes: The NPL ratios are computed as Non-performing Loans to Total Gross Loans. For Finland no data were available for the fourth quarters of 2009 and 2013. For Cyprus, Greece and the United Kingdom, the last available data refers to Q1 2018. For Germany only annual data is available (last available data refers to Q4 2017).

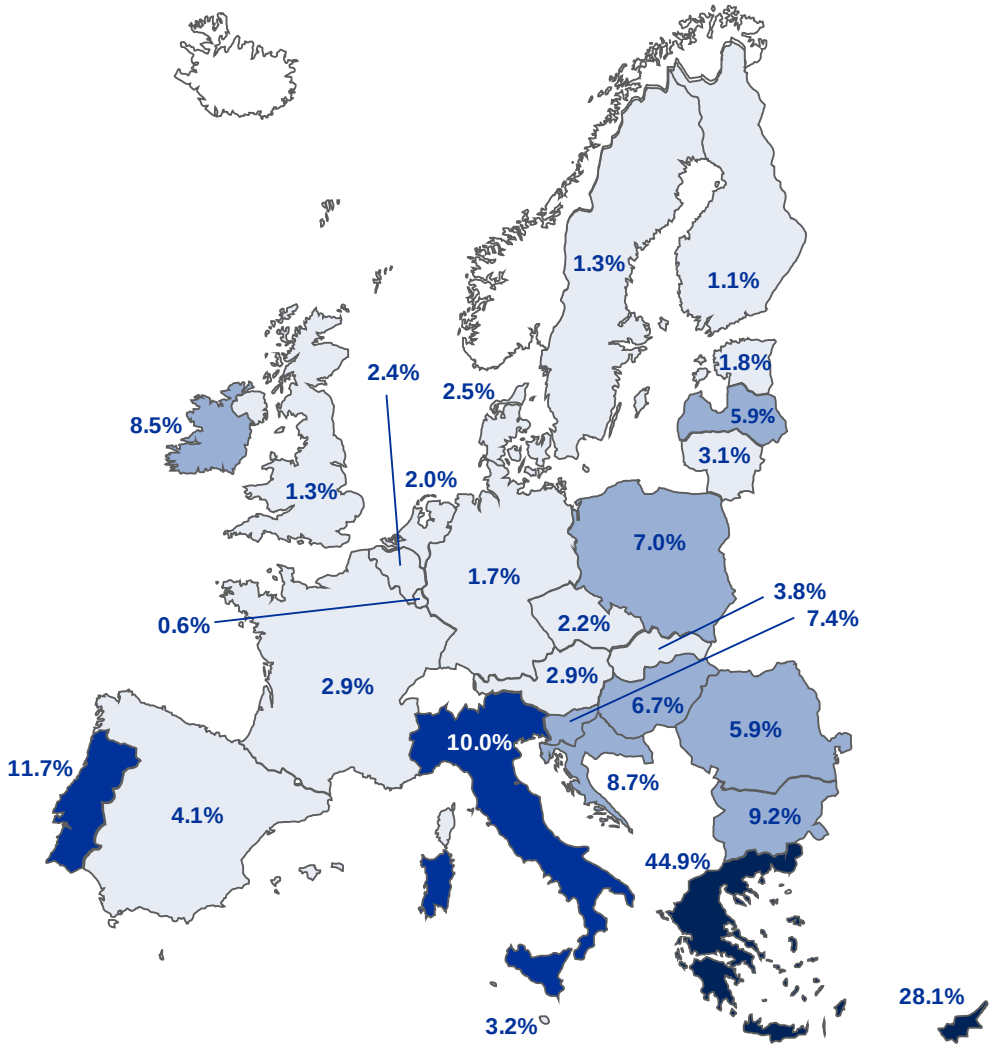
In response to the Council's request, this report focuses on measures aimed at preventing a system-wide increase in NPLs, although these measures cannot be considered in isolation from the potential pre-existing stock of NPLs. The focus is only on new flows of NPLs because macroprudential policy is of limited effectiveness when dealing with the stock of NPLs, i.e. after the materialisation of the risk.[2] In addition, policies focusing on the stock of NPLs are addressed by other initiatives (notably by SSM/ECB Banking Supervision at microprudential level). However, an assessment of risks resulting from a system-wide increase in NPLs and the potential role of macroprudential policy in this context cannot be considered in isolation from the pre-existing stock of NPLs. This caveat applies specifically to the current situation in the EU where, as a result of the recent financial and economic crisis, the stock of NPLs is still well above pre-crisis levels (see Chart 2).

With the aim of preventing the emergence of system-wide NPL problems, macroprudential policy measures may directly target the flow of new credit and/or reinforce banks' balance sheets in order to increase their resilience in the face of a systemic increase in NPLs. When the role of macroprudential policy is defined, all the triggers, vulnerabilities and amplifiers driving a system-wide increase in NPLs should be taken into account. While some of the triggers, vulnerabilities and amplifiers cannot, and indeed should not, be directly addressed by macroprudential measures, they determine the circumstances under which any macroprudential policy approach must be developed, potentially conditioning the need for the policy as well as its effectiveness. Also, other initiatives that are currently being implemented within the EU to address NPLs should be carefully considered (see Annex 1).

[2] For ESRB guidance on how to deal with the stock of NPLs in the EU, see **Resolving non-performing loans in Europe**, European Systemic Risk Board, Frankfurt am Main, July 2017.

Chart 2

Total NPL ratio by EU Member State in the second quarter of 2018



Source: ECB Consolidated Banking Data.
Note: The NPL ratios are computed as a percentage of total gross loans and advances.

The remainder of this report consists of three sections. Section 2 identifies the triggers, vulnerabilities and amplifiers driving a system-wide increase in NPLs, based on the evidence underlying the recent crisis in Europe. Section 3 discusses the role of macroprudential policy in addressing the drivers of system-wide increases in NPLs, while also taking into account, in a dedicated sub-section, those drivers that cannot be directly addressed by macroprudential approaches. Section 4 concludes with the main policy messages.

2 Drivers of system-wide increases in NPLs: lessons from the recent crisis in Europe

The role economic conditions play on the dynamics of the increase in systemic NPLs is illustrated in the existing literature. A number of papers show the negative link between NPLs and GDP growth: when growth picks up, borrowers' debt servicing capacity tends to increase (thus contributing to a decrease in NPLs), whereas when growth slows down, increased unemployment and decreased NFC revenues lead to higher NPLs, reflecting the increased difficulty faced by borrowers to repay their debt. In particular, Salas and Saurina (2002), Angelini, Bofondi and Zingales (2017) and Kjosevski and Petkovski (2017) illustrate this relationship.[3]

The explanatory power of empirical models aimed at assessing the causes of systemic increases in NPLs improves significantly when augmented by macroeconomic conditions. According to Bonfim (2009), numerous firm-level characteristics play a role in determining the quality of loans granted to firms and, subsequently, the probability of default. However, including macroeconomic conditions adds significant explanatory power to the probabilistic model of default used by the author. Betz et al. (2013) point out that the ability to predict individual bank distress is enhanced by taking macroeconomic conditions into consideration, alongside bank-level indicators. Finally, Charalambakis et al. (2017) show that bank-specific variables associated with bank capitalisation and liquidity risk only seem to determine NPLs under "normal economic conditions", while the deterioration in macroeconomic conditions (captured by very high rates of unemployment) and political uncertainty constitute key factors that explain the recent sharp increase in NPLs in the Greek banking sector.[4]

Other factors should also be taken into account when assessing the underlying causes of a system-wide increase in NPLs. Although entering a recessionary phase of the business cycle and/or experiencing negative asset price shocks may be considered the most important triggers of a system-wide increase in NPLs, other factors may also play an important role in explaining why, when faced with the same kind of shock, some economies/banks are in a better position than others to avoid a significant increase in NPLs. In addition, a recessionary phase of the business cycle that tends to be associated with an increase in NPLs may be due to a build-up of imbalances in the past and the subsequent need to correct these.

This section identifies the main drivers of a system-wide increase in NPLs, building on the experience gathered from the recent crisis in Europe.[5] It starts by addressing the causes of the downturns and asset price shocks, before addressing the vulnerabilities that had built up before the crisis and, finally, focusing on the specific structural factors that may also play a role in explaining

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3 Further literature: See Anastasiou, D., Louri, H. and Tsionas, M.G., "**Determinants of non-performing loans: Evidence from Euro-area countries**" *Finance Research Letters*, No 18, Amsterdam, 2016, pp. 116-119. See Anastasiou, D., Louri, H. and Tsionas, M.G., "**Non-performing loans in the euro area: Are core-periphery banking markets fragmented?**" *Working Paper*, No 219, Bank of Greece, Athens, 2016. See Castro, V., "**Macroeconomic determinants of the credit risk in the banking system: The case of the GIPSI**", *Economic Modelling*, No 31, Amsterdam, 2013, pp. 672-683.

4 For the US experience see Ghosh, A. "**Banking-industry specific and regional economic determinants of non-performing loans: Evidence from US states**", *Journal of Financial Stability*, Vol. 20, Amsterdam, 2015, pp. 93-104.

5 The analysis relies significantly on the experience of the members of the ESRB policy workstream on macroprudential approaches to NPLs, especially from those Member States where a system-wide increase in NPLs was observed in the aftermath of the recent crisis.

why some Member States/banks were faced by such a significant increase in NPLs in the aftermath of the crisis.

2.1 Business cycle and asset price shocks

If the business cycle enters a downturn phase and/or negative asset price shocks are experienced, notably in sectors to which the banking sector is significantly exposed (e.g. RRE and CRE), a system-wide increase in NPLs may be triggered. Macroeconomic conditions are thus relevant to explaining the increase in NPLs, as they affect borrowers' real and financial conditions and, therefore, their propensity to default. From a cyclical perspective, either a slow deterioration of average credit quality (due to protracted weak economic growth) or a negative shock to asset prices or economic activity (e.g. due to a real estate bust) may trigger a substantial and abrupt increase in loan defaults and, thereby, in the NPLs accumulated in banks' balance sheets.

In most of the countries recently affected by a system-wide increase in NPLs this increase was linked to the severe economic recession that followed the global financial crisis and the European sovereign debt crisis. Phases of economic expansion are usually characterised by lower levels of NPLs, as only a few households and NFCs have insufficient income and revenue to repay their debts. As the expansion phase continues, competitive pressure and optimism regarding the macroeconomic outlook may lead borrowers to increase their leverage and lenders to ease their lending standards, with aggregate credit growth accelerating. At this point the banking sector may appear resilient and well capitalised, with a sufficient level of provisions/impairments, and NPL levels may be low and are not seen as an issue. When a recession starts, however, the drop in economic activity weakens borrowers' ability to service debt, particularly in the case of overleveraged borrowers (or those who took on debt in the final part of the expansion), leading to an increase in payment arrears and loan defaults and a generalised decrease in bank asset quality (both through the increase in expected defaults and the decline in the value of collateral and, as a result, the recovery value of defaulted loans).

The system-wide increase in NPLs should also be assessed against a background that may be characterised by a significant reallocation of resources in the economy. In fact, in some of the countries affected by a significant increase in NPLs, the recession was accompanied by a reallocation of resources from less productive/non-tradable sectors to more productive sectors, partly because this meant the end of expansion driven by internal demand, construction booms and current account deficits. While this reallocation represented a positive structural change for the economies of MS, it also helps to explain the more significant increase in NPLs in sectors such as construction and real estate, to which many banks were very heavily exposed in some of the affected countries.

Asset price shocks (or, more generally, fluctuations) were also significant drivers of NPLs in some countries, especially those countries whose credit booms were accompanied by asset price bubbles. In some of the countries that experienced a significant increase in NPLs in the recent crisis, expectations before the crisis regarding future economic growth had led to a credit boom in the real estate sector: the upward momentum in real estate prices helped to fuel aggregate demand, prompting increased expectations of further increases in real estate prices. This boosted

growth in the supply of credit, further amplifying the effect of the boom in the construction sector and the wealth effects associated with the increase in real estate prices. As the boom continued, credit standards were relaxed as lenders expected the value of the collateral to continue to appreciate and, therefore, to cover potential future losses.

When the bubble burst, the collapse in asset prices led to a reversal of the feedback loop: the construction and real estate sectors found themselves in difficulty, as did the domestic financial system, due to its heavy exposures to those sectors. At this point, the affected countries experienced significant house price declines and a swift increase in unemployment. Large swathes of commercial property loans became impaired, with developers no longer able to meet repayment obligations. Almost at the same time as the increase in NPLs, many financial institutions shifted from loose to conservative lending standards and asset composition. Banks sought to reduce their risk-weighted assets in order to preserve their regulatory capital ratios and loss-absorbing capacity, although, at the aggregate level, the implied deleveraging might have contributed to further depressing economic activity, feeding a negative feedback loop for credit risk and NPLs.

2.2 Vulnerabilities that built up before the crisis

In addition to the triggers analysed above, a number of vulnerabilities that had built up before the crisis also seem to be behind the system-wide increase in NPLs in some countries.[6] This might also explain why, at least in part, in a number countries some banks were able to maintain a much lower level of NPLs than their peers.

2.2.1 High indebtedness and excessive credit growth

The size of the expansionary demand shock experienced by some euro area countries following the creation of the euro was unprecedented, as interest rates were low compared with those that would have suited the cyclical position of their economies. The strong expansion seen in some Member States before the crisis encouraged higher spending by different agents and was accompanied by significant growth in household and NFC indebtedness. Substantial imbalances built up, fuelled by capital flows from other euro area countries and, to a significant extent, channelled through banks to the non-tradable sectors. For some countries in the euro area, it was difficult to determine sustainable levels of indebtedness in the different sectors given the change in regime associated with a strong decline in inflation and, as a consequence, nominal interest rates. The rapid growth of aggregate demand without a corresponding increase in its potential growth translated into large external imbalances and led to a hard landing for some countries when the global financial crisis erupted.

For some non-euro area countries, the rapid expansion of the financial sector, mainly through subsidiaries and branches of large EU banking groups, combined with EU accession, also led to significant capital inflows and a boom in the credit and housing

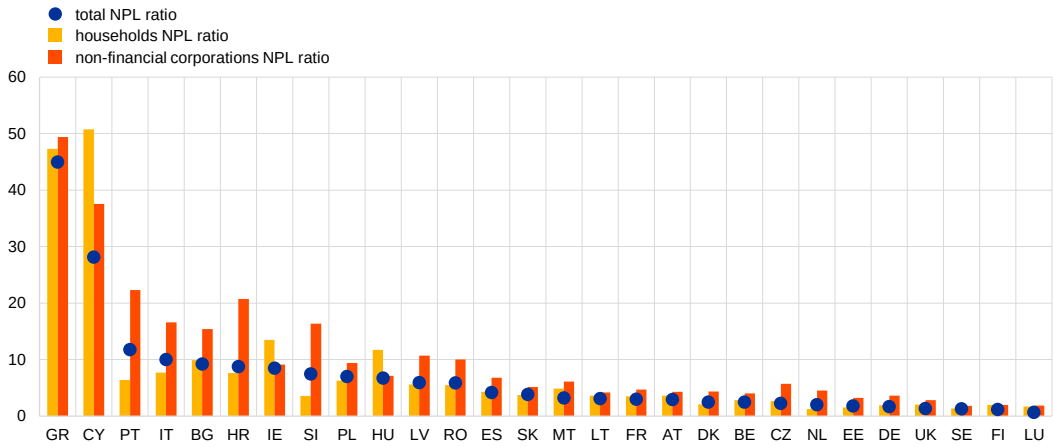
[6] Although those vulnerabilities may differ across countries.

markets. The bulk of NPLs arose in a context of unsustainable domestic demand growth and considerable capital inflows. There was a rapid increase in the volume of loans outstanding, granted without prior experience of the behaviour of new credit products over a full economic cycle and, in a number of cases, funded to an excessive extent by non-deposit cross-border loans from the parent and other western European banks. This expansive business model later showed itself to be a contributor to higher credit risk vulnerability in the subsidiaries and may have transmitted related problems to the group.[7] This lack of experience manifested itself in both exuberance and an underestimation of the related risks. Moreover, in the case of household lending, factors such as (i) borrowers' poor financial education regarding the risks underlying loan agreements, in particular foreign currency-denominated mortgage lending, and (ii) an appetite for over-indebtedness prompted by expectations in respect of wages and economic growth, contributed to excessive risk taking.

Debt levels increased significantly in some EU countries, making NFCs and households particularly vulnerable to negative shocks to income and/or to an increase in interest rates and/or to a sharp depreciation of the exchange rate (see Chart 3). This effect was amplified when these agents had a low capacity to generate internal capital and/or low savings rates. In the case of loans to households, the sharp rise in unemployment rates was a key driver of the increase in residential mortgage arrears, and this increase was especially marked for highly indebted households with low saving rates. The impact on NFCs was more diversified, depending on the specific characteristics of each national banking system and corporate sector (i.e. levels of capitalisation which, in some of the most affected countries, were very low). Consequently, while in some countries the most affected companies were part of specific sectors such as construction, real estate, and hotels and restaurants, in others a more widespread impact was observed (e.g. mainly affecting small and medium-sized companies (SMEs)).

Chart 3

NPL ratios by sector in the second quarter of 2018



Source: ECB Consolidated Banking Data.
Notes: The NPL ratios are computed as a percentage of total gross loans and advances for the relevant portfolio (total, households or NFCs). Ordered by the total NPL ratio.

[7] See Vandenbussche, J., "**Austria: Selected Issues**", *IMF Country Report*, No 12/252, International Monetary Fund, Washington, D.C., August 2012.

2.2.2 The systemic implications of banks' practices and governance

Banks' internal incentives, culture and practices, which are shaped by each bank's history, governance structure and financial position, may play an important role in explaining their exposure to the imbalances that built up before the crisis and the impact of the crisis on their balance sheets. Bank practices may contribute to underlying credit quality throughout the whole lifecycle of a loan: origination, monitoring and early intervention (including NPL management at an early stage), and repayment, resolution or disposal. The practices are influenced by a bank's internal system of incentives and organisational culture (in particular its risk culture) and by its governance.

2.2.2.1 Loans' origination

Prior to the 2007-08 crisis, banks were expanding very rapidly in many countries, often in a very competitive environment. In some countries, credit growth was in double figures, and was sometimes accompanied by a significant loosening of credit standards. Banks were expanding their business and seeking to gain a competitive advantage, frequently and disproportionately increasing the credit they offered to weaker borrowers. Credit was increasingly being granted to firms for projects with dubious economic prospects/cash flows or projects that were based on optimistic predictions of future economic growth; to households with limited capacity to repay the loan in the future; and/or to debtors whose collateral was either too low or too vulnerable to cover any deterioration in economic conditions.[8]

In some countries (especially those in which a RRE market bubble occurred), the loosening of credit standards was concentrated more in the household sector; in others, it was more concentrated in non-financial corporations. In particular, in the case of households, loans were granted to borrowers with high loan-to-income (LTI) and debt service-to-income (DSTI) ratios;[9] in the case of non-financial corporations loans were channelled to highly leveraged firms with low levels of capital.

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[8] The literature finds quite robust evidence that rapid credit growth translates into a higher amount of non-performing loans, although this may not be immediate; it may be up to five years down the line before loans present initial symptoms of impairment. By using the Central Credit Register of the Banco de España, it was also found that loans granted in the good times, when credit is growing very rapidly, have – years later – higher probabilities of default than those granted in bad times. Moreover, during boom periods collateral requirements are relaxed while the opposite occurs during recessions. See, for example, Jiménez, G., and Saurina, J., "**Credit cycles, credit risk, and prudential regulation**", *International Journal of Central Banking*, Vol. 2, No 2, Cleveland, June 2006, pp. 65-98.

[9] An analysis undertaken by the Central Bank of Ireland indicates that weak lending standards at origination were key determinants of NPLs in Ireland: loans with higher LTVs, higher LTIs, higher interest rates and higher Mortgage-Repayment-To-Income (MRTI) were more likely to default, as were loans originated during 2004-06 and those with multiple loans attached to the same facility. For more information in this regard see the following articles: Cassidy, M. and Hallissey, N., "**The Introduction of Macroprudential Measures for the Irish Mortgage Market**", *The Economic and Social Review*, Ireland, Vol. 47, No 2, Dublin, 2016, pp. 271-297; McCarthy, Y., "**Dis-entangling the mortgage arrears crisis: The role of the labour market, income volatility and housing equity**", *Research Technical Paper*, No 2, Central Bank of Ireland, Dublin, 2014; and Kelly, R., "**The Good, The Bad and The Impaired: A Credit Risk Model of the Irish Mortgage Market**", *Research Technical Paper*, No 13, Central Bank of Ireland, Dublin, 2011.Borrower characteristics also emerged as important determinants of non-performing loans given subsequent adverse shocks, with those on lower incomes, with lower education levels, and with a high numbers of dependents more likely to default on their loans. This was found in Kelly, R. and McCann, F., "**Some defaults are deeper than others; Understanding long-term mortgage arrears**", *Research Technical Paper*, No 5, Central Bank of Ireland, Dublin, 2015; and McCarthy, Y., "**Dis-entangling the mortgage arrears crisis: The role of the labour market, income volatility and housing equity**", *Research Technical Paper*, No 2, Central Bank of Ireland, Dublin, 2014.

Also, as the boom expanded, banks' reliance on collateral increased to an excessive level, to the detriment of an adequate assessment of a debtor's repayment capacity. As mentioned by Song (2002), an excessive reliance on collateral poses risks for a bank: (i) collateral is often illiquid and costly to realise through foreclosure or other legal means; (ii) collateral is even more critical when a loan is impaired and other repayment sources are no longer adequate; (iii) collateral in residential mortgages is generally considered to be relatively low risk, although it can still represent a considerable hazard to a lender (depending on real estate market developments and the effectiveness of the legal and judicial system). Additionally, an excessive reliance on collateral reduces a bank's incentive to undertake adequate monitoring, negatively affecting credit allocation efficiency.

It should be emphasised that the aforementioned overreliance on collateral was not always accompanied by its appropriate valuation. In the boom phase, loans to some borrowers might have been granted on the basis of over-optimistic valuations of the underlying collateral (e.g. which made the associated loan-to-value ratios appear reasonable) and without taking into account the potentially low levels of liquidity in real estate markets during a recession. Additionally, when NPLs rise during a downturn, especially in the aftermath of a real estate boom, the associated collateral is likely to become (or to remain) overvalued in the absence of recent and reliable prices that can be used to update its valuation, or due to intentional inaction on the part of the lender. This may, in turn, lead to an insufficient provisioning of NPLs.

In some countries[10] the NPL problem arose from a significant amount of loans granted or denominated in foreign currency and marketed to NFCs and households without sufficient disposable income and without sufficient knowledge of FX risks. These loans had lower interest rates than nationally-denominated loans. However, when the local currency depreciated during the crisis this also resulted in a higher stock of NPLs. At the same time, there is evidence that foreign-currency loans had higher debt-service-to-income ratios than domestic currency loans. In addition, lenders often promoted FX loan products to borrowers without ensuring that the inherent risks were fully understood, raising, in some cases, concerns over misselling.

Before the crisis, many banks became highly exposed to certain sectors (notably the construction/real estate/non-tradable sectors) and to some large and highly indebted NFCs. Even banks that had implemented internal risk management procedures - with underlying restrictions on exposures to a group of clients, or to a particular sector or asset class - did not take into account, when imbalances were increasing at the aggregate level, that their peers were also increasing their exposures to the same sectors/asset classes, or to the same legal entity. Moreover, as shown by previous studies, the real estate market segment was particularly exposed to systemic procyclicality in concentrated lending due to its underlying characteristics (e.g. a single loan is usually associated with big volumes; real estate markets are often inherently less liquid and more opaque).[11] Faced with a negative common shock, which was characterised by a deep and prolonged economic downturn and affected the aforementioned sectors/asset classes or legal entities, all banks were obliged to recognise substantial credit losses at the same time. The losses

[10] E.g. Romania and Hungary.

[11] See the **Report on commercial real estate and financial stability in the EU**, European Systemic Risk Board, Frankfurt am Main, December 2015.

were amplified by the imbalances that had built up before the crisis, resulting in a significant system-wide increase in NPLs.

Excessive corporate and/or household borrowing can, in fact, result in excessive increases in leverage in the private non-financial sector, leading to a situation in which the banking sector becomes excessively exposed to the risk of corporate/household defaults in the event of funding stresses and/or demand shocks. This can, in turn, lead to significant losses in the banking sector, reducing capital ratios and lending capacity, and potentially amplifying the impact of the initial shock (possibly resulting in a financial crisis). In addition, this impact can be amplified by the strong interconnectedness of the financial system.

2.2.2.2 Loan monitoring and early intervention

Loan monitoring should ensure that banks are equipped with appropriate mechanisms that provide precise loan status information. This boils down to promoting full compliance with the loan agreement, including guaranteeing that the loan is being used for eligible purposes, that the quality of the loan will be maintained in the future and that its repayment sources are protected, in order to safeguard against a potential deterioration of credit quality. There are various tools that banks can use to undertake appropriate monitoring, and supervisory experience suggests that many of these tools were severely weakened in some countries around the time of the recent crisis. Tools include relationship management, regular reporting requirements, loan covenants, transaction account monitoring, loan stress testing, as well as internal credit rating and scoring. Additionally, there might be an incentive for banks to support troubled firms in order to prevent them from formally defaulting on their loans. This incentive may be amplified due to capital constraints which may be tightened if further losses are recognised. Firms' viability assessments, in this context, should be the key driver of banks' decisions as to whether they should support such firms. In the case of households, the creditworthiness assessment should include a thorough analysis of the borrower's capacity to service the debt.

Adequate loan monitoring is closely linked to effective early intervention in the case of borrowers who display the first signs of poor performance. Banks that monitor their exposures more thoroughly and that are able to tackle emerging problems in a timely manner (i.e. when the loan is still performing or has been past-due for a limited period of time) should be in a better position to avoid significant increases in NPLs in the future.

However, the severity of the recent financial crisis showed that some banks were not sufficiently equipped to deal with a surge in bad loans, and lacked the capacity, expertise and tools to deal with NPLs on a large scale.[12] In the pre-crisis years, banks had to deal with relatively low NPL ratios and, as a consequence, when NPL volumes surged, were not properly equipped to manage them in a timely and effective manner. This may have worked to amplify the impact of the initial shock on NPLs, thereby also contributing to a system-wide increase in these legacy assets.

[12] See Shekhar Aiyar, S., Bergthaler,W., Garrido, J.M., Ilyina, A., Jobst, A., Kang, H., Kovtun, D., Liu, Y., Monaghan, D. and Moretti, M., "**A Strategy for Resolving Europe's Problem Loans**", **IMF Staff Discussion Notes**, No 15/19, International Monetary Fund, Washington, D.C., September 2015.

Importantly, before the crisis some banks did not hold sufficient capital buffers to deal with a significant increase in unexpected losses underlying the build-up of NPLs, and to protect against shocks in the wider economy and subsequent damage to a borrower's repayment capacity. Weak capital buffers also meant that some banks were no longer able to meet their core economic objective of lending to the real economy, resulting in the potential negative feedback loop effects addressed previously. The banks faced a more challenging situation in terms of the need to manage, at an early stage, the increase in NPLs.

2.2.2.3 Banks' internal incentives, organisational culture and governance structure

Some of the previously identified problems underlying loan origination, monitoring and early intervention are clearly linked with banks' internal incentives, organisational cultures and governance structures. Banks' internal incentive systems and organisational cultures that reward excessive risk taking, without due regard to risk tolerance or ethical concerns, lead to the formal rules covering loan origination and monitoring being disregarded in practice.

With regard to loan origination, a number of factors impaired the governance of the lending process. These included: weak risk management and controls (such as a lack of group-wide risk management structures in banks or a lack of adequate empowerment of internal control functions), competitive pressures leading to excessive risk appetite and a lack of effective board oversight, and the limited expertise of board members in evaluating economic prospects. Additionally, a lack of independence of mind as well as conflicts of interest at board and senior management level led to detrimental lending practices involving lending to related parties (including associates, powerful clients and politically-connected businesses).[13] The "three lines of defence" model, including risk-aware decision-making at the operational level (first line), and robust risk management/compliance (second line) and audit (third line) functions was, in many cases, either not implemented or defective due to the insufficient independence and empowerment of internal control functions and misaligned incentives at operational level. These problems were often compounded by a lack of adequate oversight controls at senior management and board levels. The intervention of external auditors was also not sufficient to avoid this build-up of risk and NPLs.

Remuneration policies might also have contributed to excessive risk taking. Executive pay arrangements that were not sufficiently linked to the long-term interests of the bank and its stakeholders, focusing instead on short-term results for shareholders, contributed to excessive risk taking in some cases. Poor practices might also have been present at staff level. Risk alignment should involve both ex ante and ex post alignment of compensation with long-term value maximisation: (i) ex ante risk alignment involves developing compensation policies, structures and performance objectives that avoid the use of incentives that are based overwhelmingly on short-term goals; (ii) ex post alignment includes activities undertaken after a performance period to align compensation with the outcomes seen by the firm. Short-term bonuses may not be desirable from a long-term credit quality point of view, as there may be a tendency to hand out high-volume loans, regardless of their riskiness.

[13] See the **Panel Discussion on Corporate Governance and Non-Performing Loans**, European Bank for Reconstruction and Development, London, 2017.

Accurate monitoring and early intervention also seem to be related to the quality of governance and organisational structures. As mentioned before, banks that had effective processes to identify, monitor and report risks, and that had dedicated structures for "early NPL" management, were successful in recording better-than-average cure rates, thus containing the surge of NPLs.

2.3 Structural factors: the legal and judicial system

Several structural factors contribute to the increase and persistence of system-wide NPL problems and, among these, the legal and judicial system should be highlighted. The level of efficiency and effectiveness of the judicial and legal system, including the degree of inertia in insolvency frameworks, is repeatedly cited as a factor that correlates with the size of stocks of NPLs across countries.[14] Foreclosure and debt enforcement practices vary considerably across EU countries, although they were considered to be particularly lengthy and hampered by social aspects in most of the countries in which a system-wide increase in NPLs took place. In this respect, a legal and judicial system supporting efficient and effective insolvency procedures is considered to be one of the main factors affecting banks' asset quality (EBA (2016)[15], ECB (2017)[16] and Carpinelli et al. (2016)[17]).

The legal and judicial system can significantly affect the extent to which NPLs become a systemic problem. From a bank's perspective, the legal and judicial system can significantly affect the persistence of NPL stocks by determining the contract enforcement and collateral repossession framework as well as pre-insolvency and insolvency laws. From an investors' perspective, complex and overburdened legal systems and judiciary proceedings might also hinder investment in distressed assets. In particular, if investors expect the enforcement of collateral and the outcome of insolvency proceedings to be lengthy, costly and unpredictable, they will incorporate this into their buying and pricing decision. From a debtor's perspective, lengthy proceedings may also increase moral hazard, as debtors might well be aware that the collateral will not be easily and quickly enforced and may be less incentivised to pay their loans in a timely manner. Therefore, very lengthy foreclosure and legal resolution timelines can create a systematic loan risk by encouraging borrowers to default, given that they see no immediate consequences of entering into arrears.[18]

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[14] See the **Report of the FSC Subgroup on Non-Performing Loans**, Council of the EU, Brussels, May 2017; **Resolving non-performing loans in Europe**, European Systemic Risk Board, Frankfurt am Main, July 2017; Shekhar Aiyar, S., Bergthaler,W., Garrido, J.M., Ilyina, A., Jobst, A., Kang, H., Kovtun, D., Liu, Y., Monaghan, D. and Moretti, M., "**A Strategy for Resolving Europe's Problem Loans**", **IMF Staff Discussion Notes**, No 15/19, International Monetary Fund, Washington, D.C., September 2015; and Consolo, A., Malfa, F., Pierluigi, B., "Insolvency frameworks and private debt: an empirical investigation ", *Working Paper Series*, No 2189, European Central Bank, Frankfurt am Main, October 2018.

[15] See the **Report on the dynamics and drivers of non-performing exposures in the EU banking sector**, European Banking Authority, London, July 2016.

[16] See the **Stocktake of national supervisory practices and legal frameworks related to NPLs**, European Central Bank, Frankfurt am Main, June 2017. According to the ECB the main legal areas that can pose particular challenges for NPL workout are: (i) the lack of a liquid market for NPLs, (ii) debt enforcement/foreclosure, (iii) corporate insolvency and restructuring, (iv) household insolvency and restructuring, (v) the judicial system and (vi) the tax regime.

[17] See Carpinelli, L., Cascarino, G., Giacomelli, S., and Vacca, V.P., "**The management on non-performing loans: a survey among the main Italian banks**", *Occasional Paper*, No 311, Banca d'Italia, Rome, 2016.

[18] See **Resolving non-performing loans in Europe**, European Systemic Risk Board, Frankfurt am Main, July 2017, and O'Malley, T., "**The Impact of Repossession Risk on Mortgage Default**", *Research Technical Paper*, 01/RT/18, Central Bank of Ireland, Dublin, 2018.

Debt enforcement practices that are not credible for creditors, potential investors and debtors have financial stability implications. An inefficient foreclosure and restructuring framework (including insolvency) is less able to manage the flow of new NPLs arising from the triggers and vulnerabilities previously identified, and the underlying inertia will have a more lasting impact on the stock.[19] Moreover, long credit recovery procedures affect recovery rates, thus reducing the market value of NPLs, constraining their disposal and, therefore, contributing to a systemic build-up of NPLs. Fell *et al.* (2017),[20] using the World Bank Doing Business database, show that bid-ask spreads (i.e. the difference between the prices that investors are prepared to pay for NPLs and the prices that banks are prepared to sell them for) are, to a significant extent, determined by the average cost of enforcing claims through individual legal systems. Other studies show that the reduction of both the costs and the time associated with judicial processes are expected to have a positive impact on the banking sector.[21] [22]

An inefficient legal system may also promote the emergence of "strategic defaulters".[23] The prolonged economic recession, along with political instability in some countries, incentivised the emergence of strategic non-payment behaviour among borrowers, in the aftermath of the recent crisis. A percentage of borrowers in some Member States chose to stop servicing their loans for a variety of reasons – these included exploiting the existing favourable legal protection framework.

This behaviour was incentivised by the existing legal framework (including bankruptcy law, borrower protection schemes and collateral enforcement) and a lack of judicial capacity. The trend has been observed empirically in Greece: an analysis conducted using a dataset, comprising loans for 13,070 firms for the period 2008-15, provides evidence that one in six firms with NPLs were strategic defaulters and highlights the importance of distinguishing the latter from financially distressed defaulters.[24] Strategic defaults undermined payment discipline and promoted moral hazard, with significant consequences for the functioning of the entire financial system. Therefore, promoting an efficient and effective legal and judicial system and providing greater transparency with regard to the extent of strategic default, combined with setting the right incentives for proactive NPL management, is pivotal for deterring non-payment behaviour.

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19 See "**The relationship between length of credit recovery procedures and volume of bad debts on banks' balance sheet**", *Financial Stability Report*, No 5, Banca d'Italia, Rome, 2013, pp. 28-29.

20 See Fell, J., Grodzicki, M., Krušec, D., Martin, R. and O'Brien, E., "**Overcoming non-performing loan market failures with transaction platforms**", in **Financial Stability Review**, European Central Bank, Frankfurt am Main, November 2017, pp. 130-144.

21 See "**Relevance of the legal framework in the recovery of NPL**", *Financial Stability Report*, Banco de Portugal, Lisbon, June 2018, pp. 112-116.

22 A poorly performing legal system might also have an impact on the securitisation market: the lack of debt repayment also affects investors trading with asset backed securities. In this regard see Coval, J., Jurek, J. and Stafford, E., "**The Economics of Structured Finance**", *Journal of Economic Perspectives*, Vol. 23, No 1, Nashville, 2009, pp. 3-25; and Agarwal, S., Amromin, G., Ben-David, I., Chomsiengphet, S. and Evanoff, D.D., "**The Role of Securitization in Mortgage Renegotiation**", *Journal of Financial Economics*, Vol. 102, No 3, Amsterdam, December 2011, pp. 559-578.

23 A "strategic default" is the decision by a borrower to stop making payments on a debt despite having the financial ability to make those payments.

24 See Asimakopoulos, I., Malliaropulos, D., Avramidis, P.K. and Travlos N.G., "Micro-behavioral Characteristics in a Recessionary Environment: Moral Hazard and Strategic Default", in Monokroussos, P. and Gortsos, C. (eds.), **Non-Performing Loans and Resolving Private Sector Insolvency**, Palgrave Macmillan Studies in Banking and Financial Institutions. Palgrave Macmillan, Cham, 2017, pp. 227-254.

3 The role of macroprudential policy

Main policy messages

Taking into account the drivers of a system-wide increase in NPLs identified in the report, the following proposals and takeaways, relating to the role of macroprudential policy in addressing those drivers, could be considered.

No fundamental changes to the existing macroprudential toolkits seem to be required, although a number of refinements should be considered.

- **Macroprudential authorities should develop EWSs to monitor risks of credit portfolio deterioration from a macroprudential perspective.** Further research, drawing upon the drivers identified in the previous section, is thus warranted at both EU and Member State level, to identify systemic risk signals related to a potential build-up of NPLs.
- **All Members States should include borrower-based measures in their national macroprudential toolkits, given the important role these instruments play in mitigating the vulnerabilities underlying the first stage of the lifecycle of a potential NPL, and their potential to lessen the adverse effects associated with credit misallocation.** Nonetheless, so that borrower-based measures can mitigate different types of risk, and despite the need to guarantee a certain degree of harmonisation of definitions, decision-making should be kept at national macroprudential authority level. This will ensure flexibility with regard to the design, calibration and implementation of the most suitable set of tools.
- **Further exploratory work should be carried out on borrower-based measures for NFCs, notably at ESRB and ECB levels.** The development of the aforementioned EWSs could be a good starting point for this work.
- **Macroprudential authorities should use the countercyclical capital buffer (CCyB) to prevent the systemic build-up of macro-financial imbalances and/or increase banks' resilience when dealing with NPL-related vulnerabilities.** Additionally, releasing the buffer during a downturn phase, in order to ensure that lending continues to flow to the economy, is consistent with the need for banks to have more room for manoeuvre to clean up potential NPLs at an early stage.
- **Macroprudential authorities should consider using the systemic risk buffer (SyRB) when the potential systemic increase in NPL flows is associated with developments in specific market segments or types of debtors as opposed to situations of generalised excessive credit growth.** The SyRB can be tailored to become a targeted instrument, better suited to dealing with the cross-section structural nature of systemic risk which constitutes the main sources of system-wide increases in NPLs. The implementation of the so-called "banking package" is expected to further increase the flexibility of the SyRB, notably through the introduction of the sectoral SyRB and the removal of the reference to its "long-term, non-cyclical" nature. Sufficient flexibility should be provided – notably in EU-related regulation – in the definition of credit segments that can be targeted using the sectoral SyRB, as the source of a system-wide NPL build-up can change over time.

- **Macroprudential authorities can also use capital measures aimed at addressing excessive exposure concentration when systemic risk appears to be building up in specific sectors/asset classes.** Tightening large exposure requirements may mitigate concentration risk and the risk of shock propagation through the financial system, although it can also have an indirect impact by mitigating and preventing excessive credit growth. Additionally, higher own funds requirements can be applied by the designated authority in order to target asset bubbles in the residential and commercial property sector, and higher risk weights for RRE and CRE, or stricter LGD parameters, can be applied by national competent authorities on the basis of financial stability considerations.

- **When macroprudential authorities apply more targeted measures, they should adopt a prudent approach in order to avoid procyclical effects and negative spillovers.** Some capital-based measures may have (i) procyclical features, since they depend on the level of own funds, and (ii) a significant procyclical impact if applied when risks have already materialised. Borrower-based measures may allow some of those potential procyclical effects to be avoided, as they do not apply to the stock of existing loans while, at the same time, they contribute to preventing a system-wide increase in NPLs. Macroprudential authorities should therefore seek to follow a comprehensive approach by assessing and avoiding procyclical features of this type and, if needed, by combining different measures with different activation and release timings. With regard to the potential negative spillover effects of these more targeted measures, special attention should be paid to avoiding a shift of the excessive risk to sectors that are not targeted by the measures in question; to the impact the measures may have on non-bank financial institutions (notably by substituting bank-based financial intermediation with non-bank intermediation); and to a potential need for reciprocity to guarantee their effectiveness.

Some of the vulnerabilities and structural factors fall outside the scope of macroprudential policy. Nevertheless, the absence of sufficient action in these areas may justify the use of a targeted macroprudential approach to guarantee banks' resilience.

- **Inefficiencies in legal and judicial frameworks that remain in some Member States should be addressed.** Despite efforts already made at both national and EU levels, it is important to agree on the minimum standards of debt enforcement and collateral foreclosure to be adopted by all Member States, including those which do not currently experience high levels of NPLs.

- **Macroprudential authorities should monitor developments in risk taking in the financial system, in particular those resulting from banks' governance structures and potentially associated to competitive pressures leading banks to excessive risk appetite.** They should be proactive in warning the competent authorities of the underlying risks and/or in following a reinforced macroprudential approach.

The role of macroprudential policy in mitigating system-wide increases in NPLs and/or increasing banks' resilience to such increases should become part of the "ESRB handbook on operationalising macroprudential policy in the banking sector". The negative consequences of a system-wide increase in NPLs, both for the financial sector and for economic activity, could be significant. The relevance of this topic to financial stability therefore justifies its consideration in the ESRB handbook.

3.1 Existing macroprudential toolkits

Since macroprudential policy is designed to address systemic risks, it may play an important role in preventing system-wide increases in NPLs and/or in enhancing banks' resilience to such increases. The use of macroprudential tools can, in fact, contribute to preventing the materialisation of system-wide risks, or at least attenuate such risks, by containing the excessive build-up of macro-financial imbalances and strengthening banks' resilience to the potential crystallisation of high credit-related losses.

Macroprudential toolkits consist of two main instrument categories: capital-based measures and borrower-based measures.[25] Capital measures determine banks' regulatory capital requirements either directly, via capital buffers, or indirectly, via risk weights and LGD, notably in the case of real estate exposures. Borrower-based measures may have an impact on the credit standards applied by banks when granting credit to borrowers, so they only impact new loans. Unlike capital instruments, borrower-based measures are not included in the EU-harmonised legal framework, and their use is governed by national law, with different institutional set-ups in place across Member States. Capital and borrower-based instruments also differ in terms of their focus, transmission channels and potential impact on different agents. A discussion is also under way with regard to the potentially higher effectiveness of borrower-based-measures when the build-up of systemic risk is still at an early stage, whereas capital measures could be more effective when the financial cycle has shifted to a phase of stronger credit recovery accompanied by an easing of credit standards.[26]

The assessment of the role of macroprudential policy in preventing a system-wide increase in NPLs should take into account the instruments already included in the EU and national macroprudential toolkits, which aim at addressing systemic risks.[27] Under the Capital Requirements Directive (CRD), the instruments available include: (i) the CCyB, under Article 130 and Articles135-140 of the CRD, designed to increase the resilience of the financial system and to address cyclical systemic risks arising from excessive credit growth; (ii) the SyRB, under Articles 133 and 134 of the CRD, designed to prevent and mitigate long-term non-cyclical systemic or macroprudential risks. Under the Capital Requirements Regulation (CRR), and on the basis of financial stability considerations, national competent authorities can apply higher risk weights to the real estate sector (Article 124 of the CRR for banks, under the standardised approach) or stricter LGD parameters (Article 164 of the CRR for banks, under the internal ratings-based (IRB) approach). Where national authorities identify changes in the intensity of macroprudential or systemic risk in the financial system that would be better addressed by means of stricter national measures, they may also use the so-called national flexibility measures (Article 458 of the CRR). Under this article, national authorities may adjust, inter alia, the level of banks' own funds, large exposure limits, the level of the capital conservation buffer, and risk weights, in order to target asset bubbles in the RRE and CRE sectors. Finally, national legal frameworks may also include other

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25 Macroprudential toolkits also include liquidity instruments, although these are not particularly relevant to the scope of this report.

26 See, for example, O'Brien, E. and Ryan, E., "**Motivating the Use of Different Macro-prudential Instruments: the Countercyclical Capital Buffer vs. Borrower-Based Measures**", *Economic Letters 15/EL/17*, Central Bank of Ireland, 2017.

27 The final report of the Financial Services Committee Subgroup on Non-Performing Loans recognises the potential role of the existing macroprudential tools to prevent the re-emergence of high NPLs. See the **Report of the FSC Subgroup on Non-Performing Loans**, Council of the EU, Brussels, May 2017.

macroprudential instruments, including borrower-based measures. When targeting households, borrower-based measures usually include limits on: (i) the volume of credit granted in relation to collateral value (LTV); (ii) the debt service payments of borrowers in relation to their income (DSTI); (iii) borrower's total indebtedness or the volume of credit granted in relation to income (D/LTI); (iv) loan repayment schedules (e.g. amortisation requirements); and (v) the maximum loan maturity.[28]

Some of the vulnerabilities associated with a potential system-wide increase in NPLs fall outside the scope of macroprudential policy, and rely more on microprudential supervision and regulation. However, since the onset of the recent financial and economic crisis, there have been significant developments at this level in order to address the risks underlying loan origination, monitoring and early intervention. Several supervisory and regulatory initiatives have been implemented, while some of the non-macroprudential initiatives included in the "Action plan to tackle non-performing loans in Europe" (adopted by the ECOFIN Council on 11 July 2017) are also expected to impact banks' behaviour, from a forward-looking perspective. Annex 1 describes, in summarised form, the extent to which some of those measures are linked with the drivers of the systemic increase in NPLs identified in the previous section.

This section elaborates on the way the existing macroprudential instruments can be used to target the vulnerabilities that were previously identified as drivers of a systemic build-up of NPLs, and the need to further enhance the use of macroprudential tools. It focuses mainly on the role that the instruments currently available can play, although it also discusses the extent to which some adjustments to the EU and national macroprudential toolkits may be required.

3.2 Early warning systems for signalling risks related to a system-wide build-up of NPLs

The timely identification of vulnerabilities which, if not addressed, could end up causing a system-wide increase in NPLs is a crucial element of prudential surveillance. Credit institutions and microprudential supervisors should use, as a part of their risk management practice, Early Warning Indicators that specifically focus on risks related to NPLs. Several EWSs have been developed at macroprudential level – both at national and European level. However, none of these is specifically aimed at assessing the potential risks, driven by the vulnerabilities identified in the previous section, of a system-wide increase in NPLs. Macroprudential authorities should be able to monitor credit and other developments in a timely manner from a system-wide perspective, in order to identify, in good time, the risks that are building up at banking system level and which may end up causing a system-wide increase in NPLs. Developing this tool will enable macroprudential policies to deal with this issue more effectively and will also allow macroprudential authorities to duly inform competent authorities of the risks that are building up in areas outside the scope of macroprudential policy.

Macroprudential authorities should develop EWSs to monitor the risks of credit portfolio deterioration from a macroprudential perspective. The development of EWSs for financial

[28] For further details on each instrument see **The ESRB handbook on operationalising macroprudential policy in the banking sector**, European Systemic Risk Board, Frankfurt am Main, April 2018.

crises has gone through considerable development in recent years. These EWSs have a macro perspective and are designed to signal, inter alia, intensifying risks related to credit crises which could potentially lead to a significant increase in NPLs. However, their focus is not specifically related to signalling, at an early stage, a potential system-wide increase in NPLs and, as a consequence, the indicators used might not be the most appropriate for this purpose.[29]

Further research is thus warranted to identify signals permitting an early detection of the potential systemic build-up of NPLs. This research may draw upon several sources linked to the drivers identified in the previous section: (i) existing macroprudential EWS frameworks; (ii) existing micro-level early warning indicators; (iii) studies on macro-financial NPL-related vulnerabilities; and (iv) institution-specific causes of higher NPL stocks. There are already a few early warning models in use which are, to some extent, related to the build-up of NPLs,[30] and a great deal of modelling experience has been accumulated with macroprudential EWSs. This experience could be helpful in developing an EWS for system-wide NPL build-up. In addition to the existing experience on micro-level indicators, this work could also benefit from the extensive literature investigating the real economic, macro-financial, sectoral and institution-specific causes/drivers of increased NPL levels (thus going beyond just adding together institution-specific risk signals, by taking into account amplifying effects stemming from, for instance, the existing interlinkages across sectors).[31]

Micro-datasets, at both bank and borrower level, can be particularly useful in identifying vulnerabilities which are building up, for instance in specific sectors or subsets of borrowers, and which might become problematic in the future.[32] The ongoing initiative to set up a European central credit register (CCR), AnaCredit, is therefore particularly important.[33] Micro-datasets are crucial in that they reveal the heterogeneity masked by aggregate numbers. Many EU central banks already manage a CCR, a centralised system for collecting entity-level credit information for loans provided to the economy (loan-by-loan and counterparty-by-counterparty). CCRs provide information that can be used to assess the distribution of risks within banks' loan

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29 See Ferrari, S., Pirovano, M. and Cornacchia, W., "**Identifying early warning indicators for real estate-related banking crises**", *ESRB Occasional Paper Series*, No 8, European Systemic Risk Board, August 2015. This paper builds on the ESCB Heads of Research (HoR) Group's banking crises database, which defines periods of banking crises based on different criteria, although only one of these is related to losses in the banking system (based on quarters when non-performing loans were above 20% or bank closures were at least 20% of banking system assets).

30 For an analytical framework for assessing system-wide risks arising from the real estate sector in Italy, including, as a vulnerability indicator, a ratio involving the annual flow of bad debts, see Ciocchetta, F., Cornacchia, W., Felici, R. and Loberto, M., "**Assessing financial stability risks arising from the real estate market in Italy**", *Occasional Papers*, No 323, Banca d'Italia, Rome, March 2016. For a risk-monitoring system using a subset of indicators which includes the NPL ratio(s), thus enabling assessment of the cyclical position of the financial system and its relation to the macroeconomy, see Mencia, J. and Saurina, J., "**Macroprudential policy: objectives, instruments and indicators**", *Documentos Ocasionales*, No 1601, Madrid, 2016.

31 See, for example, on real economic variables, Castellani, S., Pederzoli, C. and Torricelli, C. (2008), Marcucci, J. and Quagliariello, M. (2008), Bofondi, M. and Ropele, T. (2011), Glen, J. and Mondragón-Vélez, C. (2011), Nkusu, M. (2011), Louzis, D. P., Vouldis, A. T. and Metaxas, V. L. (2012), Beck, R., Jakubik, P. and Piloiu, A. (2013), Caporale, G. M., Di Colli, S. and Lopez, J. S. (2013), Klein, N. (2013), Messai, A. S. and Jouini, F. (2013), Cifter, A. (2015), Ghosh, A. (2015), Anastasiou, D., Louri, H. and Tsionas, M. (2016), Anastasiou, D. (2017), Kjosevski, J. and Petkovski, M. (2017), Us, V. (2017); and on lending institution-specific variables Berger, A. and R. DeYoung. (1997), Williams, J. (2004), Podpiera, J. and Weill, L. (2008), Vithessonthi, C. (2016).

32 See Lima, F. and Drumond, I., "**How to keep statistics' customers happy? Use microdatabases!**", in **Combining micro and macro statistical data for financial stability analysis**, IFC Bulletin, Irving Fisher Committee on Central Bank Statistics – Bank for International Settlements, Warsaw, May 2016, pp. 233-248.

33 See Regulation (EU) 2016/867 of the ECB of 18 May 2016 on the collection of granular credit and credit risk data (ECB/2016/13), OJ L 144, 1.6.2016. This is the legal basis for data collection starting in November 2018 with September 2018 as a first reference date.

portfolios, and to look at further breakdowns in terms of institutional and economic sectors, as well as some characteristics of borrowers.[34]

At a technical level, efforts should be devoted to matching the databases which include both credit information and other relevant borrower characteristics. This will allow the macroprudential EWS to better capture the heterogeneity potentially masked by aggregate numbers and identify pockets of vulnerability in specific sectors or subsets of borrowers. For this purpose, the use of central balance sheet databases would be particularly useful to monitor NFCs' leverage and other financial indicators.[35] Further work should, however, be carried out in order to select the relevant indicators and their precise definition, also taking into consideration the significant heterogeneity in the existing definitions of NFC-based ratios across firms/banks/Member States. While measures of NFC indebtedness are prime candidates as EWS input indicators, they may, if combined with other indicators – possibly broken down to sectoral/size level – inform macroprudential authorities of elevated credit risk building up at a systemic level, thus promoting timely action.

The information conveyed by stress tests and, in particular, system-wide stress tests, may also feed into an EWS. Stress testing exercises, especially if they take a system-wide perspective, are very useful as they involve a quantitative, forward-looking assessment of the resilience of individual banks, as well as the financial system as a whole, to adverse shocks.[36] They can therefore provide macroprudential authorities with estimates for emerging NPL problems in the adverse scenarios they explore.

Finally, the setting up of an EWS will also, crucially, allow macroprudential authorities to communicate their views of the risks underlying a potential system-wide increase in NPLs and the need to address these risks at an early stage. Given, in particular, the tight interlinkages between the micro- and macroprudential approaches to NPLs, the information provided by the EWS could, in fact, be crucial in that it will allow macroprudential authorities to communicate effectively with regard to the risks underlying a system-wide increase in NPLs (e.g. the increasing concentration of lending in certain sectors) and the adoption of macroprudential measures to address these.

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[34] Konečný, T., Plašil, M., Rusnák, M. and Řežábek, P., "**Use of the Czech Central Credit Register for Financial Stability Purposes**" in **Financial Stability Report 2014/2015**, Česká národní banka, Prague, June 2015, pp. 139-145; Van Roy, P., Barbic, G., Koban, A. and Kouratzoglou, C., "**Use of credit registers to monitor financial stability risks: A cross-country application to sectoral risk**" in **Data needs and Statistics compilation for macroprudential analysis**, *IFC Bulletin*, Irving Fisher Committee on Central Bank Statistics – Bank for International Settlements, Brussels, December 2017, pp. 1126-1147; Matos, J. and Dias, A., "**The Portuguese Central Credit Register as a key input to the analysis of financial stability… and beyond!**" in **Data needs and Statistics compilation for macroprudential analysis**, *IFC Bulletin*, Irving Fisher Committee on Central Bank Statistics – Bank for International Settlements, Brussels, December 2017, pp. 1248-1266; Brananova, O.C. and Wafte, G., "**Use of AnaCredit granular data for macroprudential analysis**" in **Data needs and Statistics compilation for macroprudential analysis**, *IFC Bulletin*, Irving Fisher Committee on Central Bank Statistics – Bank for International Settlements, Brussels, December 2017, pp. 1172-1194; Saurina, J., "Loan loss provisions in Spain. A working macroprudential tool". *Financial Stability Review*, No 17, 2009.

[35] The importance of the closer scrutiny of transactions with high leverage was recognised, inter alia, by the ECB in its supervisory guidance (ECB Guidance on leveraged transactions) and by the French HCSF (see Annex 4). In these two cases highly indebted NFCs were, respectively, those with a Debt-to-EBITDA ratio of over 4; and those with a leverage ratio (net debt-to-equity) of above 1 and an interest coverage ratio of below 3. Moreover, in the ECB's view "for most industries, a leverage level in excess of 6 times Total Debt to EBITDA raises concerns".

[36] Anderson, R., Baba, C., Danielsson, J., Kang, H., Das, U. and Segoviano, M., "**Macroprudential stress tests**", *VOX CEPR Policy Portal*, February 2018.

3.3 Borrower-based measures

By affecting banks' lending standards, borrower-based measures may contribute to avoiding or mitigating the vulnerabilities underlying the first stage of the lifecycle of a potential NPL. The rapid increase in credit growth observed in some EU Member States prior to the last financial crisis – related not only to higher credit demand but also to a significant loosening of banks' credit standards – was caused in part by increasing competition between banks to expand market share. Borrower-based measures have a role to play in this context, and may be especially effective when the first signs of risk build-up are displayed.

Borrower-based measures directly impact lending activity (by limiting debtors' access to credit) and indirectly impact borrowers' and lenders' resilience. The measures affect lending by constraining the volume of new lending, either in relation to the value of the underlying collateral (LTV limits) or to the borrowers' income (D/LTI limits), or by limiting debt service payments in relation to income (DSTI limits). By slowing down the dynamics of new lending, these instruments may also affect demand for collateral and, as a consequence, asset price growth. The instruments tend to enhance borrowers' debt servicing capacity by limiting their indebtedness, contributing to lower default rates when the cycle reverses and the sources of income are negatively affected. As for the banking sector, by restricting the amount of lending relative to borrowers' collateral value, LTV may contribute to minimising financial system losses in the event of default (i.e. minimising the LGD) whereas, by restricting the amount of lending relative to borrowers' income, the DTI and the DSTI may contribute to reducing the probability of default (PD).

Borrower-based measures are important tools that enhance banks' decision-making processes by focusing on borrowers' fundamentals, including their ability to repay a loan. They contribute to preventing borrowers from overburdening themselves with high leverage, thus reducing their vulnerability to economic shocks and contributing to the prevention of a system-wide increase in NPLs (by targeting vulnerabilities at an early stage). Borrower-based measures can also have a positive, albeit indirect, impact on excessive credit growth and risk taking during an upswing in the business cycle, by encouraging the origination of loans at (or below) the thresholds set by each instrument (e.g. LTV, DSTI). In a nutshell, instruments that target borrowers should increase the resilience of both banks and borrowers, while also restricting the quantity of credit (relative to the value of collateral or the borrower's income), thereby also helping to mitigate excessive credit growth and prevent the emergence of asset price bubbles. House price-based instruments can be used to contain the risk of excessive credit and price spirals, while income-based measures can be used to promote household debt sustainability and repayment capacity.

An adequate creditworthiness assessment is important for the effectiveness of borrower based measures. This includes, inter alia, the need to collect reliable data on borrowers' incomes (and sources of income) and to guarantee adequate collateral valuation.

Borrower-based measures also have the potential to lessen the adverse effects associated with credit misallocation. As suggested in the IMF Global Financial Stability Report (April 2018),[37] a period of high credit growth is more likely to be followed by a severe downturn in the medium

[37] See "**A Bumpy Road Ahead**", *Global Financial Stability Report*, International Monetary Fund, Washington, D.C., April 2018.

term if it is accompanied by an increase in the riskiness of credit allocation. In particular, the vulnerability of the financial system to cyclical risks increases with growing system-wide bank exposures to debtors with low debt servicing capacity, and is further heightened when indebtedness arises. The systemic increase in NPLs that may follow such developments can be mitigated by the timely application of borrower-based measures, as these promote more conservative credit allocation by banks and help to avoid excessive exposure to risky assets.

The timely introduction of borrower-based measures may avoid the potential procyclical effects which may underlie capital-based measures. The phase of the economic cycle and the prevailing lending standards at the time of policy implementation are important considerations in the initial calibration of borrower-based measures. The use of borrower-based instruments appears to be more appropriate at an early stage of the expansionary phase of the cycle, in order to address the build-up of risks and vulnerabilities in borrowers' balance sheets. In fact, borrower-based measures may be particularly suitable for addressing vulnerabilities related to credit misallocation at an early stage (or in a preventive manner). In addition, since the measures will not impact the stock of existing loans (they only target new loans), they may allow potential procyclical effects to be avoided and, at the same time, contribute to preventing a system-wide increase in NPLs.

Borrower-based measures should be included in the macroprudential toolkits of all Member States. In fact, as acknowledged above, borrower-based measures can play an important role in the first stage of the lifecycle of a potential NPL. Therefore, despite being governed by national law, they should be available in the macroprudential toolkits of all Member States. Nonetheless, in order for borrower-based measures to mitigate different types of risk, and despite the need to guarantee a certain degree of harmonisation of definitions, it is important for decision-making to be kept at national macroprudential authority level. This will guarantee flexibility in terms of designing, calibrating and implementing the most suitable set of tools.

Borrower-based measures targeting households have been used widely by Member States to address the systemic risks originating from household lending and RRE exposures.[38] These measures usually include limits to the (i) LTV, (ii) DSTI, (iii) D/LTI, (iv) loan repayment schedule (amortisation requirements) and (v) loan maturity.

There is limited application of borrower-based measures to NFCs.[39] In fact, only a few EU Member States have implemented such measures and these only target CRE.[40] The difficulty in applying the measures to NFCs relates to the greater heterogeneity of NFCs and NFC loans compared with households and loans granted to households (e.g. heterogeneity in terms of the size, sector of activity and age of firms). Furthermore, the calibration of such instruments would require granular data, particularly in some NFC credit segments, which may not be available, at

[38] For a comprehensive review of measures in place at the end of 2017 please refer to: **A Review of Macroprudential Policy in the EU in 2017**, European Systemic Risk Board, Frankfurt am Main, April 2018.

[39] In comparison with household sector tools, measures to manage risks arising from exposures to the corporate sector are much less commonly reported. The most frequently used of these are additional capital requirements on loans to the corporate sector (used in 28 jurisdictions), which include higher capital requirements for lending in FX. Caps on lending in FX are also relatively common (used in17 jurisdictions). Borrower-based measures are relatively less utilised – a cap on LTV ratios for CRE credit is used in 12 jurisdictions. Some countries limit lending to particular industries or sectors (14 jurisdictions). For more detail see the report "**Objectives, Design, and Country Responses**", *Annual Macroprudential Policy Survey*, International Monetary Fund, Washington, D.C., April 2018.

[40] Denmark, for instance, has ruled that CRE bank loans should not be extended to borrowers with negative cash flows (effectively a DSTI limit or debt-service-to-EBITDA of 100%). LTV limits for CRE were also introduced in Cyprus and Poland, while in Lithuania a DSTI limit applies. Sweden, in turn, has introduced maturity limits for CRE lending.

least for a sufficiently long period in all countries, and the use of common NFC financial indicators by banks.

Banks already use financial ratios to assess NFC creditworthiness, both at loan origination and subsequent loan monitoring. These ratios are based on firms' balance sheets and income reporting. The most common examples include debt repayment capacity and leverage[41] measures and collateral-based measures (such as LTV). In this process banks should require high quality information from firms to guarantee adequate credit risk assessment.

The difficulty in designing, calibrating and implementing borrower-based measures for NFCs should not justify a lack of action, and further exploratory work should therefore be undertaken. The development of the EWS, as previously suggested, would be a good starting point for this work and for the calibration of potential borrower-based measures targeting NFCs. From a macro perspective, the IMF Global Financial Stability Report (April 2018) uses four firm-level vulnerability indicators: the leverage ratio, the interest coverage ratio, the debt-to-profit ratio (or debt overhang) and a market-based indicator of credit risk (the expected default frequency). [42] However, further work is needed to assess whether or not the acknowledged heterogeneity underlying NFCs prevents the development of further borrower-based measures targeting NFCs.

In order to avoid negative spillovers, a prudent approach should be adopted by macroprudential authorities when implementing borrower-based measures with the aim of mitigating a future rise in NPLs. In particular, before implementing such measures, and despite the positive impact that these measures may have in addressing some vulnerabilities that may cause a systemic increase in NPLs, macroprudential authorities need to assess: (i) whether or not the heterogeneity underlying NFCs prevents the development of effective borrower-based measures applicable to this sector; (ii) whether the adoption of such measures may, in the end, simply shift the risk to other sectors not targeted by the measures (the systemic risks simply move from one sector/asset class to another); and (iii) whether these measures may lead to spillovers to non-bank financial institutions, notably by substituting bank-based financial intermediation with non-bank intermediation, and which measures should be adopted to avoid these spillovers. Macroprudential policy that is excessively prescriptive may, in the end, contribute to increasing systemic risks by incentivising common behaviour across banks.[43] An alternative or complementary approach would be for macroprudential authorities to guarantee that banks' are sufficiently resilient, through the use of capital-based measures, to face potential shocks affecting the sectors/asset classes to which they are most exposed, as addressed below.

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41 Debt repayment capacity is usually measured by the debt service coverage ratio (the ratio of interest payable plus capital instalments to Earnings before Interest Tax Depreciation and Amortisation (EBITDA)) the or interest coverage ratio (ratio of payable interest to EBITDA). Leverage is commonly measured by the ratio of the interest-bearing debt to EBITDA or assets (or, alternatively, by the equity to total assets ratio).

42 See "**A Bumpy Road Ahead**", *Global Financial Stability Report*, International Monetary Fund, Washington, D.C., April 2018.

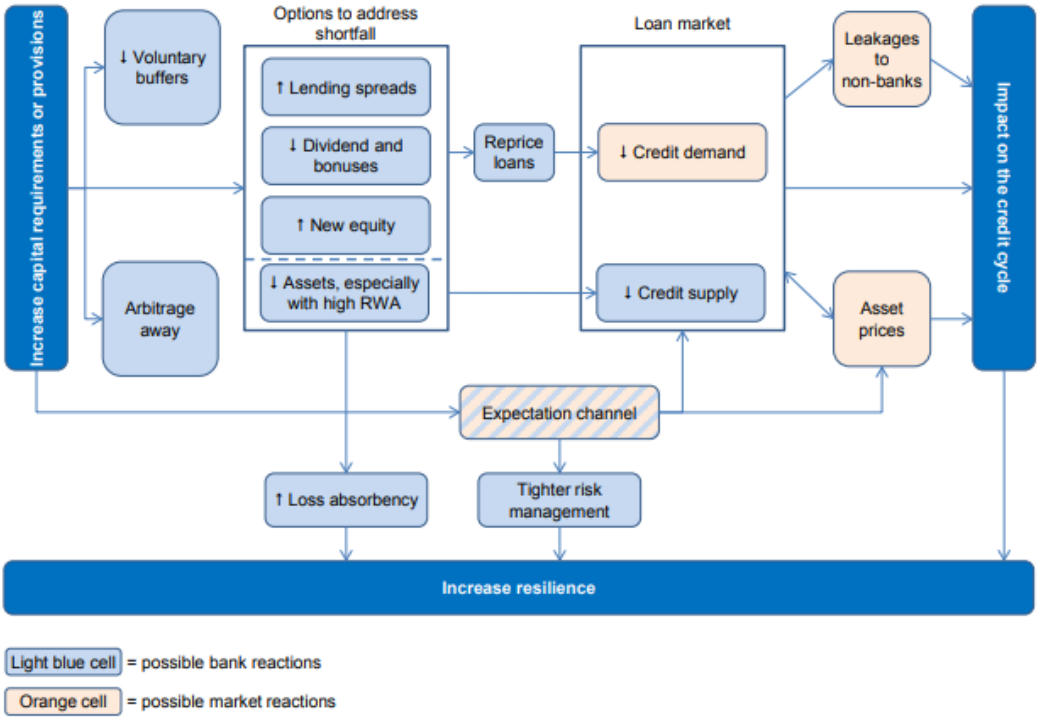
43 However, each bank should continue to be responsible for setting its own credit standards, provided these are compliant with the limits underlying the borrower-based measures.

3.4 Capital measures

Capital instruments can be used to address/mitigate vulnerabilities that might later result in a system-wide increase in NPLs, i.e. excessive credit growth and banks' excessive exposure concentration. On the one hand, capital-instruments improve banks' resilience, both directly by increasing banks' ability to absorb losses and indirectly via the impact on the credit cycle. On the other hand, specific capital instruments can also be designed to target specific pockets of vulnerability in banks' loan portfolios, by taking specific borrowers' characteristics into account and/or by targeting specific sectors. The main transmission channels for measures of this type are illustrated, in simplified form, in Figure 1.

Figure 1

Transmission channels underlying a capital requirement increase



Source: Bank for International Settlements - Committee on the Global Financial System.[44]

The absence of sufficient capital buffers to deal with the underlying unexpected losses associated with the build-up of NPLs is frequently identified as one of the main reasons there is no timely intervention to deal with an increase in NPLs. In that sense, capital-based measures will play a key role in addressing this issue. In particular, during periods of economic downturn, the authorities should allow banks to use their capital buffers to address increases in NPLs in a timely manner. This will probably be one of the most significant challenges the authorities will face: defining the conditions under which the buffers should be released.

[44] See "**Operationalising the selection and application of macroprudential instruments**", *CGFS Papers*, No 48, Committee on the Global Financial System – Bank for International Settlements, Basel, December 2012.

The transmission mechanism for capital-based measures targeting a particular sector/set of borrowers is different from the transmission mechanism for an overall capital-based instrument. The former lead to a shift in relative prices and credit allocation – a more targeted approach may even lead to a reallocation of lending across different jurisdictions and, as a consequence, to cross-border competition issues, highlighting the need for reciprocity to guarantee its effectiveness.

Some capital-based measures can also have procyclical features, as they depend on the level of own funds, and a significant procyclical impact if applied when a risk has already materialised. Macroprudential authorities should therefore seek to adopt a comprehensive approach by assessing and avoiding procyclical features of this type and, if necessary, by combining different measures with different activation and release timings.

3.4.1 The countercyclical capital buffer

Excessive credit growth and a build-up of excessive indebtedness represents one of the vulnerabilities that could underlie a system-wide increase in NPLs. Before the last crisis, the marked economic expansion observed in some EU Member States was accompanied by significant credit growth and the build-up of macro-financial imbalances, including excessive indebtedness in the private sector. In some of these countries this unsustainable increase in credit contributed to the build-up of a real estate price bubble which, in turn, fuelled booms in the construction and real estate sectors and contributed to an amplification of the wealth effect, with an additional impact on spending. If macroprudential instruments had already been available, some action could have been taken beforehand, primarily to mitigate the potential systemic fallout from excessive credit growth, by using capital buffers, such as the CCyB.[45]

The CCyB is one of the main macroprudential instruments that can be used to prevent and mitigate systemic risks arising from excessive credit growth and leverage.[46] It should not only increase banks' resilience when credit is growing at an excessive rate, but may also help to dampen excessive credit growth. Through this latter effect, the CCyB may also indirectly affect asset prices, thereby helping to avoid asset price bubbles and, subsequently, asset price bursts. Finally, a higher share of capital when financing credit growth during an upturn may moderate risk-taking incentives.

The choice between capital measures and borrower-based instruments should take the financial cycle into consideration. There is a view that borrower-based instruments should be tightened earlier in the cycle, while the CCyB should be tightened when there is a shift in the financial cycle to a phase of stronger credit recovery accompanied by an easing of credit standards. Borrower-based measures focus mainly on preventing the origination of high-risk loans, while the strong capital position the buffers provide should support banks' resilience and the cleaning up of

[45] The current EU regulatory framework (CRD) provides an additional capital-based measure – the macroprudential use of Pillar 2 requirements (SREP) to mitigate system-wide systemic risks stemming from common exposures or practices within the banking system.

[46] One of the intermediate objectives of macroprudential policy, as defined by the ERSB, is to prevent and mitigate systemic risks that may arise from excessive credit growth and leverage. For further details see **The ESRB handbook on operationalising macroprudential policy in the banking sector**, European Systemic Risk Board, Frankfurt am Main, April 2018.

NPLs at an early stage. However, the overall impact of the latter on credit growth depends on the level of banks' capital. When capital ratios are already high and/or in more concentrated systems where profitability is not an issue, an increase in the CCyB may not have a significant impact, especially with regard to credit growth. By contrast, if capital ratios are low and/or banks have low levels of profitability, an increase in the CCyB may have procyclical effects. This may justify the earlier use of borrower-based measures in order to avoid the build-up of risk. Additionally, in the case of the CCyB, the period between the announcement of a change in the CCyB rate and the effective date must also be taken into account.[47]

Macroprudential authorities should nevertheless consider using the CCyB when addressing excessive credit growth and a build-up of excessive indebtedness. Even if activation of the CCyB per se is insufficient to prevent the build-up of the macro-financial imbalances that may be behind a systemic increase in NPLs, it could put banks in a better position to deal with this (by giving them more room for manoeuvre to deal with the potential crystallisation of high credit-related losses).

The optimal activation and release of the CCyB needs to be comprehensively assessed, although the objectives which underpin the design of this instrument do not seem inconsistent with using it to prevent a system-wide increase in NPLs. Notably, releasing the buffer during a downturn in order to avoid a significant decrease in lending is not inconsistent with a possible need to create more room for manoeuvre to clean up potential NPLs at an early stage. This is because avoiding a system-wide increase in NPLs is a preliminary mandatory step towards ensuring that lending continues to flow to the economy. From a theoretical framework perspective, the CCyB addresses the time dimension of systemic risk and can, therefore, be used to deal with the cyclical component of NPLs, i.e. the flows which naturally vary across the financial cycle. However, it can only address the issue if NPL flows are associated with generalised excessive credit growth, rather than that depending on certain developments, for instance, in certain market segments or types of debtors. Other instruments may be more adequate when the latter prevail, as explained in the following subsections.

3.4.2 The systemic risk buffer and sectoral capital buffers

Excessive exposure concentration of banks to a set of firms/sectors or activity/asset classes represents another vulnerability that might underlie a system-wide increase in NPLS. In fact, before the crisis, many banks had become excessively exposed to certain sectors (particularly the construction/real estate/non-tradable sectors) and/or to significantly large/highly indebted NFCs. Even banks that implemented internal risk management procedures with underlying restrictions on exposures to a group of clients, or to a particular sector or asset class, may not have considered the fact that their peers were also increasing their exposure to the same sectors/asset classes, or to the same legal entity, thus contributing to an increase in systemic risk.

[47] According to O'Brien, E. and Ryan, E., "**Motivating the Use of Different Macro-prudential Instruments: the Countercyclical Capital Buffer vs. Borrower-Based Measures**", *Economic Letters 15/EL/17*, Central Bank of Ireland, 2017, the CCyB tends to be viewed as best suited, although not limited, to enhancing the resilience of the banking system. Borrower-based measures, in turn, can be used to target the resilience of borrowers or impact directly on the flow of lending. These instruments are flexible, however, and policymakers can tailor their implementation, either individually or in combination, to ensure an appropriate macroprudential policy stance in respect of the prevailing systemic risk environment.

In fact, the problem may arise from the fact that banks may have a tendency to lend to highly profitable sectors without considering the fact that these high levels of profitability may decrease, significantly and abruptly, in the future. When the risk starts to materialise it soon becomes systemic, precisely because of the high levels of concentration observed in the banking sector as a whole.

The SyRB is, in the present framework, a flexible residual macroprudential tool that seeks to address systemic risks (of a long-term, non-cyclical nature) which are not covered by the CRR.[48] The SyRB helps to raise an institution's loss-absorbing capacity through an increase in capital and/or a reduction in risk-weighted assets. It may also have an indirect impact on the credit cycle to the extent that implementation of the capital requirements limits the supply of credit and lowers asset prices.

The level of effectiveness of the SyRB depends on the vulnerability that needs to be addressed. If the SyRB is used to tackle structural vulnerabilities related, for instance, to the concentration of the banking sector or small-open economies, it could, potentially, address future NPL flows less effectively. This is because the impact of the SyRB will be channelled mostly towards increasing the resilience of institutions and covering potential losses, without directly addressing the identified vulnerabilities. If, however, the SyRB is used to address certain riskier exposures with a view to preventing future NPL flows, its effectiveness may be higher as it will provide direct incentives for institutions to take action in relation to the targeted exposures.

There are a number of examples of countries that have used this instrument for NPL-related risks. Annex 2 provides an example from Romania where the SyRB was used to address NPL risk management, while Annex 3 describes a Hungarian example in which the SyRB was used to manage risk arising from "problem CRE project loans".

The SyRB could be used, in the future, as a more targeted instrument to address sectoral exposures once sectoral SyRB is introduced.[49] Under the current revision of the CRR/CRD IV, the Council and the European Parliament have already proposed introducing the sectoral SyRB and removing the reference to its "long-term, non-cyclical" nature.[50] When applied on a sectoral basis, as mentioned below, the SyRB could become one of the most important targeted macroprudential instruments used to address the vulnerabilities that can lead to a system-wide

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48 For a taxonomy of risks that may be addressed by the SyRB, see Section 5.3 of the **Final report on the use of structural macroprudential instruments in the EU**, European Systemic Risk Board, Frankfurt am Main, December 2017.

49 See **Final report on the use of structural macroprudential instruments in the EU**, European Systemic Risk Board, Frankfurt am Main, December 2017; **ECB contribution to the European Commission's consultation on the review of the EU macroprudential policy framework**, European Central Bank, Frankfurt am Main, 2016; and **ESRB response to the European Commission's Consultation Document on the Review of the EU Macro-prudential Policy Framework**, European Systemic Risk Board, Frankfurt am Main, October 2016.

50 See the **Presidency compromise text on a Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/36/EU with regard to exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers, and capital conservation measures**, Council of the EU, Brussels, May 2018.

increase in NPLs.[51] By removing the reference to its non-cyclical nature, the flexibility underlying the use of SyRB will be further reinforced. In comparison with the CCyB, the SyRB can be tailored to become a targeted instrument, better suited to dealing with the cross-section structural nature of systemic risk stemming from asset commonality, common exposures or the contagion and amplification channels which constitute the main sources through which NPLs can become a systemic issue. This increased flexibility would be especially welcome if Pillar 2 were removed as a macroprudential tool, and would assign the SyRB a more prominent role in the prevention framework for a future systemic increase in NPLs.

A sectoral SyRB may provide incentives to credit allocation and avoid excessive levels of concentration in specific sectors across the whole of the banking sector. Therefore, in order to proactively tackle a potential build-up of NPLs, macroprudential authorities would start by identifying specific sectors or exposures with a high degree of risk, also based on EWSs developed for this purpose. Then they could implement either the total exposure-based SyRB sectorally or a sectoral exposure-based SyRB, that would probably be part of the EU macroprudential toolkit. The sectoral SyRB could also avoid the potential unintended negative effects of additional capital prescribed for exposures in untargeted sectors under a total exposure-based SyRB design.

Discussions regarding the possible introduction of a sectoral CCyB are currently ongoing at the level of the Basel Committee of Banking Supervisors (BCBS).[52] However, the sectoral CCyB discussions are still at a much earlier stage than those for the sectoral SyRB.

The definition of credit segments is one of the main challenges faced during the implementation of sectoral capital buffers. Sufficient flexibility should be provided, without disregarding the degree of complexity that this flexibility could introduce. In fact, differing economic and financial cycles between countries could lead to a build-up of vulnerabilities in different sectors/asset classes. Consequently, the build-up of system-wide NPLs could also arise from different sources.[53] This important factor should be taken into consideration when discussing (i) whether these credit segments/sectors should be specified ex ante in legislation or left to the discretion of designated authorities and (ii) whether authorities should be allowed to impose more than one sectoral capital buffer targeting different credit segments. These decisions involve a trade-

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[51] The Council proposal underlying article 133: "8. a systemic risk buffer may apply to (…) (b) the following sectoral exposures in the Member State that sets that buffer: (i) all retail exposures to natural persons which are secured by residential property; (ii) all exposures to legal persons secured by mortgages on commercial immovable property; (iii) all exposures to legal persons excluding those specified in point (ii); (iv) all exposures to natural persons excluding those specified in point (i). (…) (f) subsectors of any of the exposures categories identified in point (b) of this paragraph; 8a. EBA shall, after consulting the ESRB, publish guidelines by [30 June 2020] on the appropriate subsectors of exposures to which the competent authority or the designated authority may apply a systemic risk buffer in accordance with paragraph 8, point (f)", for the full proposal see the **Presidency compromise text on a Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures**, Council of the EU, Brussels, May 2018.

[52] The rationale behind the sectoral CCyB is that it could increase banks' resilience to risks in particular sectors, in order to maintain credit provision to these and other sectors in a downturn, and to lean against the cycle in the targeted sectors. See "**Towards a sectoral application of the countercyclical capital buffer: A literature review**", *Working Paper*, No 32, Basel Committee on Banking Supervision, Basel, 2018.

[53] As mentioned by the ECB: "[T]he (macroprudential) toolkit should (…) include targeted sectoral macroprudential instruments which would not be limited to the real estate sector. These should include sectoral requirements or risk weights, which are currently only available for real-estate and intra-financial exposures, as well as sectoral concentration limits, thus complementing the existing framework of large exposure limits to counterparties. It should be noted, however, that sectors may need to be defined in advance and be sufficiently broad to avoid micromanagement by macroprudential authorities", **ECB contribution to the European Commission's consultation on the review of the EU macroprudential policy framework**, European Central Bank, Frankfurt am Main, 2016.

off between risk coverage and national flexibility on the one hand, and the complexity of the macroprudential framework on the other. More targeted approaches require more granular data for calibration, have higher administrative costs, and may be more susceptible to circumvention. Additionally, issues of coordination with other policy areas (e.g. fiscal policy) may also arise and should be adequately addressed.

Interaction across different instruments is particularly important for activation and calibration. The activation or increase of a structural buffer may also have an impact on the cyclical dimension, which poses particular challenges. As mentioned in the ESRB report on the use of structural macroprudential instruments in the EU,[54] "[a] sectoral CCyB might effectively address sectoral risk of a cyclical nature, and conversely if the SyRB is used to mitigate risks stemming from a specific exposure category growing in size, and released when the exposure is reduced, the SyRB can take the role of a sectoral CCyB." In fact, provided the non-cyclical nature of the SyRB is removed and the sectoral approach is introduced into EU legislation, in line with the Council and European Parliament proposals, the sectoral SyRB could become a suitable tool for the purposes outlined in this report.

The application of sectoral buffers can also have drawbacks. Among these, and also closely related to those identified for the borrower-based measures, it should be highlighted that (i) targeted requirements may drive lending activity from one sector to another as investments in other markets may be more profitable, leading banks to increase investment in or lending to these markets, (ii) changes in sectoral capital requirements could also lead to a reallocation of lending across different jurisdictions, (iii) the need for reciprocity may be both country and sector-specific, as the amount of cross-border lending and lending through foreign branches may differ across jurisdictions and sectors. A robust reciprocation framework for sectoral instruments is, in fact, warranted owing to their direct impact on banking sector competition, although this would come at the expense of increasing the overall complexity of the macroprudential policy framework.

3.4.3 Large exposure limits and indirect sectoral capital requirements

The macroprudential toolkits encompass other capital instruments that can be used to avoid excessive exposures or to increase banks' resilience to deal with such exposures, also preventing excessive credit growth and leverage. These instruments include (i) exposure limits (Article 458 of the CRR); (ii) higher own funds requirements (Article 458 of the CRR); (iii) Article 124 and Article 164 of the CRR; and (v) an increase in risk weights in order to target asset bubbles in the residential and commercial property sector (Article 458 of the CRR).

These instruments work via regulatory capital requirements by imposing higher capital requirements for targeted exposures or by imposing stricter requirements on risk weights and LGD parameters. They are usually targeted at the real estate sector, although existing instruments can also be used to target other types of exposures (as shown by the measure recently applied in France (see Annex 4)).

[54] See **Final report on the use of structural macroprudential instruments in the EU**, European Systemic Risk Board, Frankfurt am Main, December 2017.

Large exposure limits

Exposure limits, notably at sectoral level, may also be considered when, based on early warning indicators, systemic risk appears to be building up in particular sectors/asset classes. In fact, some of the banks that experienced a higher increase in NPLs in the aftermath of the recent crisis were excessively exposed to specific sectors of activity (e.g. construction) and/or to some NFCs (in some cases large firms to which other banks were also significantly exposed, thus accentuating the systemic risk).

The current macroprudential toolkits include the possibility of applying large exposure requirements, under Article 458 of the CRR.[55] In particular, macroprudential authorities may tighten the limits on single-exposure concentrations, introduce less stringent limits for triggering intensive supervision and remove the existing exemptions for certain sets of exposures.

The aim of tightening large exposure requirements is to mitigate concentration risk and the risk of shock propagation through the financial system, although it can also have the indirect impact of mitigating and preventing excessive credit growth. Exposures tend to increase during financial cycle upswings, partly because exposure limits are set in relation to capital. A tighter large exposure restriction compels banks to diversify their counterparty base, thereby reducing the risk posed should a hub become financially distressed. Large exposure limits can also be used to contain exposure to specific sectors.

Large exposure limits only apply to single counterparties (to clients or to groups of connected clients) although it is possible to establish criteria for identifying targeted counterparties.[56] In fact, the measure recently implemented in France demonstrates how these limits can also be used to target a specific set of firms, e.g. highly indebted large companies (see Annex 4). In addition, using large exposure limits, macroprudential authorities can target specific sectors that need not be pre-defined in the legislation.

Exposure limits can decrease the riskiness of banks' balance sheets, although they can also produce spillover effects. Notwithstanding the potential positive effects stemming from the mitigation of the risks underlying banks' excessive exposure concentration, potential negative spillover effects may also arise, particularly if risks are shifted to other sectors/asset classes. As mentioned in the section focusing on borrower-based measures, systemic risk may, in fact, move from one sector/asset class to another. Macroprudential authorities should therefore pay close attention to these potential spillover effects.

Exposure limits have, implicitly, a procyclical nature, since they depend on the level of own funds. In the upward phase of the economic cycle the level of own funds tends to be high and increasing. A higher level of own funds allows an increase in credit for specific sectors. Own funds decrease during downturns, rendering exposure limit restrictions more binding. This inherent procyclicality should be taken into account when setting exposure limits for particular economic

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55 See **The ESRB handbook on operationalising macroprudential policy in the banking sector**, European Systemic Risk Board, Frankfurt am Main, April 2018.

56 The EBA issued, in November 2017, guidelines on connected clients, which, inter alia, clarify the concept of "single risk" applied to a relationship of control between clients and the assessment that institutions need to make regarding the existence of a relationship of economic dependency between clients. For the complete text see **Guidelines on connected clients under Article 4(1)(39) of Regulation (EU) No 575/2013**, European Banking Authority, London, February 2018.

sectors. However, having an exposure limit is less procyclical than having no limit at all during an economic upturn.

Indirect sectoral capital requirements for real estate exposures: risk weights and LGD floors

Additional regulatory capital requirements can also be used to address real estate exposures considered excessive and that have the potential to pose systemic risks. These capital requirements can be imposed either directly (through national flexibility measures under Article 458 of the CRR) or indirectly (through parameters that influence capital requirements, in particular RWs and LGD floors).

Higher own funds requirements (under Article 458 of the CRR) can be applied by the designated authority in order to target asset bubbles in the residential and commercial property sector. For instance, the Nationale Bank van België/Banque Nationale de Belgique has adopted this approach in order to target RRE exposures, including an "extra charge" for riskier mortgage loans. This measure was aimed at increasing the resilience of banks, through an overall increase in capital buffers for real estate exposures, while targeting the riskier segments more explicitly, thereby discouraging this type of mortgage loan.

Higher risk weights for RRE and CRE or stricter LGD parameters (under Article 124 and Article 164 of the CRR) may be applied by national competent authorities on the basis of financial stability considerations. The aim of introducing these stricter requirements is to increase banks' resilience in the face of risks stemming from the real estate sector, and the underlying instruments (risk weight or LGD) can be used on the basis of an assessment involving loss experience and forward-looking market developments. However, these instruments do not directly provide for macroprudential authorities' involvement (notably in terms of their activation).[57]

Acting through risk weights may, nonetheless, be more complex and less transparent than through exposures limits or sectoral buffers. Although banks' efforts to restore their capital ratios following a risk weight increase will also increase the size of the capital buffer in the system, this add-on will not be visible in banks' disclosed capital ratios. A risk weight increase might be perceived as an immediate deterioration in the capital position of an individual bank, while a sectoral exposure limit or a sectoral capital buffer might be viewed as a measure used to address increased sectoral risk. However, this discussion, which clearly goes beyond the macroprudential approaches used to address a system-wide increase in NPLs, should be further explored and it should not excluded that, in some situations, acting through risk weights may, in fact, be more adequate.

[57] The respective role of micro- and macroprudential authorities in the activation of these tools, as well as the necessary coordination between authorities, is under discussion in the context of the ongoing revision of the CRR/CRD IV.

3.5 Dealing with vulnerabilities and structural factors falling outside the scope of macroprudential policy

Some of the previously identified vulnerabilities and structural factors fall outside the scope of macroprudential policy. Nevertheless, a lack of appropriate action in these areas may justify the use of a targeted macroprudential approach to guarantee banks' resilience. These vulnerabilities and structural factors determine the circumstances in which any macroprudential policy approach must be developed, potentially conditioning the need for the policy as well as its effectiveness. As such, they merit consideration in the design of macroprudential approaches to NPLs. The legal and judicial framework and banks' governance structure, have been identified as two of the main key areas falling outside the scope of macroprudential policy which may, potentially, lead to the emergence of system-wide NPL problems.

The legal and judicial framework

Measures should be taken to enhance timely and clearer processes for debt enforcement and the effectiveness of collateral foreclosures, including restructuring and insolvency regimes for NFCs and households. These measures are needed to facilitate the enforcement of debt and security between debtors and creditors and should be accompanied by an efficient and effective judicial system. Even when the legal framework strikes the right balance between supporting debtors and creditors' rights, an important lesson taken from the crisis is that the underlying effectiveness depends not only on the legal and judicial framework, but also on how this framework is operationalised (e.g. in terms of an efficient out-of-court mechanism for debt enforcement and collateral foreclosure, and trained staff and specialised courts in the case of in-court restructuring or insolvency proceedings) to guarantee that the system is not overwhelmed by the number of processes that it has to deal with.

In the case of NFCs, one key aspect is an assessment of their viability, which distinguishes between approaches for going concern and those for gone concern.[58] In this respect, while not affecting secured creditors having efficient out-of-court enforcement powers, policy action could be developed in two ways: on the one hand, it could facilitate the prompt recovery of firms that are financially distressed but still economically viable (the "going concern" approach) or, on the other, it could enhance banks' timely disposal of exposures to insolvent NFCs (the "gone concern" approach). Regarding the "going concern" approach, out-of-court workouts and pre-insolvency proceedings should be developed hand-in-hand with key tools that promote their efficiency and effectiveness (such as, for instance, the conversion of debt into equity and tools that facilitate changes to the management or the business lines of NFCs). With regard to the "gone concern" approach, insolvency legislation should efficiently and effectively address the situation of firms that are no longer viable and whose assets need to be liquidated. By contrast with traditional insolvency proceedings, in-court specialised insolvency proceedings feature fast-track timelines, simplified rules and lower costs.

Inefficiencies still observed in the legal and judicial framework of some Members States should be addressed. Significant developments have already taken place in the area of

[58] A similar approach has already been proposed in the publication **Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system**, European Systemic Risk Board, Frankfurt am Main, November 2016.

insolvency and debt restructuring in many EU Member States, and a number of EU initiatives are also in place.[59] Despite all these efforts, and given the importance of the legal and judicial framework in setting the right incentives for proactive NPL management and resolution, the remaining inefficiencies still observed in some Member States should be addressed.[60]

An agreement on minimum standards for debt enforcement procedures should be adopted by all Member States. These standards should also be adopted by countries that do not currently experience high levels of NPLs. The minimum standards should include minimum requirements for efficient debt enforcement, including key elements of insolvency schemes such as the conditions for opening insolvency proceedings, the definition of insolvency, creditor rights and the rules on avoidance actions, and will help to reduce the amount of NPLs on bank balance sheets. However, such key elements need to be carefully and thoroughly assessed with regard to their consistency with national law and, in particular, to their implications for the various areas of national law closely related to insolvency law.[61] Not only will strengthening harmonisation contribute to financial stability, it will also foster cross-border investment, promote the Capital Markets Union and improve the functioning of credit markets.

Banks' governance structures

Since the crisis, several regulatory and supervisory initiatives have been put in place to deal with banks' internal incentives, organisational cultures and governance structures. These initiatives should have a positive effect on credit origination, credit monitoring and NPL management. Regulation should always be drafted and applied taking the proportionality principle into account, so as to ensure that prudential aims are safeguarded while still allowing for beneficial innovation and competition. However, regulation alone cannot fully address the underlying risks.

Banks are responsible for adequately managing their loan portfolio, adopting best practices, and complying with existing regulation. All lending should be based on a prudent assessment of the borrower's ability to repay. Before granting a loan, banks should undertake an assessment of the borrower's economic situation and repayment ability, based on sufficient information which will often include a discretionary income calculation. For NFCs, the equivalent would translate into a cash flow analysis under different assumptions. It is essential for this cash flow analysis and the proper assessment of firms' viability to be based on high quality data provided by the NFC and always carried out before considering the value of any collateral, which is often illiquid and difficult to value.

Banks must ensure that their procedures and cultures promote the ethical, sound and prudent treatment of risk and reward and that they incentivise long-term thinking. To achieve this goal, those in leadership roles should set an example and the existing structures, policies and

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59 These initiatives include, for instance, the benchmarking exercise that is being developed by the European Commission on the efficiency of enforcement and insolvency regimes available at the national level from a bank-creditor perspective, and the **Proposal for a Directive of the European Parliament and of the Council on preventive restructuring frameworks, second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures and amending Directive 2012/30/EU**, European Commission, Strasbourg, November 2016.

60 The ECB identified several of these inefficiencies in their **Stocktake of national supervisory practices and legal frameworks related to NPLs**, European Central Bank, Frankfurt am Main, June 2017; also see **Insolvency**, European e-Justice Portal, Brussels, October 2017.

61 Insolvency law is closely intertwined with the remainder of civil law so that a change to insolvency law is very likely to cause repercussions in other areas of the law. These effects should be thoroughly assessed.

procedures should reflect an ingrained cultural concern with long-term thinking, ethics and prudence, so that ethical and prudent behaviour is adopted throughout the bank (starting with business lines and front-line services).

Banks should have clear governance structures and effective internal control systems, based on regulatory requirements and international best practices. Executive decision-making should be risk aware and based on a clearly established and regularly updated risk tolerance framework, and there should be proper oversight by non-executive directors. Banks should adopt adequate and well-enforced policies in order to assess the fitness and propriety of board members and key function holders. They, alongside all staff members at the bank, should be held to high ethical standards and conflicts of interest rules. The bank should also have clear policies and rules in place to address institutional conflicts of interest, in particular with regard to related party transactions.

Banks' business lines should act as a first line of defence against excessive risk taking, by taking risk-aware decisions and by constantly monitoring loans to ensure swift responses to potential problems. Risk management and compliance functions should act as a second line of defence, interacting with business lines to ensure compliance with a bank's risk tolerance framework and the adoption of adequate risk-measuring methodologies, also taking into account input from effective EWSs.[62] An internal audit function should oversee banks' procedures to ensure effectiveness, detect deficiencies and propose possible solutions. External auditors are also an essential part of this process and are in a privileged position, since it is their legal duty to raise the alarm if they find any potential deficiencies during the auditing process.

Microprudential supervisors have a key role to play, by paying close attention and developing methodologies to adequately assess the risks posed by internal incentives structures and the organisational culture of individual banks. They need to thoroughly understand the specific risks faced by individual banks, avoiding a one-size-fits all tick-in-the-box approach and should have access to effective enforcement powers. They should monitor and assess the risks arising from culture and behaviour in supervised institutions, and should adopt the measures deemed appropriate, with a view to promoting a sound, prudent and responsible attitude towards risk. In doing this they will also develop a more comprehensive view of the causes of many supervisory issues underlying the institutions they supervise, thus increasing their options for more effective intervention.

Macroprudential authorities should follow trends in risk taking in the financial system in order to anticipate the build-up of future NPL problems. This encompasses more than simply monitoring lending standards and financial indicators but also striving to monitor incentives' structures and the culture of the financial system as a whole. Macroprudential authorities should pay particular attention to potential competitive pressures across banks (which may be captured by some of the indicators to be included in the EWSs proposed in a previous section) leading to excessive risk appetite and a lack of effective internal oversight controls across the whole system. They should also be proactive in warning the competent authorities of the underlying risks and/or in following a reinforced macroprudential approach.

[62] Effective EWSs used by credit institutions are instrumental in maintaining loan portfolio quality, managing the exposures or collateralisation of high-risk sectors or asset classes, and preparing for potential losses. Ultimately, this information feeds back into loan origination and portfolio risk management.

4 Concluding remarks

Focusing mainly on the lessons drawn from the recent financial crisis, the report starts by identifying the main drivers of a system-wide increase in NPLs, before elaborating on the macroprudential approaches. The drivers, as explained in Section 2, include the business cycle and asset prices shocks; high indebtedness and excessive credit growth; inadequate bank practices and governance (including loan origination, loan monitoring and NPL early intervention); and a number of structural factors such as the legal and judicial framework. Keeping these drivers in mind, in Section 3 the report elaborates further on the role of macroprudential policy in preventing a systemic increase in NPLs.

No fundamental change to the existing macroprudential toolkits seems to be required, although some refinements should be considered. The instruments currently included in the EU and national macroprudential toolkits should also contribute to preventing system-wide increases in NPLs and/or to enhancing banks' resilience to such increases. Nevertheless, further work is needed in areas relating to the use of sectoral capital buffers and the development of borrower-based measures (which are not harmonised at the European level).

Macroprudential authorities should develop EWSs to monitor the risks of credit portfolio deterioration from a macroprudential perspective. Macroprudential authorities should be able to monitor credit and other developments in a timely manner from a system-wide perspective, in order to promptly identify risks that are building up at the level of the banking system and that may end up causing a system-wide increase in NPLs. Setting up an EWS will also be crucial in that it will enable macroprudential authorities to communicate their views on the risks underlying a potential system-wide increase in NPLs and the need to address these risks at an early stage. Further research, drawing upon the drivers previously identified, is therefore warranted, both at EU and Member States level, to discern systemic risk signals related to the potential NPL build-up.

Borrower-based measures, by promoting banks' sound decision-making processes focusing on borrowers' fundamentals, may contribute to avoiding or mitigating the vulnerabilities underlying the first stage of the lifecycle of a potential NPL. They contribute to preventing borrowers from overburdening themselves with high leverage, thereby reducing their vulnerability to economic shocks and contributing to the prevention of a system-wide increase in NPLs. Borrower-based measures may also have a positive, albeit indirect, impact on excessive credit growth and risk taking during an upswing in the business cycle, while lessening the adverse effects associated with credit misallocation by promoting more conservative credit allocation by banks.

All Members States should include borrower-based measures in their national macroprudential toolkits, given the important role these instruments play in mitigating the vulnerabilities underlying the first stage of the lifecycle of a potential NPL. Nevertheless, to allow borrower-based measures to mitigate different types of risk, and despite the need to guarantee a certain degree of harmonisation of definitions, it is important to maintain the decision at national macroprudential authority level, thus guaranteeing flexibility in designing, calibrating and implementing the most appropriate set of tools.

The difficulties faced in designing, calibrating and implementing borrower-based measures for NFCs should not justify a lack of action, and further exploratory work should therefore be carried out at both EU and Member State level. The development of the aforementioned EWSs could be a good starting point for this work and for the calibration of potential borrower-based measures targeting NFCs. This draws attention to the need to collect reliable data on borrowers' incomes (and sources of income) and to guarantee adequate collateral valuation. In the absence of borrower-based measures for NFCs, macroprudential reaction may, for now, include capital-based measures targeting NFC exposures.

Capital based instruments can also be used to address vulnerabilities that might later result in system-wide increases of NPLs, namely excessive credit growth and banks' excessive exposure concentration. On the one hand, capital-based instruments improve the resilience of banks both directly, by increasing their ability to absorb losses, and indirectly, via their impact on the credit cycle. On the other hand, specific capital instruments can also be designed to target specific pockets of vulnerability in banks' loan portfolios, by taking into account certain borrower characteristics and/or by targeting certain sectors.

Macroprudential authorities should use the CCyB to prevent the build-up of macro-financial imbalances and/or increase the resilience of banks dealing with NPL-related vulnerabilities. In addition, the CCyB may indirectly affect asset prices, thus helping to avoid asset price bubbles. A higher share of capital underlying credit growth during the upturn phase of the cycle may also moderate risk-taking incentives. There is, however, a view that borrower-based instruments should be tightened earlier in the cycle, while the CCyB should be tightened when there is a shift in the financial cycle to a phase of stronger credit recovery accompanied by an easing of credit standards. In addition, when capital buffers are already high, an increase in the CCyB may not have a significant impact, particularly on credit growth, and borrower-based measures may therefore be more effective. Use of the CCyB should, nevertheless, be considered by macroprudential authorities when addressing excessive credit growth and the build-up of excessive indebtedness: even if the activation of the CCyB per se is insufficient to prevent the build-up of the macro-financial imbalances that may be behind a systemic increase in NPLs, it can put banks in a better position to deal with such an increase. In addition, releasing the buffer during a downturn phase, to ensure that lending continues to flow to the economy, is consistent with the need for banks to have more room for manoeuvre to clean up potential NPLs at an early stage.

Macroprudential authorities should considerer using the SyRB when the potential system-wide increase in NPL flows is associated with developments in specific market segments or types of debtor, as opposed to situations of generalised excessive credit growth. The SyRB is, under the present framework, a flexible residual macroprudential tool that may have a key role when NPL flows are associated not with generalised excessive credit growth, but with certain developments in specific market segments or types of debtor. In comparison to the CCyB, the SyRB can be tailored to become a targeted instrument, better suited to deal with the cross-section structural nature of the systemic risks which constitute the main sources of a system-wide increase in NPLs. The implementation of the so-called "banking package" is expected to further increase the flexibility of the SyRB, through the introduction of the sectoral SyRB and the removal of the reference to its "long-term, non-cyclical" nature. In order to proactively tackle a potential build-up of NPLs, macroprudential authorities could identify specific sectors or exposures with a high degree of risk and could implement either the total exposure-based SyRB sectorally or a sectoral exposure-

based SyRB. Sufficient flexibility should be provided – notably in EU-related regulation – in the definition of credit segments, as the source of a system-wide NPL build-up can change over time.

Macroprudential authorities can also use exposure limits, notably at sectoral level, when systemic risk appears to be building up in particular sectors/asset classes. In fact, some of the banks that faced a higher increase in NPLs in the aftermath of the recent crisis were excessively exposed to specific sectors of activity and/or to some NFCs. Tightening large exposure requirements may mitigate concentration risk and the risk of shock propagation through the financial system, and could also have the indirect effect of mitigating and preventing excessive credit growth.

The designated authority can also apply higher own funds requirements to target asset bubbles in the residential and commercial property sector. Moreover, higher risk weights for RRE and CRE, or stricter LGD parameters, can be applied by national competent authorities on the basis of financial stability considerations. Acting through the use of risk weights may be more complex and less transparent than using exposures limits or sectoral buffers: an increase in the risk weight might be perceived as representing an immediate deterioration in the capital position of an individual bank, while a sectoral exposure limit or a sectoral capital buffer might be viewed as a measure used to address increased sectoral risk. However, this discussion, which clearly goes beyond the macroprudential approaches used to address a system-wide increase in NPLs, should be further explored and, in fact, in some situations the use of risk weights should not be ruled out as an adequate solution.

When macroprudential authorities apply more targeted measures, they should adopt a prudent approach in order to avoid procyclical effects and negative spillovers. In particular, some capital-based measures can also have (i) procyclical features, since they depend on the level of own funds, and (ii) a significant procyclical impact if applied when the risk has already materialised. Borrower-based measures, on the other hand, may allow some of the potential procyclical effects to be avoided, as they do not apply to the stock of existing loans and, at the same time, may help to prevent a system-wide increase in NPLs. Macroprudential authorities should therefore adopt a comprehensive approach by assessing and avoiding procyclical features of this kind and, if needed, by combining different measures with different activation and release timings. With regard to the potential negative spillover effects underlying the more targeted macroprudential measures, special attention should be paid to: (i) whether or not the heterogeneity underlying NFCs prevents the design of effective borrower-based measures applicable to this sector; (ii) whether the adoption of such measures may, in the end, simply shift the risk to other sectors not targeted by the measure; and (iii) whether these measures may lead to spillovers to non-bank financial institutions, notably by substituting bank-based financial intermediation with non-bank intermediation, and which measures should be adopted to avoid such spillovers. A more targeted approach may even lead to the reallocation of lending across different jurisdictions and, as a consequence, to cross-border competition issues, highlighting the need for reciprocity to guarantee its effectiveness.

Some of the vulnerabilities and structural factors identified in the report cannot be addressed by macroprudential measures. Nevertheless, they determine the circumstances in which any macroprudential policy approach will need to be developed, possibly conditioning the need for the policy as well as its effectiveness. As such, they merit consideration in the design of macroprudential approaches to NPLs.

Inefficiencies in the legal and judicial framework that remain in some Member States should be addressed. The legal and judicial framework plays an important role in setting the right incentives for proactive NPL management and resolution and, therefore, for avoiding a systemic increase in NPLs. Despite the efforts already proposed at both national and EU level, it is important to agree on the minimum standards of debt enforcement and collateral foreclosure to be adopted by all Member States, including those not currently experiencing high levels of NPLs. This would represent an intermediate step towards future further harmonisation of national laws, which would inevitably require additional time and consideration.[63]

Macroprudential authorities should monitor developments in risk taking in the financial system, in particular developments resulting from banks' governance structures, in order to try to anticipate the build-up of future NPL problems. Since the recent financial and economic crisis, there have been significant developments with regard to banks' governance structures. While acknowledging that banks are responsible for adequately managing their loan portfolios, for adopting best practices and for complying with existing regulations, both microprudential supervisors and macroprudential authorities should play a role in this context. Microprudential supervisors should thoroughly understand the specific risks faced by individual banks, should avoid a tick-in-the-box approach to regulation, and have access to effective enforcement powers. Macroprudential authorities should, in particular, pay specific attention to potential competitive pressures across banks (which may in fact be captured by some of the indicators to be included in the EWSs proposed in this report), which could lead to excessive risk appetite and a lack of effective internal oversight controls across the whole system. They should be proactive in warning the competent authorities of the underlying risks and/or in following a reinforced macroprudential approach.

The role of macroprudential policy in mitigating system-wide increases in NPLs and/or increasing banks' resilience to such increases should become part of the "ESRB handbook on operationalising macroprudential policy in the banking sector". The negative consequences of a system-wide increase in NPLs, both for the financial sector and for economic activity, could be significant. The relevance of this topic to financial stability therefore justifies its consideration in the ESRB handbook.

[63] Insolvency law is closely intertwined with the remainder of civil law so a change to insolvency law is very likely to cause repercussions in other areas of the law. These effects should be thoroughly assessed and should be subject to a cost-benefit analysis.

Annex 1 – Measures falling outside the scope of macroprudential policy

Since the recent financial and economic crisis, there have been significant developments outside the scope of macroprudential policy to address the risks underlying loan origination, monitoring, early intervention and governance. Several supervisory and regulatory initiatives have been implemented and, in parallel, some of the non-macroprudential initiatives included in the "Action plan to tackle non-performing loans in Europe", adopted by the ECOFIN Council on 11 July 2017, are also expected to impact banks' behaviour from a forward-looking perspective.

In broader terms, the CRD III and the CRD IV/CRR package introduced several rules related to the responsibilities of corporate boards and the internal organisation of banks, as well as detailed and intrusive rules covering remuneration packages, aimed at addressing banks' internal incentives, organisation and governance structures. Primary legislation rules were complemented by implementing technical standards and regulatory technical standards and also by guidelines on matters related to the fit and proper assessment of board members and key function holders, internal governance, remuneration packages and the Supervisory Review and Evaluation Process (SREP), with further guidelines in the pipeline. Furthermore, regulatory and supervisory action on external auditors was reinforced, including public supervision when those auditors provide services to public interest entities such as banks.

In the context of the "Action plan to tackle NPLs in Europe", the EBA is currently working on draft guidelines that will set out general governance requirements for credit risk taking, loan origination and monitoring.[64] With regard to internal governance requirements, these guidelines[65] will further specify requirements for credit institutions on issues such as: (i) credit risk governance and culture; (ii) credit risk appetite; (iii) credit risk policies and procedures; (iv) credit risk management; (v) the credit risk control framework, in particular loan origination and an explanation of the application of the "three lines of defence" model; and (vi) credit resources, skills and remuneration. In respect of credit risk policies, the guidelines aim to set out further requirements for institutions that develop and implement appropriate prudent credit risk policies and procedures and minimum lending standards in relation to specific asset classes. On loan origination, the guidelines will focus on: (i) the collection and verification of information for a creditworthiness assessment; (ii) the assessment of a prospective borrower's creditworthiness (including a sensitivity analysis under adverse scenarios); (iii) loan pricing; and (iv) collateral valuation. With regard to the monitoring framework, the guidelines will provide detail on wider issues of monitoring that are applicable to all credit risk through the lifecycle of credit facilities after they have been originated, detailing the monitoring of performing loans and, where applicable, collateral, stress testing, early warning indicators and the watch list.

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64 These are current working assumptions for the drafting work and do not pre-empt the structure and content of the consultation paper or the final guidelines.

65 Building on the **Guidelines on internal governance under Directive 2013/36/EU**, European Banking Authority, London, September 2017.

With regard to early intervention, and in addition to other supervisory tools which incentivise banks to deal with NPLs at an early stage,[66] **the SSM has also published its "Guidance to banks on non-performing loans" outlining measures, processes and best practices which banks should incorporate when tackling NPLs.**[67] Based on this guidance, the EBA has recently approved guidelines for credit institutions on how to effectively manage non-performing exposures (NPEs) and forborne exposures (FBEs)[68]. The objective of these guidelines is to ensure that credit institutions, especially those with elevated NPL ratios, as defined in the guidelines, have an appropriate framework in place to manage their NPEs efficiently and effectively, and ultimately achieve a sustainable NPE reduction on their balance sheets. The guidelines specify prudential requirements for the credit institutions in order to set strategies and associated operational and governance arrangements for these credit institutions. The development and operationalisation of a time-bound realistic, yet ambitious, NPE strategy is at the core of the guidelines and the NPE strategy. The guidelines also set prudential requirements for when credit institutions introduce forbearance measures and carry out a valuation of collateral for secured NPEs.

Finally, but no less important, the introduction of IFRS 9, the SSM addendum to the guidance to banks on non-performing loans[69] **and the proposal by the European Commission for a "statutory prudential backstop"**[70] **should not only have a positive impact on the way banks deal with NPLs in a timely manner, but should also affect the way banks originate loans.** More specifically, by introducing potentially stricter provisioning rules these initiatives should encourage banks to adopt a more prudent approach at the moment of loan origination.

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66 In this context, the Pillar 2 measures that can be adopted by the microprudential supervisory authorities should be highlighted.

67 See **Guidance to banks on nonperforming loans**, European Central Bank, Frankfurt am Main, March 2017.

68 See **EBA Guidelines on Management of non Performing and forborne exposures**, European Banking Authority, EBA/GL/2018/06, London, 31 October 2018.

69 See the **Addendum to the ECB Guidance to banks on nonperforming loans: supervisory expectations for prudential provisioning of non-performing exposures**, European Central Bank, Frankfurt am Main, March 2018.

70 See **Proposal for a Regulation of The European Parliament and of the Council on amending Regulation (EU) No 575/2013 as regards minimum loss coverage for non-performing exposures**, European Commission, Brussels, March 2018. A provisional political agreement on capital requirements applying to banks with non-performing loans was reached on the 18 December 2018 by the Council presidency and the European Parliament. See **here** for more details.

Annex 2 – The use of the SyRB to address structural NPL problems – the case of Romania

Romania decided in December 2017 to implement a SyRB to address, among other structural issues, the risk of a potential re-emergence of NPLs. This risk was assessed in a context of increased interest rates and a potential slowdown in the process of banks' balance sheet clean-up in Romania. The approach was adopted to support the credit risk management process and to increase the resilience of the banking sector in the face of unanticipated shocks, amid unfavourable structural circumstances. The SyRB was considered to be the optimal instrument to use given the structural characteristics of the NPLs that were intended to be addressed, i.e. the very high importance of banking intermediation, a lack of debtor experience in the market economy and the state of development of the financial sector, despite the cyclical effects that amplified NPL dynamics.

The level of the SyRB was then set at 0%, 1% or 2%, based on the 12-month average for the NPL ratio and the (provisions) coverage ratio reported by each individual credit institution, in accordance with the following methodology:

Non-performing loans ratio	Coverage ratio	Buffer rate (% of CET1 capital applied to total RWA)
< 5%	> 55%	0%
> 5%	> 55%	1%
< 5%	< 55%	1%
> 5%	< 55%	2%

Source: Banca Naţională a României.

This SyRB measure has a forward-looking nature. It supports further actions to reduce the stock of NPLs and offers incentives to banks to ensure sustainable credit growth and, therefore, avoid a renewed rise in the NPL ratio and the consequently higher capital requirements imposed through the SyRB. In order to ensure a countercyclical effect, the intention is to release the SyRB, in the event of a significant increase in NPLs in the Romanian banking sector, so that the capital reserves built up by banks can be used to cover future losses stemming from these new NPLs. A biannual recalibration will be applied in order to monitor the NPL resolution process in real time and to support the balance sheet clean-up process.

Annex 3 – The use of the SyRB to manage risks arising from problem CRE project loans – the case of Hungary

In October 2015, the Magyar Nemzeti Bank's Financial Stability Board decided to implement the SyRB in order to adequately manage risks arising from "problem CRE project loans". [71] After the onset of the financial crisis, the ratio of non-performing and continuously restructured ("evergreen") project loans rose sharply, reaching persistently high levels as unfavourable macroeconomic conditions and the sharp depreciation of the forint against the Swiss franc (a major part of these exposures was in Swiss francs) rendered repayment difficult for borrowers. Defaults on project loans combined with their elevated concentration risk, as it was mainly systemically important institutions that held the majority of problem exposures, mostly located in the region of the capital. Due to a lack of willingness and opportunity, on the banks' side, to draw down the problem portfolio,[72] the problem CRE exposures negatively weighed on bank profitability, lending capacity and willingness (e.g. through constraining group limits, elevated funding costs, and less productive management and workforce allocation) and collateral valuation. Consequently, by 2014 the Magyar Nemzeti Bank identified problem CRE project loan exposures as a key source of structural systemic risks.

The Magyar Nemzeti Bank therefore decided to introduce the SyRB to mitigate the risk stemming from the intertwined concentration risks related to lending in a specific well-definable CRE market segment.[73] The buffer rates were set in proportion to the institution-specific contributions to systemic risk. The contribution was calculated based on a ratio of problem exposures to the domestic Pillar 1 capital requirement. The problem exposures were defined as the gross stock of domestic problem CRE exposures and repossessed real estate. Above a de minimis limit this ratio determined the exact SyRB requirement of between 0% and 2%. Effectiveness was enhanced by targeting the gross amount of problem stocks, ensuring a large enough financial incentive through higher capital costs for portfolio cleaning for the already provisioned exposure and through a wider definition of problem CRE loans to include repossessed held-for-sale real estate, in order to disincentive banks from taking this real estate onto their balance sheets.

Since the adjustment period the banking sector carried out significant portfolio cleaning, which was also supported by favourable market developments.[74] The stock of problem project exposures has fallen gradually, by more than 84% since the first communication of the introduction of the SyRB. Management of expectations before the effective date of application was instrumental both in order to incentivise a prompt start to the cleaning and to avoid a sudden and disruptive frontloading catalysed by elevated capital costs and, on the other hand, limited and overly sluggish

[71] The application of the SyRB was announced in October 2015 and banks were expected to comply with the enhanced capital requirements from January 2017. The Magyar Nemzeti Bank further postponed the introduction of the SyRB to 1 July 2017 to ensure there was reasonable time for the completion of portfolio sales already under way.

[72] Due to the lack of an active secondary market.

[73] Pillar 2 capital and provisioning requirements were already extensively in use to tackle the related risks. They could not provide either sufficient loss absorbing capacity or appropriate incentives to clean up accumulated NPLs, as SREP add-ons are capped under Hungarian banking regulations.

[74] Starting with the announcement of the capital requirement and ending with the effective introduction of the capital buffer from 1 July 2017.

bank reactions. The reduction was realised without weakening bank capitalisation as, in parallel with the improving macroeconomic conditions, the market for distressed assets had also picked up in previous years. In the future the actual SyRB requirement may also contribute to more prudent lending, by discouraging any resurfacing of problem project exposures.

Annex 4 – The use of large exposure limits to address the over-indebtedness of NFCs – the case of France

On 11 May 2018, the Haut Conseil de Stabilité Financière (HCSF) adopted a macroprudential measure (under Article 458 of the CRR), aimed at limiting French systemic banks' exposures to the most indebted NFCs resident in France. Although credit growth in France has not shown any signs of exuberance in the past few years, a number of risk pockets have been identified in the NFC sector: while the average indebtedness of firms has grown modestly on a net basis (in many cases firms have increased their cash holding at the same time as increasing their debts), some companies have significantly raised their leverage, making them less solvent and more vulnerable to a hike in interest rates. This situation has motivated the use of a targeted preventive measure, which is used as a backstop in order to limit the credit risk that banks may face vis-à-vis highly indebted large NFCs[75].

The measure adopted involves tightening the limits for large exposures (Article 395 of the CRR) to Large Corporates that are highly indebted and resident in France. Under the large exposure limits of the CRR, a bank shall not incur an exposure to a debtor or a group of connected debtors that exceeds 25% of its eligible capital. Above this limit, the HCSF has decided to set a specific limit for exposures held on highly indebted NFCs, restricting the concentration limit to 5% of eligible capital. All French banks that are designated as systemic institutions (currently six institutions) must comply with this limit. The measure entered into force on 1 July 2018 for a two-year period and can be renewed afterwards or revised in the meantime according to the evolution of the indebtedness of the NFCs (in particular, a more stringent threshold could be set by HSCF).

For the application of the measure, the definition of highly indebted NFCs is based on two financial ratios: the leverage ratio (total financial debt less outstanding liquid assets / total equity) and the interest coverage ratio (EBIT / interest expenses). An NFC is considered to be highly indebted when the following two criteria are satisfied on a consolidated basis (i.e. according to the consolidated statements of the group the NFC belongs to): the leverage ratio is above 100% and the interest coverage ratio is below 3. The threshold of 5% does not apply, regardless of the ratios, to the exposures of banks that are smaller than €300 million[76]. Although the large exposure limit does not involve any restriction on market funding, all the financial debts that a firm may raise are included in the ratios (banking as well as market-based debts), thus ensuring the indebtedness metrics are sensitive to the trends in the whole economy.

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[75] For additional information on the HSCF diagnosis see the **Template for notifying intended measures to be taken under Article 458 of the Capital Requirements Regulation (CRR)**, European Systemic Risk Board, Frankfurt am Main, May 2018.

[76] This materiality criterion is intended to prevent any rationing effects on the funding of SMEs. The current situation in the French market did not indicate a need to constrain the funding of SMEs (SME debt dynamics have not been as responsive to the acceleration in the financial cycle as Large Corporate debt dynamics).

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