I

*(Resolutions, recommendations and opinions)*

RECOMMENDATIONS

# EUROPEAN SYSTEMIC RISK BOARD

## RECOMMENDATION OF THE EUROPEAN SYSTEMIC RISK BOARD

**of 4 April 2013**

**on intermediate objectives and instruments of macro-prudential policy**

**(ESRB/2013/1)**

(2013/C 170/01)

THE GENERAL BOARD OF THE EUROPEAN SYSTEMIC RISK BOARD,

Having regard to Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board [1], and in particular Article 3(2)(b), (d) and (f) and Articles 16 to 18 thereof,

Having regard to Decision ESRB/2011/1 of the European Systemic Risk Board of 20 January 2011 adopting the Rules of Procedure of the European Systemic Risk Board [2], and in particular Article 15(3)(e) and Articles 18 to 20 thereof,

Whereas:

(1) Financial stability is a precondition for the financial system to provide credit, supporting sustainable economic growth. The financial crisis has clearly revealed the need for macro-prudential oversight that mitigates and prevents systemic risk in the financial system. The objective of this Recommendation is to take a necessary next step towards an operational macro-prudential oversight.

(2) Resilience against systemic risks in the Union depends on establishing a sound macro-prudential policy framework alongside the micro-prudential supervision. This Recommendation follows up on Recommendation ESRB/2011/3 of the European Systemic Risk Board of 22 December 2011 on the macro-prudential mandate of national authorities [3], by elaborating on intermediate objectives and instruments of macro-prudential policy.

(3) Recommendation ESRB/2011/3 requires Member States to designate an authority entrusted with the conduct of macro-prudential policy. Similarly, the proposed new framework establishing prudential requirements for credit institutions (hereinafter the 'CRD IV/CRR') requires Member States to set up a designated authority responsible for taking measures necessary to prevent or mitigate systemic risk or macro-prudential risks posing a threat to financial stability at national level [4].

(4) The ultimate objective of macro-prudential policy is to contribute to the safeguard of the stability of the financial system as a whole, including by strengthening the resilience of the financial system and decreasing the build-up of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth. Recommendation ESRB/2011/3 refers to the identification of intermediate policy objectives as operational

[1] OJ L 331, 15.12.2010, p. 1.
[2] OJ C 58, 24.2.2011, p. 4.
[3] OJ C 41, 14.2.2012, p. 1.
[4] Proposal for a directive of the European Parliament and of the Council on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms and amending Directive 2002/87/EC of the European Parliament and of the Council on the supplementary supervision of credit institutions, insurance undertakings and investment firms in a financial conglomerate (COM(2011) 453 final) and Proposal for a regulation of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms (COM(2011) 452 final).

specifications of the ultimate objective. Identifying intermediate objectives makes macro-prudential policy more operational, transparent and accountable and provides an economic basis for the selection of instruments.

(5) Moreover, the effectiveness of macro-prudential policy in the Union depends on the establishment of a set of macro-prudential instruments to be effectively applied by the relevant macro-prudential authorities guided by a set of indicators, alongside expert judgement. Macro-prudential authorities should have under their direct control or under recommendation powers the necessary macro-prudential instruments, namely one or more instruments for each intermediate objective of macro-prudential policy. Instruments used to tighten the macro-prudential policy stance shall be released if deemed appropriate to stabilise the financial cycle. Macro-prudential instruments could be applied to broad or targeted categories of exposures, the latter including, for instance, exposures to specific foreign currencies.

(6) In its letter to the Council, the European Commission and the European Parliament of 29 March 2012, the European Systemic Risk Board (ESRB) expressed its view on the capacity of the macro-prudential authorities to implement macro-prudential instruments, as defined in the CRD IV/CRR. In particular, the ESRB underlined that macro-prudential authorities at both the Member State and Union level need discretion to tighten temporarily the calibration of a diverse range of Pillar I requirements and to require additional disclosures. These requirements include aggregate capital levels, liquidity requirements and limits to large exposures and to leverage, as well as capital requirements targeting individual sectors or addressing specific vulnerabilities across the different parts of banks' balance sheets.

(7) The CRD IV/CRR, while having mostly a micro-prudential focus, also envisages a set of macro-prudential instruments to be applied by the corresponding macro-prudential authority under certain conditions. This Recommendation suggests an indicative list of instruments, including but not limited to those envisaged in the CRD IV/CRR, that Member States could assign to macro-prudential authorities in order to pursue the identified intermediate objectives, while not restricting Member States in applying further instruments.

(8) Furthermore, macro-prudential authorities should develop an overall policy strategy on the application of macro-prudential instruments to foster decision-making, communication and accountability of macro-prudential policy.

(9) The effectiveness of macro-prudential policy also depends on the coordination between Member States on the application of macro-prudential instruments at national level. While macro-prudential policy will in general have substantial positive cross-border spillover effects, negative cross-border spillovers may occasionally arise. Macro-prudential authorities should assess the materiality of the net impact of such positive and negative spillovers, also to preserve the single market. The ESRB will consider potential cross-border spillovers of macro-prudential policy and, without prejudice to any relevant provisions of Union law, promote an appropriate coordination framework to address these issues.

(10) Over time, as authorities learn about the effectiveness of different macro-prudential instruments, the intermediate policy objectives and/or macro-prudential instruments may be revised, also taking into account potential new risks to financial stability. This requires a periodic assessment of the adequacy of the established intermediate policy objectives and macro-prudential instruments.

(11) The current and proposed Union legislative framework is characterised by a complex and diverse set of macro-prudential provisions, which would greatly benefit from simplification and overall consistency in future reviews. Union institutions might also consider including macro-prudential instruments in the legislation affecting areas of the financial sector other than banking.

(12) In order to achieve a coherent application of macro-prudential instruments and to ensure macro-prudential oversight across the Union, the ESRB might consider in the future addressing recommendations to macro-prudential authorities to guide their application of macro-prudential instruments.

(13) Policymakers within and outside Europe are assessing the merits and drawbacks of an even larger set of possible instruments to prevent or mitigate systemic risks and legislative reforms to ring-fence risks in the financial system. The ESRB will continue to analyse the effectiveness and efficiency of other instruments being discussed as part of the macro-prudential policy framework.

(14) The proposal for a Council Regulation establishing a single supervisory mechanism (SSM) [1], as agreed by the Council on 12 December 2012, confers on the European Central Bank (ECB) the power to apply, if deemed necessary, higher requirements for capital buffers than applied by competent or designated authorities of participating Member States, and apply more stringent measures aimed at addressing systemic or macro-prudential risks, in accordance with the procedures set out in the framework of the CRD IV/CRR and in cases specifically set out in relevant Union law. The ESRB aims to cooperate with the ECB

[1] Proposal for a Council Regulation conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions (COM(2012) 511 final).

and the national competent authorities composing the SSM, as well as with the European Supervisory Authorities and other ESRB members, for the exercise of a coherent set of macro-prudential policies within the Union.

(15) This Recommendation is without prejudice to the monetary policy mandates and the oversight role for payment, clearing and settlement infrastructures of the central banks in the Union.

(16) ESRB Recommendations are published after informing the Council of the General Board's intention to do so and providing the Council with an opportunity to react,

HAS ADOPTED THIS RECOMMENDATION:

SECTION 1

**RECOMMENDATIONS**

**Recommendation A — Definition of intermediate objectives**

Macro-prudential authorities are recommended to:

1. define and pursue intermediate objectives of macro-prudential policy for their respective national financial system as a whole. These intermediate objectives should act as operational specifications to the ultimate objective of macro-prudential policy, which is to contribute to the safeguard of the financial system as a whole, including by strengthening the resilience of the financial system and decreasing the build-up of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth. This implies, inter alia, releasing instruments that were previously used to tighten the macro-prudential policy stance;

2. these intermediate policy objectives should include:

   (a) to mitigate and prevent excessive credit growth and leverage;

   (b) to mitigate and prevent excessive maturity mismatch and market illiquidity;

   (c) to limit direct and indirect exposure concentrations;

   (d) to limit the systemic impact of misaligned incentives with a view to reducing moral hazard;

   (e) to strengthen the resilience of financial infrastructures;

3. assess the need for further intermediate objectives on the basis of underlying market failures and the specific structural characteristics of the country and/or Union financial system that could give rise to systemic risk.

**Recommendation B — Selection of macro-prudential instruments**

Member States are recommended to:

1. assess, in cooperation with the macro-prudential authorities, whether the macro-prudential instruments, currently under the direct control or recommendation powers of the latter, are sufficient to effectively and efficiently pursue the ultimate objective of macro-prudential policy, established under Recommendation ESRB/2011/3, as well as their intermediate objectives as defined in accordance with recommendation A. The assessment should take into consideration that macro-prudential authorities should have under their direct control or recommendation powers at least one macro-prudential instrument for each intermediate objective of macro-prudential policy, although more than one instrument may be needed;

2. if the assessment indicates that the available instruments are not sufficient, consider, in cooperation with the national macro-prudential authorities, additional macro-prudential instruments that should come under the direct control or recommendation powers of the latter. To this end, an indicative list of instruments is suggested for consideration in Table 1 below:

*Table 1*

**Indicative list of macro-prudential instruments**

| |
|---|
| 1. **Mitigate and prevent excessive credit growth and leverage** |
| Counter-cyclical capital buffer |
| Sectoral capital requirements (including intra-financial system) |
| Macro-prudential leverage ratio |
| Loan-to-value requirements (LTV) |
| Loan-to-income/debt (service)-to-income requirements (LTI) |
| 2. **Mitigate and prevent excessive maturity mismatch and market illiquidity** |
| Macro-prudential adjustment to liquidity ratio (e.g. liquidity coverage ratio) |
| Macro-prudential restrictions on funding sources (e.g. net stable funding ratio) |
| Macro-prudential unweighted limit to less stable funding (e.g. loan-to-deposit ratio) |
| Margin and haircut requirements |

| 3. **Limit direct and indirect exposure concentration** |
|---|
| Large exposure restrictions |
| CCP clearing requirement |

| 4. **Limit the systemic impact of misaligned incentives with a view to reducing moral hazard** |
|---|
| SIFI capital surcharges |

| 5. **Strengthen the resilience of financial infrastructures** |
|---|
| Margin and haircut requirements on CCP clearing |
| Increased disclosure |
| Structural systemic risk buffer |

3. following paragraphs 1 and 2, select any additional macro-prudential instruments, taking into account:

   (a) their effectiveness and efficiency to achieve each of the intermediate objectives in their respective jurisdictions, in accordance with recommendation A;

   (b) their capacity to address the structural and the cyclical dimension of systemic risks in their respective jurisdictions;

4. further to the selection of macro-prudential instruments, ensure that macro-prudential authorities are involved in the design and contribute to the national implementation of:

   (a) recovery and resolution regimes for banking and non-banking financial institutions;

   (b) deposit guarantee schemes;

5. establish a legal framework that permits the macro-prudential authorities to hold the direct control or recommendation powers over the macro-prudential instruments selected pursuant to this Recommendation.

**Recommendation C — Policy strategy**

Macro-prudential authorities are recommended to:

1. define a policy strategy that:

   (a) links the ultimate objective of macro-prudential policy with the intermediate objectives and the macro-prudential instruments under their direct control or recommendation powers;

   (b) establishes a sound framework for the application of instruments under their direct control or recommendation powers to pursue the ultimate and intermediate objectives of macro-prudential policy. This should include appropriate indicators to monitor the emergence of systemic risks and to guide decisions on the application, deactivation or calibration of time-varying macro-prudential instruments as well as an appropriate coordination mechanism with relevant authorities at the national level;

   (c) fosters the transparency and accountability of macro-prudential policy;

2. conduct further analysis, on the basis of the practical application of macro-prudential instruments, to strengthen macro-prudential policy strategy, including on:

   (a) instruments not established in Union legislation, for instance loan-to-value and loan-to-income requirements, and instruments to prevent or mitigate excessive maturity mismatches and market illiquidity;

   (b) the transmission mechanism of instruments as well as on the identification of indicators that may inform decisions on their application, deactivation or calibration.

3. without prejudice to relevant provisions of Union legislation, inform the ESRB prior to the application of macro-prudential instruments at national level if significant cross-border effects on other Member States or the single market are to be expected.

**Recommendation D — Periodical evaluation of intermediate objectives and instruments**

Macro-prudential authorities are recommended to:

1. periodically assess the appropriateness of the intermediate objectives defined in accordance with recommendation A, in view of the experience gained in operating the macro-prudential policy framework, structural developments in the financial system and the emergence of new types of systemic risks;

2. periodically review the effectiveness and efficiency of the macro-prudential instruments selected in accordance with recommendation B, in achieving the ultimate and intermediate objectives of macro-prudential policy;

3. if warranted by the analysis under paragraph 1, adjust the set of intermediate objectives whenever necessary and, in particular, in case of the emergence of new risks to financial stability that cannot be sufficiently addressed within the existing framework;

4. inform the relevant authority in their Member State, so that the appropriate legal framework is established, in case new macro-prudential instruments are considered necessary;

5. report to the ESRB any change in the set of intermediate objectives and macro-prudential instruments that are under their direct control or recommendation powers and the underlying analysis supporting this change.

**Recommendation E — Single market and Union legislation**

The Commission is recommended, in the framework of forthcoming revisions of Union legislation, to:

1. take account of the need to establish a coherent set of macro-prudential instruments affecting the financial system, including all types of financial intermediaries, markets, products and market infrastructures;

2. ensure that adopted mechanisms permit Union institutions and Member States to interact efficiently and establish a sufficient level of flexibility for the macro-prudential authorities in order to activate those macro-prudential instruments whenever needed, while preserving the single market.

SECTION 2

**IMPLEMENTATION**

1. **Interpretation**

1. For the purposes of this Recommendation, the following definitions apply:

   (a) 'financial system' means financial system as defined in Regulation (EU) No 1092/2010;

   (b) 'macro-prudential authority' means national macro-prudential authorities with the objectives, arrangements, powers, accountability requirements and other characteristics set out in Recommendation ESRB/2011/3.

   (c) 'direct control' means real and effective capacity to impose and modify, where necessary to achieve an ultimate or intermediate objective, macro-prudential instruments over the financial institutions that are under the scope of action of the corresponding macro-prudential authority;

   (d) 'recommendation powers' means capacity to guide by means of recommendations the application of macro-prudential instruments, where necessary to achieve an ultimate or intermediate objective;

   (e) 'structural dimension of systemic risk' means the distribution of risks across the financial sector;

   (f) 'cyclical dimension of systemic risk' means the changes of systemic risk over time, originating from the tendency of financial institutions to assume excessive risks in the upswing and become excessively risk averse in the downswing;

   (g) 'effectiveness of the instrument' means the degree to which the instrument can address market failures and achieve the ultimate and intermediate objectives;

   (h) 'efficiency of the instrument' means the potential of the instrument to achieve the ultimate and intermediate objectives at minimum cost.

2. The Annex forms an integral part of this Recommendation. In the case of conflict between the main text and the Annex, the main text prevails.

2. **Criteria for implementation**

1. The following criteria apply to the implementation of this Recommendation:

   (a) regulatory arbitrage should be avoided;

   (b) due regard should be paid to the principle of proportionality in the implementation, with reference to the different systemic significance of the financial institutions, to the different institutional systems and taking into account the objective and the content of each recommendation.

2. Addressees are requested to communicate the actions taken in response to this Recommendation, or adequately justify inaction. The reports should as a minimum contain:

   (a) information on the substance and timeline of the actions taken;

   (b) an assessment of the functioning of the actions taken, from the perspective of the objectives of this Recommendation;

   (c) detailed justification of any inaction or departure from this Recommendation, including any delays.

3. Further information on the characteristics and particularities of each of the proposed intermediate objectives can be found in the Annex to this Recommendation, as well as an indicative list of macro-prudential instruments to pursue intermediate objectives. The Annex can assist the addressees in the selection of macro-prudential instruments as well as in the preparation of the policy strategy for their application.

3. **Timeline for the follow-up**

1. Addressees are requested to communicate the actions taken in response to this Recommendation, or adequately justify inaction, as specified in the following paragraphs:

   (a) recommendations A and B — by 31 December 2014, addressees are requested to communicate a report to the ESRB, the European Banking Authority (EBA) and the Council explaining the measures undertaken in order to comply with the content of recommendations A and B. Member States may report the measures undertaken with regard to recommendation B through their macro-prudential authorities;

   (b) recommendation C — by 31 December 2015, macro-prudential authorities are requested to communicate a report to the ESRB, the EBA and the Council explaining the measures undertaken in order to comply with the content of recommendation C(1). Recommendations C(2) and C(3) do not require a specific reporting deadline. Information provided by macro-prudential authorities to the ESRB under recommendation C(3) should be made available with reasonable notice;

(c) recommendation D — recommendation D does not require a single reporting deadline. If there is a change in the intermediate objectives and instruments under the direct control or recommendation powers of macro-prudential authorities, they are requested to deliver a report thereon in good time to the ESRB, in line with recommendation D(5);

(d) recommendation E — recommendation E does not require a specific reporting deadline. The Commission delivers a report to the ESRB on a biennial basis on the way in which macro-prudential policy objectives are included in the preparation of financial legislation. The first report should be delivered by 31 December 2014.

2. The General Board may extend the deadlines set forth in the previous paragraphs where legislative initiatives are necessary to comply with one or more recommendations.

4. **Monitoring and assessment**

1. The ESRB Secretariat:

(a) assists the addressees, including by facilitating co-ordinated reporting, providing relevant templates and detailing where necessary the modalities and the timeline for the follow-up;

(b) verifies the follow-up by the addressees, including by assisting them upon their request, and reports on the follow-up to the General Board via the Steering Committee.

2. The General Board assesses the actions and the justifications reported by the addressees and, where appropriate, decides whether this Recommendation has not been followed and if the addressees have failed to adequately justify their inaction.

SECTION 3

**FINAL PROVISIONS**

1. **ESRB guidance on the application of the macro-prudential instruments**

The ESRB may give guidance to the macro-prudential authorities on how to better implement and apply macro-prudential instruments, by means of recommendations pursuant to Article 16 of Regulation (EU) No 1092/2010. This may include indicators to guide the application of macro-prudential instruments.

2. **Future reform of the macro-prudential toolkit**

The ESRB may consider, in the future, expanding the indicative set of macro-prudential instruments contained in this Recommendation, by means of a recommendation pursuant to Article 16 of Regulation (EU) No 1092/2010.

Done in Frankfurt am Main, 4 April 2013.

*The Chair of the ESRB*

Mario DRAGHI

*ANNEX TO THE RECOMMENDATION ON INTERMEDIATE OBJECTIVES AND INSTRUMENTS OF MACRO-PRUDENTIAL POLICY*

## 1. **Introduction**

Macro-prudential authorities have been, or are in the process of being, set up in most Union Member States. The next step towards making macro-prudential policy operational constitutes selecting effective and efficient macro-prudential policy instruments that will prevent or mitigate systemic risks in the financial system as a whole. This Annex presents a framework for this selection.

The ESRB Recommendation on the macro-prudential mandate of national authorities ([1]) refers to the identification of intermediate policy objectives as 'operational specifications of the ultimate objective'. Identifying intermediate objectives makes macro-prudential policy more operational, transparent and accountable, and provides an economic basis for instrument selection. The framework presented in this Annex is therefore based on a set of pre-identified and broad ranging intermediate objectives. It details how indicative instruments would help achieve those intermediate objectives and what indicators would signal a need for their activation or deactivation. Information on the legal base of individual instruments is also included. Forthcoming Union legislation is expected to provide a common legal base for some of the instruments.

In applying the framework, macro-prudential authorities should take risks to financial stability at the national level as a starting point. These risks may differ from country to country, given that the characteristics of financial systems and financial cycles vary across the Union. As a result, and in reflection of the fact that macro-prudential policy is at an early stage of development, different instruments may be selected in different Member States. At the same time, the fact that financial markets in the Union are highly integrated also calls for a coordinated approach. Coordination can strengthen the effectiveness and efficiency of macro-prudential policy by limiting the scope for arbitrage and leakage. It is also key for internalising positive and negative spillovers to the financial systems and economies of other Member States and protecting the functioning of the single market. While further Union-wide convergence in the macro-prudential toolkit can be expected over time, the application of the tools will need to be tailored to diverging financial cycles and heterogeneous risks.

The Annex is structured as follows:

— Section 2 identifies the intermediate objectives of macro-prudential policy and links them to the underlying market failures which are considered to be most relevant for macro-prudential policy,

— Section 3 suggests criteria for selecting macro-prudential instruments and provides an overview of intermediate objectives and indicative macro-prudential instruments,

— Attachment 1 provides an analysis of individual macro-prudential instruments; Attachment 2 discusses macro-prudential elements in insurance.

## 2. **Identifying intermediate objectives**

The ESRB Recommendation on the macro-prudential mandate of national authorities asks Member States to 'specify that the ultimate objective of macro-prudential policy is to contribute to the safeguard of the stability of the financial system as a whole, including by strengthening the resilience of the financial system and decreasing the build-up of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth'.

The relevant literature classifies systemic risk into two dimensions; structural and cyclical. The **structural dimension** concerns the distribution of risk across the financial system. The **cyclical dimension** is related to the tendency of banks to assume excessive risk in the upswing and become excessively risk averse in the downswing. While it is useful to take the structural and cyclical dimensions into account for the purpose of identifying the drivers of systemic risk and corresponding instruments, it is difficult to make a clear-cut distinction between the two dimensions given their close interlinkages.

Identifying intermediate objectives on the basis of specific market failures documented in the literature may allow for a clearer classification of macro-prudential instruments, ensure an economic base for the calibration and use of those instruments and foster the accountability of macro-prudential authorities. In practice, macro-prudential instruments are often already linked to intermediate objectives. The countercyclical buffer, for instance, aims to mitigate systemic risk arising from excessive credit growth. To develop a comprehensive view on intermediate objectives, this Annex uses the literature to identify the market failures relevant for macro-prudential policy and then maps them to individual objectives (see Table 1) ([2]).

([1]) ESRB/2011/03 (http://www.esrb.europa.eu/pub/pdf/recommendations/2011/ESRB_2011_3.en.pdf).

([2]) The literature is far too extensive to be summarised here. See, for example, Brunnermeier, M., Crockett, A., Goodhart, C., Persaud, A. and Shin, H. (2009), 'The Fundamental Principles of Financial Regulation', *Geneva Report on the World Economy* 11, ICBM, Geneva and CEPR, London; Gorton, G. and He, P. (2008), 'Bank Credit Cycles', *Review of Economic Studies* 75(4), pp. 1181-1214, Blackwell Publishing; Bank of England (2009), 'The Role of Macro-prudential Policy', A Discussion Paper; Bank of England (2011), 'Instruments of macroprudential policy', A Discussion Paper; Hellwig, M. (1995), 'Systemic aspects of risk management in banking and finance', *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 131, pp. 723-737; Acharya, V. V. (2009), 'A Theory of Systemic Risk and Design of Prudential Bank Regulation', *Journal of Financial Stability*, 5(3), pp. 224-255; Hanson, S., Kashyap, A. and Stein, J. (2011), 'A Macro-prudential Approach to Financial Regulation', *Journal of Economic Perspectives* 25, pp. 3-28; Longworth, D. (2011), 'A Survey of Macro-prudential Policy Issues', Mimeo, Carleton University.

The first intermediate objective is to mitigate and prevent **excessive credit growth and leverage**. Excessive credit growth has been identified as a key driver of financial crises, in which leverage acts as an amplification channel. The contrast between the impact of the collapse of the 'dot-com' bubble, which was largely equity funded, and the burst of the credit-fuelled sub-prime mortgage bubble illustrates the importance of leverage. In this respect, a distinction can be made between leverage *within* the financial system and that *between* financial institutions and real economy borrowers (i.e. by netting out intra-financial system claims). Macro-prudential policy could address excessive risk-taking in the upturn by tightening capital and collateral requirements. The buffers created in the upturn could be released in the downturn to absorb losses, alleviating the need for deleveraging and preventing bank runs, while supporting the extension of credit to sustain economic growth.

*Table 1*

**Intermediate objectives of macro-prudential policy and related market failures**

| Intermediate objective | Underlying market failures |
|---|---|
| Mitigate and prevent excessive credit growth and leverage | Credit crunch externalities: a sudden tightening of the conditions required to obtain a loan, resulting in a reduction of the availability of credit to the non-financial sector.<br><br>Endogenous risk-taking: incentives that during a boom generate excessive risk-taking and, in the case of banks, a deterioration of lending standards. Explanations for this include signalling competence, market pressures to boost returns, or strategic interaction between institutions.<br><br>Risk illusion: collective underestimation of risk related to short-term memory and the infrequency of financial crises.<br><br>Bank runs: the withdrawal of wholesale or retail funding in case of actual or perceived insolvency.<br><br>Interconnectedness externalities: contagious consequences of uncertainty about events at an institution or within a market. |
| Mitigate and prevent excessive maturity mismatch and market illiquidity | Fire sales externalities: arise from the forced sale of assets due to excessive asset and liability mismatches. This may lead to a liquidity spiral whereby falling asset prices induce further sales, deleveraging and spillovers to financial institutions with similar asset classes.<br><br>Bank runs<br><br>Market illiquidity: the drying-up of interbank or capital markets resulting from a general loss of confidence or very pessimistic expectations. |
| Limit direct and indirect exposure concentrations | Interconnectedness externalities<br><br>Fire sales externalities: (here) arise from the forced sale of assets at a dislocated price given the distribution of exposures within the financial system. |
| Limit the systemic impact of misaligned incentives with a view to reducing moral hazard | Moral hazard and 'too big to fail': excessive risk-taking due to expectations of a bailout due to the perceived system relevance of an individual institution. |
| Strengthen the resilience of financial infrastructures | Interconnectedness externalities<br><br>Fire sales externalities<br><br>Risk illusion<br><br>Incomplete contracts: compensation structures that provide incentives for risky behaviour. |

The second intermediate objective relates to excessive **maturity mismatch** (i.e. the extent to which long-term assets are funded with short-term liabilities). Experience shows that credit cycles coincide with increased reliance on short-term funding. This increases risks to financial stability owing to more illiquidity, fire sales and contagion. The focus of this intermediate objective is on the **market liquidity** of assets and reliance on short-term funds, as well as on information asymmetries that may link funding issues to asset prices. To address maturity mismatch, macro-prudential policy may require banks to finance their non-liquid assets with stable funding and to hold high-quality liquid assets to ensure refinancing of short-term funds. These measures aim to shield banks against market illiquidity and the related pressure of fire sales as well as against runs by depositors and other financial institutions.

The third intermediate objective is to limit **direct and indirect exposure concentrations**, taking into account their degree of riskiness. Direct concentration risk arises from large exposures to the non-financial sector (e.g. the housing market, sovereigns) as well as between financial sectors and/or financial entities. In addition, indirect exposures arise within the system owing to the interconnectedness of financial institutions and the contagious consequences of common exposures. Limiting large exposures can be achieved by establishing caps for specific financial sectors and (groups of) counterparties or by introducing circuit-breakers, such as CCPs, that help reduce the possible domino effect (e.g. contagion and fire sales) arising from an unexpected default or common exposures across financial institutions.

The fourth intermediate objective aims to limit **the systemic impact of misaligned incentives with a view to reducing moral hazard**. This involves strengthening the resilience of systemically important institutions, while counter-balancing the negative effects of an implicit government guarantee. Credible arrangements for orderly wind-down and resolution are also fundamental to address moral hazard. Finally, other measures such as asking market participants to 'keep skin in the game', or relating to management remuneration, could be applied.

The fifth intermediate objective is to strengthen the **resilience of financial infrastructures**. This can be achieved in two main ways: addressing externalities within the financial system's infrastructure [1] and correcting the moral hazard effects that could arise from the institutional set-up. This could include legal systems, credit rating agencies, deposit guarantee schemes and market practices.

3. **Selecting macro-prudential instruments**

Having established the intermediate objectives of macro-prudential policy, the next step is to select instruments that can be used to pursue these objectives. Instruments should be selected on the basis of their **effectiveness and efficiency** in achieving intermediate and final objectives.

**Effectiveness** concerns the degree to which market failures can be addressed and intermediate and final objectives achieved. As a minimum, at least one effective instrument is needed for each intermediate objective (the Tinbergen rule). In practice, the use of multiple, complementary instruments can be justified, especially if it dampens the impact of regulatory arbitrage and uncertainty about the transmission mechanism.

A relevant consideration in this connection is how **coordination** can be used to avoid policy arbitrage: while some instruments are effective when applied at the country level (e.g. loan-to-value or loan-to-income limits), others would require an at least Union level of application (e.g. margin and haircut requirements, CCP clearing requirement). While most instruments would have some positive effects when applied at the country level, they would nevertheless benefit from Union-wide coordination. Coordination plays a role not only in enhancing the effectiveness of instruments, but also in internalising positive and negative spillovers to the financial systems of other Member States as well as protecting the proper functioning of the single market.

**Efficiency** relates to the achievement of objectives at minimum cost. A key issue is the trade-off between resilience and growth, since increasing resilience is not cost-free. This means that instruments that support long-term growth while containing systemic risk, and instruments that have a lower impact on other policy instruments, are preferable.

Table 2 contains a list of indicative macro-prudential instruments according to intermediate objectives [2]. In addition to the instruments included in Table 2, Member States may want to select instruments that best address specific risks to financial stability at the national level. Moreover, the framework of objectives and instruments should be subject to periodical evaluation and should reflect advances in the state of knowledge on macro-prudential policy as well as the emergence of new sources of systemic risk.

[1] The oversight role of central banks is usually considered an integral element of their function in ensuring financial stability. Irrespective of institutional arrangements, the macro-prudential authority should work in close cooperation with the authority in charge of infrastructure oversight to achieve this intermediate objective.

[2] The instruments are selected from a 'long list' of all potential instruments, on the basis of top-down 'gap' analysis and surveys among members of the ESRB Instruments Working Group, according to the above mentioned selection criteria.

*Table 2*

**Intermediate objectives and indicative macro-prudential instruments**

| | |
|---|---|
| 1. **Mitigate and prevent excessive credit growth and leverage** | |
| | — Countercyclical capital buffer |
| | — Sectoral capital requirements (including intra-financial system) |
| | — Macro-prudential leverage ratio |
| | — Loan-to-value requirements (LTV) |
| | — Loan-to-income/debt (service)-to-income requirements (LTI) |
| 2. **Mitigate and prevent excessive maturity mismatch and market illiquidity** | |
| | — Macro-prudential adjustment to liquidity ratio (e.g. liquidity coverage ratio) |
| | — Macro-prudential restrictions on funding sources (e.g. net stable funding ratio) |
| | — Macro-prudential unweighted limit to less stable funding (e.g. loan-to-deposit ratio) |
| | — Margin and haircut requirements |
| 3. **Limit direct and indirect exposure concentration** | |
| | — Large exposure restrictions |
| | — CCP clearing requirement |
| 4. **Limit the systemic impact of misaligned incentives with a view to reducing moral hazard** | |
| | — SIFI capital surcharges |
| 5. **Strengthen the resilience of financial infrastructures** | |
| | — Margin and haircut requirements on CCP clearing |
| | — Increased disclosure |
| | — Structural systemic risk buffer |

The limited use of macro-prudential instruments impedes a robust quantitative analysis of their **effectiveness and efficiency**. Evidence gathered from experience at the national level is, on the whole, limited. However, the analysis of the transmission and practical application of instruments presented in Attachment 1 indicates that knowledge is more advanced in respect of some instruments (e.g. capital-based instruments, large exposures limits, LTV/LTI limits) than others (e.g. margin and haircut requirements, the CCP clearing requirement). The different transmission channels and application scope of instruments support possible **complementarities**. For instance, capital-based instruments (affecting asset prices) and LTV/LTI limits (curtailing the quantity of financial services) could be used in parallel to limit excessive credit growth. Large exposure restrictions and CCP clearing requirements could also be applied contemporaneously, as they aim to contain counterparty risk across different types of transactions. In addition to the instruments shown in Table 2, macro-prudential authorities should be involved in the design and implementation of recovery and resolution plans and deposit insurance schemes, given their implications for the sound functioning of the financial system. While some of the specific tools listed in Table 2 have been designed with the banking sector in mind, they could be applied to other sectors: Attachment 2 discusses the potential role of macro-prudential policy in insurance.

Finally, with regard to the legal base of the instruments, the upcoming Capital Requirements Regulation and Capital Requirements Directive (CRR/CRD IV) for banks and large investment firms are expected to provide the flexibility to tighten the calibration of some of the instruments presented in Table 2 under certain conditions. This is in line with

the ESRB letter on the principles for macro-prudential policies in Union legislation on the banking sector ([1]). Instruments not enshrined in Union legislation ([2]) can be implemented at the national level if they have a proper legal base ([3]). Still, the absence of detailed rules at Union level does not mean that Member States will be completely free to impose national rules, as some principles of Union law, such as the prohibition of introducing restrictions on the free movement of capital, could pose limits to national discretion.

*Attachment 1*

**Macro-prudential instruments analysed by the ESRB**

This attachment provides a summary of insights into the macro-prudential instruments analysed by the ESRB, grouped according to the intermediate objectives. It summarises how each instrument is defined, how it works (i.e. what we know about the transmission mechanism), the types of indicators that, alongside expert judgement, could guide a decision to activate or deactivate it, and how it can complement other instruments. While the conceptual analysis is already at an advanced stage with respect to several instruments, experience in using most of these instruments in the Union is limited (even though some instruments, such as LTV/LTI limits, have been applied before). Further analysis of their potential impact, indicators and scope for complementarity will be crucial.

1. **Mitigate and prevent excessive credit growth and leverage**

***Countercyclical capital buffer (CCB)***

The CCB is a capital add-on to the conservation buffer. The capital add-on can be raised or reduced in a countercyclical manner according to variations in systemic risk over time, in particular driven by the credit cycle. The purpose of the CCB is to protect the banking system against potential losses when excessive credit growth is associated with an increase in system-wide risk. The instrument has a direct effect on resilience: capital buffers will be built up during periods in which system-wide risks increase and can be used when those risks recede.

As a possible indirect effect, the CCB may help to counter the expansionary phase of the credit cycle by decreasing the supply of credit or increasing the cost of credit. The supply of credit can decline if banks increase capital ratios by decreasing risk-weighted assets. The cost of credit can rise due to a higher total cost of capital, which banks pass on to clients through higher lending rates. Both transmission channels can contribute to a decrease in credit volumes, which in turn helps to avoid the build-up of system-wide risk. Similarly, a release of the buffer may reduce the risk of the supply of credit being constrained by regulatory capital requirements when the credit cycle turns. Uncertainty regarding the indirect effect is higher than regarding the direct effect, and further research in this area is needed. The possible dampening of credit growth during the upturn of the credit cycle should be seen as a potential positive side-effect, rather than an objective of the CCB regime.

Policymakers setting the CCB may be guided in their judgment by the deviation of the credit-to-GDP ratio from its long-term trend as well as other relevant indicators. The empirical discussion has so far mostly focused on the properties of the credit-to-GDP gap. The gap represents the deviation of the credit-to-GDP ratio from its long-term trend, with a positive gap considered a proxy for excessive credit growth. Cross-country studies by the Bank for International Settlements underline the credit-to-GDP gap's good historical performance in signalling financial crises. At the same time, experiences at the national level show that it has not always given the right signal for activating the buffer or performed consistently well in signalling the release phase. An ESRB expert group has been set up to provide additional guidance for setting the buffer, in particular by conducting further cross-country analysis of other possible indicators for the Union Member States.

The CCB is provided for in the draft CRD IV and thus has to be implemented in national law. The draft CCB regime allows flexibility for macro-prudential authorities in setting the buffer subject to principles and guidance on indicators ([4]) and provides for a level of reciprocity in doing so.

([1]) ESRB, Principles for macro-prudential policies in EU legislation on the banking sector, 2 April 2012 (http://www.esrb.europa.eu/news/pr/2012/html/pr120402.en.html).

([2]) Some instruments not included in Table 2 are envisaged in EU legislation (e.g. the ban on short-selling).

([3]) An ESRB stocktake for instruments not enshrined in EU law indicates that: **LTV limits** are available in the national prudential framework of 16 Member States, but only 7 can use them for macro-prudential purposes; **LTI limits** are available in the national prudential framework of 12 Member States, but only 2 can use them for macro-prudential purposes; an **unweighted liquidity ratio** is available in the national prudential framework of 3 Member States and can also be used for macro-prudential purposes; **recovery and resolution regimes/plans** are available in the national prudential framework of 11 Member States, 8 of which can use them for macro-prudential purposes. In 6 Member States, some steps have been taken to implement such a regime. In 4 of these countries, recovery or resolution plans are expected to be available for macro-prudential purposes.

([4]) The principle of 'constrained discretion' involves ESRB guidance, setting a benchmark against a macro variable, communication and transparency.

***Sectoral capital requirements (including requirements for intra-financial system exposures)***

Aggregate capital requirements such as the countercyclical capital buffer may be a relatively blunt instrument when dealing with exuberance in particular sectors. In such cases, sectoral capital requirements ([1]) may be a more targeted tool if systemic risk is not adequately captured by micro-prudential requirements. They may be applied by (a) scaling micro-prudential capital requirements associated with a particular sector or asset class by a multiplier or (b) applying a capital surcharge or add-on to a bank's risk-weighted exposures to a particular sector or asset class. Risk weight floors could also be set.

The transmission mechanism is similar to that of the CCB, with two differences. First, an increase in capital requirements for a particular sector changes relative prices, thereby reducing lending (growth) to the targeted sector as the relative marginal funding costs for this sector would tend to rise. Second, banks might be more likely to reduce exposure than to raise equity if a sector has been singled out as particularly risky.

This instrument should be brought into play when systemic risk is seen to build up within a particular sector or asset class. One potential indicator of such a build-up could be credit data by sector, which could be calculated as sectoral credit-to-GDP gaps. Complementary data, such as mortgage volumes or real estate prices for the real estate sector, could also be significant for signalling the build-up of risk.

The draft CRR foresees the possibility to adjust capital requirements for residential and commercial property as well as intra-financial system exposures for macro-prudential or systemic risk reasons, subject to a procedure at Union level.

***Macro-prudential leverage ratio***

The leverage ratio is defined as the ratio of a bank's equity to total (non-risk-adjusted) assets. To serve macro-prudential purposes, a leverage ratio requirement could be applied to all banks as an add-on and possibly also in a time varying manner. In particular, where macro-prudential risk-weighted capital requirements are applied in a time varying manner, the leverage ratio requirement could also be changed over time, to maintain its function as a backstop. As a macro-prudential instrument, the leverage ratio requirement has the advantage of being relatively simple and transparent.

The transmission mechanism for the leverage ratio requirement is similar to that of risk-weighted capital requirements. Where the leverage ratio is more restrictive than risk-weighted requirements, banks could raise equity, retain earnings or reduce assets to meet the higher requirements ([2]). The price of credit would be likely to increase, and the quantity of credit extended might decline ([3]).

The leverage ratio is sometimes considered an indicator of systemic risk. Indeed, a BCBS study found that the leverage ratio enabled banks that required public sector support during the recent financial crisis to be identified ([4]). In addition, other indicators, potentially also relevant for the countercyclical capital buffer, could be used to guide decisions on the leverage ratio.

Once it has been adopted as a detailed binding instrument after an observation period in accordance with the forthcoming CRR, the tightening of the leverage ratio requirement for macro-prudential purposes may be allowed subject to a procedure at Union level. Before its harmonisation across the Union, its use may be envisaged at the national level.

***Loan-to-value (LTV) and loan-to-income/debt (service)-to-income (LTI) requirements***

The LTV requirement is a limit on the value of a loan relative to the underlying collateral (e.g. residential property); the LTI requirement is a limit on debt servicing costs relative to disposable income. The reference point differs from the instruments discussed until now: it is the contract between the client and the financial institution, rather than the institution itself.

([1]) Sectoral capital requirements cover both risk weights and the calibration of Internal Ratings Based models for specific sectors or asset classes.

([2]) See the discussion of the transmission mechanism for risk-weighted capital tools.

([3]) The reverse should hold for a loosening in requirements. Market pressures might, however, imply that banks cannot lower their leverage (or risk-weighted capital) ratios by the full amount, potentially reducing the effectiveness of the tools in a downturn.

([4]) See BCBS (2010), 'Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach'. In addition, a number of other studies have found that leverage is a powerful indicator of systemic risk — for example Barrell, Davis and Liadze (2010), 'Calibrating Macro-prudential Policy'; Kato, Kobayashi and Sita (2010), 'Calibrating the level of capital: the way we see it'; Adrian and Shin (2010), 'Liquidity and Leverage'; and Papanikolaou and Wolff (2010), 'Leverage and risk in US commercial banking in the light of the current financial crisis'.

The macro-prudential purpose of LTV and LTI limits is to dampen the credit cycle and to increase the resilience of financial institutions. The effect on the amplitude of the credit cycle results from the mitigating impact of more stringent LTV ratios on the 'financial accelerator' mechanism: when a positive income shock leads to an increase in housing prices, the increase in borrowing is expected to be lower in countries with lower LTV ratios ([1]). Furthermore, lower LTV limits can increase the resilience of the banking system via a lower loss given default, while lower LTI limits can reduce the probability of default. LTV and LTI limits are generally seen as complementary instruments. Since income is more stable than housing prices, LTI limits may become more restrictive in times of rising housing prices. Although in practice LTV and LTI limits have typically been used as static limits, they can also be used in a time-varying way. Expectations may, however, play a destabilising role. If households expect a tightening in caps, they might rush to get loans with high LTV/LTI ratios.

Although LTV or LTI limits have been applied in several EU countries, they are not applied in a harmonised way across the Union. Given the lack of harmonised definitions or guidelines for these instruments at the Union level, a more thorough assessment by the ESRB could be useful with a view to providing guidance to macro-prudential authorities.

***Complementarity***

The CCB, sectoral capital requirements and leverage ratio requirement complement each other in their focus (ranging from broad to narrow), risk sensitivity and implementation (some addressing cyclical, others structural, manifestations of systemic risk). LTV/LTI limits are sometimes seen as substitutes to sectoral capital requirements for the housing market. They can, however, also be seen as complementary to capital-based tools for a number of reasons. First, while capital based tools may have an impact mainly on the supply of credit, LTV/LTI limits mainly affect the demand side (i.e. the banks' loan customers). Second, if risk is not adequately captured, for example by sectoral capital requirements for the housing market, LTV/LTI limits can act as necessary backstops. Finally, the effectiveness of capital based instruments could be affected by the need for coordination between Member States; this is not the case for LTV/LTI, as their reference point is the contract between the client and the financial institution, rather than the institution itself. Therefore, they are less prone to regulatory arbitrage that shifts business abroad or to the shadow banking system ([2]).

2. **Mitigate and prevent excessive maturity mismatch and market illiquidity**

***Macro-prudential adjustment to liquidity ratio (e.g. liquidity coverage ratio — LCR) and macro-prudential restrictions on funding sources (e.g. net stable funding ratio — NSFR)***

The LCR (ratio of high-quality liquid assets to total net cash outflows over the next 30 days) measures banks' ability to withstand a short predefined period of liquidity stress and ensures that banks' liquid assets can counterbalance a potential short stressed outflow of liquidity; its definition has been agreed on by the Basel committee. The NSFR (ratio of available to required amount of stable funding) seeks to put a floor on the amount of long-term funding banks hold against less liquid assets, but the Basel committee have yet to agree on a precise definition. Macro-prudential policy action could take the form of an add-on or other macro-prudential adjustment to the regulatory levels for both instruments; it could also be possible to target only specific groups of banks (e.g. systemically important banks) rather than the entire banking sector.

The primary intermediate objective of these instruments is to mitigate excessive maturity mismatch and funding risk ([3]). Moreover, they may increase the system's resilience to excessive credit and leverage ([4]). Banks can meet these liquidity requirements by increasing funding maturity or investing in liquid assets (or both). To avoid pro-cyclicality, banks should be allowed to use their buffers in times of liquidity stress.

([1]) Almeida, H., Campello, M. and Liu, C. (2006), 'The financial accelerator: evidence from international housing markets', *Review of Finance* 10, pp. 1-32.

([2]) Still, LTV limits can be subject to their own forms of circumventing, by resorting to uncollateralised loans. Insofar as banks have discretion to judge the value of the collateral (e.g. when part of the loan is used for improving the quality of the house) they might have incentives to give more optimistic valuations in order to mitigate the impact of a limitation in the LTV.

([3]) Evidence on the effectiveness of liquidity-based macro-prudential instruments is scarce. A few papers show that a countercyclical application of LCR or NSFR is beneficial in dealing with liquidity stress. See, for example, Giordana and Schumacher, 'The impact of the Basel III liquidity regulations on the bank lending channel: A Luxembourg case study', Working Paper No 61, June 2011; Bloor, Craigie and Munro, 'The macroeconomic effects of a stable funding requirement', Reserve Bank of New Zealand Discussion Paper Series DP 2012/05, August 2012; or Van den End and Kruidhof, 'Modelling the liquidity ratio as a macro-prudential instrument', DNB Working Paper No 342, April 2012.

([4]) See CGFS Working group on the Selection and Application of Macro-prudential instruments (SAM), 'Transmission Mechanisms of Macro-prudential Instruments', interim report by Workstream 4, March 2012.

Indicators for tightening the requirements could include data on banks' balance sheets, economic indicators and market (equity, CDS) data. Indicators such as strong changes in interbank volumes and rates, use of ECB facilities, the use and availability of collateral and signals of bank runs (e.g. urgent withdrawals or payments) could help determine when relaxing limits may be appropriate [1]. Some indicators may overlap with those related to time-varying capital-based tools.

The LCR and the NSFR are expected to be introduced as detailed binding requirements by the CRR only after respective observation periods. Before the harmonisation of the instruments at the Union level, Member States are expected to have the possibility to apply national liquidity requirements or prudential charges taking into account a number of considerations, including systemic liquidity risk. In addition, the draft Union legislation foresees the possibility to adjust liquidity instruments for macro-prudential purposes subject to a procedure at Union level.

***Macro-prudential unweighted limit to less stable funding (e.g. loan-to-deposit ratio)***

In some countries, an unweighted liquidity limit to less stable funding such as the loan-to-deposit (LTD) ratio has been applied with a view to limiting excessive dependence on less stable funding sources. Customer deposits are generally seen as a stable source of funding, meaning that the LTD ratio (or extended versions of it) can be used to limit excessive structural dependence on less stable market funding. However, the instrument does not take into account the maturity structure of market funding, and its impact varies across banks with different business models. Core funding ratios or wholesale funding ratios are related measures.

The LTD requirement can be met by either reducing lending or increasing deposits. The experience of the last crisis has shown that in a downturn deposits gain relative to loans in some cases, as the former remain stable or even increase (due to shifts from other types of savings) while the demand for the latter decreases due to a decline in economic activity. Thus, the LTD ratio may follow the cycle, making a related requirement restrictive in booms and non-restrictive in downturns. There may be incentives for regulatory arbitrage if loans and deposits are not properly defined; banks may set up new financing structures with debt securities to avoid inclusion in the numerator.

Where necessary, the LTD ratio can be used to address excessive leverage or credit (as signalled by the credit-to-GDP ratio or its development) and enhance the structural liquidity position of banks.

***Margin and haircut requirements***

Haircuts and initial margins determine the level of collateralisation in secured financing and derivatives transactions. Broadly speaking, in secured financing transactions the level of collateralisation is determined by the haircut applied to securities received as collateral. In derivatives transactions, the level of collateralisation depends primarily on the initial margin requirement (which protects a market participant against potential changes in the value of their position, in the event that their counterparty defaults), as well as on the haircut applied to securities posted to meet that requirement. Haircuts and margins imposed by supervisory authorities can curb financing booms and dampen the contraction of secured funding in downturns (i.e. reduce the pro-cyclicality of market liquidity, potentially mitigating liquidity hoarding and fire sales). They can also help to limit excessive credit growth and leverage.

Employing a through-the-cycle approach (using long historical data sets that include stressed and stable market conditions) will mean that margins and haircuts are less dependent on current market conditions. This can be complemented by a discretionary countercyclical add-on to regulate secured funding when necessary, ensuring a more realistic pricing of risks and a reduction of exuberance. However, a tightening of requirements, particularly at the height of the financial cycle, can destabilise markets as this imposes strains on funding. As a result, asset prices may fall, which increases haircuts and margins and can lead to a downward spiral [2].

Current legislation does not provide a role for macro-prudential authorities in this area. For over-the-counter derivatives, this might be considered in the first review of the European Market Infrastructure Regulation (EMIR). Further, margins and haircuts, being instruments that target market transactions, would be subject to regulatory arbitrage and would benefit from global application.

[1] Heijmans and Heuver, 'Is this bank ill? The diagnosis of doctor Target 2', DNB Working Paper No 316, August 2011.

[2] See, for example, Brunnermeier, M. and Pedersen, L. (2009), 'Market Liquidity and Funding Liquidity', *Review of Financial Studies*, Society for Financial Studies, Vol. 22(6), pp. 2201-2238, and Gorton, G. and Metrick, A. (2012), 'Securitized banking and the run on repo', *Journal of Financial Economics*, Elsevier, Vol. 104(3), pp. 425-451.

***Complementarity***

Possible complementarities can be envisaged between the LCR, NSFR and LTD requirements, owing largely to differences in their maturity, scope and risk sensitivity. The liquidity instruments can also complement solvency instruments such as the CCB in reducing leverage and increasing resilience. Furthermore, margin and haircut requirements complement the bank-specific measures (especially the NSFR and LTD) as they could have an impact on aggregate market liquidity and the stability of funding.

3. **Limit direct and indirect exposure concentrations**

***Large exposure restrictions***

The CRD defines a large exposure as an 'exposure to a client or group of connected clients … where its value is equal to or exceeds 10 % of its own funds'. Credit institutions and investment firms cannot incur an exposure of more than 25 % of their own funds (capital) to any one client or group of clients. The CRD also foresees discretion for Member States in handling certain types of exposures (e.g. to systemically relevant sectors) in view of their riskiness, which could provide scope for macro-prudential intervention. Large exposure restrictions can mitigate concentration risk, reduce counterparty risk and possible contagion (also to the shadow banking sector) ([1]). They also limit the sensitivity of financial institutions to common or sectoral shocks.

By setting limits on exposures to specific counterparties or sectors (e.g. real estate or other financial institutions), the large exposure restriction directly promotes the distribution of risk through the system ([2]). It also improves the depth of the interbank market and diversifies funding for financial and non-financial institutions. Moreover, exposure limits reduce the potential impact of a single counterparty default. As with most macro-prudential instruments, pro-cyclicality can arise: an increase in capital during booms can increase the exposure limit, while a capital reduction during downturns can make the limit more restrictive. Moreover, the restriction can inhibit growth or prevent institutions from taking advantage of expertise in certain sectors.

Under the CRD, financial institutions are required to report exposures exceeding 10 % of capital. Network analysis can use this information to determine whether macro-prudential restrictions are appropriate. If necessary, the reporting threshold can be lowered to incorporate systemically relevant global institutions with a large capital base. The draft CRR foresees the possibility of tightening large exposure requirements at the national level for macro-prudential purposes subject to a procedure at Union level.

***CCP clearing requirement***

Regulators can require certain transactions by financial institutions to be cleared through central counterparties (CCPs). Replacing a network of bilateral exposures with a structure in which each participant has a single exposure towards the CCP can redistribute counterparty risk and centralise risk control and default management. This can help contain spillovers and maintain market stability in the interbank market.

However, this measure also involves transaction costs and raises the potential for regulatory arbitrage, for example by moving towards transactions that are not subject to CCP clearing. Furthermore, the systemic importance of CCPs increases, since they concentrate counterparty risk, which may lead to excessive market power, moral hazard or systemic risk (from defaults) ([3]). Moreover, the risk management and risk absorption capacity of CCPs are largely untested, especially at the possibly much higher transaction level. Strict regulation of CCPs will therefore be required, including on the development of suitable resolution and recovery plans for CCPs. The selection of products requiring CCP clearing must also be made with care.

Suitable selection indicators to decide which contracts should be subject to the CCP clearing requirement include standardisation, liquidity, complexity and risk characteristics, as well as the potential reduction of systemic risk and the possibility of international harmonisation.

There are global efforts under way to mandate central clearing of standardised over-the-counter derivatives; in the Union, this will be introduced under EMIR. Still, further research on the effects of its implementation is needed before it can be included in the macro-prudential toolkit. Moreover, to be effective the requirement must be implemented on a Union-wide, if not global, basis.

([1]) Specific empirical evidence is scarce, but historical experience shows that concentration in certain sectors (often real estate) is at the epicentre of financial instability.
([2]) Note that exposures to sovereign debt are currently exempted from large exposures restrictions.
([3]) For more discussion of these adverse effects see, for example, Pirrong, C. (2011), 'The economics of central clearing: theory and practice', International Swaps and Derivatives Association Discussion Paper No 1 and Singh, M. (2011), 'Making OTC Derivatives Safe — A Fresh Look', IMF Working Paper 11/66.

***Complementarity***

The two aforementioned measures are complementary, as they can mitigate the systemic effects of counterparty risk across different types of transactions. While the large exposure restriction reduces the concentration of risk in one counterparty or sector, the CCP clearing requirement reduces the propagation of counterparty defaults by managing the risk in one place where it can be contained. Tightening large exposures restrictions can also work alongside sectoral capital requirements or LTV limits and structural buffers to strengthen financial structure. Finally, central clearing should be supplemented with margin and haircut requirements for CCPs to make them resilient to counterparty risk; these should be aligned with the requirements for non-centrally cleared transactions.

4. **Limit the systemic impact of misaligned incentives with a view to reducing moral hazard**

***SIFI capital surcharges***

Systemically Important Financial Institutions (SIFIs) could be subject to an additional capital buffer requirement. The objective of the surcharge is to enhance SIFI loss-absorption capacity. This reduces both the probability of stress events and their potential impact. The capital buffer could be applied to systemically important banks, but could be extended to other systemically important institutions.

The buffer can also correct potential funding subsidies for SIFIs stemming from an implicit government guarantee. As such, a level playing field for small and medium-sized (non-systemic) banks is maintained and SIFIs are better equipped to withstand shocks. On the negative side, the surcharge can push activities into the shadow banking sector and make the SIFI status explicit, thus activating the implicit funding subsidy and distorting competition. Overall, the Macroeconomic Assessment Group has concluded that the financial stability benefits of the SIFI surcharge outweigh the economic costs (expressed as a temporary reduction in GDP).

The systemic nature of banks (and other institutions) is determined by comparing indicators in the following categories: size, interconnectedness, substitutability and complexity. For banks, the requirements are planned to be introduced in parallel with the Basel III capital conservation and countercyclical buffers. SIFI capital surcharges are expected to be introduced at Union level in some form in the forthcoming CRD IV.

***Recovery and resolution regimes***

Regulatory authorities need tools to prevent financial crises and mitigate their effects if they nevertheless arise. Prevention and mitigation require recovery plans (drawn up by banks) and resolution plans (drawn up by the authorities). Early intervention powers for authorities allow them to act to seek to prevent the failure of a bank should recovery actions taken by the latter prove insufficient. Resolution powers enable them to assume control of a failing bank if preventive measures taken by the bank or the authorities have failed. This regime, as proposed in the draft Bank Recovery and Resolution Directive (BRRD), aims to minimise the systemic impact of bank distress and failure by ensuring the continuity of banks' functions, containing the impact of failures and minimising losses to taxpayers by allocating them to stakeholders (e.g. through bail-in or leaving them behind in an administration procedure whilst critical functions are transferred to a bridge bank or third-party purchaser). From a macro-prudential perspective, the BRRD helps minimise the systemic implications of exposure concentrations, improve understanding of connectedness and mitigate the impact of crisis externalities.

The transmission works through two main channels. First, it limits moral hazard in systemically important banks and the implicit subsidy they may enjoy by helping to ensure that creditors, rather than third parties such as national governments, bear losses in the event of a bank's failure. Second, effective resolution mitigates the impact of direct or indirect spillovers from an individual bank's failure (contagion). It can also bolster public confidence in financial institutions. The removal of implicit state guarantees could be expected to cause bank funding costs to rise and sovereign funding costs to fall, by roughly equal amounts. However, bank funding costs would be much more elevated if the only alternative to a government bailout were a disorderly and potentially prolonged and costly bankruptcy process. So, overall effective resolution regimes should help to improve access to credit by the real economy in the medium to long term.

Effectively dealing with banks that fail could be undermined by a lack of resolution powers and tools, insufficient credibility in applying them and too little temporary funding to provide the necessary liquidity to support resolution measures. These deficiencies should be taken into consideration and avoided in setting up resolution regimes.

***Complementarity***

The SIFI surcharge and resolution regimes complement each other in reducing implicit bailout subsidies, competitive distortions and the systemic impact of defaults. The surcharge can act as an ex ante complement to ex post resolution regimes ([1]). The SIFI surcharge should be seen as part of a package of capital charges including the capital conservation, countercyclical and structural buffers.

5. **Strengthen the resilience of financial infrastructure**

***Deposit guarantee schemes (DGSs)***

In case of bank failure, a DGS acts as a safety net for bank account holders by reimbursing them up to a certain coverage amount. A DGS thus strengthens the resilience of financial infrastructures by helping to avoid bank runs and improving confidence in the financial system. It also safeguards the stability of payment systems, as deposits are an integral part of these.

Since bank deposits are guaranteed, depositors have fewer incentives to withdraw their deposits in case of bank distress; this avoids bank runs and their systemic implications. More generally, by acting as a safety net, DGSs improve the efficiency of the financial system by increasing confidence. The effectiveness of DGSs depends on their credibility, which is related to adequate funding arrangements. Ex ante funding of DGSs, based on bank risk, is countercyclical and can thus have direct macro-prudential stability effects ([2]).

When coverage is very high, unlimited or ill-defined, or when funding is not risk-based, adverse incentive effects can arise; depositors may not monitor banks closely, leading to moral hazard. Additionally, unfunded DGSs can require payments from banks in downturns, leading to negative pro-cyclical effects. Finally, a lack of cross-border coordination can lead to unwelcome competition among DGSs. It is thus important that the Union continue with its effort to harmonise the structure of DGSs, also in the context of the draft recast of the DGS directive proposed by the Commission. Macro-prudential authorities should closely follow and have a say in the design and implementation of DGSs, in particular with regard to coverage and funding arrangements.

***Margin and haircut requirements on CCP clearing***

As with bilaterally cleared trades, the margin and haircut requirements of centrally cleared trades can have systemic implications. When setting appropriate haircuts and initial margins, CCPs should take into account market liquidity, pro-cyclical effects and systemic risks. In particular, the look-back period (time horizon to calculate historical volatility) should be set to avoid excessive pro-cyclicality. This limits disruptive changes in margin requirements and establishes transparent and predictable procedures for adjusting the requirements. Furthermore, a CCP should limit dependence on commercial credit ratings in calculating margins and haircuts. Both these requirements are captured in the draft technical standards that support EMIR.

In applying these requirements, CCPs must remain flexible and responsible, balancing the need to self-protect with the desire to ensure systemic stability. As the role and systemic importance of CCPs in the financial system is likely to increase in the future, the appropriate regulation of CCPs will become more important, and this is recognised for micro-prudential purposes in EMIR. Although EMIR does not yet provide a role for macro-prudential authorities in setting CCP margin requirements, this can be reconsidered during the first scheduled reviews.

***Increased disclosure***

Alongside disclosure for micro-prudential reasons, macro-prudential authorities could introduce additional disclosure requirements in view of structural or cyclical systemic risk. Transparency enables market forces to act as a disciplining mechanism on individual institutions' behaviour and enables more accurate pricing of risk within the financial system. Disclosure also has the potential to limit the amplification of stress in the financial system by reducing uncertainty about the size and location of certain exposures and system interlinkages.

([1]) See, for example, Claessens, Herring and Schoenmaker (2010), 'A Safer World Financial System: Improving the Resolution of Systemic Institutions', *Geneva Reports on the World Economy* (London, UK: CEPR), and Claessens et al., 'Crisis Management and Resolution: Early Lessons from the Financial Crisis', IMF Staff Discussion Note 11/05, March 9, 2011.

([2]) See, for example, Acharya, Santos and Yorulmazer: 'Systemic Risk and Deposit Insurance Premiums', *FRBNY Economic Policy Review*, August 2010.

Where clearer information is disclosed, risk awareness can be promoted and market discipline can be enhanced. This enhances market confidence and safeguards financial stability, thereby avoiding market breakdowns such as that of the interbank market after the collapse of Lehman Brothers. On the other hand, macro- and micro-prudential disclosure requirements may not always be in line. An aggregate improvement in disclosure may, for instance, reveal ailing banks, leading to individual failures without systemic effects. In general, the available empirical evidence supports enhanced disclosure [1]. In terms of legal implementation, the draft CRR foresees the possibility of enhancing disclosure requirements at the national level for macro-prudential purposes subject to a procedure at Union level.

***Structural systemic risk buffer***

The upcoming CRD IV is expected to introduce a systemic risk buffer to prevent and mitigate structural risk (hereafter 'the structural buffer'), subject to a procedure at Union level. The structural buffer can be used to strengthen the resilience of the banking system, or its subsets, to possible shocks stemming from structural systemic risk. This risk can arise from changes in legislation or accounting standards, cyclical spillovers from the real economy, a large financial system relative to GDP or financial innovation that increases complexity.

The structural buffer increases resilience through an increase in loss-absorption capacity. It shifts more downside risk to equity holders and increases solvency, thereby reducing the likelihood of structural risk materialising. Possible negative effects of the structural buffer include a loss of the cross-border level playing field, a decline in banks' voluntary capital and leakages to the shadow banking system. However, higher structural buffers also restrict leverage and risk-taking.

It is difficult to pinpoint indicators for applying the structural buffer; the aforementioned structural vulnerabilities can serve as a guide. When experience in the application of the structural buffer has been gained, an analysis of its capacity to address structural risks should be carried out.

***Complementarity***

As the aforementioned measures aim to increase the overall resilience of financial infrastructure, they interact with many other instruments. For instance, DGSs could complement liquidity instruments by ensuring a stable deposit funding base. They could also complement the structural buffer (and other capital-based instruments) as they reduce the impact of failures. Margin and haircut requirements for CCPs and for non-centrally cleared transactions should be aligned to ensure a level-playing field. Moreover, margin and haircut requirements (for both CCPs and other transactions) could complement leverage ratios by reducing excessive leverage. As disclosure reduces information asymmetries, it has the potential to improve market confidence and increase market liquidity.

The effect of the structural buffer can interact with the effects of other capital-based instruments such as the counter-cyclical buffers. Coordination is therefore necessary in deciding on the appropriate aggregate level of the capital requirements.

*Attachment 2*

**Intermediate objectives of macro-prudential policy in insurance**

Macro-prudential considerations in the field of insurance are still at the inception stage. There are a number of reasons for this:

— most insurance companies emerged from the crisis relatively unscathed,

— the low systemic risk of traditional insurance activities, which are characterised by a predominantly liability-driven investment strategy, a high degree of substitutability, and a low likelihood of runs,

— the lack of an international standard for insurance supervision, although the introduction of the Solvency II framework will set a common standard for the Union.

Still, some insurance companies have expanded their operations to activities that are more likely to contribute to or amplify systemic risk. In particular, non-traditional insurance activities and non-insurance activities could result in correlated common exposures to the financial and business cycle. This is the case, for example, of credit default swaps (CDS) transactions for non-hedging purposes [2].

[1] Hirtle, B. (2007), 'Public disclosure, risk, and performance at bank holding companies', Staff Report No 293, Federal Reserve Bank of New York; Goldstein, M. A., Hotchkiss, E. S., Sirri, E. R. (2007), 'Transparency and liquidity: A controlled experiment on corporate bonds', *The Review of Financial Studies* 20(2), 235-273; Botosan, C. A. (1997), 'Disclosure Level and the Cost of Equity Capital', *The Accounting Review*, Vol. 72, No 3, pp. 323-349.

[2] International Association of Insurance Supervisors (IAIS), 2011, 'Insurance and Financial Stability'.

Non-traditional insurance activities could have wider implications for the financial system and the economy, as in the case of financial guarantees used to improve the rating of complex structured products prior to the crisis. Non-insurance activities (e.g. securities lending) and group structures (e.g. 'bancassurance') could also increase interconnectedness in the financial system. These types of activities are also perceived as having a higher systemic relevance by the International Association of Insurance Supervisors (IAIS) which uses them to identify Global Systemically Important Insurers.

Imposing measures upon non-traditional insurance and non-insurance activities as defined by IAIS is challenging. This is because there is no clear-cut separation and the same activities are often classified differently by the supervisors (e.g. third-party asset management). Therefore, a 'substance over form' analysis is necessary to determine the risk of a specific product or service.

In addition to the abovementioned structural considerations, systemic risk in the insurance sector has a cyclical dimension, since insurers are important investors and may take on more or less risky assets. In the Union, the Solvency II framework introduces market-consistent valuation of insurers' balance sheets. This entails marking the asset side to market, while valuing liabilities by discounting cash flows using risk-free interest rates. This leads to volatile balance sheets and capital levels for insurers that sell long term products. This has the potential of exacerbating pro-cyclical dynamics within the sector and across the financial system. During the upturn, exuberance in risky asset prices can expand market-consistent capital, relative to regulatory capital requirements, while contracting it in the downturn. This could generate capacity for excessive risk-taking in the upturn and pressure to dispose of risky assets in the downturn. Therefore, Solvency II currently contains countercyclical mechanisms, including the equity dampener for equity risks, the possibility of an extended recovery period, and the extrapolation of the risk-free interest-rate curve to a fixed ultimate forward rate. Moreover, discussions are taking place about the inclusion of the 'countercyclical premium' and 'matching adjustments', which both aim to correct capital levels taking excess volatility into account. Without careful design, some of these proposed mechanisms could give rise to unintended consequences for both insurers and the system as a whole. It is important that such mechanisms are transparent and induce, in upturns, the build-up of buffers which can be used in downturns.

Overall, it can be argued that the structural dimension of systemic risk mainly concerns non-traditional and non-insurance activities. These are the activities that are most likely to distribute risk across the financial system and, as such, can be framed in terms of the intermediate objectives and instruments set out in this document. To the extent that these activities constitute relevant criteria for identifying Systemically Important Insurers, they would fall under the intermediate objective of limiting the systemic impact of misaligned incentives with a view to reducing moral hazard. It should be noted, however, that this scenario has been less frequent in the case of insurers than in the case of banks. The structural dimension is also linked to the interconnectedness of insurance and other financial sector entities and the resulting potential for risk contagion. This falls under the intermediate objective of limiting direct and indirect exposure concentrations. Finally, the cyclical dimension is closely linked to endogenous risk taking and fire sales.