

# Annex II to Lower for longer – macroprudential policy issues arising from the low interest rate environment

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Joint Task Force of  
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ESCB Financial Stability Committee (FSC)



**ESRB**  
European Systemic Risk Board  
European System of Financial Supervision

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# 1 Introduction

This Annex presents fact sheets documenting the progress made so far with respect to the policy proposals formulated in the report on Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system (ESRB 2016).<sup>1</sup>

The methodological approach adopted to conduct the analysis presented in the factsheets is detailed in Annex I to the report “Lower for longer – macroprudential policy issues arising from the low interest rate environment”.

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<sup>1</sup> See Appendix F of **Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system**, European Systemic Risk Board, Frankfurt am Main, 2016.

## 2 Fact sheets

### Sustainability of business models

#### Policy A.1.1.1

<p><b>Policy text as drafted in the 2016 report</b></p>	<p>Policy A.1.1.1: The ongoing implementation of Solvency II and its future review should address the risk from the protracted low interest rate environment by reviewing the risk-free rate, and in particular the ultimate forward rate methodology, taking a macroprudential perspective, as well as relevant areas in the long-term guarantee package. The use of additional prudential tools should also be explored, including the power to request a reduction in the maximum level of interest rate guarantees offered in new contracts, the power to cancel or defer dividend distributions (even before the solvency coverage ratio (SCR) has been breached) and introduce discretionary benefit limitation options, and the power to increase resilience by retaining more capital.</p>
<p><b>Link to low interest rate environment (LIRE) as set out in the 2016 report</b></p>	<p>This policy measure has two objectives in respect of low interest rates (LIRs).</p> <ol style="list-style-type: none"> <li>1. To verify that the implementation of Solvency II and its future review guarantee adequate assessment of the risks that a protracted low interest rate environment might generate and, in particular, assess the following two aspects: the risk-free rate term structure used to calculate the technical provisions, which includes the methodology to derive the ultimate forward rate, i.e. the rate through which the discounting curve is extrapolated; and the relevant areas in the long-term guarantee packages.</li> <li>2. To suggest additional prudential tools to be used to improve the strength of insurers in dealing with the risks that low-for-long interest rates might generate. These tools relate to supervisory powers and are aimed at increasing the resilience of insurers that might be put under threat by LIRs. They would involve: (i) a reduction in the maximum level of interest-rate guarantees offered in new contracts; (ii) the power to cancel or defer dividend distributions (even before the SCR had been breached); (iii) options to limit discretionary benefits<sup>2</sup>; and (iv) the power to increase the resilience of insurers by forcing them to retain more capital. Tools (i) and (iii) would involve a reduction in technical provisions; tools (ii) and (iv) would increase the capital resources available to insurance companies.</li> </ol>
<p><b>Type of measure</b></p>	<p>Policy regulation/analysis</p>
<p><b>Sector to which the policy is addressed</b></p>	<p>Insurance (especially companies offering a guaranteed return on life insurance products).</p>
<p><b>Objectives to be achieved by the measure</b></p>	<p>Increase the resilience of insurers to the LIRs by (i) better reflecting LIR risks in Solvency II and (ii) expanding the supervisory toolkit to allow supervisors to increase insurers' resilience to a low-for-long interest rate environment.</p>

*The status of implementation can be assessed by dividing the policy proposal into three parts.*

- *The first part proposes a methodology for deriving the risk-free interest rate term structure (including the ultimate forward rate methodology) and calculating the corresponding technical provisions in order to adequately assess the low-for-long interest-rate risks raised in Solvency II.*
- *The second part proposes a reduction in the maximum level of interest-rate guarantees offered in new contracts and limitation of discretionary benefits.*

<sup>2</sup> These are benefits that the insurers may choose to distribute to life insurance policyholders.

- *The third part proposes the grant of powers to cancel or defer dividend distributions (even before the SCR has been breached) and enhancement of the resilience of insurers by requiring them to retain more capital.*

## **Part A: Adequate assessment of low-for-long risks in Solvency II**

### **A1. Actions taken/institutions**

Three actions taken by the European Insurance and Occupational Pensions Authority (EIOPA) and the European Commission can be identified in this regard.

#### **Definition of a methodology to calculate the risk-free interest rate term structure and its implementation (EIOPA)**

In the wake of entry into force of the Solvency II regime (January 2016), EIOPA has developed a methodology to determine a risk-free interest rate term structure (including the ultimate forward rate) that complies with the requirements of Solvency II. This methodology is being continuously updated and improved (e.g. in terms of new market-data providers, and assessment of the depth, liquidity and transparency of the financial market instruments used in calculating term structures).<sup>3</sup>

Importantly, EIOPA has developed and implemented a methodology for determining the ultimate forward rate (UFR).<sup>4</sup> The UFR is a key parameter for determining the term structure, which is composed of a liquid component and an illiquid component. The liquid component is determined from financial market data, while the illiquid component is extrapolated from the last liquid point to the UFR. EIOPA has drawn up a transparent methodology for the yearly determination of the UFR that reflects market conditions and the LIR environment.<sup>5</sup>

#### **2018 Review of Solvency II (European Commission)**

The European Commission decided to review parts of the legal requirements that apply to interest rate term structures and that are defined in Commission Delegated Regulation (EU) 2015/35; this

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<sup>3</sup> See **Recommendation of the European Insurance and Occupational Pensions Authority, Risk-free interest rate term structures**, European Insurance and Occupational Pensions Authority, Frankfurt am Main.

<sup>4</sup> Monthly technical information on risk-free interest rate term structures is available here: **EIOPA sets out the methodology to derive the ultimate forward rate, European Insurance and Occupational Pensions Authority, Frankfurt am Main, 2017.**

<sup>5</sup> The UFR is the sum of an expected real rate and an expected inflation rate. The expected real rate is the same for all currencies and is calculated as a simple average of the past real rates since 1961. The expected inflation rate is the central banks' inflation objective (2% for the euro). A factor newly added to calculation of the expected real rate for 2020 is the observed real rate, which for 2018 was - 1.68%. The resulting expected real rate for 2018 was 1.55% and the UFR calculated was 3.55%. As the current UFR for the euro is 3.90% and the annual change of the UFR, based on the EIOPA methodology, is limited to 15 basis points, the applicable UFR for 2020 was 3.75%. See **Risk-free interest rate term structures, Report on the Calculation of the UFR for 2020, European Insurance and Occupational Pensions Authority (EIOPA), 2019** for further details.

revision was however not included in its call for advice to EIOPA (see Commission Delegated Regulation (EU) 2019/981).<sup>6</sup>

The main amendments that the European Commission introduced relate to the process to be followed in updating term structures. Prior to those amendments, EIOPA could modify directly some of the parameters used to determine the risk-free term structure, in particular the UFR. Under the new regulation, the UFR and other parameters can only be modified at the European Commission's request or following a substantial change in the data, subject to EIOPA having provided an impact assessment of those changes.

### **2020 Review of Solvency II (EIOPA and the European Commission)**

In February 2019, the European Commission addressed a call for advice to EIOPA on, among other topics, extrapolation of the risk-free interest rate term structure.<sup>7</sup> EIOPA delivered its final opinion in December 2020.<sup>8</sup> The evidence collected in EIOPA's advice suggests that the last liquid point (LLP) for the euro, which is set by law at 20 years in the Solvency II framework, is inappropriate. In its opinion to the European Commission, EIOPA suggests adopting an alternative method that blends market data with an extrapolation technique based on the LLP, thereby improving the market consistency of term structures.

#### **A2. Status of implementation**

In progress: the review of the Solvency II Directive is still ongoing; EIOPA delivered its advice to the European Commission in December 2020. The European Commission is expected to formulate a proposal for amendment of the Directive and the Delegated Regulation (EU) 2019/981 in 2021.

#### **A3. Assessment of the sufficiency of the measure**

Over the last four years, EIOPA has implemented a new methodology for calculating the UFR, that takes into account the interest rate levels and therefore reflects the LIR environment, as explained in part A1 of this fact sheet.

More fundamental changes to the risk-free interest rate term structure could be implemented in 2021 by the European Commission, in the wake of EIOPA's advice (December 2020). The advice includes proposals that are in line with ESRB's 2016 policy proposal.

- Does the current construction/calibration of the measure adequately address LIRE risks?

Some of the proposals in EIOPA's advice are a move in the right direction. It is not possible, however, to provide a final and definitive assessment at this stage given that the legislative process is still ongoing and EIOPA's advice is still in the hands of the European Commission.

What elements are missing/incorrect and why?

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<sup>6</sup> See **Commission Delegated Regulation** (EU) 2019/981 of 8 March 2019 amending Delegated Regulation (EU) 2015/35 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), C/2019/1900 (OJ L 161, 18.6.2019, p. 1).

<sup>7</sup> See **Formal request to EIOPA for technical Advice on the review of the Solvency II Directive**, 11/02/2019.

<sup>8</sup> See **2020 review of Solvency II, EIOPA**.

See the answer above.

## **Part B: Power to request a reduction in the maximum level of interest-rate guarantees offered in new contracts and to limit discretionary benefits**

### **B1. Actions taken/institutions**

As regards new business and contracts issued over the last three years, fifteen national competent authorities (NCAs) currently have the power to request a reduction in the maximum level of interest-rate guarantees; eight NCAs have so far used this power.

Concerning existing business, four NCAs have the power to request a reduction in the maximum level of interest-rate guarantees. Two other NCAs have the same power in the event of a breach of the SCRs. Over the past three years, only one NCA has used this power.<sup>9</sup>

EIOPA's advice on the review of Solvency II suggests giving supervisors the power to restrict voluntary capital distributions when LIRE-related risks arise, even in the absence of a breach of SCRs.

### **B2. Status of implementation**

Since 2016, no action has been taken to grant NCAs with no such toolkit option the power to request a reduction in the maximum level of interest-rate guarantees offered in new contracts. Eight NCAs have imposed a reduction in maximum guaranteed rates for new business.<sup>10</sup> For this reason, implementation of the proposal is assessed as being in progress.

Similarly, no action has been taken to give NCAs the power to limit discretionary benefits.

Nor is there any evidence of action having been taken to request a reduction in the maximum level of interest-rate guarantees in existing contracts.<sup>11</sup> Ten NCAs) required additional provisions to be established for interest-rate risk and intensified their monitoring and reporting by requesting undertakings to include LIR scenarios in their respective own risk and solvency assessments (ORSAs).

### **B3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

In several cases, the powers to request a reduction in the maximum level of interest-rate guarantees offered in new contracts and to limit discretionary benefits are not available to NCAs and there is no certainty about legislators' plans to introduce such powers.

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<sup>9</sup> See [Supervisory statement on the impact of the ultra-low/negative interest rate environment](#), European Insurance and Occupational Pensions Authority, Frankfurt am Main, 19 February 2020.

<sup>10</sup> Among them Austria, Norway, and Belgium.

<sup>11</sup> In the case of Austria, if there is a deterioration in the solvency of individual undertakings, a number of statutory microprudential provisions exist that might make it possible for further measures to be taken (e.g. reducing minimum guarantees in existing contracts).

At Member States level, there is evidence that progress has been made by certain NCAs, as set out above. However, not all the NCAs that have the power to require additional provisions to be set aside for interest-rate risk arising from maximum interest-rate guarantees and not all NCAs with the power to request a reduction in maximum interest-rate guarantees in future contracts have made use of that power.

- Does the current construction/calibration of the measures adequately address LIRE risks?

There is still no harmonised approach to addressing LIRE risks arising from maximum interest-rate guarantees in the insurance sector at European level. In particular, there is a need to take the maximum interest-rate guarantee into consideration in the stress test analysis regularly performed by EIOPA. This might provide an incentive for all NCAs to adopt measures to address maximum interest-rate guarantee risks.

- What elements are missing/incorrect and why?

All NCAs should be given the power to request the set aside of additional provisions for existing maximum interest-rate guarantee risk as well as the power to request a reduction in maximum interest-rate guarantees in future contracts. Likewise, EIOPA's advice on the review of Solvency II suggests that NCAs should be given the power to restrict voluntary capital distributions.

**Part C: Power to cancel or defer dividend distributions (even before the SCR has been breached) and to increase the resilience of insurers by requiring them to retain more capital.**

#### **C1. Actions taken/institutions**

The power to restrict the distribution of dividends largely depends on domestic corporate law. That power has been granted to just four NCAs.<sup>12</sup>

However, eleven NCAs have the power to limit allocations of remuneration and bonuses, while three other NCAs can use this power when the SCR is breached. In general, this power is limited to specific cases, e.g. where risk management provisions have been breached, where remuneration practices provide an incentive for illegal activities or conduct that deviates from ethical standards, or they would instil risk-taking attitudes that conflict with sound and prudent management of the business.

So far, NCAs have, for the most part, used public statements and recommendations to introduce such limitations. In the Opinion on the review of Solvency II, EIOPA advises the European Commission to give NCAs (i) the power to restrict or suspend dividends' distributions and other payments to shareholders, and (ii) the possibility of restricting the purchase by the insurer of own shares, having identifying those situations where those powers could be applied.

The power to impose a capital surcharge does not exist under EU or national law. However, in its Opinion on the review of Solvency II, EIOPA recommends its introduction.

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<sup>12</sup> See [Supervisory Statement on the impact of the ultra-low/negative interest rate environment](#), European Insurance and Occupational Pensions Authority, Frankfurt am Main, 19 February 2020.



## C2. Status of implementation

Implementation of the policy proposal is in progress as regards the power to limit dividend distributions. While some NCAs have the power to do so, others do not.

In its final advice to the European Commission, EIOPA proposes that NCAs be granted the power to impose a capital surcharge. The legislative process surrounding this proposal is ongoing and being assessed by the European Commission.

## C3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

At EU level, the powers concerned are not available. This means that the ESRB can only suggest that restrictions on dividends be imposed, as it did during the COVID-19 crisis.

At Member State level, most countries do not have the power to impose such restrictions.

- Does the current construction/calibration of the measures adequately address LIRE risks?

If adopted and implemented, dividend payment limitations might help in addressing LIRE risks; the same is true of capital surcharges.

- What elements are missing/incorrect and why?

A significant issue is the current lack of uniformity across countries with respect to the prudential toolkit.

### Policy A.1.1.2

<b>Policy text as drafted in the 2016 report</b>	Policy A.1.1.2: Endorse EIOPA's Opinion recommending a) The strengthening of EU regulation applicable to pension funds with a common framework for risk assessment and transparency, including the market-consistent valuation of liabilities and an evaluation of additional funding (including sponsor support). b) To further investigate the interaction and potential systemic impact of (underfunded) pension funds on the real economy, including via future stress tests, taking differences between Member States into account.
<b>Link to LIRE as set out in the 2016 report</b>	Provide better insight into the impact of the low interest rate environment on the sustainability of defined benefit pension funds
<b>Type of measure</b>	Regulation/monitoring
<b>Sector to which the policy is addressed</b>	Pension funds – institutions for occupational retirement provision (IORPs)
<b>Objectives to be achieved by the measure</b>	Better recognition of LIRE-related systemic risks across the EU financial system and the economy. Urge IORP supervisors and managers to take early action to contain the risk stemming from LIREs.

### Assessment:

**Part A: Strengthening of the EU regulation applicable to pension funds with a common framework for risk assessment and transparency, including the market-consistent valuation of liabilities and an evaluation of additional funding (including sponsor support).**

### A1. Actions taken/institutions

In its Opinion to the EU institutions of April 2016, EIOPA recommended that the EU Directive applicable to IORPs (Directive 2003/41/EC of 3 June 2003) be strengthened with a “common framework for risk assessment and transparency” based on a market-consistent balance sheet and standardised risk assessment. At the time of publication of the Opinion, the legislative procedure for the adoption of the new IORP II Directive (Directive (EU) 2016/2341 of 14 December 2016, replacing Directive 2003/41/EC of 3 June 2003) was already at an advanced stage; for this reason, the intention is that EIOPA’s Opinion be considered in the review of the IORP II Directive to be undertaken by 13 January 2023. EIOPA reiterated its views on the need for a harmonized framework in its Opinion on the 2020 Solvency II review (section 14.1, page 97).<sup>13 14</sup>

## **A2. Status of implementation**

The EU Parliament, Council and Commission have not so far endorsed EIOPA’s Opinion on strengthening EU pension fund regulation by introducing a common framework for risk assessment and transparency. EIOPA has, however, reiterated its views on the need for such a framework; EIOPA and the NCAs are, *de facto*, collaborating on analysis of the stress test for pension funds and for this reason we consider the status of implementation to be in progress.

## **A3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

Any future implementation of EIOPA’s Opinion would require a new legislative initiative. Article 62(1) of the IORP II Directive requires the European Commission to review the Directive and report on its implementation and effectiveness by 13 January 2023. This review must consider “the adequacy of this Directive from a prudential and governance point of view” and might therefore take into account EIOPA’s Opinion.

- Does the current construction/calibration of the measures adequately address LIRE risks?

Since EIOPA’s opinion has not been considered so far, there is still no common framework for addressing LIRE risks in Europe.

- What elements are missing/incorrect and why?

New legislation establishing a common framework for addressing LIRE risks that focuses on the adequacy of prudential and governance aspects has yet to be implemented; for this reason, we consider the actions taken to be insufficient.

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<sup>13</sup> See [Opinion on the 2020 review of Solvency II, EIOPA-BoS-20/749](#), European Insurance and Occupational Pensions Authority, Frankfurt am Main, 17 December 2020.

<sup>14</sup> See also Background document on the Opinion on the 2020 Review of Solvency II – Analysis, EIOPA-BoS-20/750, European Insurance and Occupational Pensions Authority, Frankfurt am Main, 17 December 2020 (see section 14.1.5, pages 720-725).

**Part B: Further investigate the interaction and potential systemic impact of (underfunded) pension funds on the real economy, including through future stress tests, taking differences between Member States into account.**

**B1. Actions taken/institutions**

EIOPA tested the risk of a prolonged low interest rate environment combined with an abrupt and major fall in the price of assets held by IORPs (a “double-hit” scenario) in its 2017 occupational pensions stress test.<sup>15</sup> As a follow up to this exercise, the 2019 occupational pensions stress test<sup>16</sup> considered the implications of the specific activities and common behaviours of IORPs with respect to potential systemic risk drivers (e.g. search for yield, flight to quality or herding behaviour) to explore the potential indirect impacts of these activities and behaviours on financial stability. EIOPA will follow up on the findings and further analyse the investment behaviour of IORPs in the current persistently ultra-low and negative interest rate environment.

Going forward, EIOPA aims to further improve its analytical toolset for stress testing IORPs by extending the horizontal approach and, in so doing, assessing the common exposures and vulnerabilities of the defined-benefit and defined-contribution sectors as a whole.

**B2. Status of implementation**

In progress. EIOPA takes LIREs into account in its stress tests and is working to further develop its methodology.

**B3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

EIOPA's 2017 stress test took into account the risk of a prolonged low interest rate environment.<sup>17</sup> The stress test carried out in 2019 assumed an abrupt reversal in global risk premia resulting in higher shocks to interest rates on short maturities, whereas concerns in the euro area about growth in the long term (due, for instance, to demographic changes) were assumed to result in lower shocks for long-term maturities.<sup>18</sup> The introduction of the current Pension Data Reporting Joint Template improves on previous reporting processes and paves the way for more granular stress testing in the future.

- Does the current construction/calibration of the measures adequately address LIRE risks?

The latest EIOPA stress test in 2019 addressed some of the issues flagged in the 2016 LIR report and improved on previous exercises. Notwithstanding this progress, stress tests based on common methodologies for all pension funds, analysis of the second-round effects of stress testing and the

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<sup>15</sup> See **Occupational pensions stress test 2017**, European Insurance and Occupational Pensions Authority, Frankfurt am Main.

<sup>16</sup> See **Occupational pensions stress test 2019**, European Insurance and Occupational Pensions Authority, Frankfurt am Main.

<sup>17</sup> See **Occupational pensions stress test 2017**, European Insurance and Occupational Pensions Authority, Frankfurt am Main.

<sup>18</sup> See **Occupational pensions stress test 2019**, European Insurance and Occupational Pensions Authority, Frankfurt am Main.

impact on the real economy should be developed further in order to ensure that LIRE risks are assessed more effectively.

- What elements are missing/incorrect and why?

Analytical work on IORP investment behaviour based on EIOPA's new IORP reporting procedure is ongoing.

Analysis of the interaction between and potential systemic impact of (underfunded) pension funds on the real economy is being conducted using data collected thanks to the new reporting standards. Further work along these lines will contribute to full implementation of the 2016 proposals.

### Policy A.1.1.3

<p><b>Policy text as drafted in the 2016 report</b></p>	<p>Policy A.1.1.3: Harmonised assessment and regulation of interest rate risk in the banking book through swift implementation into EU law (CRR/CRD) of the BCBS guidance.</p> <p>Interest rate risk in the Banking Book (IRRBB) is usually assessed over two dimensions: how sensitive the Economic Value of Equity of a bank's Banking Book is to interest rate changes (EVE approach) and how sensitive the Net Interest Income of a bank is to interest rate changes (Earnings or NII approach). The two approaches have partly conflicting objectives: the minimisation of NII volatility is best pursued by a "fixed-rate" balance sheet structure, while the minimisation of EVE volatility discourages the assumption of long-term fixed-rate assets, given the relatively scarce supply of long-term fixed-rate liabilities.</p> <p>The current treatment of IRRBB in the EU (i.e. CRR/CRD package) dates back to BCBS principles set out in 2004 and complemented by EBA Guidelines in 2015. Both documents focus on the stability of the Economic Value of Equity, for which it is easier to establish a link to capital requirements. In particular, banks are expected to incur capital consequences when EVE volatility, in the event of a parallel shock in IR, exceeds a threshold of 20% of total regulatory capital. The Basel Committee has recently published revised standards tightening the above threshold to 15% of Tier 1 capital and prompting banks to disclose their risk in accordance with standardised templates and a few mandatory calculation assumptions. The Basel Committee has also set out additional qualitative criteria that banks should take into account in their risk management practices and that supervisors should enforce during their supervisory reviews.</p> <p>EU authorities will have to incorporate the revised IRRBB standards into EU law – possibly through the forthcoming update of the CRR/CRD package. However, given that discussions on implementation in the EU have not yet begun, EU implementation of the standards might be delayed beyond the BCBS deadline of 1 January 2018. The EBA will probably be asked to update its existing guidelines for the management of IRRBB (2015).</p>
<p><b>Link to LIRE as set out in the 2016 report</b></p>	<p>Resilience of banks: banks' business models may be called into question during a prolonged period of low interest rates – this policy proposal is especially relevant for the "low-for-long" scenario. Indeed, suppressed risk premia in a low interest rate environment incentivises banks to take more term risk (duration mismatch risk). In addition, given that significant changes in exposure to IRRBB can only be made over a long-term horizon, measures to increase banks' resilience to rising IRRBB and rising risk premia should be implemented soon, even under a "low-for-long" scenario.</p>
<p><b>Type of measure</b></p>	<p>Regulation</p>
<p><b>Sector to which the policy is addressed</b></p>	<p>Banks</p>
<p><b>Objectives to be achieved by the measure</b></p>	<p>Discourage the build-up of systemic risk through excessive extension of the duration gap between banks' assets and liabilities. By reducing the threshold for the impact of an IRR scenario that triggers the identification of outlier banks (from 20% of EVE to 15%), which in turn triggers supervisory action, the measure is meant to discourage any interest risk taking that might be viewed as excessive in a LIR environment.</p>

## Assessment

### A1. Actions taken/institutions

The guidance provided by the BCBS was legally implemented in the EU as part of Capital Requirements Directive V (CRDV)<sup>19</sup>/Capital Requirements Regulation II (CRR II)<sup>20</sup> package in 2019.

The EBA has also published new guidelines on IRRBB, transposing some of the technical aspects of the BCBS guidance and of the European Central Bank (ECB) IRRBB stress test of 2017.

## A2. Status of implementation

The proposal has been implemented at EU level. The process of implementation at Member State level should be finalized by the end of 2020.

## A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

The following documents summarise the progress made since 2016 and mentioned in the paragraphs above: CRD V (Pillar 2)<sup>21</sup>, CRR II (disclosure)<sup>22</sup>, the ECB IRRBB stress test of 2017<sup>23</sup> and the new EBA IRRBB guidelines.<sup>24</sup>

- Does the current construction/calibration of the measures adequately address LIRE risks?

The focus on minimization of EVE volatility seems to be consistent with the notion that one of the primary functions performed by banks is maturity transformation, which would not be possible if banks were pushed strongly towards a fixed-rate liability structure, as would be the case under a regulatory framework that minimized NII.

Whether or not the calibration of volatility measures is appropriate would depend on the design of the underlying interest-rate scenarios, as well as on the volatility thresholds used; in this regard, no empirical analyses are available to our knowledge. While the recent tightening of the threshold would seem to have incorporated the likelihood of a more persistent LIRE than envisaged in 2016, the recent developments related to the COVID-19 pandemic will presumably require additional assessments to be conducted given that real rates may decrease even further and interest-rate volatility may increase, particularly in countries in a weak fiscal position.

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<sup>19</sup> Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (OJ L 176, 27.6.2013, p. 338).

<sup>20</sup> Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012 (OJ L 150, 7.6.2019, p. 1).

<sup>21</sup> See Directive (EU) 2019/878 of the European Parliament and of the Council of 20 May 2019 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, PE/16/2019/REV/1, OJ L 150, 7.6.2019, p. 253–295.

<sup>22</sup> See [Regulation \(EU\) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation \(EU\) No 648/2012](#) (OJ L 176, 27.6.2013, p. 1).

<sup>23</sup> See [Sensitivity Analysis of IRRBB – Stress test 2017](#), European Central Bank, Frankfurt am Main.

<sup>24</sup> See [Final report on guidelines on the management of interest rate risk arising from non-trading book activities](#), EBA/GL/2018/02, European Banking Authority, Paris, 18 July 2018

- What elements are missing/incorrect and why?

A Pillar 1 component for IRRBB would seem, in principle, warranted. However, in the 2016 BCBS guidelines, the possibility of treating IRRBB based on a standardized Pillar 1 approach was seen as difficult to implement due to the complexities involved in formulating a standardized measure of IRRBB (which would need to be both sufficiently accurate and risk sensitive to set regulatory capital requirements). The BCBS concluded therefore that the heterogeneous nature of IRRBB would be more appropriately captured in Pillar 2.

### Policy A.1.2.1

<b>Policy text as drafted in the 2016 report</b>	Policy A.1.2.1: Finalise the resolution framework under the BRRD on country and EU levels.
<b>Link to LIRE as set out in the 2016 report</b>	Resilience of banks: broad-based pressure on profitability and solvency lowers systemic resilience and increases failure risk for unsustainable business models. In this regard, a fully operational recovery and resolution regime is needed to ensure the orderly exit of failing institutions.
<b>Type of measure</b>	Policy regulation
<b>Sector to which the policy is addressed</b>	Banking, credit institutions, investment firms
<b>Objectives to be achieved by the measure</b>	An effective recovery and resolution framework to ensure orderly handling of an institution that is failing, or likely to fail, through the application of resolution powers and tools, while maintaining critical or other functions that are material to the financial system or the real economy, thus enhancing resilience of the financial system.

### Assessment

#### A1. Actions taken/institutions

The EU Bank Recovery and Resolution Directive (BRRD)<sup>25</sup> has been legally implemented at EU and country levels.

All Member States have notified having completed transposition. The European Commission has verified that the BRRD has been fully transposed in all Member States and is currently verifying that the measures have been transposed correctly at national level.

In April 2019, the European Parliament and the Council of the European Union adopted the Banking Package<sup>26</sup>, which was published in the Official Journal in June 2020. It includes amendments to certain provisions of the BRRD and the Single Resolution Mechanism Regulation (SRMR)<sup>27</sup>, as well as to the CRD and CRR. Some of the provisions in the package relate to the

<sup>25</sup> Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council (*OJ L 173, 12.6.2014, p. 190*).

<sup>26</sup> See amendments to Capital Requirements Regulation (CRR) and Capital Requirements Directives (CRD).

<sup>27</sup> Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010. *OJ L 225, 30.7.2014*

minimum requirement for own funds and eligible liabilities (MREL). In particular, they provide measures to align the existing legislative framework with the international standard issued by the Financial Stability Board on total loss absorbing capacity (TLAC). They introduce significant changes to MREL calibration, eligibility criteria and group allocation, and the consequences of any breach. In addition, the text tackles the issue of contractual recognition of bail-in for liabilities issued under third-country laws, as well as the powers of resolution authorities to suspend payments (moratorium powers). While some of the requirements in CRR related to the TLAC provisions became applicable in June 2020, Member States have until December 2020 to transpose the BRRD<sup>28</sup> and CRDV amendments and the SRMR will also become applicable at the same time. The Single Resolution Board (SRB) has already consulted on its updated 2020 MREL policy reflecting the changes to the Banking Package and will publish its document in spring 2020, for application from 2021, following its transposition.

In April 2019, the European Commission published a report<sup>29</sup> on the functioning of the BRRD and SRMR and identified areas for further potential improvement.

In addition to the Banking Package, other changes to the crisis management framework are being discussed in various fora as part of a broader debate on the completion of the banking union. A particular focus is the handling of smaller and medium-sized bank failures in insolvency proceedings.

## **A2. Status of implementation**

BRRD1/SRMR1 are legally implemented. The framework has been operationalised to a large extent and is being implemented. BRRD2/SRMR2 and other changes introduced by the Banking Package through CRR/CRD are likewise being implemented.

## **A3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

Implementation of BRRD is ongoing. The resolution authorities in all the Member States and SRB, for the banking union, have set resolution strategies and MREL targets in place for all the banks under their direct remit. Banks have therefore begun removing impediments to these strategies and building up MREL resources. Since the introduction of BRRD, a number of resolution colleges have been set up with a view to resolution plans, resolvability assessments and MREL being agreed between the competent home and host authorities or resolving banking groups within the EU.

Within the banking union, the SRB has been preparing resolution plans for the banks under its remit. In addition, it has developed guidance on critical functions and the operationalization of bail-

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<sup>28</sup> Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC.

<sup>29</sup> See [Report from the Commission to the European parliament and the council on the application and review of Directive 2014/59/EU \(Bank Recovery and Resolution Directive\) and Regulation 806/2014 \(Single Resolution Mechanism Regulation\)](#), COM/2019/213 final, 30/04/2019.

ins, as well as formulated its expectations of banks in terms of capabilities to enable resolution. It is also working on a number of other topics, in particular operational continuity and management information systems.

Banks' compliance with the requirements and guidance is in a transitional phase. Some banks still face MREL shortfalls but are on track to fulfil the objectives within the specified timeframes. EBA published a quantitative MREL report<sup>30</sup> in January 2020 in which it sets out the state of play with compliance with MREL throughout the EU.

There is still limited practical experience of application of the framework to banks that are failing or likely to fail. Up to now, there have been 14 cases of the use of resolution tools under the BRRD within the EU (for banking institutions domiciled in Portugal, Croatia, Italy, Spain, Latvia and Poland). Of those, only one case (Banco Popular Espanol, June 2017) involved resolution of an institution under SRMR.

- Does the current construction/calibration of the measures adequately address the LIRE risks?

LIREs put stress on the business models of a large number of banks. The ability of the BRRD regime to address the challenges of system-wide crises and multiple bank failures is untested. There is also limited evidence even in relation to idiosyncratic situations. All this makes formulating firm conclusions very difficult.

- What elements are missing/incorrect and why?

Although the recovery and resolution framework is already complex and practical use of the framework is rare, there are a number of areas for further analysis.

The EC's review report, prepared for the European Parliament and Council of the EU,<sup>31</sup> lists a number of areas where further assessment would be needed. Concretely, in terms of the application of the BRRD/SRMR, the topics to be further analysed include precautionary recapitalisation, early intervention measures, a common backstop for the Single Resolution Fund (SRF), and intergovernmental agreement and measures to ensure liquidity in resolution.

In addition to the issues identified by the European Commission, there is also a need to look at incentives for the resolution authorities and supervisory authorities to take action and cooperate (including on a cross-border basis).

A broader, more political discussion on the completion of the banking union has been taking place in inter-governmental fora (Eurogroup, High Level Working Group on a European Deposit Insurance Scheme (HLWG EDIS)). Ongoing discussions are focusing on four topics, namely: implementation of a European deposit insurance scheme, enhancement of the crisis management framework, achievement of greater cross border market integration and the regulatory treatment of sovereign exposures and safe assets.

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<sup>30</sup> See **Quantitative MREL Report**, EBA/rep/2020/07, European Banking Authority, Paris, 2020.

<sup>31</sup> Final Report from the Commission to the European Parliament and the Council on the application and review of Bank Recovery and Resolution Directive) and Single Resolution Mechanism Regulation, COM(2019) 213 final, 30.04.2019.



## Policy A.1.2.2

<b>Policy text as drafted in the 2016 report</b>	Policy A.1.2.2: Develop effective recovery and resolution procedures for insurance companies (at national and EU levels) whose business models prove unviable, including exploring legal options for modifying the terms of existing contracts with guaranteed returns, as part of the resolution process and as a measure of last resort if other instruments, like guarantee schemes, have proved insufficient and the modification is in the interest of policyholders.
<b>Link to LIRE as set out in the 2016 report</b>	The lack of adequate return on assets in a LIR environment to meet liabilities with higher guaranteed returns may result in a deterioration in the balance sheets of insurance companies offering guaranteed-return life-assurance products. In the long term, this may lead them to breach their minimum capital requirements (MCRs) (including the SCR). If multiple insurance companies faced this situation, the result could be large-scale termination of retirement insurance services and, consequently, the slump in confidence in financial system.
<b>Type of measure</b>	Policy regulation
<b>Sector to which the policy is addressed</b>	Insurance (especially companies offering guaranteed-return life-assurance products)
<b>Objectives to be achieved by the measure</b>	Resolution of insurers that are failing or likely to fail involves ensuring the continuity of the insurance contracts and of payments to policyholders, as well as the liquidation of non-essential or substitutable services in an orderly, cost-efficient and timely manner, in ways which avoid any systemic impact on the real economy and/or financial stability.

## Assessment

### A1. Actions taken/institutions

The European Commission has considered the need to introduce a harmonised framework for recovery and resolution (R&R) in the insurance sector but has not formulated any concrete proposals as yet. In 2012, the European Commission launched a consultation<sup>32</sup> on a possible framework for the R&R of non-bank financial institutions, including primary insurers and reinsurers. The aim of this consultation was to gather the views of stakeholders as to the possibility of developing an R&R framework within Europe. In 2016, Jonathan Hill, then Commissioner for Financial Stability, Financial Services and the capital markets union, held that other policy areas should receive higher priority. It was then decided to continue monitoring any developments in this field.

In the meantime, EIOPA has continued to work on recovery and resolution in the insurance sector and on the need to harmonise the framework across the EU. EIOPA published a discussion paper<sup>33</sup>, followed by the adoption of a formal Opinion<sup>34</sup>, on this topic in 2017. This work is aimed at identifying a set of minimum harmonized features across R&R frameworks for insurers in the EU.

<sup>32</sup> European Commission (2012), Consultation on a possible recovery and resolution framework for financial institutions other than banks.

<sup>33</sup> Discussion paper on Potential harmonisation of recovery and resolution frameworks for insurers, EIOPA-CP-16/009, European Insurance and Occupational Pensions Authority, Frankfurt am Main, 02 December 2016.

<sup>34</sup> Opinion to Institutions of the European Union on the Harmonization of Recovery and Resolution Frameworks for (Re)insurers across the Member States, EIOPA-BoS/17-148, European Insurance and Occupational Pensions Authority, Frankfurt am Main, July 2017.

The ESRB has also focused on these issues as a follow up to the 2016 LIRE Report and published a dedicated report on this issue.<sup>35</sup> This report (i) discussed the need for comprehensive R&R policies to complement supervisory and macroprudential policies; (ii) identified and set out a number of potential R&R tools; (iii) highlighted the funding aspects of the resolution process; and (iv) considered the cross-sectoral and cross-border implications and contagion channels that arise when resolution tools are applied. The report advocated the development of a harmonized R&R framework for insurers across the EU.

In its call for advice on the 2020 review of Solvency II, the European Commission asked EIOPA to further reflect on recovery and resolution rules for insurers.<sup>36</sup> In particular, EIOPA was asked to assess whether the Solvency II rules on recovery and early intervention powers should be further developed and whether there was a need for minimum harmonized rules on resolution, as well as to advise on appropriate triggers.

EIOPA's Opinion on the review of Solvency II included a proposal to introduce a minimum harmonised R&R framework across the EU Single Market.<sup>37</sup> In particular, the Opinion recommends: (i) extending the Solvency II regime to include a pre-emptive recovery planning requirement for firms covering a "very significant share" of each national market and a pre-emptive resolution planning requirement for firms covering a "significant share" of each national market; (ii) introducing into the Solvency II regime a set of preventive measures to be used before a breach of capital requirements; (iii) the designation of a resolution authority in each Member State, to be granted a set of resolution powers to be exercised in a proportionate way.

## **A2. Status of implementation**

In progress. There is still a high heterogeneity of resolution tools available under national legislation in EU countries. The European Commission is currently assessing the need to implement harmonized recovery and harmonized resolution schemes across the EU Single Market as part of the review of Solvency II.

## **A3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

At the EU level, analysis of the issue is ongoing. EIOPA's proposals were formulated as part of the current 2020 Solvency II Review at the request of the European Commission. No decision to implement harmonized minimum requirements at EU level has yet been taken – the legislative process is ongoing.

Before 2016, there was no consensus among EU Member States on the need for an EU-level regulatory initiative on this matter (Expert Group on Banking, Payments and Insurance (EGBPI) 2015). More recent discussions have revealed that a sizeable number of Member States would now

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<sup>35</sup> Recovery and resolution for the EU insurance sector: a macroprudential perspective, European Systemic Risk Board, Frankfurt am Main, August 2017.

<sup>36</sup> See [Request to EIOPA for technical advice on the review of the SOLVENCY II Directive](#), 11 February 2019.

<sup>37</sup> See [Opinion on the 2020 Review of Solvency II](#), EIOPA-BoS-20/749, European Insurance and Occupational Pensions Authority, Frankfurt am Main, 17 December 2020.

be in favour of EU-level harmonisation on recovery and resolution, provided that this caters for the particularities of the insurance sector (EGBPI 2020).

At Member State level, there is high heterogeneity of resolution tools and competences available under national legislation in EU countries. In recent years, France, the Netherlands and Romania have developed their own national recovery and resolution frameworks for insurance companies. While the content varies according to the related political emphasis (e.g. scope for recovery and resolution planning, approach to policyholders' protection, etc.), all three frameworks were inspired by the BRRD.

Based on a survey conducted by EIOPA on existing national recovery and resolution frameworks for insurers within the EU, reflecting the situation in February 2016, two Member States have put in place dedicated insurance resolution authorities. In other cases, competences as regards the toolkit have been assigned to supervisory institutions or ministries of finance (MoFs). As regards the toolkit, the EIOPA survey concluded that resolution powers were, for the most part, lacking. Twelve Member States nevertheless reported powers to effect portfolio transfer, with or without judicial intervention or the agreement of policyholders. Seven Member States indicated that they had contemplated changes to their frameworks in the course 2017.

- Does the current construction/calibration of the measures adequately address LIRE risks?

Yes. EIOPA's recent Opinion on the review of Solvency II proposes a set of resolution powers, including the power to restructure, limit or write down insurance liabilities and allocate losses to policyholders, who will need to be provided with additional safeguards<sup>38</sup>; these proposals are in line with the proposal set out in the 2016 Report.

- What elements are missing/incorrect and why?

The framework proposed by EIOPA would seem to be sufficient to manage the process effectively, foster cross-border cooperation and coordination and avoid unnecessary economic costs stemming from uncoordinated decision-making processes in the event of cross-border failures, while allowing for the flexibility needed to accommodate differences in insurance sectors across the EU.

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<sup>38</sup> Background analysis of the Opinion on the Solvency II Review, Box 12.5, page 663.

### Policy A.1.2.3

<b>Policy text as drafted in the 2016 report</b>	Policy A.1.2.3: Evaluate the consistency of resolution regimes across borders and sectors
<b>Link to LIRE as set out in the 2016 report</b>	Long-term problems with the resilience of certain banking business models caused by a LIRE may weaken the economic fundamentals of such institutions and pose a risk of failure across EU countries. The same may be true for insurance undertakings, especially those offering guaranteed-return life-assurance products (concentrated in a few countries). Should the risk of failure materialise as a result of a LIRE, these institutions may require the use of resolution powers. Cross-sectoral and cross-border contagion risk may arise from the unintended consequences of applying country-specific and sectoral resolution powers.
<b>Type of measure</b>	Analytical
<b>Sector to which the policy is addressed</b>	Banking; insurance; cross sectoral
<b>Objectives to be achieved by the measure is aiming to achieve</b>	The main objective of this policy proposal is to ensure that resolution regimes in different areas of the financial system are consistent with each other and do not create systemic risk in other sectors, e.g. as a result of domino effects or because some creditors are treated more benignly than others. Furthermore, the expansion of shadow banking activities <sup>38</sup> anticipated means that the costs and benefits for institutions offering similar products or services should receive level-playing field treatment from a regulatory point of view. This also applies to recovery and resolution. Consistency among resolution regimes could reduce contagion from spillovers across sectors and should ensure a more level playing field for EU financial institutions.

### Assessment

#### A1. Actions taken/institutions

A dedicated analysis of the cross-sectoral and cross-border consistency of resolution regimes has not been done yet. There are nonetheless some on-going analyses that may contribute to this issue, at least partially.

In one section of ESRB (2017)<sup>39</sup>, elaborated, inter alia, on the cross-sectoral and cross-border implications and contagion channels that might arise when insurance resolution tools were applied.

The European Commission, in an ongoing review of the implementation of the BRRD into national legislation, is currently verifying whether the measures have been correctly transposed at national level. Going forward, the results of the transposition work, combined with further work on cross border market integration, could facilitate the identification of cross-border application inconsistencies that might have negative cross-border effects. Currently, the consistency of the framework (in particular the application of insolvency proceedings), the resolution tools, but also the subdued cross-border market integration in the EU are under discussion by Member States in inter-governmental fora (Eurogroup, HLWG EDIS).

Enhancing EU cross-border market integration was one of the topics also discussed in inter-governmental fora (Eurogroup, HLWG EDIS) in 2019 and 2020, as a part of broader discussions on

<sup>39</sup> **Recovery and resolution for the EU insurance sector: a macroprudential perspective**, European Systemic Risk Board, Frankfurt am Main, August 2017.

the completion of the banking union. The Eurogroup has a mandate until June 2020 to propose a way forward on banking union.

A number of reports<sup>40</sup> and studies<sup>41</sup> have been done or commissioned by the European Commission, or prepared by the Financial Stability Board (FSB)<sup>42</sup>, that focus on the application of the BRRD/SRMR, on differences between bank insolvency laws and on the implementation of resolution planning standards. While none of them has specifically included analysis of the consistency of resolution frameworks or the identification of barriers to cross-border resolution, they have all touched on these matters in one way or another.

The European Commission has also commissioned a study<sup>43</sup> on the harmonization of national insolvency laws and potential outcomes of possible future application of the resolution framework. This study shows that insolvency regimes for banks are extremely varied at national level, both in terms of general structure and specific features, such as the hierarchy of claims or the triggers for initiating proceedings, and that further harmonization might be appropriate.

The EBA has also conducted and published certain topical studies on relevant issues. One of the EBA's tasks with regard to the resolution framework is to monitor and assess consistent implementation of the legislation among Member States. On the recovery planning side, examples of this work range from reports on the application of simplified obligations and comparative analyses of critical functions, recovery options, governance and recovery indicators, and recovery scenarios.

## **A2. Status of implementation**

The proposal has not been implemented. Little progress has been recorded since 2016. A formal analysis of the contagion channels between banking and insurance (and central counterparties (CCPs)) has not been conducted so far. To date, the only work undertaken on these topics has been academic.

## **A3. Assessment of the sufficiency of the measure**

Insufficient due to lack of implementation.

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<sup>40</sup> Final Report from the Commission to the European Parliament and the Council on the application and review of Bank Recovery and Resolution Directive) and Single Resolution Mechanism Regulation, 30.04.2019.

<sup>41</sup> Study on the differences between bank insolvency laws and on their potential harmonisation, VVA, Grimaldi & Bruegel, November 2019.

<sup>42</sup> Thematic Review on Bank Resolution Planning. Peer Review Report, Financial Stability Board), April 2019; Report on Market Fragmentation, Financial Stability Board, June 2019.

<sup>43</sup> Impact assessment study on policy options for a new initiative on minimum standards in insolvency and restructuring law, COM, 2017.

## Broad-based risk taking

### Policy A.2.1.1

<b>Policy text as drafted in the 2016 report</b>	Policy A.2.1.1: Enhance the monitoring of financial and real asset valuations, with a view to strengthening early warning systems and communication (e.g. by giving it more prominence in the Risk Dashboards and in the work programmes of relevant institutions).
<b>Link to LIRE as set out in the 2016 report</b>	Risk of asset price misalignments, which can lead to abrupt revaluations in the event of an increase in risk premia, and risks related to the build-up of imbalances in residential and/or commercial real estate.
<b>Type of measure</b>	Monitoring
<b>Sector to which the policy is addressed</b>	Financial and real estate (RE) markets, cross-sectoral
<b>Objectives to be achieved by the measure</b>	The ultimate objective of the policy is to develop a more formalised risk-monitoring system coordinated by the ESRB, highlighting – and as much as possible, quantifying – risks related to asset valuations. (LIR, 2016)

### Assessment

#### A1. Actions taken and relevant initiatives

A framework has been developed by the ESRB to provide concrete guidance on the assessment of the systemic risks that may stem from developments in RE markets. The report “Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: residential real estate”<sup>44</sup> (2019) documents the quantitative framework developed by the Working Group on Real Estate Methodologies (WG – REM) for assessing residential real-estate vulnerabilities and the related macroprudential policies in terms of appropriateness and sufficiency. The report “Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate”<sup>45</sup> (2019) drawn up by the same working group looks at the commercial real-estate market.

The ESRB has also published reports providing an assessment of RE vulnerabilities. With regard to RE risks, the ESRB published a report on vulnerabilities in the EU commercial real estate sector in November 2018.<sup>46</sup> This report provided an analysis of financial stability risks stemming from the commercial real-estate (CRE) sector, following on from the work of the Expert Group on Real Estate in 2015. Concerning residential real estate, the ESRB published a report, “Vulnerabilities in the residential real-estate sectors of the EEA countries”, which provided an analysis of the vulnerabilities of the residential real-estate (RRE) sector across EU countries, in September 2019.<sup>47</sup>

<sup>44</sup> See [Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: residential real estate](#), European Systemic Risk Board, Frankfurt am Main, September 2019.

<sup>45</sup> See [Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate](#), European Systemic Risk Board, Frankfurt am Main, December 2019.

<sup>46</sup> See [Press release – Report on vulnerabilities in the EU commercial real estate sector](#), European Systemic Risk Board, Frankfurt am Main, 26 November 2018.

<sup>47</sup> See [Vulnerabilities in the residential real estate sectors of the EEA countries](#), European Systemic Risk Board, Frankfurt am Main, September 2019.

In line with its mandate,<sup>48</sup> the ESRB published a set of country-specific warnings on medium-term vulnerabilities in the residential real-estate sector in November 2016. The warnings were addressed to the relevant ministers in the following eight Member States: Belgium, Denmark, Luxembourg, the Netherlands, Austria, Finland, Sweden and the United Kingdom. In 2019, these warnings were complemented by a follow-up report on medium-term vulnerabilities in the residential real-estate sector of the countries that had received the warnings.<sup>49</sup>

In September 2019 a set of country-specific warnings and recommendations were issued on medium-term vulnerabilities in the residential real-estate sector. This time the warnings were addressed to the competent ministers of the following five countries: Czech Republic, Germany, France, Iceland and Norway. The competent ministries of the following six countries were sent recommendations instead: Belgium, Denmark, Luxembourg, the Netherlands, Finland and Sweden.

As regards the monitoring of financial assets (e.g. prices, spreads and volumes), the ESRB has continued to publish its Risk Dashboard<sup>50</sup> – a set of comprehensive quantitative and qualitative indicators of systemic risk in the EU financial system – for the last four years. These indicators encompass: the interlinkages and composite measures of systemic risk; macro risks; credit risks (including RE-related risks); funding and liquidity; market risk; profitability and solvency; structural risk; and risk related to central counterparties. The Risk Dashboard has been published quarterly ever since its adoption by the General Board, and is accompanied by an overview that explains the recent development of the indicators.

## **A2. Status of implementation**

The policy was implemented.

## **A3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

Significant progress was made in the RE sector, where multiple initiatives have been taken to monitor and limit the build-up of imbalances in both the residential and/or commercial real-estate sector. Some progress has also been made in the financial assets area. The most relevant publication is the Risk Dashboard, which is in line with the current policy proposal for monitoring financial and real asset valuations.

- Is the framework developed able to effectively assess LIRE risk across the financial system (as intended)? Is the monitoring framework complete? Is it used actively at EU level?

There is a robust framework for determining any overvaluation of RE prices; there is monitoring of financial assets. These make it possible to monitor and assess financial and real asset valuations in the event of a LIRE at country and EU levels.

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<sup>48</sup> The ESRB has a mandate to issue warnings when significant systemic risks are identified and to provide recommendations for remedial action to address such risks.

<sup>49</sup> Follow-up report on countries that received ESRB warnings in 2016 on medium-term vulnerabilities in the residential real estate sector (2019).

<sup>50</sup> See **Risk Dashboard**, European Systemic Risk Board, Frankfurt am Main.

- What elements are missing/incorrect and why?

The objective of the policy proposal has been fulfilled. We have identified no missing or incorrect elements.

#### Policy A.2.2.1, A.2.2.2, B.1.2.1

<b>Policy text as drafted in the 2016 report</b>	<p>Policy A.2.2.1: Implement, on a country-specific basis, macroprudential measures (LTV, DTI, etc.) to strengthen resilience to risk revaluation and pre-empt the build-up of imbalances and systemic risks from the relaxation of lending conditions.</p> <p>Policy A.2.2.2: Adopt, on a country-specific basis, prudent lending principles across real estate lenders, including loan affordability tests, (accounting for the impact of interest rate changes) and collateral valuation standards.</p> <p>Policy B.1.2.1: Implement a monitoring framework for lending standards for all credit lending institutions, not limited to banks (framework to be strengthened over time as data gaps are being closed).</p>
<b>Link to LIRE as set out in the 2016 report</b>	<p>A LIRE may incentivize lending on both demand and supply side. On the demand side, low interest rates may incentivize borrowing, such as household spending, with lenders preferring to maximize their lending capacity by contracting higher LTV loans. On the supply side, low interest rates, and low margins on lending may be partially offset by higher volumes of lending with strong credit supply from financial intermediaries.</p> <p>Against this backdrop, macroprudential authorities should implement a sound and comprehensive system for monitoring lending standard parameters (e.g. limits on LTV, debt service-to-income (DSTI), loan-to-income (LTI) ratios and maturity in the case of retail housing loans). The extent of the monitoring should be proportionate and tailored to the level of risk in each country, ensuring that tail risks (e.g. the share of loans with high LTV and DSTI) are adequately captured. On the basis of this monitoring, authorities are required to take action when facing relaxed and riskier lending practices.</p>
<b>Type of measure</b>	Monitoring; policy regulation
<b>Sector to which the policy is addressed</b>	RRE/CRE, and notably price misalignment (credit & financial cycle), for the three recommended policy actions, and for proposal B121, with the scope gradually being widened to include lending beyond the real estate sector.
<b>Objectives to be achieved by the measure</b>	<p>Implement a sound and comprehensive system for monitoring lending standard parameters (e.g. limits to LTV, DSTI, LTI ratios and maturity in the case of retail housing loans) at macroprudential-authority level.</p> <p>The scope of the monitoring framework should also be widened to include lending beyond the real-estate sector in order to monitor any incentives for lenders to lower credit standards or take on excessive risks.</p> <p>Include measures relating to lending standards in the standard toolkit of all national macroprudential authorities. Each Member State should therefore ensure that its macroprudential authority has the power to implement such measures (as a minimum, LTV limits, including sound real-estate valuation principles, LTI/DSTI limits, including loan affordability tests for a possible interest-rate jump, and maturity/amortisation limits).</p> <p>Recommendations A221, A222 and B121 of the 2016 LIRE report are jointly assessed.</p>

### Assessment

#### A1. Actions taken/institutions

##### On the monitoring framework



Recommendation ESRB/2016/14<sup>51</sup> (amended by Recommendation ESRB/2019/3<sup>52</sup>) on closing real-estate data gaps was published in October 2016. The Recommendation requires the regular collection and distribution at EU level of comparable country data so that real-estate-related risks across Member States can be more accurately assessed and use of macroprudential policy instruments can be compared, with the aim of addressing real-estate-related vulnerabilities. The Recommendation aims to harmonise the definitions and indicators used for monitoring RRE and CRE markets and to address existing gaps in the availability and comparability of data on RRE and CRE markets in the Union.

National macroprudential authorities are required to implement a risk-monitoring framework with lending-criteria indicators for their national RRE sector. These indicators should be based on weighted averages but univariate distribution and the selected joint distributions of the relevant indicators should also be monitored (subrecommendations A and B). The information on these indicators should relate to domestic credit providers on a solo basis and should be sufficiently representative of the domestic RRE loan market. It is also recommended that national macroprudential authorities implement such frameworks for CRE (subrecommendations C and D).

EBA, ESMA and EIOPA are recommended to publish, at least annually, aggregated data on the exposures of entities subject to their respective supervision in each CRE market (subrecommendation E).

Finally, the European Commission (Eurostat) is requested to provide a monitoring framework for physical real estate, and to promote statistical standards, sources, methods and procedures in this regard (subrecommendation F).

As regards subrecommendations A and B, national macroprudential authorities are requested to deliver an interim report by the end of 2019, and a final report by the end of 2020.

Concerning subrecommendations C and D, national macroprudential authorities are requested to provide an interim report on the availability of CRE indicators by the end of 2019, with a final report by the end of 2021, and to implement such monitoring by the end of 2025.

Under subrecommendation E, European Supervisory Authorities (ESAs) are requested to publish such indicators by the end of 2019.

Under subrecommendation F, the European Commission (Eurostat) is required to deliver an interim report by the end of 2021 and a final report by the end of 2023 on implementation of the monitoring framework.

Regarding lending beyond real estate, which is mentioned in a non-specific manner in policy proposal B.1.2.1, data availability has improved. Concerning bank loans to corporations and other

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<sup>51</sup> See [Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps](#) (ESRB/2016/14) (OJ C 31, 31.1.2017, p. 1).

<sup>52</sup> See [Recommendation of the European Systemic Risk Board of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps](#) (ESRB/2019/3) (OJ C 271, 13.8.2019, p. 1).

legal entities beyond the real-estate sector, analytical credit datasets (AnaCredit)<sup>53</sup> provides detailed information on individual bank loans in the euro area that is harmonised across all Member States. However, no comprehensive assessment of the national monitoring frameworks for loans beyond real estate, including consumer loans, is currently available.

### **On the implementation of macroprudential instruments**

Regarding residential real estate, the ESRB has published several reports aiming at:

- developing a framework to assess risks in the RRE sector on a country basis: see the report “Methodologies for the assessment of real-estate vulnerabilities and macroprudential policies: residential real estate”<sup>54</sup>;
- assessing the level of risks, using the framework developed in all EU countries: see the report “Vulnerabilities in the residential real estate sectors of the EEA countries”<sup>55</sup>.

It was on the basis of these methodologies and analyses that the ESRB issued warnings and recommendations, in both 2016 and 2019 relating to these risks. In 2016, 8 EU members received an ESRB warning. The responses of national authorities to these recommendations were reviewed by ESRB in a compliance report.<sup>56</sup> In 2019, 5 warnings and 6 recommendations were sent to the competent ministers calling for appropriate measures to be taken given the level of risks.

The policy analysis concluded by the ESRB at the end of 2019 showed that most countries had taken macroprudential policy action with respect to residential real estate in terms of both bank capital measures and/or borrower-based instruments. While capital instruments are defined by CRR and CRD IV, borrower-based instruments are only defined, if at all, at national level. In 2019, the ESRB specified<sup>57</sup> that macroprudential decisions to address vulnerabilities in the real-estate sector had translated mainly into the implementation of borrower-based instruments (Figure 1).

With respect to the CRE sector, the ESRB published reports, in 2015 and 2018,<sup>58</sup> devoted to vulnerabilities in this sector. The reports point in particular to the role of the low interest rate environment and to the fact that search for yield dynamics had contributed to high CRE prices and to an increasing role being played by non-banks and foreign investors. The ESRB has so far not issued warnings or recommendation as regards CRE markets given the lack of quality and

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<sup>53</sup> See [Decision \(EU\) 2016/868 of the European Central Bank of 18 May 2016 amending Decision ECB/2014/6 on the organisation of preparatory measures for the collection of granular credit data by the European System of Central Banks](#) (ECB/2016/14) (OJ L 144, 1.6.2016, p. 99).

<sup>54</sup> See [Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: residential real estate](#), European Systemic Risk Board, Frankfurt am Main, September 2019.

<sup>55</sup> See [Vulnerabilities in the residential real estate sectors of the EEA countries](#), European Systemic Risk Board, Frankfurt am Main, September 2019.

<sup>56</sup> See [Follow-up report on countries that received ESRB warnings in 2016 on medium-term vulnerabilities in the residential real estate sector](#), European Systemic Risk Board, Frankfurt am Main, September 2019.

<sup>57</sup> See [A Review of Macroprudential Policy in the EU in 2019](#), European Systemic Risk Board, Frankfurt am Main, April 2020.

<sup>58</sup> See [Report on vulnerabilities in the EU commercial real estate sector](#), European Systemic Risk Board, Frankfurt am Main, November 2018.

homogeneity across countries as regards CRE data. In this regard, a methodological framework has been developed for assessing CRE vulnerabilities and macroprudential policies implemented for this sector (see 2019 ESRB report).<sup>59</sup> The ESRB has acknowledged that macroprudential measures to target CRE are available, although they only apply to the banking sector currently (Figure 2).

As a general comment, only a few of the above-mentioned borrower-based instruments cover all types of credit (including consumer loans). As regards measures with capital add-ons, these only relate to banks. In other words, most actions have focused on real-estate lending rather than overall credit, and only on lending by banks.

## A2. Status of implementation

### As regards monitoring

All countries provided interim reports on the current application of ESRB Recommendation 2019/3<sup>60</sup> by the end of 2019. Most countries are now able to gather information on lending criteria. Moreover, the Recommendation helps fostering peer reviews as it facilitates harmonization of risk indicators across EU Member States.

In order to address subrecommendation E of Recommendation ESRB/2016/14<sup>61</sup> on closing real-estate data gaps, the EBA has included data on credit institutions' exposures to national CRE markets in its quarterly Risk Dashboard since April 2018 (i.e. as from the Risk Dashboard for Quarter 4, 2017).

In May 2020, the EBA also published its Guidelines on loan origination and monitoring. Although these Guidelines were developed in response to the Council of the EU's Action Plan on tackling the high level of non-performing exposures, they also address Policies A.2.2.1, A.2.2.2 and B.1.2.1. The objective of the Guidelines is to improve bank practices and associated governance arrangements, processes and mechanisms in relation to the grant of credit. They include specific provisions on lending to consumers on residential immovable property, commercial real-estate lending and lending for real-estate developments. In addition, there is a specific section on the monitoring and revaluation of immovable property collateral and a full chapter devoted to the monitoring of credit risk.

In accordance with the Recommendation issued to insurance-sector ESAs (Recommendation E), EIOPA has made detailed real-estate exposure data publicly available since June 2018 (and notified the ESRB thereof on 22 June 2018). The data is updated with a higher frequency than that set out in the Recommendation, being updated quarterly. For IORPs, EIOPA has recently

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<sup>59</sup> See [Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate](#), European Systemic Risk Board, Frankfurt am Main, December 2019.

<sup>60</sup> Recommendation of the European Systemic Risk Board of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (ESRB/2019/3) (OJ C 271, 13.8.2019, p. 1).

<sup>61</sup> Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (ESRB/2016/14) (OJ C 31, 31.1.2017, p. 1).

implemented new reporting requirements, which will soon enable it to carry out similar analyses and to work on the corresponding publications for the European IORP sector.

In spring 2018, the ESS (European Statistical System) paved the way for the collection of data on commercial real-estate indicators (CREI) at European level. As a first step, a Task Force on Commercial Real Estate Indicators (TF CREI) was established and has met regularly since autumn 2018. Its members include representatives of national statistical institutes, national central banks and certain international organisations (ECB, Bank for International Settlements (BIS), International Monetary Fund (IMF) and the Organisation for Economic Cooperation and Development (OECD)). The TF CREI is a forum for discussing the pilot projects of Member States and it is developing a manual for compilers in order to support harmonised approaches. A draft legal act targeting data collection at European level is expected to be drawn up in 2021.

### **As regards policy actions**

As for policy proposal A.2.2.1, most of the policy actions relate to residential real estate. The majority of countries have now implemented measures targeting RRE, and most of those measures are borrower-based instruments. Regarding commercial real estate, some progress with the implementation of measures has been achieved as compared to 2016. Notably, many countries have developed measures that target lending by banks or mortgages, although instruments based on total debt – which would capture, for instance, lending by non-banks and consumer loans – are not as commonly implemented. As for policy proposal A.2.2.2, affordability tests are, by definition, implemented in countries where DSTIs (and the corresponding revenue-related borrower-based instruments) have been adopted, both in a static version (as regards interest rates when fixed-rate contracts are the norm) or in a stressed form (where interest rates are variable). Most countries have some type of loan affordability tests (although not all are listed as macroprudential measures and many are softer guidelines or recommendations), especially as regards the obligation to assess capacity to repay laid down in the Consumer Lending Directive<sup>62</sup> which has been transposed in all countries. The same is true as regards the principle of valuation of real-estate property imposed under this Directive (Article 19).

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<sup>62</sup> Directive 2014/17/EU of the European Parliament and of the Council of 4 February 2014 on credit agreements for consumers relating to residential immovable property and amending Directives 2008/48/EC and 2013/36/EU and Regulation (EU) No 1093/2010 (OJ L 60, 28.2.2014, p. 34).

Figure 1: Implementation of measures targeting residential real estate

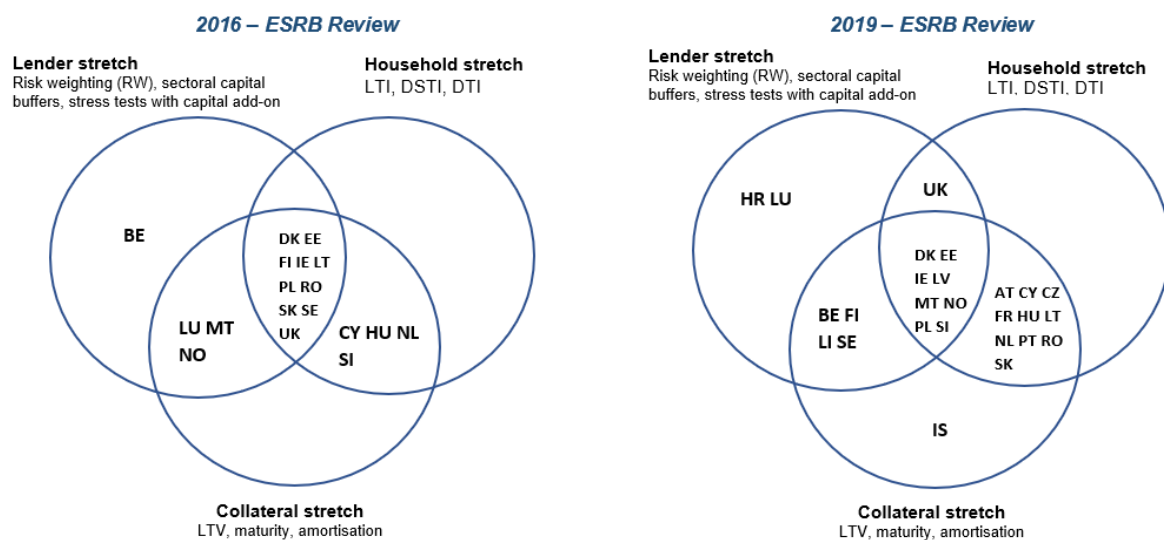
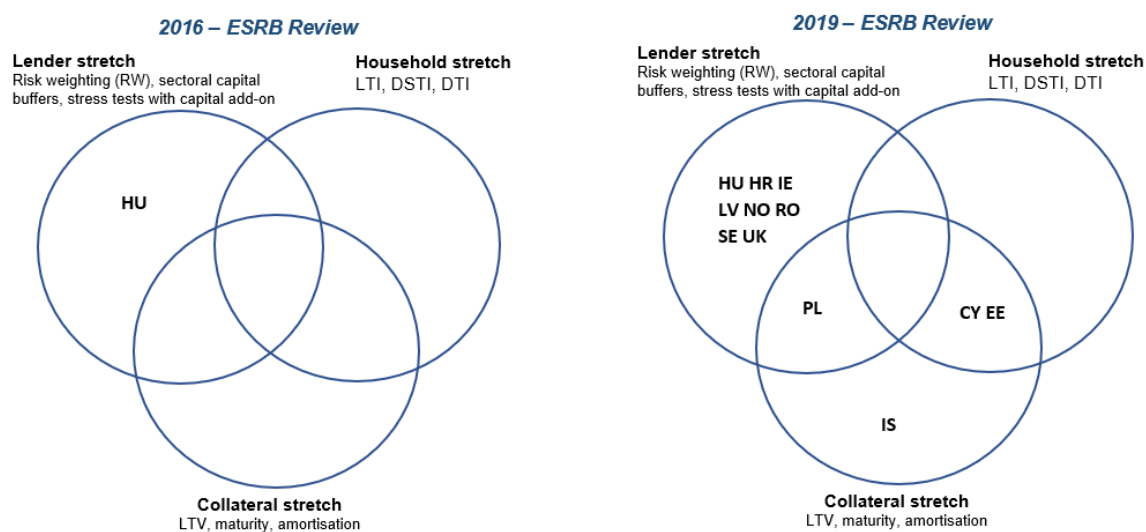


Figure 2: Implementation of measures targeting commercial real estate



### A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

The broad range of initiatives undertaken should soon provide all the information needed to monitor risks. Moreover, policy instruments to address these issues are available in most countries. More specific guidelines might be helpful, in particular on the national frameworks for the measures and the possibility of implementing them in a timely manner, as well as on the importance of targeting total lending so that consumer loans and non-bank lending could, for instance, be covered. The

progress is undoubtedly tangible, but it is also unequal across the three 2016 policy proposals related to RE financing.

Work on the creation of a comprehensive framework for monitoring of RE lending standards (policy proposal B 1.2.1) and on other RE-related data is in progress and is expected to be finalized in 2021 (RRE) and 2025 (CRE). Most countries are now able to gather information on lending criteria, which is significant progress as compared to 2016.

Countries generally implemented macroprudential measures (LTV, DTI, etc.) to strengthen resilience to risk revaluation and pre-empt the build-up of imbalances and systemic risks from any relaxation of lending conditions (policy proposal A 2.2.1). The calibration of these measures varies among countries. However, measures that target total debt and that apply to all types of lender are still absent.

Comprehensive and consistent adoption (policy proposal A.2.2.2) of prudent lending principles (such as loan affordability tests and collateral valuation standards) across real-estate lenders and across countries continue to be lacking. However, the need for such approach is not homogenous given the high heterogeneity of mortgage lenders across the EU.

- B.1.2.1. Is the monitoring framework developed for the purposes of policy proposal B.1.2.1 able to effectively assess RE risk across the financial system (as intended)?

The monitoring framework which is currently being developed in line with the 2016 ESRB Recommendation is very comprehensive. Once finalised, it should provide all the information necessary to assess RE risks in Member States and across the EU, addressing lending by all types of lender. Appropriate monitoring will have been achieved once the Regulation has been fully implemented by all countries.

- A.2.2.1. Does the current construction/calibration of the measures adequately address LIRE risks?

A formal assessment of the policies to limit RE risks was carried out by ESRB in 2019 and is publicly available.<sup>63</sup> Where actions were not considered sufficient and/or appropriate, warnings and recommendations were addressed to the ministers of finance of the countries flagged.

- What elements are missing/incorrect and why?

Without discussing individual actions taken by national authorities, overall assessments can be made with regard to the implementation of real estate tools.

In the case of residential real estate, a heterogeneous range of decisions has been taken: some are recommendations while others are legally mandatory decisions. Capital Requirements Regulation 2 (CRR2)<sup>64</sup>(Article 513) contains a provision stating that by 30/06/2022 the European

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<sup>63</sup> See [Press release – ESRB issues five warnings and six recommendations on medium-term residential real estate sector vulnerabilities](#), European Systemic Risk Board, Frankfurt am Main, 23 September 2019.

<sup>64</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (OJ L 176, 27.6.2013, p. 1).

Commission must, after consultation of the ESRB, among others, present a report discussing the legitimacy of harmonising borrower-based measures. This could lead to harmonisation of the toolkit and clarify the responsibilities of national designated authorities (NDAs) in this domain, without prejudice to national decision-making processes. Furthermore, consideration could be given to the possibility of extending the measures to include all types of credit and all types of borrower.

As regards CRE measures, given the international nature of this market (compared to residential real estate), it is harder to design and apply instruments (especially for CRE borrowers) in national law. In this regard, the European Commission could undertake further work to include Banking Business Models (BBMs) for CRE borrowers/lenders in EU law.

### Policy B.1.1.1

<b>Policy text as drafted in the 2016 report</b>	Policy B.1.1.1: Enhance data sharing, analysis and risk monitoring related to interconnectedness across the EU financial system in order to build knowledge of how risks are moved through different parts of the financial system, detect spillover channels and identify key nodes in the system (including, among others, securities financing transactions (SFTs), collateral re-use and derivative exposures).
<b>Link to LIRE as set out in the 2016 report</b>	<p>Interconnectedness and cross-sectoral resilience: broad-based risk taking beyond risk bearing capacity (search for yield) may take the form of accumulating concentrated positions in increasingly illiquid assets. Adequate data on the resilience of market liquidity are required in order to assess the liquidity of assets held.</p> <p>Cross-sectoral resilience and system-wide aspects: risks also relate to the expansion of shadow banking activities. Monitoring should include the build-up of liquidity risks within this sector as well as from links between entities and other financial sectors; increased leverage in this sector could result in less resilient market liquidity and a higher probability of fire sales.</p> <p>Cross-sectoral funding and liquidity: adequate data are ultimately required to assess the extent of homogeneity in risk taking by market participants and its potential impact on the resilience of financial markets and liquidity. (2016 LIR Report)</p>
<b>Type of measure</b>	Analysis; monitoring.
<b>Sector to which the policy is addressed</b>	Cross-sectoral
<b>Objectives to be achieved by the measure</b>	Build knowledge of how risks are moved through different parts of the financial system, detect spillover channels and identify key nodes in the system.

## Assessment

### A1. Actions taken/institutions

With a view to monitoring and analysing the risks posed by EU non-bank financial intermediation (NBFi), in 2016 the ESRB began publishing a report devoted to this issue, the NBFi Monitor Report, to be published annually.<sup>65</sup> The report considers a range of systemic risks and vulnerabilities related to non-bank financial intermediation, including those related to interconnectedness, liquidity and leverage.

In 2020, the ESRB published a report on mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions.<sup>66</sup> This report considers systemic risks

<sup>65</sup> See [NBFi Monitor](#), European Systemic Risk Board, Frankfurt am Main.

<sup>66</sup> See [Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions](#), European Systemic Risk Board, Frankfurt am Main, January 2020.

arising from that procyclicality and provides an analysis of the interconnectedness between money markets and derivatives markets through margining methodologies (Section 3.2).

Against the background of the COVID-19 pandemic, the ESRB has been studying the procyclical impact of large-scale downgrades of corporate bonds on markets and entities across the financial system. A technical report on this topic was published in July 2020.<sup>67</sup>

Two studies contributing to an understanding of how risks move through different parts of the financial system have been published as ESRB and ECB Working Papers over the last four years. The first of these studies, “Mapping the interconnectedness between EU banks and shadow banking entities”<sup>68</sup> provides a unique snapshot of the exposures of EU banks to shadow banking entities within the global financial system. The second, “Interconnected banks and systemically important exposures”<sup>69</sup>, studies the interplay between direct interconnectedness (i.e. network of interbank loans, banks' loans to other corporate and retail clients, and securities holdings) and indirect interconnectedness (i.e. via exposures to common asset classes) in the banking system.

Finally, the ESRB undertakes data analysis and reporting using data deriving from the following: the European Market Infrastructure Regulation (EMIR)<sup>70</sup> (information on selected aggregates, e.g. countries and asset class, is available through the EU Derivatives Monitor), the Alternative Investment Fund Managers Directive (AIFMD)<sup>71, 72</sup>, the Securitisation Regulation<sup>73</sup> and the Securities Financing Transactions Regulation (SFTR)<sup>74</sup>. ESMA also publishes annual statistical reports on EMIR, AIFMD and, more generally, on trends, risks and vulnerabilities in markets (see the ESMA TRV Report on Trends, Risks and Vulnerabilities).<sup>75</sup>

## A2. Status of implementation

In progress.

## A3. Assessment of the sufficiency of the measure

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<sup>67</sup> See [A system-wide scenario analysis of large-scale corporate bond downgrades](#), July 2020.

<sup>68</sup> See [Mapping the interconnectedness, between EU banks and shadow banking entities, Working Paper Series, No 40, March 2017](#), European Systemic Risk Board, Frankfurt am Main.

<sup>69</sup> See [Interconnected banks and systemically important exposures](#), Working Paper Series No 2331, European Central Bank, Frankfurt am Main, November 2019.

<sup>70</sup> Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (OJ L 201, 27.7.2012, p. 1).

<sup>71</sup> Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

<sup>72</sup> In a letter dating back to February 2020 and aimed at informing the European Commission on the application and scope of Directive 2011/61/EU on Alternative Investment Fund Managers (AIFMD), the ESRB stressed the need to address vulnerabilities in the funds sector as they may result in the amplification of shocks due to the interconnectedness of funds with other parts of the financial system leading to direct and indirect contagion.

<sup>73</sup> Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012 (OJ L 347, 28.12.2017, p. 35).

<sup>74</sup> Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012 (OJ L 337, 23.12.2015, p. 1).

<sup>75</sup> See [Report on Trends, Risks and Vulnerabilities](#), European Securities and Markets Authority, Paris, 19 February 2020.



- What progress has been made since 2016?

Some progress has been made, but restrictions on data sharing remain.

- Is the analysis sufficiently complete for better assessment of LIRE risks (as intended)? Does it provide a good basis for deciding whether additional macroprudential policy action is required in this area?

Obstacles to linking and benchmarking complementary data persist due to data quality issues and legal constraints. For instance, although significant progress has been made by regulators in the definition and adoption of international standards (e.g. the Legal Entity Identifier (LEI)) and identifying counterparties is now easier, more work is needed to push the industry to adopt these standards and expand the scope of their application. Data quality has been improved thanks to the streamlining of definitions but some quality issues persist (e.g. with respect to reporting timescales and granularity, which are different across databases). Moreover, confidentiality and the absence of a legal framework to share data prevent NCAs from sharing data, both within and across organisations.

While we are still not able to build a comprehensive picture, sectoral and activity datasets can provide important insights into different sectors of the financial system.

- What elements are missing/incorrect and why?

While significant progress has been made in terms of infrastructure, data quality and legal hurdles still prevent us from combining different data sets and developing a comprehensive framework to analyse the EU financial system (i.e. data mapping of the EU financial system).

The 2019 NBF1 report concludes that further work is needed to address remaining data gaps and to develop appropriate risk metrics to measure liquidity, leverage and interconnectedness.

### Policy B.1.1.2

<b>Policy text as drafted in the 2016 report</b>	Policy B.1.1.2: Consider increasing the disclosure requirements of investment funds and other non-banks to better monitor leverage (including synthetic leverage), liquidity conditions and funding positions, including Securities Financing Transactions (SFTs), collateral re-use and derivative use, if required.
<b>Link to LIRE as set out in the 2016 report</b>	LIRs pose risks to the resilience and liquidity of investment funds. More specifically, it may give rise to: <ul style="list-style-type: none"> <li>• Risks from increased leverage (search for yield) that may undermine the resilience of investment funds.</li> <li>• Increased liquidity and redemption risk due to investment in less liquid assets and a shift into bank-like saving products, while easy redemption is preserved.</li> <li>• Liquidity risk in non-banking sectors accompanied by less diversity (more homogeneous risk taking).</li> </ul>
<b>Type of measure</b>	Monitoring; policy regulation
<b>Sector to which the policy is addressed</b>	Non-banking financial institutions
<b>Objectives to be achieved by the measure</b>	Increase transparency and improve the monitoring of leverage (including synthetic leverage), liquidity conditions and funding positions, including SFTs, collateral re-use and derivative use.

## Assessment

### A1. Actions taken

A series of actions have been taken to increase the disclosure requirements of investment funds and other non-banks. These disclosure requirements were introduced with a view to better monitoring, among others, of leverage, liquidity conditions and funding positions, collateral re-use and derivative use.

Recommendation D of the 2017 ESRB Recommendation on liquidity and leverage calls for the European Commission to propose Union legislation that imposes a requirement for undertakings for collective investment in transferable securities (UCITS) and UCITS management companies to regularly report data, especially on liquidity risk and leverage. The European Commission is also recommended to establish a harmonised UCITS reporting framework across the Union and to propose that NCAs make the data available to the NCAs of other Member States and to the ESMA and ESRB.

The “Simple, Transparent, and Standardised” (STS) criteria set out in the Securitisation Regulation<sup>76</sup>, which was issued following the Securities Financing Transaction Regulation<sup>77</sup>, define the reporting requirements and respond to the need to enhance the transparency of the securities financing market, the securitisation market and the overall financial system.

With respect to the European Market Infrastructure Regulation (EMIR), the amended Implementing Regulation<sup>78</sup>, laying down technical standards regarding the format and frequency of trade reports to trade repositories, was published in the Official Journal of the European Union in 2017.<sup>79</sup>

In June 2020 the European Commission published a report addressed to the European Parliament and the Council assessing the scope and the functioning of the AIFMD<sup>80</sup>).<sup>81</sup> The report concludes that the AIFMD is delivering on its objectives, including disclosure and transparency requirements, and confirms the key role that ESMA has been playing in promoting supervisory convergence

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<sup>76</sup> Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012 (OJ L 347, 28.12.2017, p. 35).

<sup>77</sup> Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012 (OJ L 337, 23.12.2015, p. 1).

<sup>78</sup> Regulation (EU) 2017/105 of 19 October 2016 amending Implementing Regulation (EU) No 1247/2012 laying down implementing technical standards with regard to the format and frequency of trade reports to trade repositories according to Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories, C/2016/680 (OJ L 17, 21.1.2017, p. 17).

<sup>79</sup> See **Commission Implementing Regulation (EU) 2017/105 of 19 October 2016 amending Implementing Regulation (EU) No 1247/2012 laying down implementing technical standards with regard to the format and frequency of trade reports to trade repositories according to Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories**, C/2016/6801 (OJ L 17, 21.1.2017, p. 17).

<sup>80</sup> Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

<sup>81</sup> **The report fulfils the mandate of the European Commission to provide the European Parliament and the Council with an assessment of the functioning of the AIFMD.**

among the NCAs in applying the AIFMD. The next step in the AIFMD review process is a public consultation, to be launched in early autumn 2020.

Finally, in September 2019, ESMA published a report outlining a stress simulation framework for investment funds.<sup>82</sup> The report discusses the calibration of redemption shocks for investment funds, methods to assess the resilience of funds to shocks and ways to measure the impact of fund managers' liquidation strategies on financial markets, including second-round effects. In addition to the methodological aspects of the framework, the report also provides a simulation of a redemption shock and its effects on a sample of 6,000 UCITS bond funds. The ESMA intends to use this stress simulation framework as part of its regular risk monitoring of investment funds.

## A2. Status of implementation

Partly implemented.

## A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

There has been significant improvement in reporting since 2016, as it is outlined in the previous sections. Regulation has addressed disclosure requirements across different markets (Securitisation Regulation, EMIR).

- Is the framework developed able to adequately assess LIRE risk across the financial system (as intended)? Is the monitoring framework complete? Is it used actively at the EU level?

The framework will make it possible to monitor leverage, liquidity conditions and funding positions more effectively at the EU level.

- What elements are missing/incorrect and why?

With respect to Recommendation D of the 2017 ESBR Regulation<sup>83</sup> on harmonization of the UCITS reporting framework across the Union, the European Commission is expected to deliver a report to the ESRB and the Council.

The 2019 NBF1 report concludes that further work is needed to address the remaining data gaps and to develop appropriate risk metrics to measure liquidity, leverage and interconnectedness. The report discusses the lack of metrics to measure leverage in the Investment fund (IF) sector, both globally and at a system-wide level.<sup>84</sup> The report also states that in order to gain a more comprehensive view of interlinkages in the financial system, supervisors would need to be able to link data covering activities in certain market segments, such as derivatives or SFTs, to the balance-sheet data of the institutions engaging in those markets. The 2020 NBF1 report reiterates

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<sup>82</sup> See [Stress simulation for investment funds](#), European Securities and Markets Authority, Paris, September 2019.

<sup>83</sup> Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

<sup>84</sup> As current risk indicators for IFs tend to be based on broad fund categories, such as bond or equity funds, risk assessments are limited in their ability to assess pockets of risk in specific business models

the need to address these data gaps and to develop new and improved risk metrics as new datasets become available through regulatory requirements.

### Policy B.1.2.2

<b>Policy text as drafted in the 2016 report</b>	Policy B.1.2.2: Review the need, within and across sectors, to increase liquidity buffers or strengthen liquidity management tools.
<b>Link to LIRE as set out in the 2016 report</b>	The policy proposal calls for an evaluation of the liquidity management tools with a view to tackling the emergence or the increase in liquidity risks in non-banking sectors. The enhanced risks are due to less diversity in investments (more homogeneous risk taking), risks arising from increased leverage (search for yield), increased liquidity and redemption risk due to investment in less liquid assets and a shift into bank-like saving products while preserving easy redemption.
<b>Type of measure</b>	Analysis
<b>Sector to which the policy is addressed</b>	Cross-sectoral (with a focus on investment funds)
<b>Objectives to be achieved by the measure</b>	Increase resilience to the materialization of liquidity risk across the financial system.

### A1. Actions taken/institutions

With respect to the topic of increasing liquidity buffers and strengthening liquidity management tools, the ESRB has issued three Recommendations (2017, 2020a and 2020b) over the last four years.

The 2017 ESRB Recommendation on liquidity and leverage<sup>85</sup> addressed systemic risks related to liquidity mismatches and the use of leverage in investment funds. The Recommendation is divided into: Recommendation A, designed to address the risks that may arise when fund managers do not have adequate liquidity management tools, such as redemption fees, redemption gates, or the ability to temporarily suspend redemptions, in place; Recommendation B, designed to mitigate and prevent excessive liquidity mismatches in open-ended AIFs; Recommendation C, aimed at promoting coherent liquidity stress testing practices at investment fund level; Recommendation D, focusing on establishing a harmonised UCITS reporting framework across the Union; Recommendation E, intended to facilitate the implementation of Article 25 of the Alternative Investment Fund Managers Directive<sup>86</sup>, which provides for a macroprudential tool to limit leverage in AIFs.

ESRB Recommendation 2020a on liquidity risks in investment funds<sup>87</sup> was issued against the background of the COVID-19 pandemic and is designed to enhance preparedness to respond to potential future adverse shocks that could lead to a deterioration in financial market liquidity with

<sup>85</sup> See [Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#) (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

<sup>86</sup> Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

<sup>87</sup> See [Recommendation of the European Systemic Risk Board of 6 May 2020 on liquidity risks in investment funds](#) (ESRB/2020/4) 2020/C 200/01 (OJ C 200, 15.6.2020, p. 1).

potential adverse implications for financial stability in the Union. The text recommends that ESMA: (1) coordinates with the national competent authorities to undertake a focused supervisory exercise with investment funds that have significant exposures to corporate debt and real-estate assets to assess the preparedness of these two segments of the investment funds sector to potential future adverse shocks, including any potential resumption of significant redemptions and/or an increase in valuation uncertainty; and (2) reports to the ESRB on its analysis and on the conclusions reached on the preparedness of the relevant investment funds.<sup>88</sup>

In response to this, ESMA has launched a common supervisory exercise with NCAs on UCITS liquidity risk management that will be conducted in the course of 2020. The exercise aims to ensure the convergence of fund managers' liquidity risk management.<sup>89</sup>

ESRB Recommendation 2020b<sup>90</sup> on liquidity risks from margin calls was also issued against the background of the COVID-19 pandemic. It consists of: Recommendation A on limiting changes and cliff effects through demand for margins and in collateral practices; Recommendation B on the stress scenario used for assessment of future liquidity needs; Recommendation C on limiting liquidity constraints due to margin collection; Recommendation D on the mitigation of pro-cyclicality in the provision of clearing services and in non-cleared OTC derivatives and securities financing transactions.<sup>91</sup>

Other ESRB assessments of non-bank financial intermediation have highlighted potential vulnerabilities stemming from investment funds. The ESRB letter of February 2020 to the European Commission on the AIFMD review outlined considerations relating to (i) the suitability of the reporting framework and access to data for monitoring systemic risk, (ii) the need to operationalise existing macroprudential policy instruments, and (iii) the ongoing development of the macroprudential policy framework "beyond banking" in general and for investment funds in particular. It did so by drawing on the ESRB's experiences with the scope and application of the AIFMD. The letter stresses that investment-fund-sector vulnerabilities that can lead to risks to financial stability relate, in particular, to: liquidity risks, high levels of leverage in some types of funds and procyclical risk taking.

In 2020, the ESRB published a report on mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions.<sup>92</sup> This report considers systemic risks

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<sup>88</sup> This Recommendation is part of a broader set of actions taken by the ESRB Working Group on Market Illiquidity against the background of the COVID-19 pandemic and the implications of such illiquidity for asset managers and insurers. Among these actions and with respect to this topic, the ESRB has published an **Issues Note on liquidity in the corporate bond and commercial paper markets, the procyclical impact of downgrades and implications for asset managers and insurers** (see ESRB website for a complete list of the policy measures in response to the COVID-19 pandemic).

<sup>89</sup> See **ESMA launches a Common Supervisory Action with NCAs on UCITS liquidity risk management**, European Securities and Markets Authority, Paris, 30 January 2020.

<sup>90</sup> See **Recommendation of the European Systemic Risk Board of 25 May 2020 on liquidity risks arising from margin calls** (ESRB/2020/6), 2020/C 238/01 (OJ C 238, 20.7.2020, p. 1).

<sup>91</sup> The General Board extended the mandate to the Expert Group on the Macroprudential Use of Margins and Haircuts (EGMH) Task Force to complete work on margins and haircuts and finalise policy proposals by end of 2020.

<sup>92</sup> See **Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions**, European Systemic Risk Board, Frankfurt am Main, January 2020.

arising from the procyclicality associated with margin or haircut practices and the side effects of the greater use of collateral, such as transforming credit risk into liquidity risk, following from the regulatory reforms relating to central clearing or the bilateral collateral requirements. The report presents a range of possible actions to either limit the cyclicity of margins and haircuts in derivatives and SFT markets, or to increase the resilience of market participants. The suggested action include requiring CCPs to pass through the intraday variation margin gains they collect; ensuring that initial margin levels do not fall to excessively low levels through the introduction of initial margin floors in centrally and non-centrally cleared derivatives markets<sup>93</sup>; addressing risks from procyclicality in client clearing; developing guidance for market participants on the use of notice periods to avoid changes in haircuts and collateral eligibility occurring suddenly; introducing a cash collateral buffer for counterparties operating in centrally and non-centrally cleared derivatives markets to ensure that market participants transacting in derivatives markets are better equipped to meet margin calls; extending the risk mitigation techniques used (and mandated by EMIR) in non-centrally cleared derivatives markets to non-centrally cleared SFTs. The 2020 ESRB report builds on the findings of the 2017 ESRB report<sup>94</sup> which included a comprehensive analysis of the risk from excessive leverage and procyclicality in collateral requirements and a broad list of potential macroprudential tools to address them.

EIOPA's 2019 thematic review, "Impact of variation margining on EU insurers' liquidity: an analysis of interest rate swaps positions",<sup>95</sup> uses Solvency II reporting data to assess the extent to which European (re-)insurers would be able to meet potential variation margin calls on interest-rate swap (IRS) portfolios and concludes that there might be a liquidity risk for (re-)insurers stemming from the use of IRS derivatives. The 2018 ESRB report, "Macroprudential provisions, measures and instruments for insurance"<sup>96</sup>, formulated a shortlist of macroprudential policy options to address key systemic risks<sup>97</sup> in the domain of (re)insurance; these options included the introduction of liquidity requirements for (re)insurers with a vulnerable liquidity profile. The 2020 ESRB report on macroprudential policy for the insurance sector<sup>98</sup>, which was intended to inform the review of Solvency II, goes a step further and proposes that liquidity risk management by insurers be enhanced through (i) better reporting and measurement, (ii) stress-testing requirements, and (iii) Pillar 2 provisions enabling supervisors to set up liquidity buffers.

## A2. Status of implementation

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<sup>93</sup> This action would supplement existing tools in the European Market Infrastructure Regulation (EMIR) to ensure that initial margin levels do not fall to excessively low levels during prolonged periods of low volatility.

<sup>94</sup> See [The macroprudential use of margins and haircuts](#), European Systemic Risk Board, Frankfurt am Main, February 2017.

<sup>95</sup> See [Impact of variation margining on EU insurers' liquidity: an analysis of interest rate swaps positions](#), European Insurance and Occupational Pensions Authority, Frankfurt am Main, 18 December 2019.

<sup>96</sup> See [Macroprudential provisions, measures and instruments for insurance](#), European Systemic Risk Board, Frankfurt am Main, November 2018.

<sup>97</sup> Systematic withdrawal/failure of (re)insurance services and the risk of direct and indirect contagion.

<sup>98</sup> See [Enhancing the macroprudential dimension of Solvency II](#), European Systemic Risk Board, Frankfurt am Main, February 2020.

Policy implemented.

### A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

Significant progress has been made, for instance through the 2017 ESRB Recommendation<sup>99</sup>, as regards the promotion of stress-testing coherence (Recommendation C)<sup>100</sup>. The ESMA has in fact produced a report setting out Guidelines on liquidity stress testing in UCITS and AIFs.<sup>101</sup> The common requirements outlined in the report, which will become applicable on 30 September 2020, will allow for convergence in the way NCAs supervise liquidity stress testing across the EU.<sup>102</sup>

The improved understanding of the role and function of margins and liquidity buffers has led the ESRB to place greater emphasis on policy options aimed at reducing liquidity strains during times of market stress. In ESRB 2020<sup>103</sup>, the ESRB sets out a range of possible policy options to address the risks identified (as discussed above).

- Is the framework developed able to effectively assess LIRE risks across the financial system (as intended)?

Yes. The actions taken help with evaluating the appropriateness and the possible need for policy actions as far as liquidity buffers and liquidity management tools are concerned.

- What elements are missing/incorrect and why?

In response to the 2017 ESRB Recommendation, the European Commission is requested to deliver a report to the ESRB and the Council on the implementation of Recommendations A(1), A(2) and A(3) on liquidity management tools for redemptions, Recommendation B on the mitigation and prevention of excessive liquidity mismatches in open-ended AIFs, and Recommendations D(1), D(2) and D(3) on the harmonization of the UCITS reporting framework across the Union. This report is due to be delivered after the 31 December 2020 reporting deadline.

With respect to the six policies identified in the 2020 ESRB report on mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions, the ESRB intends to carry out further analyses and to consider how the policy options could be incorporated into existing regulatory frameworks. In setting out these policy options, the ESRB is mindful that their eventual implementation would require further work and engagement with market participants and international fora.

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<sup>99</sup> See [Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#) (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

<sup>100</sup> See [Report on Guidelines on liquidity stress testing in UCITS and AIFs](#), European Securities and Markets Authority, Paris, 02 September 2019.

<sup>101</sup> See [ESMA consults on guidance to address leverage risk in the AIF sector](#), European Securities and Markets Authority, Paris, 27 March 2020.

<sup>102</sup> Moreover, work related to other parts of the ESRB Recommendation, such as guidance on the assessment of leverage-related systemic risk (Recommendation E), is ongoing.

<sup>103</sup> See [Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions](#), European Systemic Risk Board, Frankfurt am Main, January 2020.

The Expert Group on the Macroprudential Use of Margins and Haircuts (EGMH) is continuing to work on possible policy options for margins and haircuts, complementing the 2020 ESRB Recommendation.

### Policy B.1.2.3

<b>Policy text as drafted in the 2016 report</b>	Policy B.1.2.3: Review the need, within and across sectors, to contain leverage to counter the risk of repricing effects and as a backstop limiting contagion risk (the precondition is to close data gaps)
<b>Link to LIRE as set out in the 2016 report</b>	In an environment of low interest rates which may induce search-for-yield behaviour and consequent broad-based risk taking, financial institutions may be tempted to increase their leverage in order to obtain resources and expand their balance sheets.  Against this background, a thorough review should be conducted of the tools currently available across sectors, especially among non-banks, to contain leverage, and avoid excessive leverage amplifying financial stress and spreading contagion across the financial system. Remaining data gaps in respect of leverage (mostly related to non-banks) may need to be closed before this review can start. Excessive leverage can generate financial stability risk, typically by triggering pro-cyclicality in prices and contagion.
<b>Type of measure</b>	Analysis
<b>Sector to which the policy is addressed</b>	All sectors
<b>Objectives to be achieved by the measure</b>	This proposal aims at integrating legal instruments/provisions to address excessive leverage by financial intermediaries.

## Assessment

### A1. Actions taken/institutions

Regarding banks, a range of macroprudential instruments to contain leverage are now in place across the EU, for instance the countercyclical capital buffer (CCyB), the systemic risk buffer (SRB), sectoral requirements (Arts124, 164, 458 CRR), the capital conservation buffer and LTV, LTI and DSTI caps, and leverage ratios. Moreover, the implementation of the leverage ratio for banks since 2018 (as part of Basel III) and the gradual implementation of the output floor will contribute to contain leverage in the bank sector.

As for the insurance sector, no such leverage ratio exists per se. In 2018 EIOPA published<sup>104</sup> its stance on the leverage ratio indicating that (...) “the concept of the leverage ratio varies much more than in banking. This is due to i) the inverted production cycle, and ii) the fact that there is no common definition of leverage in insurance, and therefore, there is not a simple non-risk weighted ratio that can be used for the same purpose. Also, the business model is substantially different, and size is not automatically considered as a source of systemic risk but is to some extent necessary in order to be able to apply the law of large numbers. Instead, in insurance, there is a multiplicity of ratios (based on metrics such as investment assets or insurance liabilities) which become less straightforward to interpret. As a result, contrary to what happens in banking, any kind of leverage ratio in insurance should be better used to identify and monitor the potential build-up of risks

<sup>104</sup> See **Other potential macroprudential tools and measures to enhance the current framework**, European Insurance and Occupational Pensions Authority, Frankfurt am Main, 2018.



instead of to impose an additional requirement.” As such, three definitions of leverage for insurance have been defined but only with a monitoring objective; this work was done in parallel to the holistic framework published by the International Association of Insurance Supervisors (IAIS) in 2019<sup>105</sup>, which was the outcome of a public consultation<sup>106</sup> closed in 2019 and does not tackle leverage risks (the word is not even mentioned).

On this issue, EIOPA considers that leverage ratios are well suited to the banking sector. While the debt-to-equity ratio can be seen as a leverage metric for insurance, risk-sensitive ratios (i.e. own funds/SCR in Solvency II) are more appropriate for determining equity levels.

In EIOPA’s discussion paper on systemic risk and macroprudential policy in insurance<sup>107</sup> the leverage ratio was considered to be a tool for monitoring purposes, i.e. not as a hard requirement. No additional work has been done subsequently on the leverage ratio from a macroprudential perspective: given the different nature of the business models of insurers and banks, supervisors consider the establishment of a minimum leverage ratio requirement for insurers, similar to the one used in banking, to be less appropriate for insurance. Leverage is, however, mentioned in Insurance Core Principle (ICP) 17<sup>108</sup> on capital adequacy in the context of the intragroup capital resources.<sup>109</sup> It is worth mentioning that the discussion on systemic risk in insurance has evolved since the publication of the EIOPA discussion paper: the term non-traditional and non-insurance activities (NTNIs) is no longer used. In this regard, IAIS published its above-mentioned Holistic Framework for Systemic Risk in the Insurance Sector<sup>110</sup> in 2019.

As regards investment funds, in March 2020, ESMA launched a public consultation<sup>111</sup> on the leverage risk for AIFs, in response to the 2018 ESRB Recommendation<sup>112</sup>, calling on ESMA to

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<sup>105</sup> See [IAIS Holistic Framework for Systemic Risk in the Insurance Sector \(2019\)](#).

<sup>106</sup> See [Public Consultation: Holistic Framework for Systemic Risk in the Insurance Sector](#), International Association of Insurance Supervisors, Basel, 25 January 2019.

<sup>107</sup> See [EIOPA publishes Discussion Paper on Systemic Risk and Macroprudential Policy in Insurance](#), European Insurance and Occupational Pensions Authority, Frankfurt am Main, 29 Mar 2019.

<sup>108</sup> For reference see ICP 17 - Capital Adequacy: The supervisor establishes capital adequacy requirements for solvency purposes so that insurers can absorb significant unforeseen losses and to provide for degrees of supervisory intervention. Standard: Criteria for the assessment of the quality and suitability of capital resources 17.11 The supervisor establishes criteria for assessing the quality and suitability of capital resources, having regard to their ability to absorb losses on both a going concern and wind-up basis. Guidance: 17.11.48 For group-wide capital adequacy assessment with a group level focus, a consolidated accounts method would normally eliminate intra-group transactions and consequently multiple gearing and other intra-group creation of capital whereas, without appropriate adjustment, a legal entity focus may not. Whatever approach is used, multiple gearing and other intra-group creation of capital should be identified and treated in a manner deemed appropriate by the supervisor to largely prevent the duplicative use of capital. Leverage: 17.11.49 Leverage arises where a parent, either a regulated company or an unregulated holding company, issues debt or other instruments which are ineligible as regulatory capital or the eligibility of which is restricted and down-streams the proceeds as regulatory capital to a subsidiary. Depending on the degree of leverage, this may give rise to the risk that undue stress is placed on a regulated entity as a result of the obligation on the parent to service its debt.

<sup>109</sup> In this context the concern is that excessive leverage of individual entities towards the parent company, which is not reported at group level, might in some cases and under specific circumstances make difficult to serve the debt.

<sup>110</sup> [Holistic Framework for Systemic Risk in the Insurance Sector](#), International Association of Insurance Supervisors, November 2019

<sup>111</sup> See [ESMA consults on guidance to address leverage risk in the AIF sector](#), European Securities and Markets Authority, Paris, 27 March 2020.

<sup>112</sup> See [Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#) (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

“establish a harmonised reporting framework across the EU for undertakings for collective investment in transferable securities (UCITS) to make it easier for authorities to monitor such funds and assess any risks to financial stability [as regards leverage risks]”. The Recommendation also asks ESMA to provide guidance to supervisory authorities on assessing leverage risks in the AIF sector and to design, calibrate and implement macroprudential leverage limits. Such guidance would facilitate the implementation of Article 25 of the Alternative Investment Fund Managers Directive<sup>113</sup>, which provides for the use of an existing macroprudential tool to limit leverage in AIFs. The outcome of the consultation opened by ESMA should ensure that the “proposed Guidelines address the assessment of leverage-related systemic risk and aim at ensuring that NCAs adopt a consistent approach when assessing whether the condition for imposing leverage-related measures are met”. As regards UCITS, funds generally employ traditional investment strategies with low leverage. They typically invest in marketable securities and comply with leverage restrictions: (i) financial leverage, meaning leverage obtained through outright borrowings, is limited to 10% of net asset value and can be carried out only on a temporary basis; (ii) “global exposures” gained through the use of derivatives are restricted to 100% of net asset value, de facto limiting synthetic leverage in UCITS.

The consultation launched by ESMA follows on from the International Organisation of Securities Commissions (IOSCO) report on the leverage framework.<sup>114</sup> The objective of the IOSCO leverage framework is to provide “a holistic approach to capture any significant leverage-related risks incurred by a fund (or group of funds) to give regulators the tools to assess these risks for financial stability purposes”, taking into account the diversity in this sector since leverage is forbidden already for some types of funds or at least subject to a cap (money market funds (MMFs) for example). IOSCO will publish an annual report reflecting leverage trends within the asset management industry at a global level. The first report (that will develop over time and be expanded to include more jurisdictions) is scheduled to be published in 2021. This framework tackles the issue of synthetic leverage through derivatives.

It should be noted that through its Joint ATC-ASC Expert Group on Non-bank Financial Intermediation, the ESRB monitors a range of systemic risks and vulnerabilities related to non-bank financial intermediation (NBFi), including those related to leverage (as well as interconnectedness and liquidity). In its annual NBFi Monitor for 2020, the ESRB noted that further work on addressing data gaps is needed, and that appropriate risk metrics to measure leverage (as well as liquidity and interconnectedness) still have to be developed. This indicates that the precondition of bridging relevant data gaps stated in policy proposal has not yet been fulfilled.

## **A2. Status of implementation**

The development of a leverage framework for all parts of the financial system is still at an early stage, but it is in progress.

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<sup>113</sup> Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010, OJ L 174, 1.7.2011, p. 1–73.

<sup>114</sup> See [Recommendations for a Framework Assessing Leverage in Investment Funds](#), International Organization of Securities Commissions, Madrid, December 2019.

### A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

Definitions of leverage across sectors are close to being set so that leverage across the financial system could be monitored as soon as data are made available (which could be one limitation for regulators). However, impact studies on the use of leverage requirements (not only as a monitoring tool) as well as the interactions of such sectoral requirements have not yet been conducted. Very few studies have been undertaken on the procyclical nature of leverage at the level of the financial system/the more systemic entities (in the entire financial system). The countercyclical dimension of leverage requirements or such requirements for more systemic entities has not been debated so far.

- Does the current construction/calibration of the measures adequately address LIRE risks?

Given that there are still data gaps and a lack of appropriate risk metrics to measure leverage, it is difficult to assess how well LIRE risks are addressed. Until a complete leverage framework for the whole financial system is implemented, it is however likely to be deemed insufficient.

- What elements are missing/incorrect and why?

Impact studies of leverage requirements have not yet been done, be it in relation to its impact or interaction with the already existing capital requirements, especially for insurance companies. A historical perspective on the evolution of leverage across the non-bank sector is still lacking.

To conclude, leverage regulation in banking is now implemented. EIOPA has reviewed the need for leverage regulation in insurance (the outcome of this review implies that there is no need to limit leverage, although there may be a need to monitor it); the ESMA review of leverage is ongoing for AIFs; no review for UCITS is foreseen (despite the 2018 ESRB recommendation). No EU actions have been taken with regard to other sectors.

## Changes in the structure of the financial system

### Policy B.2.1.1

<b>Policy text as drafted in the 2016 report</b>	Policy B.2.1.1: Increase cooperation and establish common grounds across sectoral stress tests, with the ultimate goal of, in the long term, developing and implementing system-wide stress tests that include common shocks related to asset prices and liquidity.
<b>Link to LIRE as set out in the 2016 report</b>	<p>At a general level, a system-wide approach is required given the interrelated nature of risks identified in low interest rate environments (LIREs) calling for a holistic and system-wide perspective. For example, banks may react to low profitability by taking on higher liquidity and duration risk (longer term and longer duration loans) and this extra risk is ultimately borne by investors in banks' liabilities, including retail and non-retail investors.</p> <p>In a LIRE, cross-sectoral exposures may also be expected to increase. For example, higher risk appetite in financial market may lead banks to rely more on market-based finance, so that investor in financial markets ultimately bear more of the risk on the asset side of banks' balance sheets.</p> <p>Finally, a LIRE is also characterised by higher correlation between asset classes, ultimately due to similar trading behaviour (search for yield – and unwinding of search for yield).</p>
<b>Type of measure</b>	Analysis, monitoring
<b>Sector to which the policy is addressed</b>	Cross-sectoral
<b>Objectives to be achieved by the measure</b>	<p>The system-wide stress-test would highlight the interactions between market participants, examining risks on a forward-looking basis, assessing the system-wide implications of potential policy measures targeting specific groups of investors, and taking a holistic approach to the identification of vulnerabilities across the entire financial system.</p> <p>In the medium term, the exercise should include the regular stress testing of asset values, taking account of endogenous correlations across all markets, market liquidity and exposures to less regulated entities.</p>

### Assessment

#### A1. Actions taken/institutions

Currently, there are only a few documented system-wide stress test models with different types of agents. Finding complete and consistent data to map and analyse the financial network remains a challenge. Due to this caveat, existing implementations of system-wide stress testing frameworks generally use simulated data or focus on aggregate data for financial entities (e.g. using one representative bank, one representative insurer, etc.).

ECB staff, with the cooperation of staff from the national central banks of the Eurosystem, are currently working on the development of an analytical stress-testing framework to be able to more realistically capture the interactions between banks and non-bank financial institutions by exploiting a range of granular data sets.

This new framework is expected to enable the ECB to assess the impact of an adverse macro-financial scenario on individual financial entities and on the financial system as a whole, featuring direct and indirect contagion mechanisms, liquidity and solvency interactions, dynamic balance-sheet developments and related reactions of the different financial institutions that may in turn lead to material amplification effects. This new framework should help to reveal vulnerabilities in the non-bank financial sector and assess the potential for spill-overs, most notably due to fire sales, across institutions and across sectors (e.g. banks, investment funds, insurance corporations, etc.).

The horizon for the finalisation of a first implementation of this framework, covering banks, investment funds, insurance companies and potentially CCPs and hedge funds, is the end of 2021.

Regarding documents on the status of implementation of system-wide stress testing, a broad overview is set out below.<sup>115</sup>

## **A2. Status of implementation**

Implementation of the policy is in progress.

## **A3. Assessment of the sufficiency of the measure**

- What progress has been made since 2016?

Research by the ECB, other central banks and academia is still at an early stage of development.

In the EU, a number of initiatives aimed at collecting granular information on bilateral exposures across the different types of instruments have been implemented and finalized (for example, EMIR for derivatives, AnaCredit for loans, statistics on holdings of securities (SHS) for securities, money market statistical reporting (MMSR) for money market transactions). There is nonetheless limited availability of harmonized and sufficiently detailed information on firms' balance sheets (a fully-fledged harmonized pan-European business register with universal coverage of both large corporates and SMEs). The availability of granular datasets on bilateral exposures covering all economic sectors and the possibility to aggregate and combine them is a pre-requisite for designing and implementing a system-wide stress test.

- Does the current construction/calibration of the measures adequately address LIRE risks?

Not applicable.

- What elements are missing/incorrect and why?

As mentioned above, one challenge that remains is finding complete and consistent data to map and analyse the financial network.

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<sup>115</sup> See [Stress-testing banks - a comparative analysis](#), Bank for International Settlements, Basel, 27 November 2018

### Policy B.2.2.1

<b>Policy text as drafted in the 2016 report</b>	Policy B.2.2.1: Ensure cross-sector consistency to avoid regulatory arbitrage by fostering activity-based regulation (complementing entity-based regulation).
<b>Link to LIRE as set out in the 2016 report</b>	Given that financial markets are expected to play a bigger role and that non-banks are starting to provide bank-like services, regulation should concentrate on the nature of the activities under consideration instead of targeting a given subset of institutions. For the specific example of banks, the extensive regulation of banking activities may provide incentives that encourage the undertaking of similar activities in a sector with a different regulatory framework, which may have been designed for different purposes and which may not adequately address risks from bank-like activities. Relying on activity-based regulation ensures a level playing field across the many institutions involved in similar activities (and offering similar products).
<b>Type of measure</b>	Policy regulation
<b>Sector to which the policy is addressed</b>	All sectors
<b>Objectives to be achieved by the measure</b>	This proposal aims at integrating legal instruments/provisions to address risks and activities across financial intermediaries that are subject to different legal frameworks. This is particularly relevant as all financial entities are subject to low interest rate environments and may suffer certain common risks related to this environment. Implementation of activity-based measures should increase the effectiveness of the macroprudential policy by limiting regulatory arbitrage.

### Assessment

#### A1. Actions taken/institutions

So far macroprudential regulation, especially for the EU, has been entity based, with specific legal frameworks applied to specific types of entities. However, a clear objective of recent legal reviews has been to integrate some tools (designed differently to closely match each sector's own characteristics) in the legal frameworks of all types of entities in a way that makes regulation proportionate to the source of systemic risk.

For insurances companies, ESRB (2020) proposes equivalence in regulation of bank-like activities and has called for this approach in its response to EIOPA's consultation on Solvency II. ESRB (2020) also recommends that greater consideration be given to the pro-cyclical effects of some features of Solvency II. For investment funds, the ESRB has called for the introduction of tools that address liquidity mismatch, pro-cyclicality or leverage, which are common risks across banks, insurances companies and CCPs.

Finally, as regards real-estate lending, Recommendation ESRB/2016/14 clearly addressed all credit providers, including non-banks.

#### A2. Status of implementation

This part of the macroprudential framework is still very incomplete, despite the fact that some activity-based regulations have started to be integrated into EU legal provisions, or have been recommended by the ESRB, but have still not been implemented.

#### A3. Assessment of the sufficiency of the measure

- What progress has been made since 2016?

Ensuring greater consistency between regulations for specific sectors is essential to limit regulatory arbitrage. Some progress has been made given that many legal provisions now include a macroprudential dimension in tackling risks/activities that cuts across the financial system.

However, these dimensions of the legislation are still very new and still under debate and are not homogenous activity-based regulations. Looking, for instance, at end borrowers, progress has been made with the implementation of entity-based tools, such as limits on bank debt for households, while instruments, such as LTV caps and caps on leveraged loans, that limit mortgage/leverage finance transactions independent of the type of lender are less common. In some countries (e.g. Denmark), borrower-based measures are implemented across the financial system as part of the consumer protection framework and are not considered to be macroprudential.

- Does the current construction/calibration of the measures adequately address LIRE risks?

Activity-based regulation is not widely developed.

- What elements are missing/incorrect and why?

Complementing entity-based regulation and moving towards more activity-based regulation entails the adoption of a completely new perspective on the macroprudential framework and could take time due to the complexity of this task. One strategy could be that of working on an ESRB macroprudential handbook adopting a systemic view and applying it to both banks and bank activities and to non-banks and non-bank activities. The objective of such a handbook would be that of adopting an activity-based approach to macroprudential policy; this would be in line with the long-term objectives of the ESRB strategy paper “Beyond Banking”<sup>116</sup>, to: (i) develop a strategy for macroprudential policy extending beyond banking that targets risks across the whole financial system with a consistent set of instruments; (ii) develop a framework that links the required level of resilience of specific parts of the financial system, such as market-based finance, to their contribution to the systemic risk facing the financial system as a whole; (iii) regulate financial entities and activities in line with the intensity of systemic risk arising from externalities and market failures; and (iv) address the risk of excessive credit growth at the level of end-borrowers, irrespective of the type of credit.

An activity-based approach is needed, for instance, in the domain of mortgage financing, consumer lending, liquidity risk and synthetic leverage, as well as margins and haircut practices.

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<sup>116</sup> See [Strategy paper – Macroprudential policy beyond banking](#), European Systemic Risk Board, Frankfurt am Main, July 2016.

## Policy B.2.2.2

<b>Policy text as drafted in the 2016 report</b>	Policy B.2.2.2: Support efforts aimed at developing a strategy for macroprudential policy beyond the banking system, including a review of the current framework for the regulation of leverage, liquidity and financing in the non-banking sector, with the aim of limiting systemic risk; the development of margins and haircuts as macroprudential instruments.
<b>Link to LIRE as set out in the 2016 report</b>	<p>This proposal mainly addresses cross-sectoral and system-wide aspects: risks related to the expansion of shadow banking activities, the emergence or increase in liquidity risk in non-banking sectors accompanied by less diversity in the financial system, the greater importance of risks originating in financial markets and broad-based risk taking beyond capabilities. It deals in particular with risks arising from increased leverage, as well funding and liquidity risks, in investment funds.</p> <p>The policy proposal encourages the ESRB to facilitate efforts aimed at developing a macroprudential policy strategy that applies beyond the banking system. These efforts relate to: liquidity stress-testing of NBFIs, minimum liquidity management tools available for NBFIs, macroprudential liquidity tools within the remit of macroprudential authorities, counter-cyclical capital buffers for NBFIs or leverage requirements.</p>
<b>Type of measure</b>	Analysis, regulation
<b>Sector to which the policy is addressed</b>	NBFI especially insurance companies, CCPs, and the investment fund industry.
<b>Objectives to be achieved by the measure</b>	As a strategic objective, the aim of this proposal is to explore the different aspects of a possible macroprudential framework for NBFIs. The objective is that of starting to devise a framework, consistent with the existing microprudential frameworks.

## Assessment

### A1. Actions taken/institutions

Several ESRB reports have been produced on this issue and have provided the stocktakes and the analytical foundation that the policy proposal asks for. The main contribution is to be found in the ESRB strategy paper “Macroprudential policy beyond banking” (2016)<sup>117</sup> which complements the ESRB Flagship Report and Handbook on the application of macroprudential policy in the banking sector (2014).

This ESRB strategy paper highlighted the fact that macroprudential instruments to address financial stability risks beyond the banking sector should be part of a wider macroprudential policy strategy and that the move to a more market-based financial system underscores the need for a broader set of macroprudential instruments. The strategy paper presents short-term policy options and a long-term policy agenda, including the development of a “resilience standard” based on the contribution of financial entities and activities to systemic risk. As indicated in the strategy paper, addressing risks beyond banking requires macroprudential instruments that apply to both lenders and borrowers, targeting entities and activities. While this strategy is not a formal recommendation, it gave authorities detailed macroprudential objectives. The strategy paper proposed:

- for insurance companies: to use new data made available with the introduction of Solvency II requirements; to systematize stress-testing (in a top-down or bottom-up fashion); to address

<sup>117</sup> See [Macroprudential policy beyond banking: an ESRB strategy paper](#), European Systemic Risk Board, Frankfurt am Main, July 2016.



the systemic relevance of individual entities; to increase the consistency of macroprudential tools with bank-like activities or similar type of risks (leverage, liquidity);

- for CCPs: to address the pro-cyclical nature of margins and haircuts during periods of stress; to develop top-down stress tests; to monitor risks using new available EMIR data;
- for investment funds: to increase monitoring capacity by using data made available by AIFMD; to develop a macroprudential leverage instrument in the fund sector in close cooperation with ESMA; to address liquidity mismatch and procyclical risks;
- overall: to better understand the link and risk channels within the different components of the financial sector to anticipate any contagion risk when stress materializes.

The overall objective of the report was to ensure that ongoing legislative reviews appropriately include a macroprudential perspective across the EU. The ESRB outlined its views for the above-mentioned sectors, in particular for insurance sector, in 2020.<sup>118</sup>

As regards investment funds, the ESRB has published several formal recommendations to ESMA and the European Commission aimed at improving its macroprudential toolkit as regards liquidity and leverage, the first time being in 2017<sup>119</sup> and then in 2020<sup>120</sup> (following the COVID-19 stress episodes).

## A2. Status of implementation

ESMA complied with the requests expressed in ESRB recommendation 2017/6<sup>121</sup> by publishing liquidity stress-testing guidelines<sup>122</sup> (subrecommendation C). These guidelines are to be applied by NCAs by 30 September 2020. In addition, the European Commission was recommended to consider several legal concerns as regards EU law concerning investment funds sector: liquidity tools management, liquidity requirement for open-ended AIFs, NCAs and ESMA powers to suspend redemptions when cross-border financial stability is concerned, and to implement UCITs reporting obligations.

As regards Insurance companies, the 2020 ESRB report<sup>123</sup> “Enhancing the macroprudential dimension of Solvency II”, devoted to the review of Solvency II, indicates that the review of Solvency II will take financial stability considerations into account. Article 77f of Directive

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<sup>118</sup> See [Enhancing the macroprudential dimension of Solvency II](#), European Systemic Risk Board, Frankfurt am Main, February 2020.

<sup>119</sup> See [Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#), (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

<sup>120</sup> See [Recommendation of the European Systemic Risk Board of 6 May 2020 on liquidity risks in investment funds](#) (ESRB/2020/4) 2020/C 200/01 (OJ C 200, 15.6.2020, p. 1).

<sup>121</sup> See [Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#), (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).

<sup>122</sup> See [Final Report, Guidelines on liquidity stress testing in UCITS and AIFs](#), European Systemic Risk Board, Frankfurt am Main, 02 September 2019.

<sup>123</sup> See [Report – Enhancing the macroprudential dimension of Solvency II](#), European Systemic Risk Board, Frankfurt am Main, February 2020.

2014/51/EU (Omnibus II) amending Directive 2009/138/EC (Solvency II) highlights the financial stability dimension of long-term guarantee measures and the measures on equity risk. The review thus provides an opportunity to strengthen the macroprudential aspects of Solvency II. In contrast to investment funds, there was no formal ESRB recommendation relating to the insurance sector.

As regards CCPs, the ESRB published two reports (2017<sup>124</sup> and 2020<sup>125</sup>) on the use of margins and haircuts in securities financing transactions. In this regard, EMIR states that CCPs, competent authorities and ESMA should adopt measures to prevent and control possible procyclical effects arising from the risk-management practices adopted by CCPs. To this end, Article 41 of EMIR and Article 28 of the Regulatory Technical Standards (RTSs) sets out requirements for CCPs to monitor procyclicality arising from margin revisions and margin parameters and adopt at least one of three anti-procyclicality margin measures. In line with this, ESMA requested the NCAs to comply with a set of guidelines published in 2018 that address these concerns.<sup>126</sup>

In 2017, ESMA conducted CCP stress testing and published a report on the methodological aspects and results.<sup>127</sup> This stress test included liquidity stress tests. The focus was on interconnectedness, with default simulations of key actors in the financial system network.

### **A3. Assessment of the sufficiency of the measure**

The size, complexity and systemic importance of the non-banking sector and market financing is growing. The development of a strategy to identify and limit these risks outside the banking sector is crucial for our ability to contain systemic risk.

In spite of the significant progress towards the creation of a framework made by ESRB, ESMA and EIOPA, the actions taken so far have not led to a fully-developed macroprudential framework extending beyond the banking sector; the recent COVID-19 crisis has brought problems in the non-bank financial sector to the fore, especially as regards investment funds and linkages between banks and non-banks. For these reasons, we consider the actions taken to be insufficient to fulfil the objective outlined in the policy proposal.

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<sup>124</sup> See [Report – The macroprudential use of margins and haircuts](#), European Systemic Risk Board, Frankfurt am Main, February 2017.

<sup>125</sup> See [Report – Mitigating the procyclicality of margins and haircuts in derivatives markets and securities financing transactions](#), European Systemic Risk Board, Frankfurt am Main, January 2020.

<sup>126</sup> See [Final Report – Guidelines on EMIR Anti-Procyclicality Margin Measures for Central Counterparties](#), European Securities and Markets Authority, Paris, 28 May 2018.

<sup>127</sup> See [Report – EU-wide CCP Stress Test 2017](#), European Securities and Markets Authority, Paris.

## 3 Imprint and Acknowledgements

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