EUROPEAN CENTRAL BANK
EUROSYSTEM

# Macroprudential stress-tests and tools for the non-bank sector

**Prepared remarks by Vítor Constâncio, Vice-President of the ECB,**
**at the ESRB Annual Conference, Frankfurt am Main, 22 September 2017**

## 1. Introduction: Systemic risks in the non-bank sector

Assessing the impact of a large shock on financial soundness of non-bank financial institutions, stress testing can improve measurement of the risks and can help in the calibration of instruments mitigating those risks. There is a need to further develop these policy tools while at the same time adaptation of stress test models towards integrating different agents into a system-wide tool is important. The ESRB - in its strategy paper on macroprudential policy beyond banking[1] , for example, emphasises the need to develop a wider financial stability toolkit, including top-down stress tests, for example, for asset managers, the need to operationalise macroprudential instruments for which a legal basis has already been created or the need to investigate the potential for increasing the consistency of available macroprudential instruments across sectors.[2] In its report on stress test analytics for macroprudential purposes in the euro area, the ECB also outlines the plans for extending stress testing into other sectors, most prominently the shadow banking sector, but also into the stress testing of central counterparties and insurance and pension funds.[3]

Let me first set the stage by reiterating the two main systemic risks stemming from the non-bank financial sector.

First, the increasing size and growth of the euro area investment fund sector has the potential to amplify financial stability risks, both in terms of liquidity and leverage. As an example of the structural change in the European financial sector, it is worthwhile noting that the size of the money market and investment fund sector represented only 17% of banks' total assets in 2008 but is now at 40%. Whereas the banking sector shrank by 18% since the crisis, the fund sector more than doubled since 2008.

The continued inflows into bond funds for example, may raise concerns about sudden redemptions in response to a more widespread repricing in global fixed income markets, if it were to occur. Large redemption calls can have widespread amplification effects in financial markets. There are signs that fixed income investment funds have increased their risk taking in recent years via a higher asset allocation to lower-rated debt securities and an increased duration in their fixed income portfolios. At the same time, there is evidence that redemption patterns can be procyclical, which can foster adverse market dynamics when asset prices are declining.

Second, the procyclical nature of margin and haircut-setting practices of market participants and liquidity risk propagation in collateralised securities financing and derivatives transactions is a concern for financial stability. These practices stimulate the build-up of excessive leverage and funding risk in good times, while amplifying funding stress and deleveraging in bad times.

Collateralised transactions, while limiting counterparty risk, have the potential to amplify funding liquidity risk or market risk via fire sales in a stress scenario. The resulting propagation of risk may be material and potentially of systemic nature. Non-bank financial institutions can be part of the risk transmission mechanism, in particular, since they do not have recourse to central bank liquidity.

## 2. Macroprudential stress test to gauge the magnitude of the risks stemming from the non-bank financial sector

So the questions arise: how to appropriately measure these risks and how to derive policy instruments that are effective in mitigating these risks? What are the challenges for macroprudential stress tests to provide meaningful indicators to measure and predict the level of systemic risk, the position of the economy in the financial cycle and consequently the adequate stance of macroprudential policies?

In recent years, stress testing has become an increasingly prominent approach to gauging impact of a large shock on the agents' financial soundness and on the market functioning.

Developed originally for assessing banking system resilience, macroprudential stress tests have recently been extended to cover a wider range of non-bank financial institutions: let me mention insurance companies (conducted by EIOPA), CCPs (conducted by ESMA) and asset managers.

This more recent development is largely reflecting the increasing importance of non-bank financial institutions within the EU financial system.

However, stress testing tools for non-banks are still in a fledgling state, in particular in how they capture system-wide effects.[4] Let me elaborate on what needs to be improved to operationalise them.

First and foremost, in order to conduct proper stress test analysis for the non-bank financial sector, data availability needs to be significantly improved. A successful application of the system-wide stress test models hinges upon availability of reliable data sources for model calibration and validation. In general, the availability of sufficiently granular and historical data series for the non-bank financial sector is still lagging behind the situation on the banking side.

These concerns notwithstanding, it should be acknowledged that data availability is improving in some areas following some important initiatives of financial regulators and overseers. In Europe, trade repository reporting under EMIR is one example that can shed light on interconnectedness via derivative markets.[5] Another European initiative to improve information about SFT should go live in Q1 2019 with the Securities Financing Transactions Regulation (SFTR) transaction reporting obligation.

Furthermore, ad hoc, targeted data collections can help improve the calibration of stress testing models and inform further required changes to the regular financial reporting. If properly constructed, such ad hoc data collections can provide deep insights into potential shock transmission channels.[6] I would like to stress that the research community can offer useful advice on relevant data dimensions in this regard and therefore should be actively involved in designing such data collection templates.

As far as the second enhancement is concerned, existing non-bank stress test approaches need to better account for interactions between agents. We know from experience that the impact of a stress test event hitting a financial institution is often amplified via its interactions with the rest of the financial system. Therefore, failing to account for such interactions may risk overestimating the resilience of single institutions and the system as a whole. Some extensions to the traditional stress testing have already been operationalised, at least for the banking system. I would like to emphasise the inclusion of strategic behaviour (e.g. balance sheet portfolio optimisation in STAMP€ analytical framework of the ECB[7] ), game theoretical approaches to handle strategic responses to shocks and activity of other market participants (e.g. in the MFRAF stress testing framework of Bank of Canada), network effects capturing interlinkages (e.g. in the RAMSI framework of Bank of England or the ECB top-down stress test model[8] ) or feedback loops with the real economy (e.g. DSGE models in STAMP€).

Third, as their business models and behaviour differ from traditional banks, specificities of non-bank financial institutions have to be considered carefully when designing tools to stress them. Both the policy and academic communities are looking into ways to enhance stress testing models for macroprudential policy. STAMP€ is one example. Let me mention a few others focusing on integrating behaviours of different types of agents and on analysing the increasing pool of data. One enhancement is about fire sales mechanisms stemming from interactions between banks and shadow banks.[9] Another example worth mentioning is about systemic aspects of liquidity and its links with solvency conditions accounting for pertinent interactions between market participants captured in an agent-based modelling fashion.[10] Though, what is still required is further strong support from the research community to provide theoretical foundations for the various components of the stress test apparatus.

## 3. Macroprudential tools to address the risk stemming from the non-bank sector

Despite these limitations, we should also note the progress made in understanding how stress testing exercises, in particular, have the potential to support macroprudential policy in the design, calibration and assessment of the impact of macroprudential tools.

Let me now turn to the state of play regarding the implementation and progress made for some of the specific macroprudential instruments that authorities would need, should systemic risks materialise.

On the global level, the 2017 FSB policy recommendations on asset management structural vulnerabilities[11] , now being operationalised by IOSCO, are expected to reduce liquidity mismatches in open-ended funds. Importantly, recommendation 8 captures the potential macroprudential role for authorities to provide direction on the use of liquidity risk management tools (e.g. suspension of redemptions) by funds in extraordinary circumstances. In the area of liquidity mismatch, the recommendations also address the potential use of system-wide stress testing by authorities. Leverage recommendations focus on the measurement and monitoring of leverage within investment funds, including data for synthetic leverage calculation.

On the European level, on-going work of the Expert Group on Investment Funds (EGIF) develops recommendations that are addressed to funds and asset managers. Given that the investment fund sector is growing relative to the financial system as a whole, the ESRB is analysing systemic risks posed by liquidity mismatch and leverage in the types of investment funds exposed to these risks.

To highlight the importance of this work, let me preview results of an ECB Occasional Paper[12] to be published soon. The study shows, for a large sample of European Alternative Investment Funds (AIFs), that open-ended leveraged funds experience greater investor outflows after bad performance than unleveraged funds.

This can be explained by investors expecting proportionally larger valuation losses when remaining invested in leveraged funds. During stressed periods, leveraged funds need to de-lever proportionality more than unleveraged funds in order to obtain liquidity to cover margin calls and higher haircuts on leveraged positions. Also, leveraged funds have to sell relatively more assets following redemption requests to keep the leverage ratio constant. To the extent these asset sales impact market prices or are sold at fire sale prices, the net asset value of the portfolio declines.

These new findings on the greater vulnerability of leveraged funds to potential investor runs support the idea that mismatches between the portfolio liquidity and redemption terms of leveraged funds are undesirable for more leveraged funds from a macroprudential perspective. They also complement existing evidence on the greater sensitivity of investor outflows to bad performance in illiquid versus liquid funds, which can be explained by higher liquidation costs for less liquid assets.

Within the EU, competent authorities already have legal powers to impose macroprudential leverage limits on AIFs, such as hedge funds, bond funds and funds-of-funds. The ESRB has marked the operationalisation of this existing policy tool as a key part of the agenda to develop macroprudential policy beyond banking.[13] Achieving this goal is important and may require an EU-level framework to assess financial stability risks related to leverage in the investment fund sector and to evaluate potential designs for macroprudential leverage limits.

For risks in SFT and derivatives, as I have laid in a keynote speech at a dedicated conference last year here at the ESRB[14] , I am convinced that macroprudential margins and haircuts are tools that have the potential to allow authorities to control the build-up of excessive leverage in these markets. Importantly, these tools can reach beyond the banking system and also address the build-up of leverage and liquidity risks in parts of the financial system, where we have seen rapid growth in recent years.

Since then, we have made some progress on this front. For example, the ESRB has published a comprehensive report on the macroprudential use of margins and haircuts this year. The report describes in detail the mechanics of how these tools would affect leverage and procyclicality. Nevertheless, the report also acknowledges a number of implementation challenges and calls for further empirical and conceptual analysis.

So let me conclude by saying that despite the progress made, there is more work to be done: on the operationalisation of tools, on further improving data or the interaction with the policy and research community to enhance stress testing models. I would therefore encourage authorities, including the European Commission, the ESRB but also ESMA to continue to contribute towards this goal.

[1] See **Macroprudential policy beyond banking: an ESRB strategy paper**.

[2] Examples include definitions of leverage, taking into account differences and interdependencies between sectors or macroprudential instruments, such as instruments that address procylicality of initial margins or haircuts, especially in securities financing transactions and derivatives

[3] **Stamp€ Report**

[4] The need to be able to capture system-wide effects in non-bank stress tests is strongly advocated by e.g. the **FSB**.

[5] J. Abad, I. Aldasoro, C. Aymanns, M. D'Errico, L. Fache Rousová, P. Hoffmann, S. Langfield, M. Neychev and T. Roukny (2016), "Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset", *ESRB Occasional Paper 11*.

[6] BCBS-CPMI-FSB-IOSCO (2017), **Analysis of Central Clearing Interdependencies**, July.

[7] **Stamp€ Report**.

[8] ECB (2013), "A Macro stress testing framework for assessing systemic risks in the banking sector", ed. J. Henry, C. Kok, *ECB Occasional Paper, 152*.

[9] S. Calimani, G. Hałaj, S. Zochowski (2017), "Simulating fire-sales in a banking and shadow banking system", *ESRB Working Paper Series 46*.

[10] G. Hałaj (2017), "Agent-Based Model of system-wide implications of funding risk", mimeo, ECB. R. Bookstaber, M. Paddrik and B. Tivnan (2017), "An Agent-based Model for Financial Vulnerability", *Journal of Economic Interaction and Coordination*.

[11] http://www.fsb.org/wp-content/uploads/FSB-Policy-Recommendations-on-Asset-Management-Structural-Vulnerabilities.pdf

[12] K. van der Veer, A. Levels, C. Lambert, L. Molestina Vivar, C. Weistroffer, R. Chaudron and R. de Sousa van Stralen.Developing macroprudential policy for alternative investment funds, Towards a framework for macroprudential leverage limits in Europe: an application for the Netherlands; to be published in October 2017

[13]See https://www.esrb.europa.eu/pub/pdf/reports/20160718_strategy_paper_beyond_banking.en.pdf, page 4: "To operationalise macroprudential instruments for which a legal basis has already been created, in particular by providing advice to the European Securities and Markets Authority (ESMA) on the AIFMD framework for leverage requirements."

[14]" **Margins and haircuts as a macroprudential tool**", remarks by Vítor Constâncio, Vice-President of the ECB, at the ESRB international conference on the macroprudential use of margins and haircuts, Frankfurt am Main, 6 June 2016.

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