



LUXEMBOURG

FINANCIAL SECTOR ASSESSMENT PROGRAM

TECHNICAL NOTE—MACROPRUDENTIAL FRAMEWORK AND POLICIES

August 2017

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TECHNICAL NOTE

MACROPRUDENTIAL FRAMEWORK AND POLICIES

Prepared By
**Monetary and Capital Markets
Department**

This Technical Note was prepared by IMF staff in the context of the Financial Sector Assessment Program in Luxembourg. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at <http://www.imf.org/external/np/fsap/fssa.aspx>

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Glossary

AIFM	Alternative Investment Fund Manager
AIFMD	Alternative Investment Fund Managers Directive
BCL	Banque Centrale du Luxembourg
CAA	Commissariat Aux Assurances
CCB	Countercyclical Capital Buffer
CRS	Comité du Risque Systémique
CRDIV	Capital Requirement Directive IV
CRR	Capital Requirement Regulation
CSSF	Commission de Surveillance du Secteur Financier
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
FSB	Financial Stability Board
HCSF	Haut Comité de Stabilité Financière
LMT	Liquidity Management Tool
IRB	Internal Rating Based
SSM	Single Supervisory Mechanism
TNA	Total Net Asset
UCITS	Undertaking for Collective Investment in Transferable Securities

EXECUTIVE SUMMARY

Luxembourg has a large financial system which contributes a significant share of GDP and is globally interconnected. The investment fund industry, which is central to the business model of large depositary banks in Luxembourg, is the second largest in the world after the United States (U.S.). The banking system is also large relative to GDP, with banks active in activities ranging from private banking and wealth management, depositary and custodian activities, treasury operations for large and systemic banking groups, and traditional retail and commercial banking serving the domestic economy. The size and breadth of financial activities conducted in Luxembourg means the quality of regulation and surveillance, from both a microprudential and macroprudential perspective, is of paramount importance.

A new macroprudential policy framework has recently been put into place. A *Comité de Risque Systémique* (CRS) bringing together the government, the central bank, and the two supervisors, i.e. the CSSF and the CAA, is tasked with the macroprudential oversight of Luxembourg's financial system.

The institutional arrangement is broadly appropriate for effective macroprudential policy, but some areas should be strengthened. Consistent with IMF guidelines, the macroprudential policy framework is assessed against three key principles: (i) willingness to act in the face of potential opposition, thereby countering inaction bias; (ii) ability to act, through access to data, resources and powers; and (iii) cooperation across all agencies at the domestic and international levels.¹ The CRS makes decisions based on unanimity voting. This approach has drawbacks: it could create an inaction bias because each member has an effective veto right and can therefore block decisions (though it should be stressed there is no evidence this has yet emerged as an issue): see for instance the 2016 IMF-FSB-BIS paper, and the 2013 IMF paper "Key Aspects of Macroprudential Policy." Simple or qualified majority arrangements can strike a better balance between the need to avoid delay and the need to ensure that the committee has taken full account of trade-offs and different perspectives.^{2,3} To counter any potential risks of inaction bias in the future (possibly related to political considerations) and to ensure effective coordination, the unanimity requirement should be replaced with a majority vote. Replacing unanimity voting by majority voting does not preclude consensus-based decision making, as the experience of other countries shows. The practice of awarding a lead role to the central bank in the analysis of systemic risks should also be enshrined in law to strengthen the institutional framework. To advance public transparency and accountability further, the CRS should periodically publish the risk dashboard and surveillance notes assessing systemic risks. The authorities are also advised to address remaining data gaps in important areas, in

¹ See for instance IMF-FSB-BIS, 2016, Elements of Effective Macroprudential Policies; and: International Monetary Fund, 2013, Key Aspects of Macroprudential Policies.

² <https://www.imf.org/external/np/pp/eng/2013/061013b.pdf>

³ In its opinion on the second draft law of the CRS, the ECB also noted that the unanimity voting arrangement of the CRS could in practice cause a risk of paralysis in macroprudential policy (https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2014_46_f.sign.pdf).

particular related to the real estate market and the investment fund industry, which would serve to strengthen the operational capacity of the CRS.

The monitoring and analysis of systemic risks by the *Banque Centrale du Luxembourg (BCL)* is appropriate and performed on a timely basis. The BCL prepares a risk dashboard which is updated on a regular basis and produces a surveillance note of systemic risks for the regular meetings of the CRS. The BCL relies on sophisticated analytical techniques and has access to various data sources to perform this analysis. However, in some areas, such as on the linkages between investment funds and banks, some data gaps remain. In recent years, as demonstrated in the annual *Financial Stability Review*, the BCL has analyzed the key vulnerabilities in Luxembourg, in particular related to the real estate market and household debt, and to the investment fund industry (including linkages to banks).

A macroprudential toolkit is in place, but legal clarity should be provided for borrower-based tools as they relate to the real estate market, while the macroprudential usefulness of liquidity management tools in the investment fund industry should be assessed. Luxembourg's toolkit contains all the macroprudential instruments provided for in the Capital Requirements Regulation (CRR) and the Capital Requirements Directive IV (CRDIV). However, legal clarity should be provided on the availability of borrower-based macroprudential tools (in particular, limits to loan-to-value, debt-to-income, or debt-service-to-income). Moreover, while asset managers in Luxembourg can avail of a wide range of liquidity management tools (LMTs), the effectiveness of these tools has not been formally assessed from a macroprudential perspective. As part of this assessment, the authorities should survey industry experience with LMTs, as also recommended in the Technical Note "Fund Management: Regulation, Supervision, and Systemic Risk Monitoring." The assessment could in turn provide the basis for additional regulatory guidance on the use of LMTs, including covering their inclusion in fund prospectuses.⁴

The authorities are encouraged to continue to increase efforts to monitor risks related to the investment fund industry. The *Commission de Surveillance du Secteur Financier (CSSF)* has stepped up its surveillance of the investment fund industry in recent years, as internal resources have been increased and the industry has continued to expand. Further efforts to increase macroprudential-based surveillance should include closer monitoring of potentially destabilizing liquidity mismatches, market risk where synthetic leverage is used, and counterparty risk. The CSSF should provide industry guidance on the scope (i.e. fund coverage), frequency and modalities of liquidity-based stress tests. As part of intensified supervision, the CSSF should develop the capacity to undertake stress tests from a systemic/financial stability perspective, including interlinkages among funds and banks, and stress tests in higher risk areas (such as bond funds), to better understand collective behavior dynamics, linkages with banks and impact on markets. This would be consistent with similar efforts underway in other jurisdictions and at the EU level in the context of the European Systemic Risk Board (ESRB). Although some of these actions may require a level of supervisory

⁴ The regulator would need to be careful so as not to interfere with current private contracts.

intensity that is beyond the existing requirements of relevant EU Directives, these steps follow the Financial Stability Board's preliminary guidance on addressing structural vulnerabilities in the global asset management industry.⁵ Similar in spirit, the authorities should advocate actions at the EU level designed to strengthen the macroprudential surveillance and regulation of the investment fund industry.

⁵ The Ireland FSAP also called on the regulator to build internal capacity to undertake regular stress tests of investment funds for market risk (IMF Country Report No. 16/258).

Table 1. Luxembourg: FSAP Recommendations on Macprudential Policies

Recommendation	Authority responsible for implementation	Priority / Time frame
To strengthen the willingness to act: (1) Replace the unanimity voting requirement of the CRS by majority voting (2) Enshrine into law the <i>de facto</i> leading role of the BCL (3) Give the BCL the power to make formal policy recommendations to the CRS	Legislator	High / medium term
To further transparency and accountability, publish the risk dashboard and a note assessing systemic risks	CRS	Medium / medium term
Address data gaps related to the real estate market	CRS and members	Medium/ medium term
Address data gaps related to the investment fund industry	CRS and members	High / near term
Strengthen monitoring of systemic risks in the investment fund industry and, in alignment with international and European efforts, develop instruments to take pre-emptive measures to mitigate these as appropriate	CSSF, BCL	High / near term
Prepare thematic study on the linkages between the investment funds and the banks and on the balance sheets of nonbank corporate sector	CRS, BCL, CSSF	Medium/ near term
Involve the BCL in the regular risk analysis of investment funds from a macroprudential perspective and in the related policy recommendations	BCL, CRS	Medium/near term
Commission survey to study the effectiveness of LMTs	CSSF	High/ near-term
Provide guidance to asset managers on the modalities of stress tests and use of LMTs	CSSF	High / medium term
Continue to carefully monitor developments in the real estate market, and take further policy actions if needed	CRS and members	High / near term
Develop capacity for financial stability stress tests of investment funds, including from a systemic perspective	CSSF	High / medium term
Recommend legislative action to complete the macroprudential toolkit with limits on LTV, DTI, and DSTI	CRS	Medium/near term

BACKGROUND

1. An institutional framework for macroprudential policy has recently been established in Luxembourg and has worked well so far. The CRS was set up on April 1, 2015 to ensure the macroprudential oversight of Luxembourg's financial system.⁶ The committee comprises: (i) the government represented by the member of government in charge of the financial sector (the Finance Minister), and who chairs the CRS; (ii) the BCL, represented by its Director General; (iii) the CSSF, represented by its Director General; and (iv) the *Commissariat aux Assurances (CAA)*, represented by its Director. The law establishing the CRS attributes the secretariat of the CRS to the BCL. The Director General of the BCL chairs the CRS, in the absence of the government member in charge of the financial sector. According to Article 1(1) of the law of April 1, 2015, the mandate of the CRS is to coordinate the implementation of macroprudential policy, whose ultimate objective is to safeguard the stability of Luxembourg's financial system, including by strengthening the resilience of the financial system and decreasing the buildup of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth. Since it was set-up, the CRS has met [seven] times and has issued eight recommendations, mostly related to capital buffers, including the counter-cyclical capital buffer (CCB).

2. The framework operationalizes recommendations put forth at the EU level by the European Systemic Risk Board (ESRB), and is articulated in line with the macroprudential institutional framework in place at the EU level. The creation of the CRS operationalizes two ESRB recommendations: *ESRB recommendation on the macro-prudential mandate of national authorities* (Recommendation ESRB/2011/3) and the *ESRB recommendation on the intermediate objectives of macro-prudential policy* (Recommendation ESRB/2013/1). The framework aims at achieving consistency with the ESRB Recommendation ESRB/2011/3, whereby the national central bank should take a leading role in the national macroprudential policy framework without undermining its independence.⁷ Indeed, given its independence, responsibilities, expertise, and financial stability mandate, the central bank should play an important role in macroprudential policy.⁸ The preparatory work of the CRS draft law recognizes that, according to the recommendation ESRB/2011/3, the central bank should play a leading role in macroprudential policy, and it expresses the intention to write this in the law.⁹ Interaction with the European levels of macroprudential oversight occurs at the ESRB (in which the BCL, the CSSF, and the CAA participate), and at the ECB under the Single Supervisory Mechanism (SSM) where the macroprudential oversight

⁶ Please see law available at: <http://www.chd.lu>.

⁷ Recommendation B, paragraph 3. In its 2014 assessment which was based on the draft bill of the law establishing the CRS, the ESRB found the framework largely compliant with its recommendations, with partial compliance with Recommendation B (institutional arrangements, in relation to the role of the central bank) and Recommendation E (operational independence). See: <https://www.esrb.europa.eu/mppa/recommendations/html/index.en.html>.

⁸ IMF, 2014, Staff Guidance Note on Macroprudential Policy; and IMF-FSB-BIS, 2016, Elements of Effective Macroprudential Policies.

⁹ Projet de Loi N. 6653 portant création d'un comité du risque systémique, found on the webpage of the parliament : <http://www.chd.lu>.

of euro area banks takes place under the auspices of the Macroprudential Forum (MPF) and the Financial Stability Committee (FSC) (both the BCL and the CSSF are represented in these fora).¹⁰

INSTITUTIONAL FRAMEWORK

A. Summary

3. This note assesses the formal institutional arrangement according to three key principles. These are: (i) the willingness to act in the face of potential opposition, thereby countering inaction bias; (ii) the ability to act, through access to data, resources and powers; and (iii) cooperation across all agencies at the domestic and international levels (including within the SSM, at the ESRB, and in the context of global fora such as the FSB and other international bodies).

4. Recommendations pertaining to Luxembourg’s institutional framework for macroprudential policy are as follows. First, to ensure willingness to act and avoid potential paralysis, voting should in principle be based on simple or qualified majority, rather than on unanimity as in the law of April 1, 2015. While the mission did not encounter any evidence of paralysis so far, willingness to act could be tested when systemic risks become significant. Second, the leading role of the BCL should be formally strengthened to take full advantage of its independence and financial stability mandate and expertise. This could be better achieved by assigning the BCL legal responsibility for the periodic analysis and identification of systemic risks, which is already the practice in the functioning of the CRS, while other members contribute as required, and giving the BCL the power to formally recommend macroprudential policies to the CRS. These arrangements are already described in an internal rule and they should now be enshrined in the law to ensure their well-functioning into the future. To foster transparency and accountability of the CRS, a risk dashboard and the risk assessment of the BCL should be published periodically, and the risk assessment document could contain policy recommendations. Third, ensuring the independence of the members of the CRS as recommended in the Technical Note on Banking Supervision would also be important to its effectiveness.

B. Principle 1: Willingness to Act

5. The mandate assigns clear objectives and powers that are underpinned by accountability mechanisms of the CRS and by the financial stability mandates of its members. The CRS is tasked to establish close cooperation and coordinated actions between the various authorities, which have well defined financial stability objectives. The organic law of the BCL (law of *December 23, 1998*) provides a financial stability mandate to the BCL while respecting its independence and legal powers. The BCL is also tasked to cooperate with the government and with prudential supervision authorities at the national level, as well as with the other central banks at the

¹⁰ The Governor of the BCL, referred to as Director General in the law, is a voting member within the ESRB General Board and the BCL and the CSSF are represented within the Advisory Technical Committee of the ESRB. The CSSF is a non-voting member of the ESRB General Board.

EU and global levels to help ensure financial stability. Within the BCL's organizational hierarchy, the Secretariat of the CRS reports directly to the Director General. The CSSF and the CAA also have well defined financial stability mandates and the obligation to cooperate with the BCL.¹¹ Since the transposition of the CRD IV into national law, the financial stability mandate of the CSSF has been expanded following its appointment as the national designated authority, vesting it with new responsibilities in the area of financial stability.

6. The model of a committee chaired by the government member in charge of the financial sector, also adopted by other countries, often gives a leading role to the central bank.¹² The presence of the Ministry of Finance on the committee can be useful when changes in legislation or coordination with fiscal or other policies is needed. But it can also delay or impair decision making because of interference by political considerations. While other euro area countries (such as neighboring France and Germany) have adopted a similar committee model chaired by the Ministry of Finance, the Ministry of Finance does not have veto power and the formal leading role of the central bank in these committees should help to ensure the willingness to act. In France, the leading role of the Banque de France results from its task to identify and monitor systemic risks, its power to make proposals to the Haut Conseil de Stabilité Financière (HCSF) on the use of specific instruments, its contribution to the implementation of the decisions and its role in their evaluation. In Germany, the Bundesbank has a veto power, and its leading role also derives from its tasks in identifying and analyzing risks and providing analytical support to the committee (Appendix 1).¹³

7. Objectives of the CRS are well set in the law. The CRS has a central role in coordinating the implementation of macroprudential policy in Luxembourg. More specifically, the CRS is tasked to: (i) identify, monitor and assess risks to financial stability and implement policies to achieve its objective by preventing and mitigating those risks; (ii) determine, based on analyses produced by the members of the CRS, which activities, infrastructures and participants in the financial system pose—or may pose—a systemic risk to the Luxembourg financial system; (iii) issue any opinion useful or necessary to realize the intermediate and ultimate objectives of macroprudential policy; (iv) issue risk warnings when risks to financial stability are considered important, and can make these warnings public; (v) issue recommendations about corrective policy measures, and can make these recommendations public; (vi) evaluate and follow up on the responses provided by the addressees

¹¹ According to the the *law of December 23, 1998 establishing the Commission de Surveillance du Secteur Financier* the CSSF shall cooperate with the government, the BCL and with the other national, Community and international supervisory authorities in order to ensure financial stability, notably within committees set up for this purpose. The law of December 1, 2015 on the insurance sector provides a legal basis to the macroprudential mandate of the *Commissariat aux Assurances* (CAA): in view of its supervisory missions and in compliance with the legal competences of the parties, the CAA shall cooperate with the Government, the BCL and with other supervisory authorities at national, EEA and international level to contribute to ensure financial stability, notably within committees set up for this purpose. *The CSSF makes use of macroprudential instruments available under the CRD IV/CRR package. When acting in such capacity, the CSSF takes decisions after consulting with the BCL and, where applicable, after requesting the opinion of the CRS or taking the latter's recommendations into account.*

¹² See discussion in: IMF-FSB-BIS, 2016, *Elements of Effective Macroprudential Policies*. Many countries have set up macroprudential bodies where decisions are made based on majority voting.

¹³ See for instance, Opinion of the European Central Bank of June 26, 2014 on a systemic risk committee (CON/2014/46).

to any opinion, alert or recommendation issued by the CRS; (viii) contribute to reinforce cooperation and information exchange—both during normal times and in crisis situations—between its members; (ix) cooperate and exchange information with the ESRB and with other macroprudential authorities; and (x) ensure a follow-up of the recommendations issued by the ESRB.

8. Though it appears to be working well in practise, there is a risk that voting arrangements of the CRS could delay the decision making process or result in inaction.

According to Article 5 of the law of April 1, 2015, decisions made by the CRS require unanimity among its members, e.g., for adopting and, if deemed appropriate, publishing opinions, alerts and recommendations. This implies that each member has a right of veto, which could cause delay or inaction in decision making. The risk of paralysis that is associated with voting arrangement based on unanimity has been well identified in international best practises. For instance, the 2016 IMF-FSB-BIS paper found that “voting on policy measures tends to be based on simple or qualified majority, rather than unanimity, to avoid the potential for paralysis, even if the authorities may often in practice strive for consensus”. The 2013 IMF paper “Key Aspects of Macroprudential Policy” argued that “a formal requirement for unanimity assigns a veto to each of the members of the committee and risks paralyzing macroprudential policy. Simple or qualified majority arrangements can strike a better balance between the need to avoid delay and the need to ensure that the committee has taken full account of trade-offs and different perspectives”.¹⁴ Moreover, in anticipation of this potential paralysis important policy proposals may never reach the CRS. While the CRS appears to be working well in practice, the real test of the decision-making framework could arise in the face of rising systemic risks before they are realized. The framework should also ensure that the practice is institutionalized in the law for future policy makers. In its opinion on the second draft law of the CRS, the ECB also noted that the unanimity voting arrangement could in practice cause a risk of paralysis in macroprudential policy.¹⁵ Introducing a governance structure for the CSSF that would remove any potential for future interference from the government or industry, although there is no evidence of any interference, as recommended in the Technical Note on Banking Supervision, would also be important to ensure effectiveness of the macroprudential framework.

9. Enshrining in the legal framework a stronger leading role for the BCL in line with existing internal rules would further help address any potential inaction bias. The comments on the draft law during the parliamentary process argue that the BCL’s leading role results from the BCL acting as the secretariat of the CRS, and the Director General of the BCL acting as chair in the absence of the Minister of Finance.¹⁶ The allocation of the secretariat function to the BCL is unlikely by itself to amount to a leading role to the central bank.¹⁷ Moreover, the law does not clarify which member institution is tasked with the analysis of systemic risks. For example, Article 3 states that each member institution contributes one staff member to the secretariat to contribute to the tasks

¹⁴ <https://www.imf.org/external/np/pp/eng/2013/061013b.pdf>

¹⁵ https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2014_46_f.sign.pdf

¹⁶ Projet de Loi N. 6653 portant création d’un comité du risque systémique, found at: <http://www.chd.lu>.

¹⁷ For a similar view, see also the ECB’s assessment of the draft law: https://www.ecb.europa.eu/ecb/legal/pdf/en_con_2014_46_f.sign.pdf

of the secretariat, which include the possibility to draft analysis on systemic risks. Although the BCL has, in practice, acted as the leading institution in the CRS since its introduction, especially with respect to the risk analysis, the lack of legal clarity could impair the functioning of the CRS in the future, particularly with respect to the decision making process and blur accountability lines as to which institution should principally monitor systemic risks. The *règlement intérieur* (internal rules) of the CRS adopted November 15, 2015, defines the modalities and functioning rules of the CRS and of its secretariat. In practice, the financial stability and supervision department of the BCL takes the lead in the monitoring and analysis of systemic risks, including by preparing a risk dashboard and a surveillance note for the meetings of the CRS. To remove any possible ambiguity about the *future* functioning of the CRS, the law should provide clarity about the leading role of the BCL, including its role in the periodic preparation of systemic risk analysis, as already stated in the internal rules, and in formally recommending macroprudential policies to the CRS. These policy recommendations could for instance be included in a risk analysis paper that would be made public on the website of the BCL or the website of the Secretariat. This would ensure the current practise is perpetuated. The law should also clarify that other member institutions of the CRS are empowered to contribute to the analysis as deemed appropriate by the CRS. The Committee could also include external academic members to foster its independence and willingness to act.¹⁸

10. The CRS is accountable to the national parliament and to the government, and is subject to a transparency framework. In addition to submitting its annual report to the parliament and to the government, the CRS shall, upon request by the parliament, present its annual report to the internal parliamentary commission in charge of financial affairs. The CRS publishes a shortened version of the annual report, which contributes to accountability and transparency (Article 9 of the law of April 1, 2015).¹⁹ The report describes the assessment of systemic risks and provides the list of opinions, alerts and recommendations issued by the CRS and follow-up actions taken by recipients. The transparency requirements regarding the publication of opinions, risk warnings, recommendations and reports ((Article 5 (2) and Article 7 (2)) is consistent with the ESRB recommendation (Recommendation D of ESRB/2011/3). However, the law does not require any publication of risk assessments.

11. To further transparency and accountability, the CRS should periodically publish an analysis of systemic risks. For instance, the CRS should periodically publish the risk dashboard (as the ESRB does) and a note evaluating systemic risks and that would include policy recommendations that could help address any emerging risk identified by the analysis. It should also publish a summary of the thematic studies undertaken by the members of the CRS, and as appropriate, publish the related papers.

¹⁸ The CRS can solicit the opinion of external experts (Art. 6(2)).

¹⁹ The CRS first annual report can be found at: http://www.bcl.lu/fr/stabilite_surveillance/CRS/Rapport-Annuel-2015-du-Comite-du-Risque-Systemique.pdf

C. Principle 2: Ability to Act

12. The framework provides an adequate range of powers to identify and respond to evolving risks. The CRS is endowed with powers enabling it to identify systemic risks, issue opinions, or risk warnings and can address recommendations to other agencies (either members of the CRS or any financial institution part of the financial system), coupled with a “comply or explain” mechanism (a “semi-hard” power). In contrast to the macroprudential committee of countries such as France, the CRS has no binding powers, but to the extent that these powers rest with CRS members (the CSSF and the CAA), the CRS can ensure policy actions are taken if it believes they are needed.²⁰ It can obtain *any information* deemed relevant from the institutions that are represented at the CRS, and from any national agency, and the recipient must provide the requested information within the delays requested, given their competencies and obligations as defined in the EU and national legal framework. Its calibration power is embodied in its ability to formulate recommendations. In principle, the presence of the Ministry of Finance in the committee could allow taking legislative action more easily to add new instruments to the macroprudential toolkit, and to expand the perimeter of macroprudential powers of member institutions, and it should help coordinate macroprudential policies with other policies which could impact systemic risks.

D. Principle 3: Effective Coordination and Cooperation

13. The committee framework explicitly recognizes the importance of effective coordination and cooperation at the national level and at the international level. The legal framework explicitly states that the CRS should contribute to reinforcing cooperation and information exchange—both during normal times and in crisis situations—between its members, and that it should cooperate and exchange information with the ESRB and with other macroprudential authorities. Importantly, the fact that CRS members all have a financial stability mandate, as noted in paragraph 5, tends to foster engagement and cooperation. Moreover, each institution that is part of the CRS must designate a staff member to contribute to the analysis undertaken by the Secretariat. The internal rules of the CRS clarify the modalities of the contributions of each institution to the tasks of the Secretariat, both for the regular risk monitoring, and for specific thematic studies requested by the CRS.

14. The members of the committee are cooperating with EU macroprudential bodies, and at the international level. At the European level, the BCL and CSSF contribute to the JSTs of significant institutions directly supervised by the SSM, and the BCL and the CSSF contributes to other groups such as those falling under the auspices of the Financial Stability Committee of the ECB. Both the BCL and the CSSF also participate in macroprudential risks analysis and policies decisions at quarterly meetings of the ESRB at various levels (general board, advisory technical

²⁰ In particular, the CSSF is the national competent authority as well as the national designated authority (NDA) in the context of the CRR/CRDIV. Decisions on the implementation of macroprudential instruments are taken by the CSSF, when acting in its capacity as NDA, following a consultative process with the BCL and where applicable, after requesting the opinion of the CRS or taking the latter’s recommendations into account.

committee, and various thematic sub-groups) as well as at quarterly meetings of the ECB (joint macroprudential forum, financial stability committee, and its sub-groups). Both institutions contribute to separate sub-committees for risk assessment (analysis working group (AWG) and macroprudential analysis group (MPAG)) and for policy considerations (instruments working group (IWG) and macroprudential policy group (MPPG)). Luxembourg has contributed to the FSB analysis of structural vulnerabilities from asset management activities (by FSB - Workstream 3 on other shadow-banking entities), but is not part of the FSB steering committee.

15. The Committee framework fosters cooperation and coordination with other policies.

The fact that the government member in charge of the financial sector chairs the committee should allow in principle to internalize and mitigate the potential systemic impact of tax policies and coordinate the use of tax and structural policies so as to not over-burden macroprudential policies. Regarding crisis management, policy coordination in crisis time would be achieved given that the CSSF is the resolution authority in Luxembourg and that the Finance Ministry would play an important role especially if public funds are required.

OPERATIONAL CAPACITY

16. The BCL and the CSSF have analytical capacity and processes in place to undertake the financial sector systemic risk assessment.

The BCL has a dedicated financial stability and supervision department which produces a risk dash board and a surveillance note on a quarterly basis for the CRS. The two documents make use of adequate data, analytical models, early warning indicators, and has defined thresholds to help map risk assessments into policy actions. The CSSF has set up a dedicated macroprudential division which prepares risk indicators for the assessment of a potential build-up of systemic risks. To propose decisions to set the CCB, the CSSF provides the CRS with a risk dashboard with indicators used to assess the potential build-up of systemic risks associated with periods of excessive credit growth. For the identification of O-SIIs, the CSSF maintains a scoring system the result of which is communicated to the CRS for the purpose of taking a decision.

17. Several data and information gaps remain and need to be addressed to enhance risk monitoring.

Data gaps could ultimately impair the monitoring and analysis of risks and the decision making process. The BCL collects monthly data on investment funds' flows, portfolios and bilateral exposures (security by security) for statistical purposes while the CSSF obtains various reporting including amongst others monthly reports on total net assets, subscriptions/redemptions for all funds, a semiannual risk report for UCITS, the AIFM reporting for AIFMs/AIFs as well as monthly reports on largest MMF and a more targeted report on large funds' use of synthetic leverage.²¹ A number of data gaps need to be addressed. In the case of the real estate market, data gaps pertain to both the residential real estate market (including on the rental market, on loan-to-value ratios (LTVs) and their distribution among borrowers, and non-standardized definitions across banks) and

²¹ The CSSF also undertakes ad-hoc studies, such as on the use of securities financing transactions by investment funds.

the commercial market (for which there is no official data). The authorities highlighted that the ESRB Recommendation 2016/14 of October 31, 2016 on closing real estate data gaps is expected to improve the situation by harmonising definitions in the EU. In the case of investment funds, and following from the current reporting system in place comprising both the BCL and the CSSF reports, the CSSF should further refine data collection for the purpose of risk monitoring.

18. The financial systems' high level of international integration poses structural risks, although mitigants are in place to manage these. The scope for international spillover effects with macroprudential consequences is non-trivial given that the Luxembourg's financial system is highly integrated internationally, it hosts the second largest investment fund industry after the U.S., and has a large presence of foreign banks specialized in cash management and treasury operations, private wealth management, and depository activities. This puts a high premium on the quality of international cooperation, supervision of cross-border exposures, reciprocity arrangements for macroprudential instruments and home-host considerations of macroprudential and microprudential oversight. In this respect, a recent decision by the CRS demonstrates a proactive stance so far in reciprocating macroprudential measures.²²

19. Recommendations:

- i. The BCL and the CSSF should undertake thematic studies in areas of relevance for the financial system of Luxembourg (e.g., defining the perimeter of the nonbank finance, and further analyzing links between investment funds and banks);
- ii. The CSSF and the BCL should have in place an MOU for the exchange of complementary data on investment funds;
- iii. The CSSF and the BCL should intensify and further elaborate, on the basis of the current and recently introduced UCITS risk reporting, regular data collection related to liquidity and concentration of investment funds' assets, the use of synthetic leverage and the resulting exposures, the use of securities financing transactions, the concentration and categorization of investors, and bilateral linkages between banks and investment funds;²³
- iv. The CRS and its member institutions should also address additional data gaps related to:
 - (i) the residential real estate market (including data on the rental market, and the lack of standard definition of LTVs across banks, and the absence of data on the distribution of LTVs among borrowers and across banks),
 - (ii) the commercial real estate market (for which there is no data besides a survey undertaken by a commercial firm every five years), and
 - (iii) balance sheets of the nonbank corporate sector.

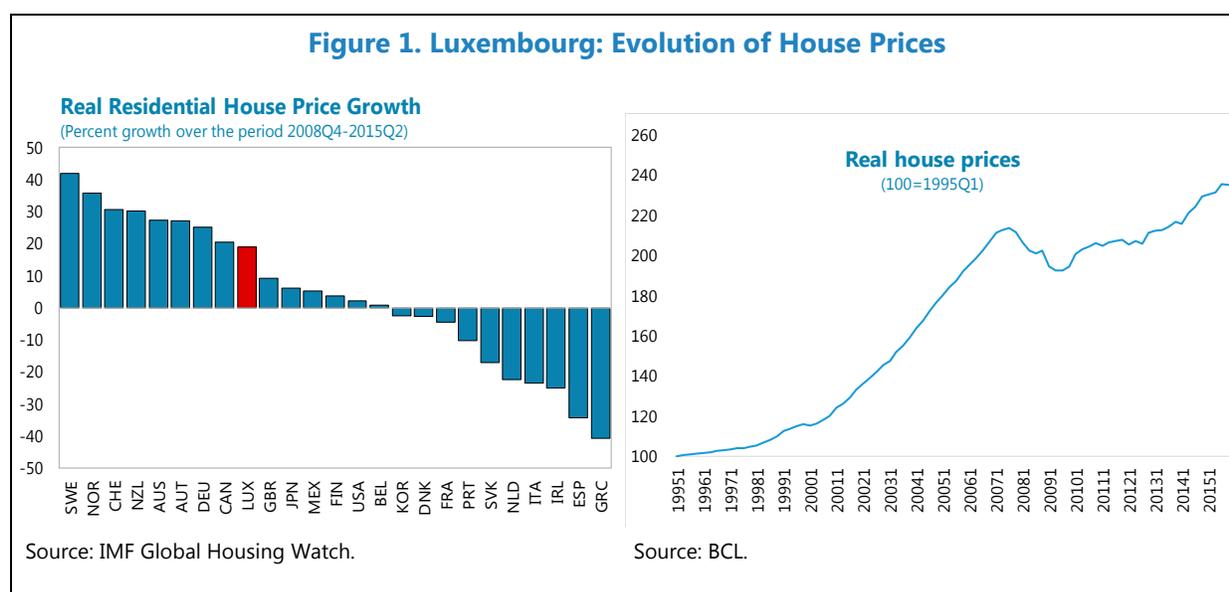
²² See for instance Recommendation of the CRS dated July 25, 2016, regarding the reciprocity of an increase of risk weights on exposures guaranteed by real estate exposures in Belgium.

²³ The CSSF recently introduced regular risk reporting for UCITS in regards to liquidity risk, synthetic leverage, SFTs, counterparty and credit risk, allowing the CSSF to conduct further studies to get a deeper insight into these areas.

RISK MONITORING

A. Macroprudential Risks in the Residential Real Estate Market

20. Residential real estate prices have grown substantially since the global financial crisis. Prices are 18 percent above their level at the end of 2008, and Luxembourg is among the 10 OECD countries which have experienced the most rapid growth of housing prices since the global financial crisis. This comes after a significant increase in prices after the introduction of the euro and in the run-up to the global financial crisis.



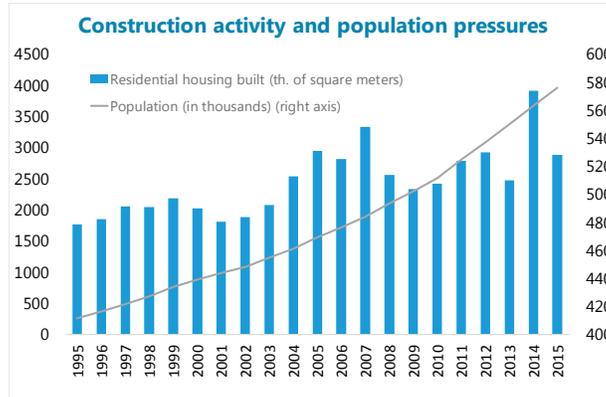
21. This evolution likely reflects growing supply constraints. While population and overall employment have continued to rise substantially, construction of new residential housing has increased moderately relative to its historical average (Figure 2). Moreover, about 40 percent of employment is accounted for by nonresident workers, some of whom look for housing locally, adding to the housing market pressures.

22. Various indicators suggest that residential real estate prices are on the high side relative to income and relative to yields on rented properties, and require on-going monitoring. The price-to-rent ratio which measures the return on real estate, and the price-to-income ratio which measures affordability, are at historically high levels in Luxembourg, and are between one and two standard deviations above their historical mean, suggesting that there is some overvaluation of real estate prices.²⁴ Estimation of econometric models relating real residential real estate prices to fundamentals (such as disposable income, interest rates, population, and mortgage

²⁴ There are serious limitations as to the quality of data related to rents (such as coverage of the survey on rents reported in the consumer price index).

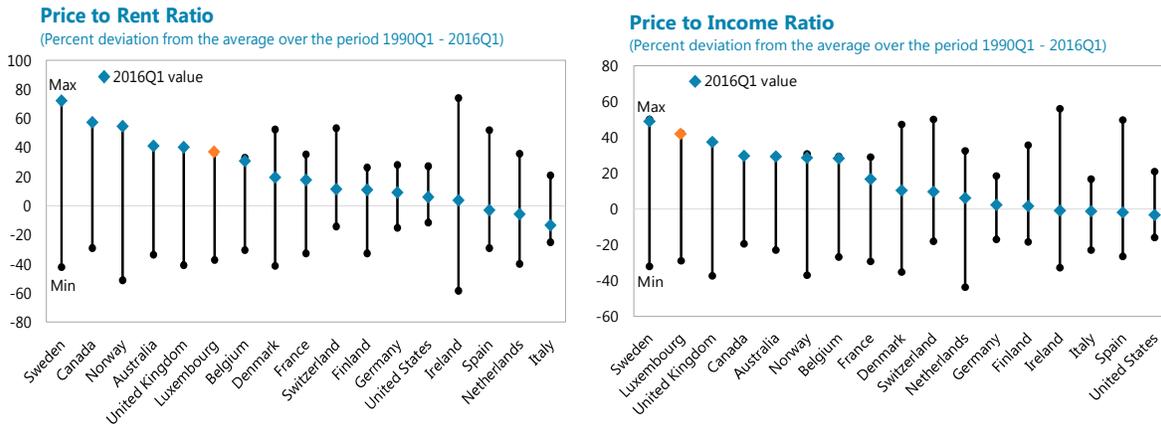
credit) suggests that prices are slightly above their equilibrium value (Box 1). However, given supply constraints and continued population growth, the current trend of rising prices is likely to continue, unless a severe negative shock impacts demand for housing.

Figure 2. Luxembourg: Construction Activity and Population Pressures



Source: BCL.

Figure 3. Luxembourg: Rental Value and Affordability Indicators



Sources: BCL and OECD.

Box 1. Econometric Model of Equilibrium House Prices

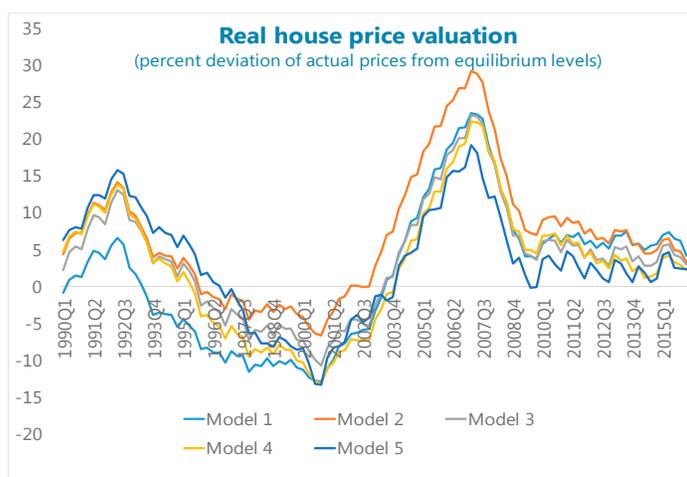
Following the literature (see Igan and Loungani (2012)), we estimate variants of the following real house price model linking house price growth to a set of fundamentals, and estimated at a quarterly frequency during 1981Q1–2015Q4:

$$y_t = \alpha + \beta \cdot inc_{t-1} + \phi \cdot r_{t-1} + \varphi \cdot pop_{t-1} + \eta \cdot mort_credit_{t-1} + \delta \cdot pti_{t-4} + \varepsilon_t$$

Where y_t is real house price year-on-year growth, inc_{t-1} is real disposable income year-on-year growth, pti_{t-4} is the log of the price to income ratio, r_{t-1} is the real interest rate on mortgages, pop_{t-1} is year-on-year population growth and $mort_credit_{t-1}$ is the year-on-year growth of mortgage credit. The model is estimated with a Newey-West estimator correcting any potential autocorrelation of residuals, up to four lags.

The predicted real house price index is computed as the index of house prices predicted by the regression coefficients under the assumption that the predicted index takes the same value as the actual index during 1982–2015. The overvaluation/undervaluation is the percent difference between the predicted index and the actual index.

The analysis suggests that real house prices were overvalued before the global financial crisis because house prices were growing significantly faster than trend, but that, while they have continued to rise since then, their evolution has become more aligned with trend and population growth in spite of the flat disposable income while the low interest rate environment has improved their borrowing capacity. Comparing specification 5 and specification 6 shows that population growth is a major driver of house prices: the trend growth of house prices becomes insignificant once the growth of population is accounted for, and conversely, population growth becomes strongly significant once the constant is removed.

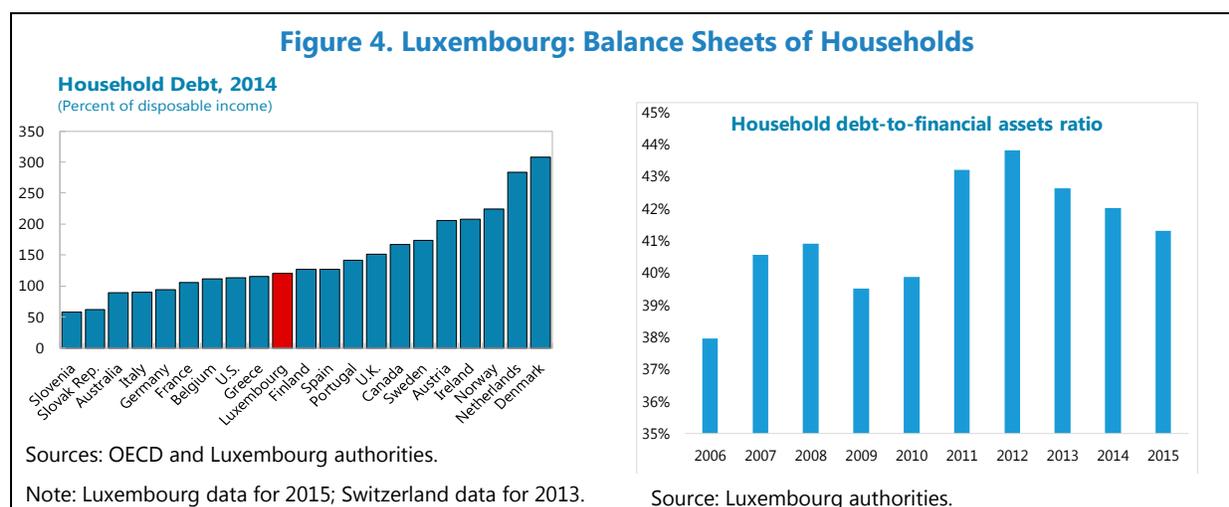


Dependent var: yoy real house price growth	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log (Price to Income ratio) (t-4)			-0.0381	-0.0732	-0.0761	-0.0698
Disposable income growth (t-1)	0.691***	0.825***	0.878***	0.791***	0.588**	0.511**
Real mortgage rate (t-1)		-0.278	-0.593	-0.522	-0.502	-0.266
Population growth (t-1)				1.930	2.277	3.034**
Mortgage credit growth (t-1)					0.330**	0.350**
Dummy euro (1998-1999)	0.0388***	0.0407***	0.0357***	0.0288**	0.0471***	0.0492***
Constant	0.0269***	0.0353***	0.0548**	0.0358	0.0209	
F test	185.88	91.82	55.45	45.07	44.1	62.16
Observations	140	140	140	140	140	140

*** p<0.01, ** p<0.05, * p<0.1

Note: model estimated with a newey west estimator with 4 lags.

23. Household debt remains at reasonable levels in percent of disposable income. It has risen significantly since 2000 and stands now at 120 percent. Moreover, it is on average only 40 percent of households' financial assets, 50 percent of which are accounted for by bank deposits. As about 50 percent of mortgages are adjustable rate, some households could be exposed to interest rate risks. While the average LTV ratio is below 50 percent on the stock of existing mortgages, about 25 percent of mortgages have a LTV ratio equal to or above 80 percent, suggesting that some pockets of the market could be sensitive to price declines coupled with interest rate increases. Moreover, in 2015, about 40 percent of new residential mortgage loans had an LTV ratio about 80 percent, well above the 25 percent of such loans among the outstanding stock of mortgages, suggesting that in the past decade banks have increasingly advanced loans with LTV ratios over 80 percent. However, where such loans are granted additional collateral is generally required.



24. Macroprudential buffers have been put in place to mitigate housing risks and increase the resilience of banks to potential shocks. Since 2012, the following measures have been in place: adjusted risk-weights of 75 percent under the standardized approach for the part of new mortgage loans that exceed a LTV of 80 percent instead of the standard 35 percent risk-weight; stricter stress test requirements for IRB banks mortgage books and pillar II capital add-ons for banks with main exposures to real estate due to "concentration risk" in the real estate. In addition, three credit institutions, operating in the residential real estate sector and maintaining major mortgage books, have been identified as systemically important with the application of additional capital requirements of 0.5 percent of RWAs. On August 31, 2016, and following a recommendation of the CRS, IRB banks have been required to apply a risk weight floor of 15 percent for exposures to Luxembourg residential real estate.²⁵ There is no measured impact of these measures on the housing market.

25. Recommendation: the authorities should continue to carefully monitor developments in the real estate market. The measures in place might need to be complemented by borrower-

²⁵ Since 2014, all credit institutions in Luxembourg are subject to a (fully-loaded) capital conservation buffer of 2.5 percent.

based measures (such as limits on LTVs, or DSTIs) to address demand-related pressures, should house prices continue to rise faster than incomes and rents. Measures to expand the supply of housing would contribute to relieving price pressures.

B. Macprudential Risks in the Investment Fund Industry and Bank-Fund Linkages

26. The latest developments in the international financial system and the growing stability risks in the fund industry can also be observed in Luxembourg, which hosts the second largest in the world after the U.S..²⁶ Reflecting the wide scope of investment fund activities and interlinkages, potential risks arise in the form of: counterparty and operational risks (such as those arising from securities lending activities, and the safeguarding of investment fund assets, etc.); market risk (such as resulting from sensitivity to market movements exacerbated by the use of leverage); and liquidity and redemption risks that can culminate in destabilizing investor runs and asset fire sales (arising from a mismatch between the liquidity profile of assets and the redemption terms of liabilities) which could spread to entire asset classes (and possibly, countries).

27. The rapid growth of the fund industry, combined with market-wide developments including the search for yield and significant inflows into relatively less liquid bond funds, suggests these risks warrant increasing attention from a macroprudential perspective. As the FSB has noted, the main macroprudential risk that can arise in the investment fund industry is a consequence of the potential mismatch between asset liquidity and redemption terms. The microprudential risk of liquidity mismatches can become a macroprudential risk in the presence of price externalities and various market imperfections. Price externalities are reinforced when asset returns are correlated across institutions (or across investment funds, see below), or when the liquidity of assets is low. Market imperfections include: (i) herding behaviors which can result in correlated exposures to specific geographical segments or asset classes of the global market, including illiquid ones, or in a “run for the exit” in the event of market stress; and (ii) “first mover” advantages (which can create risks of a run) and the resulting fire sales which can transmit shocks elsewhere in the financial system. As markets become less liquid, first mover advantages tend to become more severe.²⁷ Risks related to liquidity mismatches depend on both asset side considerations (including market depth and trading volumes), and on the liability side, investor characteristics, including the retail/institutional mix and concentration in a given investment fund.

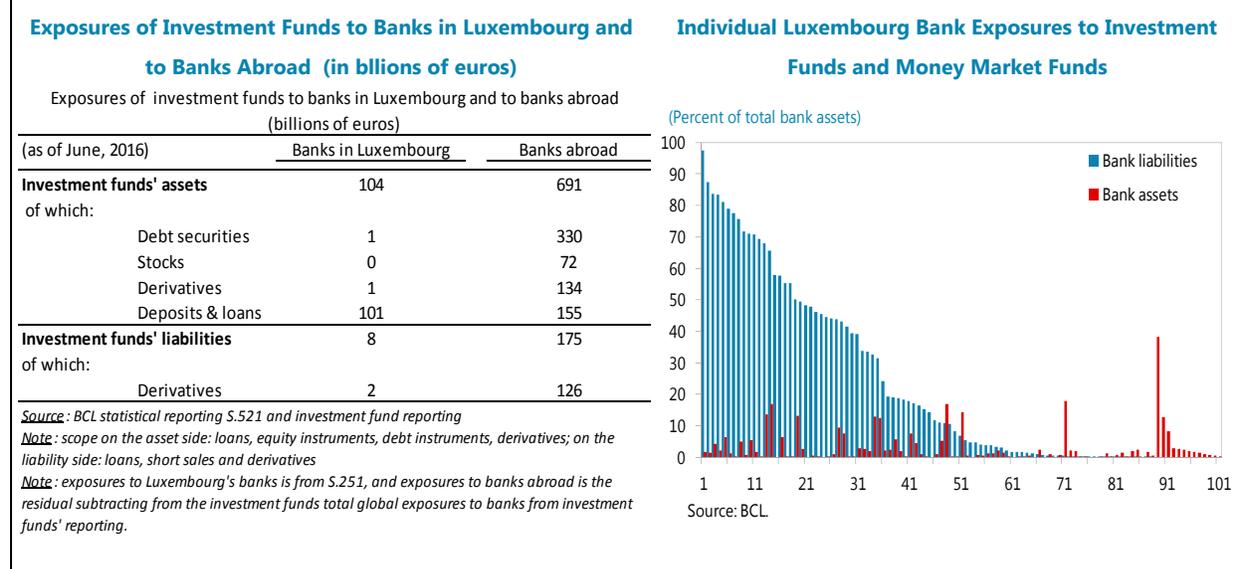
²⁶ See: Luxembourg, 2016 Article IV Consultation Staff Report; and: Selected Issues Paper Chapter one “Investment Fund-Bank Linkages: Luxembourg as a Case Study”, IMF Country Report 16/119. The authorities have also undertaken a significant amount of work to analyze risks in the investment fund sector. See for instance the study published by the BCL in the *2015 Financial Stability Review*, and the paper by Raphael Janssen and Romuald Mohrs, 2015, “The Interest Rate Sensitivity of Luxembourg’s Bond Funds: Results from a Time Varying Model”, Banque Centrale du Luxembourg Cahier d’Etude 98.

²⁷ This may be particularly the case in specific segments of bond markets, such as high yield bonds or emerging market bonds. See Goldstein, Itay, Jiang, Hao and Ng david, 2016, Investor Flows and Fragility in Corporate Bond Funds, Mimeo Wharton School, University of Pennsylvania.

28. Macroeprudential risks could also arise in the presence of linkages between investment funds and banks. These linkages, with banks in Luxembourg but also with banks abroad, are an important trait of the Luxembourg financial system that could contribute to the transmission of shocks (text Figure 5). Unsurprisingly given the liability-driven nature of the depository banking model, there is a high concentration of fund deposits in Luxembourg depository banks, for regulatory and practical purposes, and these deposits account for a high share of their liabilities. Excess deposits at custodian banks (those over and above minimum regulatory requirements) are typically 'upstreamed' to the parent bank, other banks or invested in cash equivalent marketable instruments. While investors bear the risks of investment funds, the exposures reported in Figure 5 suggest that shocks from the fund industry could be transmitted to the banking system domestically and abroad, despite the stability of operational deposits observed in the past.²⁸ Besides linkages through exposures, the banking system also provides various services to the investment fund industry, including custodian, oversight, administration or origination services. There are also reputational links as several important asset managers present in Luxembourg belong to large banking groups. Such shocks would also impact the real economy through a decline in the value-added of the Luxembourg financial system (which accounts for around one quarter of GDP). As such, the oversight of investment funds and asset managers should continue to evolve as international standards and practices are strengthened, and risk monitoring and regulatory frameworks should continue to investigate and address any residual risks resulting from the linkages between banks and investment funds.

29. Individual investment funds returns are increasingly correlated with global shocks and with global market returns, suggesting that a macroprudential perspective to risks in the fund industry is increasingly important. A statistical analysis of monthly returns of 74 Luxembourg bond funds since 2000 shows that returns are increasingly correlated with the market portfolio (the beta), and their volatility is increasingly explained by common shocks (Box 2).

²⁸ The exposures reported in Figure 5 are likely to evolve as several large Luxembourg's depository banks are in the process of changing their status from subsidiaries to branches of foreign banks.

Figure 5. Luxembourg: Linkages Between Banks and Investment Funds

30. A growing search for yield suggests that liquidity mismatch and market risks are likely rising across the global fund industry, including in Luxembourg-domiciled funds. Between the end of 2008 and the third quarter of 2015, exposures of investment funds to (nonbank) corporates and other institutions' bonds, which tend to be less liquid than other financial assets, rose from €141 billion (or 29 percent of total bond investments) to €648 billion (or 45 percent of total bond investments) in October 2015.²⁹ A recent study finds that first mover advantages and therefore run risks are likely to emerge as corporate bonds become more illiquid.³⁰ The growing use of synthetic leverage (measured as notional values without netting) could reflect the use of derivatives for hedging purposes (e.g., FX-Hedging and interest rate hedging). But it could also be a signal that fund managers may try to boost returns, which would also increase risks, including the sensitivity to interest rates and other market movements. In time of stress, the use of derivatives (with embedded leverage) could aggravate potential liquidity mismatches between redemption terms and the liquidity of portfolios. Data provided by the authorities suggests the average (synthetic) leverage of Undertakings for Collective Investment in Transferable Securities (UCITS) funds (based on the notional value of derivatives, without netting) is elevated (typically exceeding 100 percent of the net asset value for a subset of bond funds, and is around 60 percent for all UCITS funds). Moreover, a group of large bond funds has much higher leverage.³¹

²⁹ Source: BCL statistical tables 13.14.

³⁰ See: Goldstein, Itay, Jiang, Hao and Ng David, 2016, Investor Flows and Fragility in Corporate Bond Funds, Mimeo Wharton School, University of Pennsylvania.

³¹ These figures based on gross notional values of derivative contract do not allow to infer the purpose of the contract (e.g., such as hedging versus return enhancement), or to assess the exact risk exposure. For illustration purposes, a sub-fund hedging the currency risk for 100 percent TNA via currency forward transactions does account for a leverage figure of 100 percent.

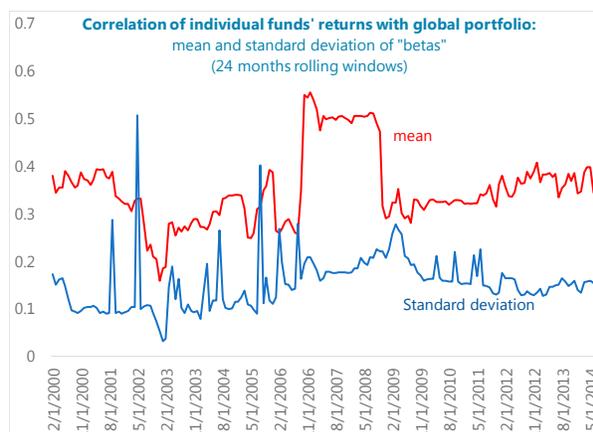
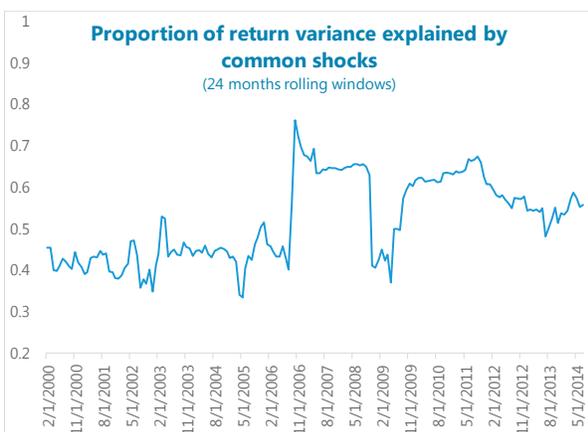
Box 2. Analysis of Investment Funds' Returns

Using a sample of 74 Luxembourg bond funds, we track their monthly returns between January 2000 and July 2016. First, we perform a variance decomposition of their monthly return, by rolling windows of two years.¹ The methodology used is an analysis of variance (ANOVA) for which explanatory variables are fixed effects for each month including in the window considered. From this ANOVA we uncover the proportion of the variance explained by these fixed effects, averaged over the period considered. The analysis shows that, since the global financial crisis, the variance of monthly bond funds' returns have become increasingly explained by common shocks (text table and left hand side chart).

Proportion of variance explained by common shocks (24 months rolling windows)	
Pre-crisis (pre Sept 2008)	0.43
Crisis (Sept-Dec 2008)	0.64
Post-crisis (Jan 2009 - July 2016)	0.58

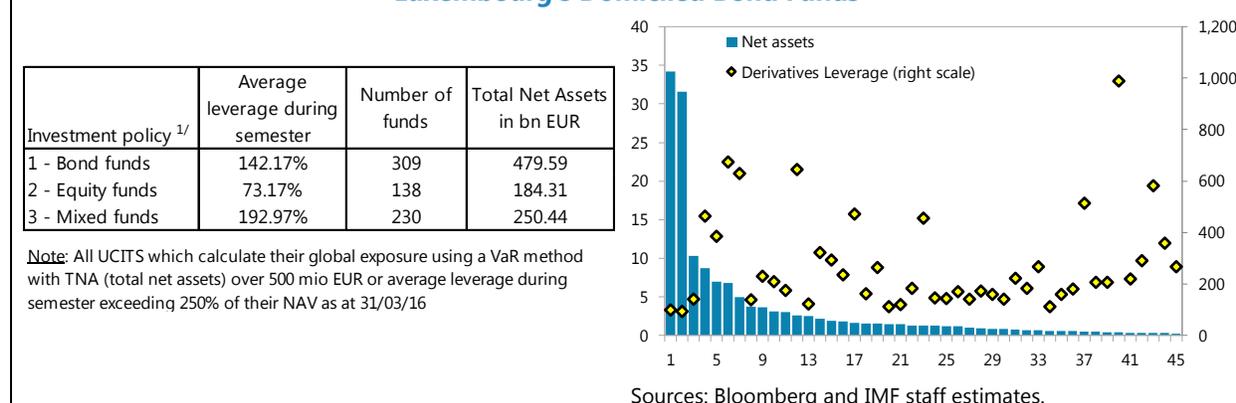
Second, we follow a standard portfolio approach and estimate a standard world CAPM model over rolling windows of 24 months to extract the correlation of each fund's monthly return with the global market return (which we proxy by the return of the Dow Jones global index): $return_{it} = \alpha_i + \beta_{it} \cdot DJ_t + \varepsilon_{it}$ where $return_{it}$ is the monthly return of fund i during month t , β_{it} is the correlation of the return with the global market portfolio estimated on the rolling window $[t, t + 24]$ and ε_{it} is the component of the return orthogonal to the market portfolio return. The methodology used is an OLS regression with robust standard errors. From each regression we extract the investment fund specific beta β_{it} for the period $[t, t + 24]$.

The analysis shows that the correlation of individual funds' returns with the market return increased during the global financial crisis on average, and that it has remained higher than during the pre-crisis period since then. The variation of beta across funds has also become more stable since the global financial crisis, implying that there are fewer idiosyncratic events of deviations of funds' returns from the market portfolio.



¹ The rolling windows are computed as $[t, t+24]$, where t is a given month.

Figure 6. Luxembourg: The Use of Synthetic Leverage Among Luxembourg's Domiciled Bond Funds



C. Risk Analysis and Views of the Authorities

31. In its financial stability reviews, the BCL has analyzed various potential risks to financial stability and sources of vulnerabilities. The financial stability review typically analyses the evolution of the nonfinancial sector balance sheet risks, risks and vulnerabilities related to banks, investment funds, and capital markets. Recent issues have looked more specifically at financial stability risks and vulnerabilities in the housing market, the banking system, and the investment fund industry. It has also undertaken interconnectedness analysis among banks, and between investment funds and banks. The latest financial stability review highlights rising risks related to the high yield corporate bond market and the lack of liquidity and notes the ongoing work at the international level on macroprudential instruments related to non-bank finance.

32. The CRS is currently pursuing two timely thematic work streams as part of its risk analysis. These are “interconnectedness between banks and investment funds” (CSSF) and “credit intermediation by other financial institutions” (BCL). The authorities participate actively in international workstreams on macroprudential instruments for the investment fund industry, and ESRB studies on liquidity, stress tests and leverage in the investment fund industry.

33. The authorities consider that developments in the residential real estate market warrants careful monitoring but that there are no signs of a bubble. The main risk would arise from a sustained increase in real estate prices associated with further increase in household indebtedness. While some analytical studies find some sign of overvaluation and show that there are clear indications that affordability of housing has become a concern for some segments of the population, they also suggest that the banking system is sufficiently well capitalized to be able to absorb shocks from the real estate market. The authorities consider that this is a medium-term problem that reflects a growing imbalance between the supply and the demand for housing, and that addressing this imbalance will require carefully policy action on various front, including by addressing supply constraints.

34. The authorities continue to monitor and assess risks in the investment fund industry.

In their view, the main risk to the investment fund industry is related to the low interest rate environment which has increased search for yield and increased the sensitivity of bond funds to interest rate movements (including through lengthening of duration of portfolios and the growing use of synthetic leverage). Interest rate movements could result from diverging monetary policy developments or geopolitical developments. The repricing of credit and liquidity risk in the case of an interest rate reversal is considered to be a significant source of risk and uncertainty. Nevertheless, the authorities consider that the sector's resilience in case shocks materialize would be supported by the fund industry's diversification across a multitude of different asset classes, and by investors differences in terms of geographical origin and type (ranging from retail to institutional investors). Thus, while funds remain exposed to global risks, risks are mitigated as a result of the high degree of diversification of the fund industry. At the individual fund level, the authorities consider that risks (credit risk, counterparty risk, market risk, redemption risk/liquidity risk) are mitigated by the risk management process and liquidity management tools available to the management companies, the liquidity risk management tool available to the supervisor (e.g., the power to suspend redemptions for extreme periods of stress), and particularly diversification rules and requirements of the UCITS regime.

35. The authorities consider that there are limited risks of spillovers from investment funds to the banking system.

Luxembourg-based investment funds holdings of cross-border deposits and debt securities issued by euro area financial institutions of about €250 billion account for only 7 percent of funds' TNAs. Similarly, the authorities note that balance sheet linkages between Luxembourg's investment fund industry and the rest of the domestic financial system are also rather limited, while operational deposits in depository banks appear rather stable.³² The liquidity ratio of banks (which have to hold HQLA locally including deposits at the BCL for subsidiaries of foreign institutions) ensures the resilience of banks to liquidity shocks which could be transmitted through volatility of investment funds' deposits.

36. Recommendations: the framework should allow the authorities to intensify the monitoring of risks, and should provide instruments to take pre-emptive measures to mitigate these as appropriate.

In addition to recently introduced improvements of surveillance (i.e. CSSF's UCITS risk reporting), authorities should continue to monitor risks, and the reporting requirement should continue to evolve in line with work programs at the European and global levels (e.g., FSB, IOSCO, and ESRB) to allow the authorities to obtain enhanced data from asset managers to assess (i) potential liquidity mismatches between assets and redemption terms;³³ (ii) the sensitivity of funds' value to market movements, including arising from leveraged positions in derivative markets; and (iii) the reliance on securities lending. The authorities should also have in place a

³² Total deposits of investment funds in Luxembourg's banks fluctuate around €100 billion.

³³ Preliminary investigations by the FSAP team suggest that the capacity to monitor liquidity risks be further improved beyond the new risk reporting .

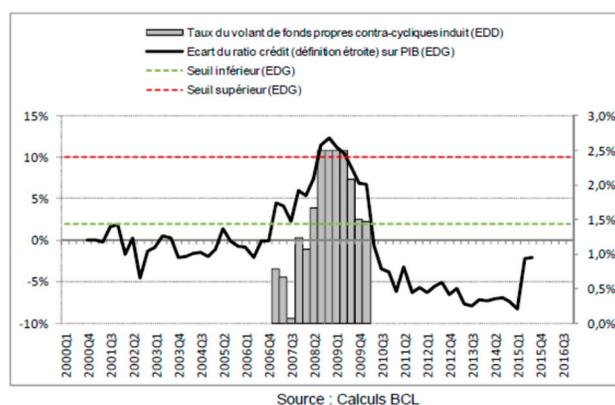
framework and capacity to undertake their own liquidity stress tests of investment funds, including from a financial stability perspective taking into account correlated exposures or behaviors.³⁴

TOOLKIT OF MACROPRUDENTIAL INSTRUMENTS

37. With respect to credit institutions, the authorities have introduced all macroprudential tools contained in the CRD IV/CRR into Luxembourg law and are under the recommendation power of the CRS. These include Pillar II measures, the CCB, the systemic risk buffer, higher risk weights or loss given default, additional capital buffers for global and other systematically important institutions, and various sectoral measures to address systemic risks. The CSSF also makes use of stress tests to assess housing market risks. The CSSF sets the CCB in close cooperation with the central bank and on the basis of a recommendation from the CRS (ESRB, 2016, A Review of Macroprudential Policies in the EU in 2015). The BCL is responsible for supervising the general liquidity situation in the markets as well as evaluating market operators for this purpose according to its organic law. In addition, under the SSM regulation, the ECB can apply higher requirements for capital buffers and more stringent measures than those applied by national authorities (“topping-up power”), but cannot set lower requirements than those set nationally. The Governing Council is the ultimate decision-maker for macroprudential policy in the ECB. The Council decides on macroprudential measures based on a proposal by the Supervisory Board, taking into account the input of the ECB’s Financial Stability Committee and the Macroprudential Coordination group. Quarterly high-level macroprudential discussions with the Supervisory Board take place at the Macroprudential Forum and allow the Governing Council to assess the interaction between micro- and macroprudential policies. The ECB’s Financial Stability Committee brings together high-level representatives of national authorities and provides the platform to establish a common ground in macroprudential frameworks across the SSM member states.

38. The CRS has issued opinions and recommendations related to bank capital buffers.³⁵ First, since the end of 2015, the CRS has issued recommendations regarding the CCB, while recommending to exempt small and medium sized investment firms from the CCB and the capital conservation buffer. Based on the calculations and calibration of the BCL and of the CSSF, and after taking into account the recommendation of the CRS, the CSSF decided to

Graphique 1 : Ecart du ratio du crédit (définition étroite)-sur-PIB et taux du coussin de fonds propres contracyclique induit



Source : Calculs BCL

³⁴ The current framework only requires stress tests to be undertaken by AIFM’s for their managed AIF’s while for UCITS and the asset managers themselves, stress test should be performed when appropriate.

³⁵ http://www.bcl.lu/fr/stabilite_surveillance/CRS/index.html.

set the CCB at zero.³⁶ Given statistical caveats related to the credit-to-GDP gap (analyzed in Drehmann and Tsataronis, 2014), the activation of the CCB also relies on additional, complementary indicators which in the case of Luxembourg could include additional credit growth measures (such as related to the mortgage market), deviation of asset prices from long-term trends, market volatility and spreads, or measures of leverage. Moreover, its latest opinion and recommendation issued on July 1, 2016 was implemented by the CSSF's decision on August 31, 2016 requesting a minimum risk weight threshold to be applied by domestic internal rating based (IRB) credit institutions to exposures secured by residential real estate to correct for inadequate risk weights.³⁷ Last, the CRS has published a recommendation regarding the activation and calibration of the capital buffer applicable to the Other Systemically Important Institutions (the list of O-SIIs comprises six banks).³⁸ Based on the opinion of the CRS, the CSSF issued its decision in the form of a regulation.³⁹

39. With respect to investment funds, asset managers can make use of a set of microprudential LMTs. Asset managers have an obligation to ensure that their funds can meet redemption requests according to their fund policy, and, according to regulations, a variety of tools can be used to ensure an adequate liquidity management process. According to a comparative study by the IOSCO referred to by the authorities, the asset managers in Luxembourg usually can avail themselves of a wide variety of tools to manage redemptions and liquidity risks (e.g., swing pricing, suspension of redemption, gating, fees, etc.).⁴⁰ Some of these tools (such as suspension of redemptions) could be used for macroprudential purposes, but the effectiveness of other tools is currently not well researched from a macroprudential perspective.

Recommendations:

40. The CRS should recommend legislative action to ensure that the toolkit contains all standard macroprudential instrument it deems necessary for achieving the ultimate and intermediate macroprudential policy objectives. In particular, there should be legal clarity to ensure that limits to LTVs, DTIs, or DSTIs are available as part of the toolkit.⁴¹ Having such tools available would be particularly useful given that a range of empirical studies have shown them to be

³⁶ The decisions on the applicable CCB rates in Luxembourg take the form of regulations issued by the CSSF every quarter, namely so far: CSSF Regulations N°15-04, 16-02, 16-03, and 16-05.

³⁷ Experienced with sectoral risk weights has been mixed – in particular when banks' capital is well above capital requirements, increases in risk weights may not affect banks' lending behavior, and therefore they may be less effective in containing mortgage credit growth (Crowe, Christopher, Dell'Ariccia, Giovanni, Igan, Deniz and Pau Rabanal, 2013, "How to Deal with Real Estate Booms: Lessons from Country Experiences," *Journal of Financial Stability*, No.9, pp.300-319.

³⁸ Banque et Caisse d'Epargne de l'Etat, Banque Internationale a Luxembourg, BGL-BNP Paribas, Caceis Banque Luxembourg, Deutsche Bank Luxembourg S.A., Societe Generale Bank and Trust.

³⁹ http://www.cssf.lu/fileadmin/files/Lois_reglements/Legislation/RG_CSSF/RCSSF_No15-06eng.pdf

⁴⁰ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD517.pdf>

⁴¹ According to the authorities' response to the FSAP questionnaire and discussions, it is currently not possible legally to set limits to LTVs, DTIs or DSTIs.

effective in containing rapid house price increases through financial accelerator effects, and in addressing related systemic risk by increasing the resilience of the banking sector to shocks.⁴²

41. Further investigation is needed to assess the effectiveness of these tools in mitigating financial stability risks. As part of this assessment, the authorities should undertake a survey among asset managers to strengthen their understanding of LMTs effectiveness in different market environments.

42. The authorities should ensure that the monitoring allows to identify the main sources of risks and that tools are available to mitigate the buildup of financial stability risks. Various monitoring processes are already in place at the CSSF and keep evolving, including at the authorization stage of an investment fund, and as part of ongoing supervision under the framework of the UCITS and Alternative Investment Fund Managers (AIFM) directives and under CSSF circulars.⁴³ This is also reflected with the recent introduction of the new semi-annual UCITS risk reporting, collecting valuable data points on various risks beyond the European standards. The authorities should ensure that the monitoring allows to identify the main sources of risks and that tools are available to mitigate the buildup of risks. As recommended in the FSB Consultative Document: Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (2016), the authorities should ensure that:

- I. reporting requirements are adequate and that meaningful information is available to monitor risks and assess the liquidity profile of funds and their synthetic leverage on a regular basis;
- II. disclosure requirements to investors are appropriate;
- III. asset managers have proper guidance from the regulator in relation to the frequency, coverage, modalities of stress tests to support liquidity risk management with regard to various risks (liquidity risks, market risks, counterparty risks);
- IV. asset managers could report the results and parameters of the stress tests to the regulator;

Going beyond the FSB recommendation, asset managers should be required to report the results, scenarios and parameters of the stress tests to the regulator.

43. The CSSF should also develop capacity to undertake stress tests from a systemic perspective and especially for risky segments of the investment fund industry. In particular, the CSSF should develop, including in the context of the work program at the FSB, IOSCO, and the ESRB,

⁴² See discussion in: IMF, 2014, Staff Guidance Note on Macroprudential Policy – Detailed Guidance on Instruments, December, Washington DC.

⁴³ See for a detailed list of reporting requirements: Luxembourg: Financial Sector Assessment Program. Technical Note: Fund Management: Regulation, Supervision and Systemic Risk Reporting. Appendix I (Periodic Reports Received by the CSSF).

stress test capacity to assess resilience to liquidity risk, market risk or credit risk, while taking into account interlinkages with banks.⁴⁴ Given the size of the industry, it is not sufficient that asset managers alone perform stress tests: while they typically undertake stress tests from a consumer protection perspective and rely on these to manage risks in their portfolios, they cannot, in contrast to the regulator, take a financial stability and systemic perspective and cannot internalize the impact of their actions on how other asset managers manage their investment funds.⁴⁵ The CSSF should also provide clear guidance governing the use of liquidity tools by the asset managers. An assessment of the effectiveness of these tools could provide the basis for such guidance. The systematic monitoring capacity of the CSSF should be strengthened further by incorporating more detailed data on investment fund synthetic leverage, concentration in specific asset classes, and the use of securities' financing transaction, into their risk-based scoring system. To implement some of these steps, the authorities may have to go beyond the requirements of the EU Directives regulating UCITS and AIFM, and they should raise these topics at the European level (e.g., ESRB, ESMA) to work towards uniform European approaches, though it should be noted that they are similar in spirit to current FSB guidance as it relates to structural vulnerabilities in the asset management industry.

44. The BCL should be involved in the risk analysis of investment funds from a macroprudential perspective and in the policy recommendations. Considering the linkages between investment funds and banks, and to bring more macroprudential perspectives in the risk analyses, the BCL in the context of the CRS should play a role in the risk analyses and policy recommendations.

⁴⁴ In a similar vein, the Ireland FSAP recommended that the national competent authority (the central Bank of Ireland) builds internal capacity to undertake regular stress tests of investment funds for market risk (IMF Country Report No. 16/258).

⁴⁵ For instance, a decision to invest in a particular security or asset class may impact its liquidity, and therefore affect the liquidity of other investment funds.

Appendix I. The Role of the Central Bank in the Macroprudential Committees of France and Germany

In France, the Haut Conseil de Stabilité Financière (HCSF) is the macroprudential committee established by the law of separation and regulation of banking activities of July 26, 2013. The HCSF comprises eight members: the minister of Finance (Chairman), the governor of the Banque de France, also President of the banking supervisor, the Autorité de Contrôle Prudentielle et de Résolution (ACPR), the vice-president of the ACPR, the President of the securities markets regulator, the Autorité des Marchés Financiers (AMF), the president de l’Autorité des Normes Comptables (ANC), the body in charge of accounting rules, and three “qualified personalities”, economists designated jointly by the president of the national assembly, the president of the Senate and the Minister of Finance. Its decisions on risk warnings and recommendations require a simple majority (and in the case of ties, the decision is made by the Chairman) while decisions on binding instruments require four favorable votes. The Treasury serves as the Secretariat of the HCSF. The leading role of the Banque de France is ensured by its assigned tasks (identification and monitoring of systemic risks), and from its power to propose the HCSF to use a set of macroprudential instruments. The HCSF, as the designated authority, has binding powers on a set of instruments (which include the countercyclical capital buffer, the systemic risk buffer, a flexibility package defined in Article 458 of the CRR, and borrower-based measures, such as limits on the loan to value ratio, or the debt service to income ratio) and can issue opinions and recommendations on other policy actions. The ACPR is the competent authority for other instruments available in the CRR/CRDIV). The Banque de France publishes twice a year an evaluation of systemic risks in France.

In Germany, the Financial Stability Committee (FSC) was created under the Financial Stability Act of 2012, with a central role in macroprudential oversight and setting out additional responsibilities for the Bundesbank in financial stability. The FSC comprises three senior representatives each from the Ministry of Finance (chair and deputy chair), the Bundesbank, and BaFin. The chair of the Federal Agency for Financial Market Stabilization (FMSA)—the German agency in charge of crisis management and resolution—is a non-voting advisory member. The FSC meets at least quarterly and its main tasks—as set out in the Financial Stability Act—include: discussing factors that are key to financial stability, strengthening the cooperation between the institutions represented on the FSC in the event of a crisis, advising on handling of warnings and recommendations issued by the ESRB, reporting annually to Bundestag, and issuing warnings and recommendations to the Federal Government, BaFin, or other German public institutions. The FSC’s main tool is its power to issue warnings and recommendations and the associated ‘comply or explain’ mechanism. FSC decisions require simple majority. However, for recommendations and warnings (and their publication) and the submission of the Annual Report to the Bundestag, the FSC will strive to adopt decisions unanimously. The Bundesbank has a leading role: it is responsible for analyzing and identifying financial stability risks, making proposals to the FSC on the issuance of warnings and recommendations and evaluating their implementation, and preparing the FSC’s Annual Report to Bundestag. Major decisions at the FSC (i.e. the issuance of warnings and recommendations, including their publication, and the submission of the FSC Annual Report to the Bundestag) cannot

be taken against the votes of the Bundesbank representatives in the meeting. The Bundesbank publishes a Financial Stability Review annually.