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April 2017

TECHNICAL NOTE—MACROPRUDENTIAL POLICY FRAMEWORK

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TECHNICAL NOTE

MACROPRUDENTIAL POLICY FRAMEWORK

Prepared By

Monetary and Capital Markets Department

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

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Glossary

AIFMD	Alternative Investment Fund Managers Directive
AFM	De Autoriteit Financiële Markten (the Authority for the Financial Markets)
BKR	Bureau Krediet Registratie (Credit Registration Bureau)
Brexit	British voters' referendum to exit the European Union in June 2016
CBS	Statistics Netherlands
CCB	Countercyclical Capital Buffer
CPB	Bureau for Economic Policy Analysis
CRD	Capital Requirements Directive
CRE	Commercial Real Estate
CRR	Capital Requirements Regulation
DNB	De Nederlandsche Bank (The Netherlands Bank)
DSTI	Debt-Service-to-Income
EA	Euro Area
EBA	European Banking Authority
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
EMIR	European Market Infrastructure Regulation
ESCB	European System of Central Banks
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
FSAP	Financial Sector Assessment Program
FSC	Financial Stability Committee
FSD	Financial Stability Division
FSR	Financial Stability Report
GFC	Global Financial Crisis
G-SII	Global Systemically Important Institution
ICR	Interest Coverage Ratio
IPO	Income Panel Survey
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
LTI	Loan-to-income
LTV	Loan-to-value
MID	Mortgage Interest Deductibility
MiFID	Markets in Financial Instruments Directive
MoF	Ministry of Finance
MOIKR	Ministry of the Interior and Kingdom Relations
NCA	National Competent Authority
NDA	National Designated Authority
NFC	Nonfinancial Corporations
NIBUD	National Institute for Family Finance Information

NSFR	Net Stable Funding Ratio
O-SII	Other Systemically Important Institution
RRE	Residential Real Estate
SRB	Systemic Risk Buffer
SSM	Single Supervisory Mechanism
Wft	Act of Financial Supervision

EXECUTIVE SUMMARY

The high cost of the crisis demonstrated the importance of a strong macroprudential policy framework to support financial stability. A strong policy framework is particularly important in currency unions, such as the euro area (EA), where a central monetary policy stance may give rise to diverging credit developments across Member States, that require macroprudential policy action at the national level.

Macroprudential policy is a shared competency between the national authorities and European agencies. The Financial Stability Committee (FSC) is responsible for identifying potential risks to financial stability in the Netherlands as the national macroprudential authority. The FSC issues warnings and makes recommendations to mitigate risks (without a comply-or-explain mechanism), but the use of macroprudential instruments remains the responsibility of individual agencies, the De Nederlandsche Bank (DNB) and the Ministry of Finance (MoF). The DNB conducts macro- and microprudential policies as the National Designated and Competent Authority for the purpose of the Capital Requirements Directive (CRD IV) and Regulation (CRR). The MoF has the powers for setting limits on loan-to-value (LTV) and debt-service-to-income (DSTI) ratios in collaboration with the Ministry of Interior and of Kingdom Relations (MOIKR). The Autoriteit Financiële Markten (AFM) monitors systemic risk arising from financial markets, conduct by financial institutions towards clients, and asset management activities in cooperation with the DNB and examines any violation of limits of LTV and DSTI ratios by mortgage lenders as the supervisor for the conduct of business. The European Central Bank (ECB) can apply more stringent measures to the Dutch banking system, including higher capital buffers (the so called “topping-up power”). To foster sound macroprudential frameworks across Europe, the European Systemic Risk Board (ESRB) can also issue recommendations on a “comply or explain” basis to Member States, covering all segments in the financial systems (both banks and nonbanks) of all the EU member countries.

The authorities have strengthened the institutional arrangement for macroprudential policy by enhancing the DNB’s legal mandate and establishing the FSC in 2012 by means of a ministerial decree, but there is room for further improvement. The macroprudential framework is evaluated according to three key principles: (i) willingness to act in the face of potential opposition, thereby countering inaction bias; (ii) ability to act, through regulatory powers, and access to data and resources; and (iii) cooperation across all agencies in the domestic and cross-border dimensions. The FSC and its members (DNB, AFM, and MoF) have a clear financial stability mandate and collaborate towards meeting the objective. The MoF is a non-voting member. The FSC is accountable to Parliament via the Minister of Finance, and communicates well by publishing summaries of meetings, warnings, and recommendations, which are published on the FSC website and sent to the Parliament for information by the MoF. However, to strengthen legitimacy and effectiveness of its warnings and recommendations, the FSC’s legal status and powers need to be strengthened. It should be established in primary legislation to issue recommendations on a comply-or-explain basis. The DNB should also consider publishing a summary of the Governing Board meetings on macroprudential policy issues, which would enhance the transparency of policy making and promote public support.

The authorities' analysis of systemic vulnerabilities is sophisticated and timely. The amended Bank Act ensured the DNB can obtain information not only from regulated entities but also directly from unregulated entities (excluding households). The central bank has a dedicated division (the Financial Stability Division (FSD)) which consists of two departments with 36 staff, which undertake systemic risk analysis and prepare macroprudential policy discussions at the DNB and the FSC, the latter in cooperation with the AFM. The bi-annual Financial Stability Report (FSR) covers macroprudential risks and policies in the Netherlands well and includes topical assessment of systemic risks (e.g., risks of prolonged low interest rates). The AFM closely monitors financial market activities, using financial market surveys and data stemming from the Alternative Investment Fund Managers Directive (AIFMD), the European Market Infrastructure Regulation (EMIR), and the Markets in Financial Instruments Directive (MiFID). It also cooperates with the DNB in analyzing systemic risk arising from the fund and investment management industry. The authorities have put effort into filling data gaps, but there is room for further improvement. While data on household financial conditions are rather comprehensive, those on the corporate sector are partially available. Information on commercial real estate (CRE) market development is also partial without a regional breakdown of CRE prices and transactions data. The DNB could consider publishing an internal report summarizing quarterly information of mortgage loan-level data (a so called LLD report), and the FSR should further analyze domestic and cross-border financial interlinkages on a regular basis.

The national authorities have been using the range of macroprudential instruments at their disposal, but further tightening will be necessary to contain a potential build-up of systemic risks in the financial system. The Netherlands' boom-bust experience demonstrates the need for forward-looking action to head off incipient financial sector risks. Limits on LTV and DSTI ratios on residential mortgages, which were made legally binding in 2013, should be seen in this light. The DNB has been actively addressing systemic risks stemming from interconnectedness and concentration in the banking system, using global systemically important institutions (G-SII), other systemically important institution (O-SII), and systemic risk buffers (SRBs). Moreover, the authorities plan to impose a stricter leverage ratio (4 percent) than the Basel minimum with which systemic banks have to comply by 2018. To further mitigate vulnerabilities from high household indebtedness, the authorities should take further measures in a holistic approach by accelerating the reduction of mortgage interest deductibility (MID), reducing (over time) the maximum limit on LTV ratios to 90 percent, and introducing prudential ceilings on the DSTI limits by income, along with structural measures to address a supply shortage of rental and owner-occupied housing and potential measures that deal with the low discretionary savings by young households.

Cross-border cooperation and coordination are important and should be efficient. Because several agencies are involved in the decision-making process of macroprudential policy actions in the Netherlands and Europe, it is important to have a strong but efficient coordination mechanism. The coordination at the European level involves extensive notifications, especially for Article 458 of the CRR. A challenge for all the relevant agencies will be how to handle efficiently and effectively all the notifications they receive. It remains to be seen how efficiently this system of notifications and responses will work in practice, and a streamlined notification system at the European level will support timely macroprudential actions while still allowing adequate consideration of cross-border issues.

Table 1. Netherlands: Key Recommendations

Recommendations	Timeframe[1]	Authorities Responsible for Implementation
Accelerate the phase-out of MID, faster than under current agreements (at least 1 percentage point per year), and reduce the ultimate MID rate further to a tax neutral level.	NT	MoF, MOIKR
Continue gradually reducing maximum limits on LTV ratio to 90 percent after 2018, by maintaining at least the current pace of 1 percentage point reduction per year.	NT	MoF, FSC, MOIKR
Place prudential ceilings beyond which DSTI limits cannot be relaxed along the credit cycle.	NT	MoF, FSC, MOIKR
Address a supply shortage of residential rental and owner-occupied housing by other targeted measures, such as looser zoning regulations and liberalization of rental markets.	MT	MoF, MOIKR
Strengthen the legal status of the FSC, by upgrading its legal basis from a Ministerial Degree to primary law.	NT	MoF, FSC
Vest the FSC with a semi-hard "comply or explain" mechanism over macroprudential instruments.	NT	MoF, FSC
Consider publishing a summary of the meetings of the Governing Board on macroprudential policy decisions.	NT	DNB
Improve systemic risk assessment further by closing data gaps on corporate sector financial conditions and CRE activities.	NT	DNB
Work through membership of the ESRB, the EBA, and EU Commission and Council to streamline notification system at the European level to support timely macroprudential policy action while still allowing adequate consideration of cross-border issues.	MT	DNB, FSC, MoF

[1] NT (near term): one–two years; MT (medium term): two–five years.

BACKGROUND[1]

1. Since the global financial crisis (GFC), the Dutch economy suffered a double-dip recession from which it only emerged in early 2014. As a result of vulnerabilities that had accumulated during 2005–08, the GFC resulted in severe strains for financial and household sectors. Growth suffered as protracted deleveraging by households and falling house prices kept consumption demand weak, and as banks underwent balance sheet repair processes, while fiscal policy remained tight. Since 2014, the economy has been gradually recovering, led by a pickup in domestic demand and exports, and unemployment has started to decline.

2. The high cost of the crisis illustrated the importance of a strong macroprudential policy framework to support financial stability. The GFC showed that containment of systemic risk does not necessarily emerge as a natural by-product of an appropriate macroeconomic policy mix and the traditional focus on idiosyncratic risks and the solidity of individual institutions needs to be complemented by a wider perspective, the so-called macroprudential policy. IMF (2013) stresses that a strong policy framework is particularly important in currency unions, such as the Euro area (EA), since the monetary policy stance adopted at the center may give rise to diverging developments in credit across Member States that will require macroprudential policy action at the national level.

3. This Technical Note evaluates the existing macroprudential policy framework in the Netherlands and proposes recommendations. It assesses the systemic risk monitoring framework, macroprudential policy toolkit, the domestic institutional arrangement, and cross-border collaboration. The assessment is conducted in the context of the overall stability analysis and identified vulnerabilities and develops specific policy recommendations based on this analysis. It is built on the "Staff Guidance Note on Macroprudential Policy (IMF, 2014a);" its background note ("Detailed Guidance on Instrument (IMF, 2014b)"); numerous publications by the DNB, Bureau for Economic Policy Analysis (CPB), the ECB, and the ESRB; as well as other relevant material that reflect emerging international consensus in this field.

4. There are three sections in this note. Section II assesses the institutional framework that is currently in place and provides recommendations. Section III describes the staff assessment of the systemic risk monitoring framework in the Netherlands, focusing on the DNB's capacity and resources, as well as data gaps. Section IV summarizes the macroprudential policy existing toolkit and its effectiveness.

[1] Prepared by Heedon Kang (MCM) in collaboration with Marc Gerard (EUR).

INSTITUTIONAL FRAMEWORK

6. The Dutch authorities have strengthened the institutional arrangement for macroprudential policy by establishing the FSC, based on lessons from the recent crises. The Netherlands was one of the early adopters of the so-called "twin-peaks" model of supervision (introduced in 2002). The DNB is the single prudential supervisor of all financial institutions (banks, insurance companies, investment firms, pension funds, and other financial intermediaries), and the AFM is the supervisor for conduct-of-business of all financial institutions (banks, insurance companies, investment firms, pension funds, and other financial intermediaries), including security market activities. Following the GFC and the subsequent European debt crisis, the FSC was established in 2012 as the national macroprudential authority.

7. The new European Union banking legislation and revised national laws have given the Dutch authorities and the ECB a wide range of macroprudential instruments to mitigate systemic risk in the banking system. Macroprudential policy for the banking sector is a shared competency between the national authorities and the ECB in the Single Supervisory Mechanism (SSM) Member States. The SSM Regulation (Council Regulation (EU) No. 1024/2013) confers to the national authorities and the ECB specific tasks relating to macroprudential instruments for the banking sector set out in the CRR (European Union Capital Requirement Regulations No. 575/2013) and the CRD IV (European Union Capital Requirement Directive 2013/36/EU). 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.[2, 3] For limits on LTV and DSTI ratios, which are outside of the CRR and CRD IV, the MoF has the powers and responsibilities in collaboration with the MOIKR. The limits are within the exclusive remit of the national authorities, but the ECB can suggest to use their powers over these instruments without any binding mechanism.[4]

8. This section evaluates the current institutional arrangement according to three key principles in the Staff Guidance Note on Macroprudential Policy (IMF, 2014a): (i) willingness to act in the face of potential opposition, thereby countering inaction bias; (ii) ability to act, through regulatory powers, and access to data and resources; and (iii) cooperation across all agencies in the

[2] 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 FSC and the Macroprudential Coordination group. Quarterly high-level macroprudential discussions with the Supervisory Board allow the Governing Council to assess the interaction between micro- and macroprudential policies. The ECB's FSC brings together high-level representatives of the national authorities and provides the platform to establish a common ground in macroprudential frameworks across the SSM Member States. See Appendix I for the decision-making framework in the ECB.

[3] When a measure is intended to be undertaken by a national authority, the ECB should be notified 10 working days in advance of the relevant decision, and the ECB can object to the proposed measure within 5 working days stating its reasons for the objection in writing. Where the ECB objects, the national authority is required to consider the ECB's reasons prior to proceeding with the decision as appropriate. Similar notification requirements apply to the ECB decision to apply higher requirements (Appendix I).

[4] The Dutch authorities fully inform the ECB and the ESRB about the exercise of those powers.

domestic and cross-border dimensions.[5] Mechanisms are also evaluated for cooperation among domestic and international bodies under the SSM regulation, focusing on how collaboration among domestic agencies and with the European agencies, such as the ECB, the European Banking Authority (EBA), and the ESRB, has been working in practice.

A. Principle 1: Willingness to Act

9. **The DNB, AFM, and MoF have a clear financial stability mandate and collaborate towards this objective.** Under the amended Bank Act that became effective on January 2014, the DNB has an explicit mandate for financial stability in addition to its responsibility for microprudential supervision. The AFM also received its mandate to contribute to the financial stability by ensuring the proper functioning of financial markets and proper conduct by financial institutions towards clients. The MoF is politically responsible for the overall functioning of the financial system, and makes rules to ensure a stable financial system, including limits on LTV and DSTI ratios.

10. **To facilitate the collaboration among agencies, the FSC was established in November 2012 by means of a ministerial decree as a result of the recommendations of the Parliamentary Commission of Inquiry on the Financial System (De Wit Committee).** The FSC includes seven representatives from the DNB, the MoF and the AFM, and is chaired by the President of the DNB.[6] The MoF is a non-voting member.[7] The Director of the CPB attends the FSC meetings as an external observer. The FSC is required to meet at least twice a year, and has met 10 times in the past 4 years. The committee's secretariat is assigned to the DNB, and currently the Director of the DNB FSD is assigned to play the role of head of the secretariat. The FSC strives for consensus among its members, but if members cannot reach the consensus, it makes decisions by a two-thirds majority.

11. **The FSC is responsible for identifying potential risks to financial stability in the Netherlands and making recommendations to mitigate the risks.** Specifically, its activities include: exchanging information and analyses to identify systemic risks; discussing how to mitigate the risks and strengthen instruments to do so; issuing warnings and recommendations publicly to mitigate identified risks;[8] and monitoring the implementation of ESRB recommendations. To support the FSC's activities, the AFM and the DNB put joint efforts to analyze systemic risk in the Dutch financial system as a whole, including financial market and asset management activities. While the FSC discusses systemic risk and recommends policy actions, the use of macroprudential instruments

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[5] The ESRB (2014) assessed the Dutch authorities to be "largely compliant" with the 2011 recommendations on the macroprudential mandate of national authorities. This grade means actions taken implement almost all of the recommendations.

[6] The seven representatives include three members from the DNB (the President, the Executive Director for Supervision, the Executive Director for Monetary Affairs and Financial Stability), two members from the AFM (the Chairman and a Member of the Executive Board), and two members from the MoF (the Treasurer General and the Director of Financial Markets).

[7] This arrangement is to ensure the operational independence of the FSC and avoid friction between the committee's focus on financial stability and the MoF's other policy responsibilities (e.g., economic growth, income inequality).

[8] The FSC may decide not to disclose warnings and recommendations if warranted not to jeopardize financial stability. So far, there has been no case in which the FSC decided not to publish a warning or recommendation.

remains the responsibility of the individual authorities. All the macroprudential instruments under the CRR and CRD IV have been explicitly assigned to the DNB. The MoF remains responsible for limits on LTV and DSTI ratios.

12. The FSC is accountable to the Parliament via the Minister of Finance and, in a broad sense to the general public, in discharging macroprudential functions. It publishes a summary of its meeting on the website although it is not legally required to do so. Its secretariat strives to publish the summary within a week after the meeting. When the FSC issues warnings and recommendations, the Minister of Finance passes them on to the Parliament. The FSC also publishes an annual report for the MoF, and the Minister provides the Parliament with a copy of the report.

13. The DNB is responsible for prudential policies for banks and nonbanks as the National Designated Authority (NDA) as well as the National Competent Authority (NCA).[9] The DNB plays an important role in undertaking macroprudential policy for the banking sector in collaboration with the ECB under the SSM, the ESRB, and the EBA. For the nonbanking sector and market activities, the DNB and the AFM conduct joint risk assessment and also collaborate with the ESRB, the European Insurance and Occupational Pensions Authority (EIOPA), and the European Securities and Markets Authority (ESMA).

14. The Governing Board is the highest decision-making body in the DNB. It consists of the President and a maximum of five, currently four, Executive Directors. Governing Board members are appointed by Royal Decree for seven-year tenures. The Board holds the decision power regarding policy instruments in the CRR and CRD IV.[10] The FSD is dedicated to support the role of the Board in macroprudential policy discussions. A group of senior managers forms the Coordination Group in Financial Stability, which discusses macroprudential topics and is chaired by the Director of the FSD.

15. The DNB communicates mainly through the annual report and bi-annual FSR, but does not publish a summary of meetings of the Governing Board. The DNB has also published several papers that set out the macroprudential policy strategy and experience on its website (e.g., "DNB's financial stability task"). The FSR is one of the main channels to communicate systemic risk to the markets and general public, which is an important part of macroprudential policy.[11] The President presents the main financial stability risks in a Parliamentary hearing once a year, and he can also be asked to appear before a committee of the Parliament and to provide the committee with such information as it requires (subject to the European System of Central Banks (ESCB) Statute or any restrictions imposed under any other legislation). To further enrich the DNB's communications, the DNB should consider publishing a summary of its Governing Board meetings on macroprudential

[9] The NCA is the microprudential authority for the purpose of the CRR and CRD IV, while the NDA is the authority entrusted with the use of macroprudential instruments in the CRR and CRD IV.

[10] The Governing Board passes resolutions by consensus, but if a member objects to the manner of decision-making, a vote is taken by means of sealed ballots or orally and a resolution is adopted by an absolute majority of votes cast. In the event of a tie, the vote of the President is decisive.

[11] To promote transparency and accountability, the DNB publishes data and graphs in each issue of the FSR, and every new FSR issue follows up on progress of policy recommendations from the previous issue of the FSR. The AFM contributes to the FSR by sharing perspectives on risk developments in the early stage of its production round.

policy decisions, while excluding confidential information. This will promote public understanding of the need for policy actions to contain systemic risk, counter biases in favor of inaction, and enhance legitimacy and transparency of macroprudential policy.

B. Principle 2: Ability to Act

16. The amended Bank Act includes provisions that ensure that the DNB can obtain information and adapt to the evolving nature of systemic risk. The DNB has the power to request data directly from regulated entities. The Bank Act was revised to give the DNB more powers to collect information from unregulated entities (excluding households) where this information is necessary for the performance of its functions. The appropriate use of this power is assessed on a case-by-case basis with checks and balances. If the DNB wants to make a new data request to any regulated or unregulated entities, it must first check whether the information is already available in other public agencies. This procedure has been applied recently to collect data from banks on their real estate exposures.

17. The national authorities (e.g., the DNB and the MoF) and the ECB have powers to change the level and regulatory perimeter of macroprudential instruments. The DNB has been calibrating and publishing the CCB rate for the Netherlands since 2016. It has powers to designate individual financial institutions as systemically important and to require them to build additional capital buffers to address systemic risk.[12] The recalibration and perimeter adjustment of limits on LTV and DSTI ratios can be made by the MoF in collaboration with the MOIKR.

18. The FSC's legal status can be strengthened by establishing it in primary legislation and vesting it with a "comply or explain" mechanism. As noted above, the FSC was established by means of a ministerial decree as opposed to primary legislation. Due to this fact, the ESRB (2014) assesses the current arrangement as only partially compliant with recommendations concerning institutional design. It also considers the Dutch arrangement to be partially compliant with a sub-recommendation concerning powers because of the absence of a comply or explain mechanism. A comply or explain mechanism will need to be vested to ensure the effectiveness of the FSC by enhancing transparency and public accountability as regards actions of the relevant agencies, and can help (e.g., the DNB and the MoF) overcome biases for inaction or insufficiently timely action due to the industry's opposition or political pressures.

C. Principle 3: Effective Coordination and Cooperation

19. The FSC plays an important role in fostering coordination across member agencies. The FSC provides a formal coordination mechanism across member agencies, which helps to internalize trade-offs (e.g., financial stability versus economic growth, systemic risk mitigation versus consumer protection). This is supported by an MOU on information sharing regarding financial stability between the DNB and the AFM and MoF, respectively. The FSC's discussion have been prepared by a

[12] Detailed policy actions of G-SII, O-SII, and systemic risk buffer will be discussed in Section IV.

joint DNB/AFM project team to benefit from the expertise of both institutions (e.g., bank funding, market liquidity, financial stability implications of the OTC-derivatives market reforms and systemic implications of passive investment strategies).[13]

20. A number of arrangements are in place in the DNB to mitigate the risk of group-thinking. Because of the integrated supervision structure at the DNB, there is a strong coordination of micro- and macroprudential policy within the DNB. The integration facilitates the flow of information and brings together relevant expertise, enriching and fully exploiting complementarities between top-down and bottom-up risk analyses. The Coordination Group on Financial Stability, chaired by the director of the FSD, discusses macroprudential topics and has representation from both macro- and microprudential policy areas within the DNB. The Supervisory Council, which is mainly responsible for microprudential policy and supervision, also discusses macroprudential instruments under CRR and CRD IV and provides input on the Governing Board's decisions. Outside the two policy functions, the Risk Management and Strategy Department provides an external check on macroprudential policy decisions. To enhance the coordination of technical staff between the two policy functions, the DNB developed two intranet IT platforms, the so called micro-macro register and the macro-micro register, which are extensively used to share information across divisions.

21. The DNB seeks the views of market participants, academics, other regulators, and the public through consultation papers. Furthermore, after the publication and press conference of the FSR, there is a discussion of its contents with representatives from the financial sector, and the DNB also presents the findings at the MoF and AFM.[14] In addition, there are ad-hoc meetings with financial sector experts and academics.

22. The authorities have been making efforts to enhance cross-border cooperation. The ESRB was established in 2010 to act as the macroprudential oversight body in the EU. To foster a sound macroprudential framework across Europe, the ESRB may issue recommendations on specific policy measures to a specific EU member state or institution on a "comply or explain" basis to Member States, covering all segments in the financial systems (both banks and nonbanks).[15] The DNB and AFM actively share information with other European bodies and are involved in several joint projects by the ESRB (e.g., the ESRB risk dashboard, ESRB strategy paper on macroprudential policy beyond banking, and EU Shadow Banking Monitor). The AFM and the DNB also participate in several working groups within ESRB and the Financial Stability Board (FSB) to collaborate with other

[13] At the European level, a discussion is taking place to extend the macroprudential policy framework beyond the banking sector. When it is implemented in the future, the coordination mechanism of micro- and macroprudential policy and between the DNB and the AFM will need to be strengthened further.

[14] The coordination and most of the drafting of the FSR is done by the Macroprudential Analysis and Policy Department in the FSD. Depending on topics, staffs from other departments can also be involved. The selection of topics is discussed at the Governing Board level, based on a proposal supported by the executive director responsible for financial stability.

[15] The ESRB can issue warnings and recommendations not only to the national authorities but also to the ECB.

European authorities. Moreover, the risk assessment of the ESRB is partly based on input from the DNB and AFM, for example through a bottom-up survey and discussions with the ESRB and ECB staffs.

23. Because several agencies are involved in the decision-making process of macroprudential policy actions in Europe, it is important to have efficient coordination mechanisms. The coordination at the European level involves extensive notifications and consultation requirements on the use of macroprudential tools, and the requirements vary across macroprudential instruments (see Appendix II). While the principles behind the notification requirements in the CRR and CRD IV are sound, the system that has been established seems lengthy and complex, and is quite rigid. For example, the implementation process of Article 458 (flexibility measures) is particularly onerous. It can take up to two–three months under the CRR from the time of the national authorities' notification to the adoption of the draft national measure.[16] A challenge for all the relevant agencies will be how to handle efficiently and effectively all the notifications they send and receive. It remains to be seen how efficiently this system of notifications and responses will work in practice.

D. Recommendations

24. The current institutional arrangement is broadly in line with IMF guidance (IMF, 2014a) for effective macroprudential policy, but there is room for improvement. Specifically, the authorities need to:

- Upgrade the legal basis of the FSC from a Ministerial Decree to a primary law; and[17]
- Vest the FSC with a comply-or-explain mechanism, established in primary law, to make recommendations over macroprudential instruments.

25. This recommendation is in line with the FSB peer review (2014) and IMF guidance. It will enhance the legitimacy of the FSC's decisions, reduce the risk of delayed action due to political considerations, and strengthen the independence and accountability of the Committee. To enhance the accountability, the FSC could be required to directly send its annual report to the Parliament.

26. The DNB should consider publishing a summary of the Governing Board meetings regarding macroprudential policy issues. As mentioned above, the Governing Board has the decision-making powers related to the CRR and CRD IV instruments (except the limits on LTV and DSTI ratios). The publication of the Boards discussions would help enhance the transparency of macroprudential policy and promote public support.

[16] The national authorities must consider if they can use the other measures contained in the CRR and CRD IV before using the flexibility measures in Article 458; meanwhile systemic risks can be significant and may require imminent actions.

[17] The DNB has officially requested the MoF to strengthen the legal basis of the FSC in the 2015 Wetgevingsbrief (letter on legislation). The MoF has indicated its willingness to do so in response to the 2015 Wetgevingsbrief.

27. A more streamlined notification system could more efficiently support timely macroprudential policy action while still allowing adequate consideration of cross-border issues. The national authorities currently need to work through the membership of the EU Council, the EU Commission, the ESRB, and the EBA. Considering the possibility of an urgent need to implement a proposed measure, the authorities should be able to make their case for accelerating the approval process, perhaps on condition that the relevant measure is subject to early review. Moreover, the current review of the EU macroprudential policy framework provides an opportunity to revise and streamline the notification system.

SYSTEMIC RISK MONITORING

A. Assessment

28. The DNB has a dedicated division and its assessment of systemic vulnerabilities is sophisticated and timely. The FSD consists of two departments (Macroprudential Analysis and Policy Department and International Financial Architecture Department). It has 36 staffs altogether that involve systemic risk analyses and macroprudential policy discussions. The DNB staff has published a number of high quality research and policy papers to discuss topical issues on financial stability and macroprudential policy. The bi-annual FSR comprehensively covers macroprudential risks and policies in the Netherlands.[18] It also includes discussion on special topics, such as risks of habituation to prolonged low interest rates, implications of technological innovation for financial stability, and CRE market developments. The risk map and index of financial market stress in the first chapter of the FSR provide a succinct visual description of overall developments in the financial system. Annex 1 in the FSR ("Macroprudential indicators") delivers the latest information of early warning indicators (e.g., credit-to-GDP gap, growth in household and corporate lending, LTV and loan-to-income (LTI) ratios, loan-to-deposit ratio). Top-down stress test model for households using the Income Panel Survey (IPO) data allows the DNB to conduct granular stress tests for mortgages with detailed loan-level data, considering various dimensions of household characteristics. Systemic importance of banks is annual assessed and network analyses are carried out using the interbank exposures and the BIS data hub information.

29. The DNB has put efforts into filling data gaps especially related to household financial soundness. The DNB also increased access to micro datasets in collaboration with other public agencies (e.g., residential mortgage loan-level data, Statistics Netherlands (CBS) data, and CRE loan-level data). In particular, the DNB and the CBS have closely collaborated in the setup of the new template for the mortgage loan-level data. This is an extension of the previous template, and will also include an encrypted version of a personal identification number (e.g., social security number) to build linkages between the loan-level data with other datasets of the CBS. It will allow the authorities to answer many more questions related to the financial position of households. In the third quarter of 2017, the new template is expected to be used by all reporting institutions.

[18] The DNB started to publish the FSR since December 2004.

30. Closing data gaps, however, still requires further improvements.

- While data on household financial conditions are rather comprehensive, those on corporate sector are rather scarce. The CBS collects balance sheets and P&L statements from nonfinancial corporations (NFC) for statistical purposes only. It is legally forbidden for the CBS to publish any "policymaking" material using the data. The DNB uses the CBS' data on a regular basis and collects NFCs' cross-border transaction information to compile the Balance of Payments statistics, but a number of important data to assess NFCs' financial soundness are only partially available (e.g., NFC debt by ownership (domestic vs. foreign-owned firms)). It can impede assessment and mitigation of systemic risk that can stem from corporate sector. The macroprudential authorities (the FSC and its members) have not published an in-depth analysis on corporate vulnerabilities with micro-level data.

- Information on CRE market developments is partial. For example, although loan-level data on CRE loans are collected from commercial banks, a regional breakdown of CRE prices and transaction data is unavailable. Detailed analyses on CRE markets will be necessary and further data improvements would be useful to analyze demand and supply misalignment and changes in banks' exposures to the segment.

- The Credit Registration Bureau (*Bureau Krediet Registratie*, BKR) was established in 1964 to share information about the overall debt burden carried by borrowers. So far, the DNB has not used the BKR data, but following the amendment on the Bank Act, the DNB can ask the BKR to provide information to link the mortgage loan-level data with other types of household loan data. It will allow the DNB to calculate the debt-service-to-income ratio more accurately per households.

B. Recommendations

31. The authorities should enhance data collection and continue to allocate sufficient resources for CRE market and corporate sector analyses. Recent efforts to analyze CRE market developments are welcome (DNB, 2015a), but it will be important to collect granular information, such as regional prices, transactions, and CRE loans. Also, the DNB should consider collecting more data on corporate financial conditions; building a comprehensive data by combining financial data with other data from the CBS, and conducting comprehensive vulnerability assessment.[19]

32. It will be crucial to continue to collect the loan-level data from all mortgage lenders for systemic risk assessment and macroprudential implementation, and the DNB should make more use of the BKR data. The loan-level data has allowed the DNB to understand granular information in the Dutch mortgage market, which was previously inaccessible with aggregate data. The loan-level data will be crucial to properly evaluate the impacts of limits on LTV and DSTI ratios. In

[19] The ECB launched a project in 2011, so called "AnaCredit" together with the EA and some non-euro are national central banks to collect detailed information of bank loans to legal entities. Data collection is scheduled to start in September 2018. This project will help the authorities to close the data gaps on corporate financial conditions.

this vein, the recent effort to set up the new template for the mortgage loan-level data with encrypted personal identification information is welcome. The DNB may consider publishing the internal loan-level data report periodically.

33. **The OFR should discuss financial interlinkages in the Netherlands.** It will be useful to periodically examine structural dimension of systemic risks and present the findings in the OFR. The DNB has been conducting various network analyses and the OFR could include them on a regular basis to describe direct and indirect interlinkages in the financial system.

MACROPRUDENTIAL INSTRUMENTS

A. Tools Under the CRR and CRD IV

34. **The DNB and the ECB have a range of macroprudential instruments for the banking system at their disposal (text table).** The CRR and CRD IV, which entered into force on January 1, 2014, provide the macroprudential authorities with a number of instruments: countercyclical capital buffer (CCB), sectoral capital requirements (e.g., risk weights and minimum LGD floors for specific types of exposures), G-SII and O-SII buffer, SRB, Pillar 2 requirements, leverage ratio, and national flexibility measures (e.g., risk weights to target bubbles in real estate markets). Liquidity measures, such as the liquidity coverage ratio (LCR) and the Net Stable Funding Ratio (NSFR), are also incorporated in the CRR, as part of flexibility measures.

Netherlands: Macroprudential Instruments

Instruments	Agencies	Implementation
Macroprudential Tools Under CRR and CRD IV		
Countercyclical capital buffer	DNB, ECB	January 2016
G-SII buffer	DNB, ECB	January 2016
O-SII buffer	DNB, ECB	January 2016
Systemic risk buffer	DNB, ECB	January 2016
Risk weight for RRE and CRE exposures	DNB, ECB	January 2014
Loss given default for RRE and CRE exposures	DNB, ECB	January 2014
Flexibility measures 1/	DNB, ECB	January 2014
Liquidity coverage ratio	DNB, ECB	October 2015
Pillar II	DNB, ECB	January 2014
Macroprudential Tools Under National Law		
Limits on LTV ratio	MoF 2/	January 2013
Limits on DSTI ratio	MoF 2/	January 2013

Sources: DNB; and IMF staff.

1/ The DNB has not activated any flexibility measure yet.

2/ The MoF collaborates with MOIKR in setting the LTV and DSTI limits.

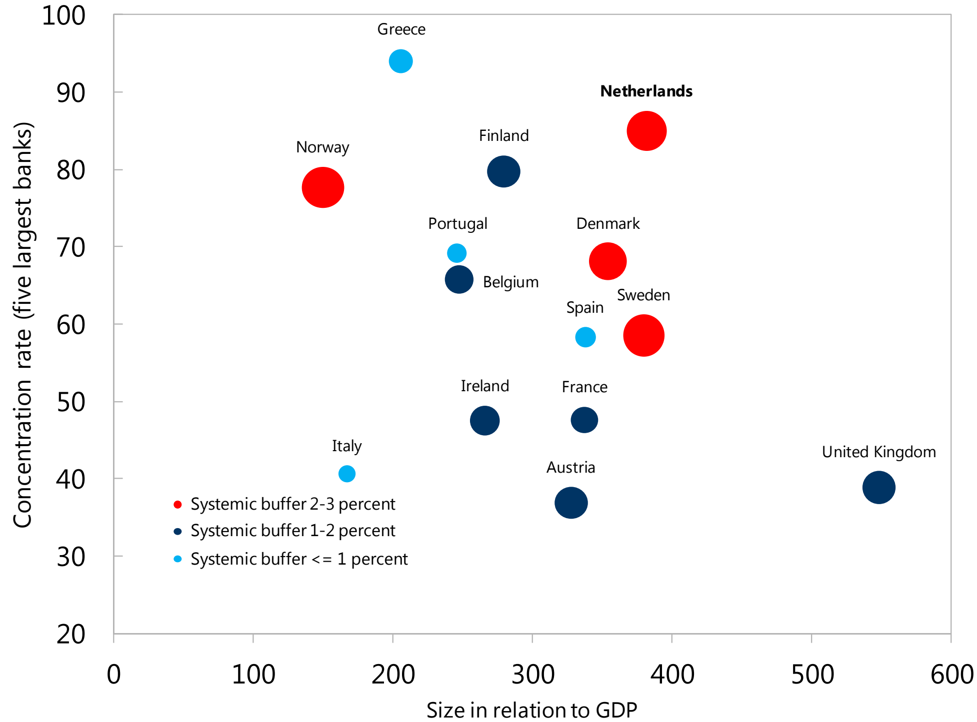
35. The DNB has been actively implementing macroprudential instruments to address the risks stemming from concentration and interconnectedness in the banking system (Figure 1). The DNB imposed a 1 percent of a G-SII buffer for ING Bank; 2 percent of an O-SII buffer to ING Bank, ABN AMRO, and Rabobank; and 1 percent of an O-SII buffer to SNS Bank and BNG Bank as of January 2016, which will be phased in from 2016 to 2019 in equal steps of 25 percent. The DNB also introduced a 3 percent SRB on the three largest banks, ING Bank, ABN AMRO, and Rabobank (see Figure 1).[20] In practice, the highest percentage of the above-noted capital buffer requirements applies at a consolidated level: that is, 3 percent SRB is applied to the three largest banks, while 1 percent of the O-SII buffer is imposed on SNS and BNG bank. The CCB, which is reviewed on a quarterly basis, has been set at the rate of zero, considering a large negative credit-to-GDP gap (about -20 percentage points of GDP).[21] The LCR came into force in October 2015. The DNB determined that commercial banks must satisfy the 100 percent LCR requirement immediately without a phase-in period, because a similar type of liquidity requirement had already been imposed since April 2003 and it was the intention not to weaken the banks' liquidity condition. The NSFR will be implemented in 2018.[22] The leverage ratio, defined as the ratio of Tier 1 capital to total exposures with the denominator covering both on- and off-balance sheet activities, is subject to an observation period until mid-2016, and is expected to become a binding requirement by 2018 following review and calibration at the European level. Following recommendations from the MoF in August 2013, the DNB has requested that four systemically important banks (ING Bank, ABN AMRO, Rabobank, and SNS Bank) meet a minimum 4 percent leverage ratio by 2018, which is above the current Basel minimum (3 percent).

[20] The O-SII buffer is subject to a 2 percent statutory maximum in the CRD IV. DNB applies the SRB, because the O-SII buffer alone cannot offer sufficient prudence (DNB, 2016). Detailed information is available in the following hyperlinks: the EBA O-SII guidelines and DNB buffer decision.

[21] The DNB and the ECB can use different methodologies to set the CCB rate for the Netherlands. From 2017, the DNB will be able to apply—if deemed necessary—the CCB at the maximum level of 2.5 percent.

[22] The NSFR rule is still in the process of being finalized at the European level, but will be implemented by 2018. The CRR Article 510 outlines the timeline for the finalization of the NSFR. The EBA has concluded its report (https://www.eba.europa.eu/-/eba-recommends-introducing-the-nsfr-in-the-eu) and has recommended the introduction of the NSFR. The Commission must submit a legislative proposal, if appropriate, on the NSFR by December 31, 2016. (http://www.eba.europa.eu/documents/10180/1162591/Call+for+advice.pdf.

Figure 1. Netherlands: Systemic Risk Buffers of European Banks versus Size and Concentration Rate 1/ 2/



Source: DNB (2016).
1/ The size of the circle reflects the weighted average SRB.
2/ Data is collected from the ECB, Eurostat, ESRB, and central bank publications, and DNB staff calculations.

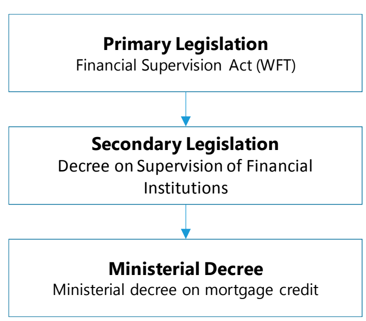
B. Tools Under National Law

36. The MoF has the power to implement limits on LTV and DSTI ratios in collaboration with the MOIKR. A primary legislation (Act of Financial Supervision, Wft) and the Decree on Supervision of Financial Institutions describe the general features of mandatory limits on LTV and DSTI ratios (e.g., objectives, definitions of income and property value), and a Ministerial Degree allows the government to set methodological details to implement these limits.[23]

[23] The WFT and Decree on Supervision of Financial Institutions oblige lenders to take into account the financial situation of the consumer and requires them to prevent excessive lending. The detailed rules with respect to LTV and DSTI limits are set in the ministerial decree on mortgage credit. A graphic representation of the legislative framework is shown as below. Note that the adoption of or changes in the primary and secondary legislation require approval by both Houses of Parliament, but the Ministerial decree does not require formal approval. There is, however, a public consultation period (4-6 weeks), and the DNB and the AFM are regularly consulted.

(*continued*)

37. In order to contain the build-up of potential vulnerabilities stemming from new mortgage loans, the MoF started to impose mandatory limits on LTV and DSTI ratios since 2013. These official limits are imposed on all mortgages that are provided by any financial institutions in the Netherlands. The AFM is responsible for examining any violation as the supervisor for the conduct of business, and the DNB conducts impact analyses of these measures based on loan-level data from banks to support the FSC's role as the macroprudential authority (see Appendix III for various agencies' role in implementing limits on LTV and DSTI ratios).[24] The 2011 Code of Conduct, which is a voluntary self-regulation of the mortgage industry in consultation with the government, set the limits on LTV ratio of residential mortgage loans at 106 percent (including related cost such as stamp duties), starting from January 2012. The limit on LTV was adopted in a Ministerial Decree that entered into force on January 2013, setting the limit on 105 percent. This limit is set to decline by 1 percentage point per year until it reaches 100 percent by 2018, which is very high relative to the level in other countries. In May 2015, the FSC recommended further reduction of the LTV limits to 90 percent after 2018, by keeping up at least the current pace of 1 percentage point decrease per year.[25] A cap on the DSTI ratio was officially imposed on mortgage loans in 2013 (Box 1).[26] Also, mortgage lenders are required to apply 'stressed' DSTI caps with a 'prudent' interest rate that is determined and published by the AFM. This rate is currently set at 5 percent for mortgage loans that have interest rates fixed for a period shorter than 10 years. This additional feature on the cap will play an appropriate role in mitigating risks from interest and income shocks. However, leading up to the crisis, this affordability ratio had been procyclical (Verbruggen and others, 2015), which has reduced the effectiveness of the DSTI cap as an automatic stabilizer.[27]



[24] Existing underwater mortgages are exempt, as well as mortgage financing up to €27.000, that is used for energy-saving home improvements (for higher-income groups only).

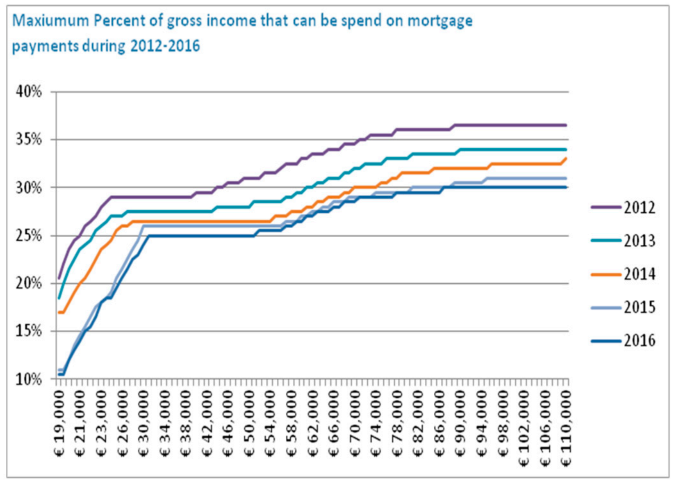
[25] LTV limits at 90 percent would be still high by international comparison. Limits on LTV ratios are below 80 percent in more than half of the 28 sample countries. See a text figure in Box 2.

[26] Before 2013, the DSTI cap was also part of the Code of Conduct.

[27] While limits on LTV ratio may become less binding and thus lose effectiveness through some channels with the increase of house prices (Kuttner and Shim, 2013), potentially requiring successive tightening, caps on DSTI ratios become more binding when house prices (and mortgage loans) grow faster than households' disposable income. As a result of this built-in automatic stabilizer feature, DSTI caps can smooth credit booms even without any time-varying element (IMF, 2014b).

Box 1. Limits on Debt-Service-to-Income Ratio in the Netherlands

The DSTI limits have been enshrined in national legislation since January 2013. The regulation applies to all borrowers that want to obtain a mortgage from any financial institution. The legislation determines the maximum percentage of annual disposable income that can be spent on mortgage payments (interest and amortization). The maximum ratio is announced annually by the MoF in collaboration with the MOIKR, based on an advice from an independent institution, the National Institute for Family Finance Information (NIBUD). In determining the ratio, the NIBUD takes the annual gross income and subtracts taxes, pension premiums, and costs of living other than housing. Based on the annual disposable income, the NIBUD calculates the maximum percentage of the disposable income to service mortgage payments. Interestingly, the maximum ratio is also different according to the income amount (box text figure). Also, given that taxes and pension premiums change after retirement, different tables apply for borrowers who reached the statutory retirement age. The NIBUD consults several parties, including the DNB, the AFM, the MoF, and the MOIKR, and commercial banks, before submitting the advice. Since 2015, the NIBUD's advice is made public and sent to the Parliament. Since the ministerial decree's official introduction in 2013, the DSTI ratio has been tightened every year.



In practice, mortgage lenders have to determine the annual disposable income of the borrower. The annual income of the borrower is determined on the basis of the current income. If the borrower has no current income, the income can be based on the average gross annual income earned over the previous three years. Furthermore, mortgage lenders can take into account future income stemming from available assets (e.g., saving deposits or investments) or a structural wage increase foreseen within a reasonable period after the conclusion of the mortgage. In addition, they should take into account other financial obligations of the borrower, such as consumer loans and student loans.

38. As part of the Housing Market Reform Agenda, the government introduced in September 2013 a path for the reduction of the MID rate. Generous tax reliefs have contributed to high household indebtedness and incentivized interest-only loans. According to IMF (2014c), a non-amortizing loan generated a cumulated yield close to 14.5 percent at the highest tax bracket, while a fully amortizing loan in the same condition produced a return about 11.5 percent as of 2014. Since January 2013, newly originated interest-only mortgages are no longer eligible for tax deduction; new mortgage loans are eligible for the MID only if they are amortized on at least an annuity basis within 30 years. Furthermore, the MID rate has been reduced by 0.5 percentage point per year from 52 percent to 38 percent in 2014. However, the tax neutral treatment of owner-occupied housing would mean reducing the MID rate further with the home assets taxed like financial assets in Tax Box 3 (Parlevliet and Kooiman, 2015)."[28]

C. Recommendations

39. The Dutch authorities should take a holistic approach in addressing the household indebtedness problem. Specifically, the FSAP recommends the following:

- The authorities should accelerate the phasing out of MID, faster than the current arrangement (at least 1 percentage point per year) and should also reduce the ultimate tax deductibility rate to a tax neutral level;

- Following the FSC's recommendation, the MoF needs to continue to gradually reduce the maximum limit on the LTV ratio to 90 percent after 2018 by keeping up at least the current pace of reduction of 1 percentage point per year.[29] This would enhance the resilience of households against house price shocks (Box 2 for international experiences). Other measures could be explored to address the low discretionary savings by young households;[30]

- There should be prudential ceilings beyond which the DSTI caps by income cannot be relaxed across the credit cycle. This would enable the automatic stabilizing function of the caps and decrease the probability of default of households against interest rate and income shocks;[31]

- The AFM and the DNB should closely monitor policy leakages while limits on the LTV and DSTI ratios are being tightened. These measures can give rise to potential arbitrage, for example, through the use of unsecured loans to compensate for lower mortgage credit availability. For this purpose, the authorities should actively use the information from the BKR, and construct an extensive loan-level data covering not only mortgages but also other types of loans, such as consumer loans, auto loans, and student loans; and

[28] See IMF (2016) for the detailed information of tax reforms in the Netherlands.

[29] The gradual approach will mitigate potential undesirable impacts of the measure on macroeconomy. Based on a DSGE model stimulation, which is presented in Box 3 of The Technical Note on Financial Stability and Stress Testing, negative effects of a house price shock on macrofinancial variables would be smaller under a stricter macroprudential policy regime. If the authorities manage to gradually tighten MaPP tools, the Dutch economy will be able to reduce negative impacts of future financial shocks on macrofinancial variables.

[30] Financial distress of young borrowers was reduced through a one-time intergenerational donation for a maximum €100,000. The donated amount is exempted from taxes. By March 2014, about 4,000 taxpayers had availed themselves of this measure.

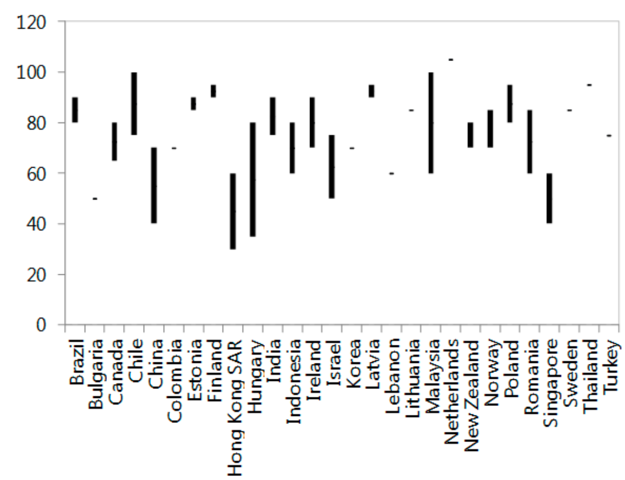
[31] IMF (2014b) shows that the norm of maximum DSTI ratio across countries is 40 percent and four countries restrict it to be below 35 percent. In the United Kingdom, and Ireland, the LTI limits are 4.5 and 3.5 times annual gross income, respectively.

- Because financial regulations are not suited to address a supply shortage and demand-supply mismatch of residential rental and owner-occupied housing, these bottlenecks need to be addressed by other targeted policies, such as looser zoning regulations and liberalization of rental markets.

Box 2. International Experience of Limits on LTV, DSTI, and LTI Ratios

A growing body of evidence points to the benefit of LTV and DSTI ratios in enhancing resilience and reducing fire-sale dynamics, in housing market downturns. Lee (2012) shows that house prices in Korea fell from 2008, but the delinquency ratio on household loans remained below 1 percent well into 2012, and claims that this implies that strict implementation of limits on LTV and DSTI ratios prevented household defaults even as house prices fell, thus reducing financial institution losses. The Financial Services Authority (2009) finds evidence of a correlation between higher LTV ratios, and higher default rates during 2008 in the United Kingdom Hallissey and others (2014) find that, based on loan-level data in Ireland, the default rate was higher for loans with higher LTV and LTI levels at origination, and that this relationship is stronger for the loans issued at the peak of the housing boom. They also show a positive relationship between LGD and LTV for loans with an LTV greater than 50 percent, with a sharp increase in the losses of defaulted loans at LTVs greater than 85 percent. Wong and others (2011) present cross-country evidence that, for a given fall in house prices (1 percent), the incidence of mortgage default is higher for countries without an LTV ratio limit (1.29 basis points) than for those with such a tool (0.35 basis points). The paper also notes that in the wake of the Asian financial crisis, property prices in Hong Kong SAR dropped by more than 40 percent from September 1997 to September 1998, but the mortgage delinquency ratio remained below 1.43 percent, which suggests that limits on LTV ratio reduced the probability of defaults faced by lenders.

Limits on LTV ratios
(In percent)



Source: IMF staff calculation.

Limits on LTV and DSTI ratios have been successful in targeting financial accelerator mechanisms that otherwise lead to a positive two-way feedback between credit growth and house price inflation. A number of studies have found that a tightening of LTV and DSTI ratios is associated with a decline in mortgage lending growth, thereby reducing the risk of an emergence of a housing bubble. Lim and others (2011) find that credit growth declines after limits on LTV and DTI ratios are introduced, and the LTV limits reduce substantially the procyclicality of credit growth. Igan and Kang (2011) show that limits on LTV ratios curb speculative incentives among existing house owners, validating the expectation channel. Crowe and others (2013) confirm the positive association between LTV at origination and subsequent price appreciation

Box 2. International Experience of Limits on LTV, DSTI, and LTI Ratios (concluded)

using state-level data in the United States—a 10 percentage point increase in the maximum LTV ratio is associated with a 13 percent increase in nominal house prices. Duca and others (2011) estimate that a 10 percentage point decrease in LTV ratio of mortgage loans for first-time buyers is associated with a 10 percentage point decline in the house price appreciation rate. Krznar and Morsink (2014) find that four measures to tighten macroprudential instruments (LTVs, in particular) in Canada were associated with lower mortgage credit and house price growth. IMF (2011) finds that lower LTV ratios reduce the transmission of real GDP growth shocks and shocks to population growth to house prices. Kuttner and Shim (2013) find that an incremental tightening in the DTI ratios is associated with a 4 to 7 percentage point deceleration in credit growth over the following year. RBNZ (2014) suggests that a cap on the share of high-LTV loans was effective, showing a dramatic fall in the share of mortgages over an 80 percent LTV ratio since the introduction in August 2013. Ahuja and Nabar (2011) find that limits on LTV ratios in Hong Kong SAR, where monetary policy is constrained as a small open economy with exchange rate pegs, reduced house prices and transaction volumes, albeit with a lag.

Since the financial crisis, many countries have newly adopted these instruments. Limits on LTV ratios are below 80 percent in more than half of 28 sample countries, as shown below.

Use of Limits on LTV, DSTI, and LTI Ratios

	Advanced Economies	Emerging Market Economies	Total
Limits on LTV ratio	Canada (2007), Estonia (2015), Finland (2010), Hong Kong SAR (1991), Ireland (2015), Israel (2012), Korea (2002), Latvia (2007), Lithuania (2011), Netherlands (2011), New Zealand (2013), Norway (2010), Singapore (2010), Sweden (2010)	Brazil (2013), Bulgaria (2004), Chile (2009), China (2001), Colombia (1999), Hungary (2010), India (2010), Indonesia (2012), Lebanon (2008), Malaysia (2010), Poland (2013), Romania (2004), Thailand (2003), Turkey (2011)	28
Caps on DSTI ratio (including LTI caps)	Canada (2008), Estonia (2014), Hong Kong SAR (1997), Korea (2005), Ireland (2015, LTI), Lithuania (2011), Netherlands (2007), Norway (2010, LTI), Singapore (2013), United Kingdom (2014, LTI)	China (2004), Colombia (1999), Hungary (2010), Latvia (2007), Malaysia (2011), Poland (2010), Romania (2004), Thailand (2004)	18

Source: IMF staff calculation.
Note: Parentheses show the year a jurisdiction introduced currently imposed measures; changes tracked since 1990.

Appendix I. Functions and Powers of the ECB and the ESRB on Macroprudential Policy

1. **The ECB and the ESRB both exercise macroprudential policy functions, each within the remits of their respective mandates and with different powers.** The ECB's macroprudential mandate covers the banking sector in countries that participate in the SSM, whereas the ESRB's remit comprises the financial system as a whole, including the nonbanking sector, and for the entire EU. While the ECB has hard ("topping-up") powers over the set of instruments set out in the CRD IV and CRR (see further below), the ESRB only has powers of recommendation to relevant agencies.

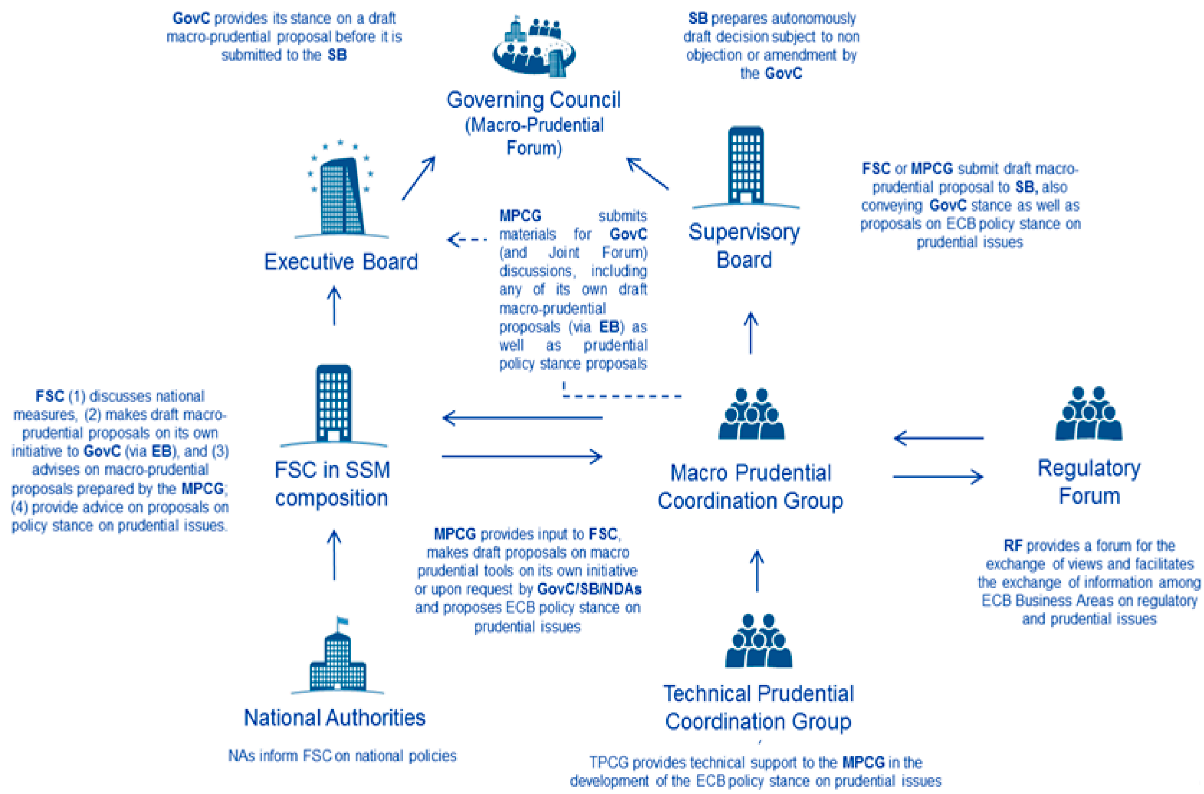
2. **For SSM countries, the competency for macroprudential policy is shared between national authorities and the ECB.** The SSM Regulation confers to the ECB specific powers over the macroprudential instruments for the banking sector that are set out in the CRD IV and CRR (Appendix II). For these measures, such as the CCB, the ECB must be notified in advance and can apply higher requirements and more stringent measures than those applied by national authorities (so called "topping-up" powers). The ECB can relax the higher requirement set by it, but cannot set lower requirements than those set nationally. For instruments outside of the CRR and CRD IV, such as limits to LTV, LTI or debt service-to-income ratios, the ECB can suggest national authorities to use their powers over these instruments and national authorities are obliged to fully inform the ECB about the exercise of those powers.

3. **The ECB internal governance of its macroprudential mandate is complex, with the Governing Council the ultimate decision-maker (Figure 1).** The Council decides on macroprudential measures based on a proposal by the Supervisory Board, in turn based on the initiative and taking into account the input of the FSC and its sub-structure (the Macroprudential Coordination group). The FSC brings together high-level representatives of national authorities, and provides the platform to establish common ground in macroprudential policy across the SSM Member States.

4. **The ESRB is tasked with identifying and monitoring systemic risks in the EU financial system, but has no direct powers to impose specific measures.** The ESRB has only semi-stringent powers. It can issue non-binding warnings and recommendations on a comply-or-explain basis to: the European Union as a whole; one or more Member States; and one or more of the European or national supervisory agencies, including the ECB in its supervisory role. The CRR and CRD IV provide additional roles for the ESRB, including issuing "opinions" on specific measures notified by national authorities and the ECB under Art 458 CRR, which ultimately require approval by the European Council.

5. **The ECB cooperates closely with the ESRB, by coordinating the macroprudential agenda and work plans.** Among other things, this cooperation aims at ensuring that spillovers across sectors and between SSM and non-SSM countries are duly considered. The ECB also provides analytical, statistical, logistical, and administrative support to the ESRB Secretariat.

Figure 1. ECB Framework Macro- and Microprudential Supervision Coordination



Source: ECB.

Appendix II. Macroprudential Instruments

Instruments	Legal Basis	Agency in Charge of Implementation[2/]	Usage		Reciprocity	Perimeter	Notification Requirements		
			Availability	Implemented			European Commission	ESRB	EBA
Macroprudential Tools under CRR and CRD IV									
Countercyclical capital buffer	Wft	DNB, ECB	Jan. 2016	Jan. 2016	Mandatory	All banks and some investment firms	-	O	-
G-SII buffer	Wft	DNB, ECB	Jan. 2016	Jan. 2016	-	ING	O	O	O
O-SII buffer	Wft	DNB, ECB	Jan. 2016	Jan. 2016	-	ABN AMRO, ING Bank, Rabobank, SNS Bank, BNG Bank	O	O	O
Systemic risk buffer	Wft	DNB, ECB	Jan. 2014	Jan. 2016	DNB has the power to reciprocate	ABN AMRO, ING Bank, Rabobank	O	O	O
Risk weight for RRE and CRE exposures	Article 124.2 of the CRR	DNB, ECB	Jan. 2014	-	Not Mandatory	All banks and some investment firms	-	-	O
Loss given default for RRE and CRE exposures	Article 164.5 of the CRR	DNB, ECB	Jan. 2014	-	Not Mandatory	All banks and some investment firms	-	-	O
Flexibility measures[1/]	Article 458 of the CRR	DNB, ECB	Jan. 2014	-	Can be requested	All banks and some investment firms	O	O	O
Pillar 2	Wft	DNB, ECB	Jan. 2014	-	-	All banks and some investment firms	-	-	O
Liquidity Coverage Ratio	Article 460 of the CRR	DNB, ECB	Jan. 2014	Oct. 2015	-	All banks and some investment firms	-	-	-
Macroprudential Tools under National Law									
Limits on LTV ratios	Wft (Act of Financial Supervision)	MoF[3/]	2013	2013	-	All mortgage providers	-	-	-
Limits on DSTI ratios		MoF[3/]	2013	2013	-	All mortgage providers	-	-	-

Sources: DNB; and IMF staff.

1/ The DNB can tighten the following tools under certain circumstances: large exposure limits, level of own funds, public disclosure, capital conservation buffer, liquidity requirements, risk weights for targeting asset bubbles, and intra financial sector exposures.
2/ The power of the ECB will only be applicable to SSM banks and investment firms.
3/ The MoF collaborates with the MOIKR in setting the LTI and DSTI limits.

Appendix III. Role of Agencies in the Decision-Making Process of Limits on LTV and DSTI Ratios

1. **There are many interested parties in the decision-making process of limits on LTV and DSTI ratios in the Netherlands.** They include the MoF, MOIKR, FSC, DNB, AFM, NIBUD, ECB, ESRB, and the mortgage lenders. This Appendix describes the role that each agency plays in the process.

2. **The MoF has the power to implement limits on LTV and DSTI ratios to ensure a stable financial system.** A primary legislation (WFT) and the Decree on Supervision of Financial Institutions describe the general **features** of mandatory limits on LTV and DSTI ratios (e.g., objectives, definitions of income and property value), and a Ministerial Degree allows the MoF to set methodological details to implement these limits.

3. **Before setting the LTV and DSTI limits, the MoF consults with the MOIKR, which plays a key role in housing and rental market policies in the Netherlands.** The MOIKR also participated in the several FSC meetings to discuss housing market developments and policy measures to address potential vulnerabilities as external experts.

4. **The MoF also receives an input from an independent institution, the NIBUD, to set the limits on DSTI ratios.** In determining the ratio, the NIBUD calculates the maximum percentage of the disposable income to service mortgage payments in consultation with several parties, including the DNB, the AFM, the MoF, the Ministry of Housing, and commercial banks. Since 2015, the NIBUD's advice is made public and sent to the Parliament.

5. **As the national macroprudential authority, the FSC discusses systemic risk in the financial system as a whole and can recommend recalibration of limits LTV and DSTI ratios, while the use of these tools remains the responsibility of the MoF.** In May 2015, the FSC recommended future governments further reduction of the LTV limits to 90 percent after 2018, by keeping up the current pace of 1 percentage point decrease per year, in order to promote financial stability while suggesting other policy measures to mitigate potential social costs. The current government published a reaction to the recommendation, but there is no formal comply-or-explain mechanism attached to the Committee's recommendations.

6. **The DNB conducts impact analyses of these measures based on loan-level data from banks to support the FSC's role.** It has published analytical reports investigating the impact of LTV limits, and the bi-annual FSR includes an annex ("Macroprudential Indicators") that delivers the latest information of early warning indicators (e.g., credit-to-GDP gap, growth in household and corporate lending, LTV and LTI ratios, etc.).

7. The AFM is responsible for examining any violation of these regulations as the supervisor for the conduct of business. The AFM also determine and publish a so-called 'prudent' interest rate with which mortgage lenders are required to apply when they calculate 'stressed' DSTI ratios for mortgages that has interest rate fixed for a period shorter than 10 years. This rate is currently set at 5 percent.

8. The Dutch authorities fully inform the ECB and the ESRB about the implementation of LTV and DSTI limits. The ECB can suggest to the national authorities to use their powers over these instruments, while there is no instance by far.

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