INTERNATIONAL MONETARY FUND

IMF Country Report No. 15/252

NORWAY

FINANCIAL SECTOR ASSESSMENT PROGRAM

September 2015

FINANCIAL SYSTEM STABILITY ASSESSMENT

This Report of the Financial System Stability Assessment for Norway was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed in August 2015.

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NORWAY

FINANCIAL SYSTEM STABILITY ASSESSMENT

August 17, 2015

Approved By
James Morsink and Philip Gerson

Prepared By
Monetary and Capital Markets Department

This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Norway in February 18–March 4. The FSAP findings were discussed with the authorities during the Article IV consultation mission in May 2015.

- The FSAP team was led by Mr. Marco Piñón and included Messrs. Etibar Jafarov (deputy mission chief), Luis Brandao Marques, Tanai Khiaonarong, Mamoru Yanase, and Ms. Silvia Iorgova (all MCM), Ms. Kazuko Shirono (EUR), Messrs. Clive Briault, Michael Deasy, and David Scott (MCM external experts), and Ms. Virginia Rutledge (LEG external expert). The mission met with the Financial Secretary and other staff of the Ministry of Finance (MOF), the Governor of the Norges Bank (NB) and his staff, the Director General of the Financial Supervision Agency of Norway (FSA) and his staff, the Oslo Stock Exchange, representatives of banks, insurance companies, and other financial institutions, policy research organizations and auditors.

- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. Certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud, are not covered in FSAPs.

- Norway is deemed by the Fund to have a systemically important financial sector, and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement.

- This report was prepared by Messrs. Marco Piñón and Etibar Jafarov with inputs from the Norway FSAP team members.

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Glossary

ABS	Asset-backed Securities
AML/CFT	Anti-Money Laundering and Combating the Financing of Terrorism
Basel I	International Convergence of Capital Measurement and Capital Standards (July 1988)
Basel II	Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework – Comprehensive Version (June 2006)
Basel III	Basel III: A global regulatory framework for more resilient banks and banking systems (revised version June 2011)
BCP	Basel Core Principles
BGF	Banks' Guarantee Fund
BRRD	Bank Recovery and Resolution Directive
CAR	Capital Adequacy Ratio
CCB	Counter Cyclical Buffer
CCPs	Central counterparties
CET1	Common equity tier 1
CPSS	Committee on Payment and Settlement Systems (renamed in September 2014 to Committee on Payments and Market Infrastructures)
CRD4	Capital Requirements Directive
CRR	Capital Requirements Regulation
DAR	Detailed Assessment Report
DGS	Deposit Guarantee Scheme
D-SIB	Domestic systemically important bank
DSR	Debt service ratio
DTI	Debt to income
EA	Euro Area
EAD	Exposure at default
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
EEA	European Economic Area
EIOPA	European Insurance and Occupational Pension Authority
ELA	Emergency Liquidity Assistance
ESA	European Supervisory Authority
ESRB	European Systemic Risk Board
EU	European Union
FIA	Financial Institutions Act
FSA	Finanstilsynet (The Financial Supervisory Authority of Norway)
FSAct	Financial Supervision Act
FSAP	Financial Sector Assessment Program
FMI	Financial Market Infrastructure

FSI	Financial Soundness Indicators
FSB	Financial Stability Board
FSSA	Financial System Stability Assessment
GPFG	Government Pension Fund Global
GSA	Guarantee Schemes Act
HP	Hodrick-Prescott filter
IOSCO	International Organization of Securities Commissions
IRB	Internal ratings based
KA	Key Attributes for Effective Resolution Regimes for Financial Institutions
LCR	Liquidity Coverage Ratio
LGD	Loss given default
LTI	Loan to income
LTV	Loan to value
MOF	Ministry of Finance
MoU	Memorandum of Understanding
MREL	Minimum required eligible liabilities
NB	Norges bank
NBO	Norges Bank Settlement System
NICS	Norwegian Interbank Clearing System
NOK	Norwegian Krone
NPL	Nonperforming loan
NSFR	Net Stable Funding Ratio
OC	Overcollateralization
OECD	Organization for Economic Cooperation and Development
OTC	Over the counter
PD	Probability of default
ROE	Return on Equity
RWA	Risk weighted asset
SIFI	Systemically important financial institution
SME	Small and medium sized enterprise
SRB	Systemic risk buffer
SSM	Single Supervisory Mechanism
TLAC	Total loss absorbing capacity
WEO	World Economic Outlook

EXECUTIVE SUMMARY

Norway's financial system coped well with the global financial crisis and has further increased buffers to deal with potential shocks, but significant financial imbalances have also built up since then. Favorable macroeconomic conditions in recent years have helped maintain financial stability. However, the prolonged period of low interest rates and high oil prices have fueled credit and asset price growth, leading to higher vulnerabilities. The housing market is estimated to be overvalued by 25–60 percent, and, at about 220 percent, the household debt-to-disposable income ratio is among the highest in the world. To finance this increase in lending to households, banks have relied extensively on wholesale funding. At the same time, Norway's close regional and global interconnectedness is a source of potential spillover risks.

Stress tests suggest that under severe macroeconomic shocks banks and life insurers could face important but manageable capital shortfalls. A combination of severe shocks—including protracted low oil prices and a sharp contraction in house prices—could result in an aggregate capital shortfall for banks of up to 4.6 percent of GDP over five years. This requires continued action to ensure adequate capital buffers, including through discretionary requirements under Pillar II of the capital framework. Norwegian banking groups also face liquidity gaps in domestic currency and are exposed to maturity mismatches and rollover risks, due to their reliance on currency swaps. Insurers' solvency ratios would decline sharply under a combination of severe shocks under the Solvency II framework, although the rule for the transition to Solvency II would significantly reduce the immediate need for insurers to raise capital. The Financial Supervisory Authority of Norway (FSA) should continue to constrain dividend distribution by weakly capitalized insurance institutions and ensure that the insurance businesses of conglomerates are adequately capitalized on a solo basis.

The authorities have taken significant measures to improve the oversight framework, but further strengthening is needed. To boost banks' resilience, capital requirements have been increased, including through early implementation of the EU capital regulations and additional capital buffers. The authorities applied restrictions on mortgage lending risk weights and banks' mortgage lending standards. Nonetheless, to further enhance the monitoring of risks, the Norges Bank (NB) and FSA should intensify cooperation to exploit synergies between macro- and micro-prudential stress testing, and further enhance their stress testing frameworks, and consider supplementing the Basel III liquidity requirements with stress tests more closely aligned with banks' funding and cash flow profiles. They should also introduce measures to contain systemic risks arising from high real estate prices and household indebtedness (e.g., stricter loan-to-value (LTV) ratios, and loan-to-income or debt service ratio to supplement the affordability test). More broadly, the authorities should consider reducing tax incentives for mortgage finance, and relaxing planning and building requirements to reduce imbalances in the housing market.

Institutional arrangements for macroprudential policies could be improved in a number of areas. Possible reforms should include more standardized and transparent procedures for providing advice by NB and the FSA to the Ministry of Finance (MOF); a more transparent "comply or explain"

approach by decision makers; an annual broader overview of the collective purpose, impact, and effectiveness of the use of macroprudential instruments; and, in due course, greater delegation of decision-making powers over macroprudential instruments to NB or the FSA, based on clear mandates, objectives, and accountability. Alternatively, some macroprudential policy functions could be exercised through a formal committee.

The regulatory and supervisory framework is generally good, but some weaknesses need to be addressed. The FSA employs a risk-based approach to supervision, and its general supervisory framework is comprehensive, taking into account macroeconomic and system-wide aspects. The supervisor challenges banks and has shown willingness to act to ensure the stability of the whole sector and of individual institutions. Oversight over entire financial groups is well established. Close supervisory cooperation exists among Nordic countries, reflecting the advanced integration of these countries' banking industries, where reciprocity of regulatory measures has largely been achieved. Also, the oversight and supervision of financial market infrastructures (FMIs) is generally effective. However, it would be desirable to further strengthen the de jure operational autonomy of the FSA, augment its supervisory resources to increase the frequency and depth of inspections of small institutions, and expand the range of its sanctioning tools. The authorities also need to take measures to improve the anti-money laundering (AML) supervisory regime and the related party rules. Regarding FMIs, the authorities should consider deepening regulatory cooperation to assess operational risks and manage dependencies on critical service providers.

The legal and institutional foundations for crisis management, safety nets, and resolutions are generally well developed, but more work is needed. The institutional framework is well established, but the resolution authorities need adequate operational independence, and the preponderance of active bank executives on the Banks' Guarantee Fund (BGF) board gives rise to frictions that impede its integration into the resolution and safety net framework. Recovery planning by the largest banks, including those that could be systemically important in case of failure, is proceeding well, but resolution planning and the conduct of resolvability assessments for such banks have yet to be initiated by the MOF. Policies for the provision of emergency liquidity assistance (ELA) by NB are in place, but policies for the provision of liquidity and solvency support by the BGF are required. The BGF is well funded but has no standing source of back-up funding. It also lacks formal policies for recusal by board members who may have actual or potential conflicts of interest with respect to specific bank support decisions. The legal framework for crisis management, including early intervention, resolution, and winding-up and liquidation, delegates substantial powers that have been effectively used by the authorities to resolve banks in the past. However, the framework will require some amendments and enhancements to bring it into compliance with the FSB *Key Attributes*.

Table 1. Key FSAP Recommendations	
Priority Recommendations	Time
Macroprudential Policies and Framework	
Consider additional measures to contain systemic risks arising from the growth of house prices and household indebtedness (e.g., stricter loan-to-value (LTV) ratios, and loan-to-income or debt service ratio to supplement the affordability test)	S
Consider measures to contain risks related to banks' wholesale funding (e.g. limits could be placed on the mismatch between the maturity of currency swaps (and other hedging techniques) and the maturity of the underlying exposures)	S
Improve the existing institutional structure for macroprudential policies. This should include more standardized and transparent procedures for giving advice to the MOF; a transparent "comply or explain" approach by decision-makers; and, in due course, greater delegation of decision-making powers over macroprudential instruments to NB or the FSA.	M
Stress Tests	
Improve liquidity monitoring by performing liquidity stress tests using the structure of cash flows at various maturities; or applying customized versions of the LCR along the maturity ladder. Consider options to discourage cross-ownership of covered bonds.	M
Enhance the stress test framework for the insurance sector. Allocate more resources to the FSA to assess the liability side risks and validate models and assumptions used in the bottom-up stress tests by insurance companies.	M
Achieve recapitalization of weakly capitalized insurance companies in the current environment. Continue to restrict dividend payouts by the companies with weak capital adequacy.	S
Micro-supervision	
Enhance the FSA's de jure operational independence, powers (particularly in regard to corrective actions and sanctions), and supervisory resources. Strengthen the FSA's supervision of small banks through conducting comprehensive assessments more frequently.	M
Upgrade substantially the FSA's supervisory approach towards the AML/CFT issues, including by increasing supervisory activities and providing guidance on the topic.	S
Financial Market Infrastructure	
Strengthen operational risk management related to outsourcing in systemically important payment systems.	S
Safety Nets	
The MOF should initiate resolution planning for the largest banks, including assessing impediments to resolvability, and delegate specific responsibilities to the FSA, and define expectations for the Norway-specific elements of the recovery and resolution plans of foreign bank subsidiaries and branches.	S, M
Enhance the legal framework for resolution to comply with the FSB Key Attributes, in particular with regard to the resolution toolkit, operational independence, legal protection for the resolution authorities and administration boards, establishing earlier triggers for resolution, cross-border resolutions, and the distinction between going concern and gone concern resolution.	S
The BGF should adopt policies specifying under what conditions board members must recuse themselves, considering actual and prospective conflicts of interest.	S

MACROECONOMIC MANAGEMENT IS SOUND, BUT FINANCIAL IMBALANCES ARE GROWING

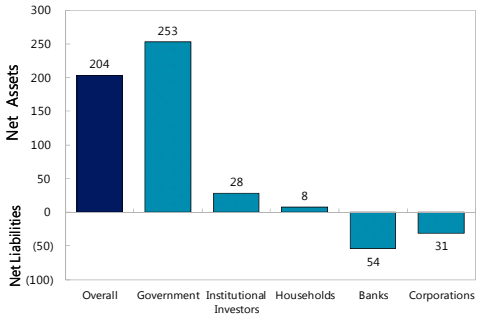
A. Macroeconomic and Financial Sector Setting

1. With solid macroeconomic frameworks and policies, Norway's recent economic performance has been generally favorable, and Norway appears well positioned to deal with external and domestic shocks. Real mainland (i.e. non-oil) GDP growth has averaged about 2.9 percent in the last two decades, with unemployment at 3.5 percent in 2014. Norway's flexible inflation targeting framework allowed the anchoring of inflation expectations without causing significant volatility in interest rates and output, while its flexible exchange rate has helped absorb foreign shocks. High oil production and exports, together with Norway's fiscal rule and Government Pension Fund Global (GPFG)—which have provided a significant degree of insulation from sharp changes in oil prices—have resulted in strong fiscal and external positions.

2. While Norway is a major net creditor to the rest of the world, the private sector has become a relatively large net external debtor. Norway's net creditor position vis-a-vis the rest of the world has reached more than 200 percent of mainland GDP. This figure, however, masks important differences across sectors. On the one hand, the public sector (including the central bank) and institutional investors have a net external creditor position of about 280 percent of mainland GDP, largely as result of high oil production and exports, together with Norway's fiscal rule and GPFG. On the other hand, banks (including mortgages companies) and corporations have a net debtor position equivalent to about 85 percent of GDP.

Norwegian Net Claims Against the Rest of the World

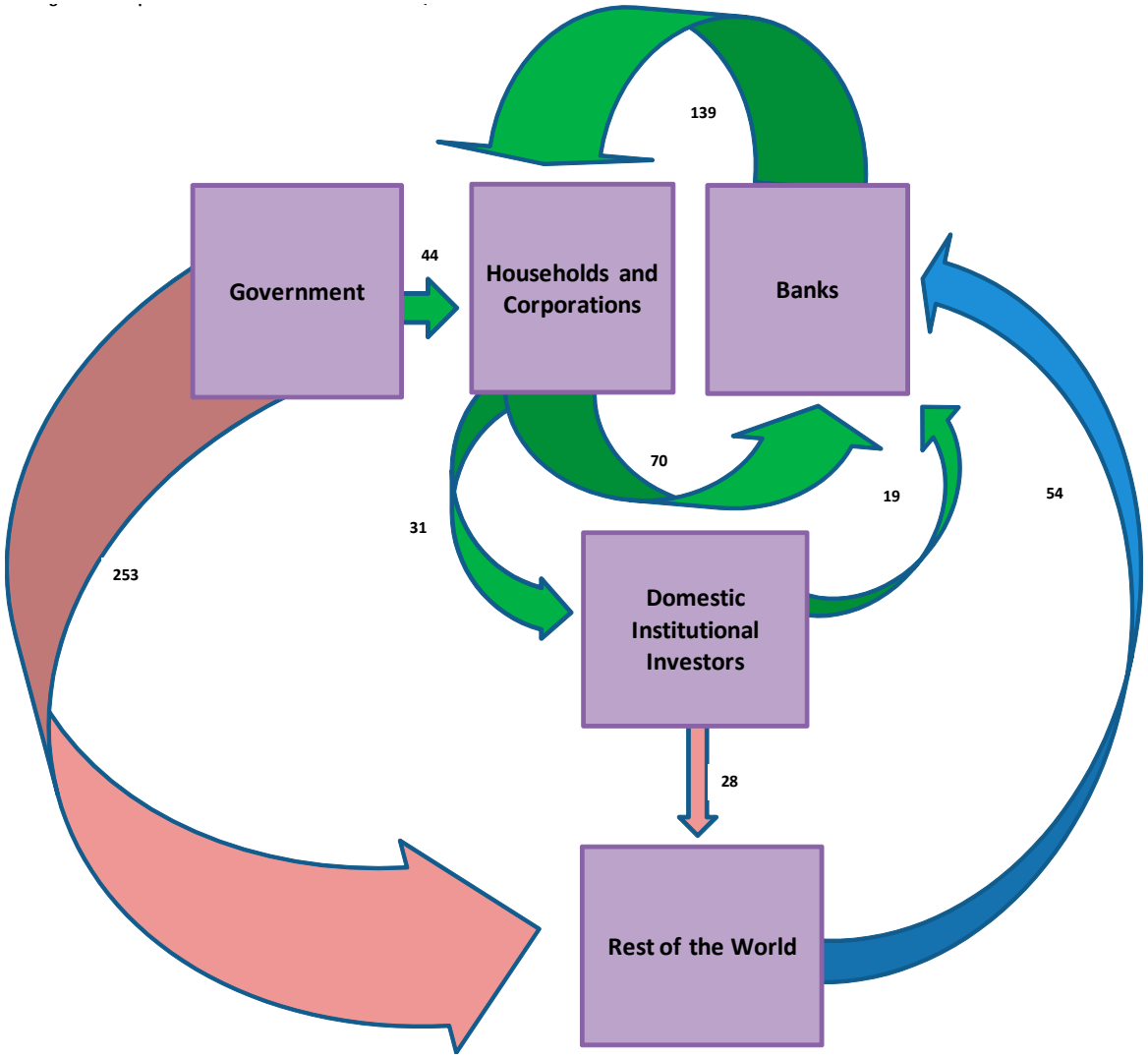
(In percent of Mainland GDP; end-2014)



Sources: Statistics Norway; and IMF staff estimates.

3. The availability of external credit, in turn, has facilitated the buildup of significant private sector imbalances during the prolonged period of economic expansion. In particular, while the public sector accumulated substantial foreign assets, growth in domestic credit demand far outstripped the evolution of deposits, banks (and mortgage companies) increasingly relied on wholesale sources, particularly external, to supplement their funding (Figure 1). At the same time, credit grew well above GDP growth with a rapid increase in real estate prices, which are now estimated significantly overvalued. This has resulted in a substantial increase in the financial indebtedness of households and corporations to well above OECD averages.

Figure 1. Net Financial Claims by Sectors of the Norwegian Economy
(In percent of Mainland GDP; end–2014)



Sources: Statistics Norway; and IMF staff estimates.

B. Structure of the Financial System

4. Norway's financial system is large relative to the country's economy and population, although less so compared with other Nordic countries (Figure 2). The sector is concentrated and dominated by conglomerates, some of which are based in other Nordic countries. The largest domestic financial group, DNB, holds a significant market share, and its importance is further increased by its role as the settlement bank for 97 smaller banks in the system. Regulatory firewalls, including restrictions on intra-group financial transactions, are in place, and in normal times such conglomerate structures lend themselves to risk diversification. In more extreme situations, however, they could increase risks of contagion.

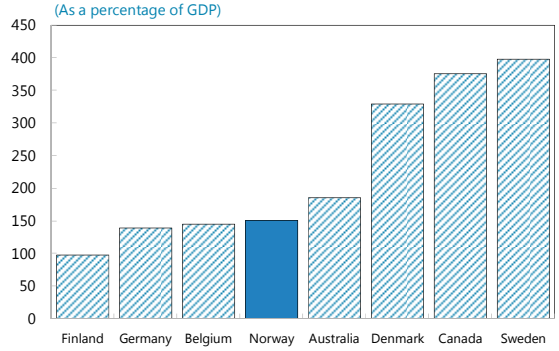
5. Banks and mortgages companies rely extensively on wholesale funding (Figure 3), in particular covered bonds. Banks' lending operations exceed deposits by a margin of almost two to one, with covered bonds issued through mortgage companies becoming banks' dominant source of financing. The introduction of a government-led swap arrangement during the financial crisis, under which banks could swap covered bonds for Treasury bills, accelerated the set-up of mortgage companies that issue covered bonds to fund the transfer of mortgage loans from parent banks. Banks, excluding DNB, have transferred about 45 percent of their mortgage loans to their partly or fully owned covered bond companies. DNB has transferred 80 percent.

6. State ownership of financial institutions is significant, although they are managed along commercial lines. Two of the three banks designated as D-SIBs are at least partly state owned. The government holds a 34 percent stake in DNB but does not intervene in the bank's day-to-day operations, keeping an arm's length. However, market power and implicit government support for DNB may cause distortions in the Norwegian credit market. The other D-SIB, Kommunalbanken, which is fully owned by the government, mainly finances local governments.

Figure 2. The Structure of the Banking Sector

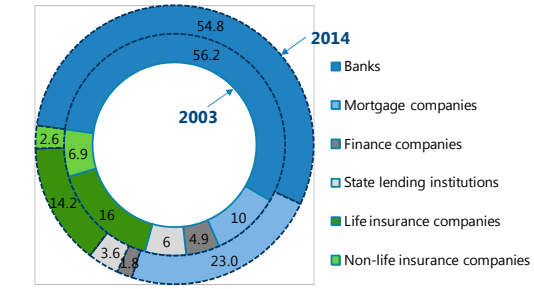
Norway's banking sector is smaller than that in most peer countries.

Total Banking System Assets, 2013
(As a percentage of GDP)



The banking sector dominates the financial system and has expanded its share through mortgage companies.

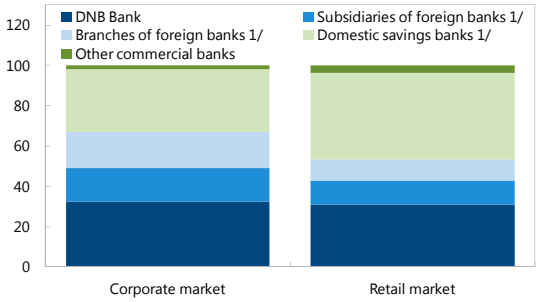
Financial System Structure: 2003 and 2014
(In percent of total assets)



Source: Statistics Norway.

The degree of bank concentration is relatively high, with DNB having the largest market share followed by subsidiaries and branches of Nordic banks.

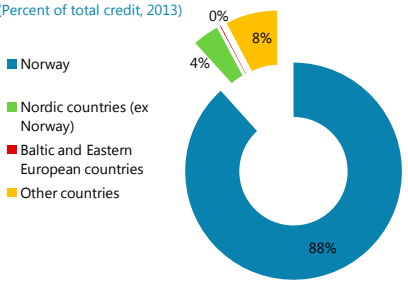
Lending Market Shares
(Percent, June 2014)



1/ Three subsidiaries including Nordea, 13 branches including Danske Bank and Hendelsbanken, and 108 Norwegian savings banks.

While Nordic banks have a significant presence in Norway, Norwegian banks operate largely in the domestic market.

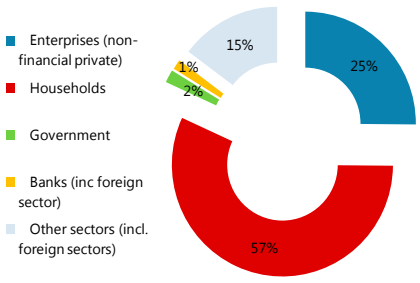
Geographical Distribution of Credit by Norwegian Banks Mortgage Companies 1/
(Percent of total credit, 2013)



1/ Includes foreign branches.

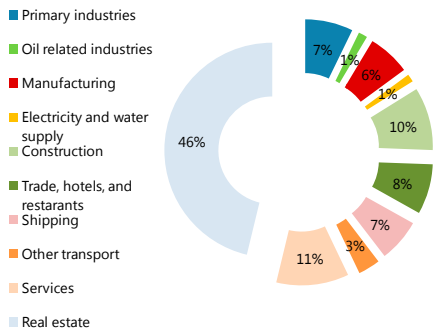
Norwegian banks have high exposures to households, largely through mortgage lending.

Lending by Norwegian Banks and Mortgage Companies
(Billion NOK, 2014Q1)



Corporate lending also includes high exposures to commercial real estate.

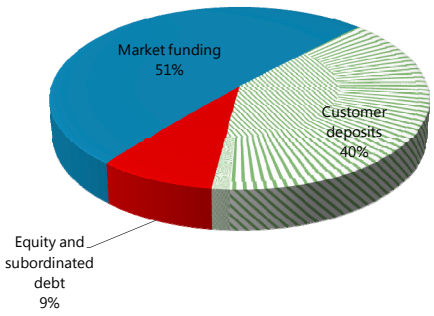
Corporate Lending by Banks and Mortgage Companies
(Percent, 2014Q1)



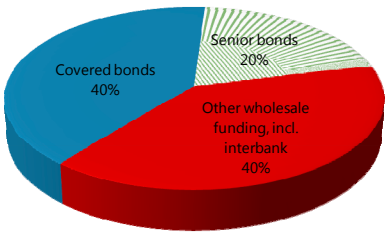
Sources: Norwegian authorities; and IMF staff estimates.

Figure 3. Funding Sources of Norwegian Banks

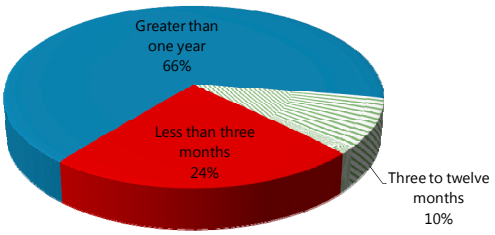
Overall Funding of Norwegian Banks



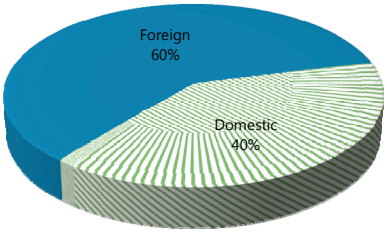
Market Funding of Norwegian Banks By Type



Market Funding of Norwegian Banks by Maturity



Market Funding of Norwegian Banks by Source



Sources: Statistics Norway; and IMF staff estimates.

C. Financial Sector Performance

7. Norwegian banks coped well with the global financial crisis and have continued to perform well, but substantial financial risks have built up. Despite some funding pressures during the global financial crisis, there were no bank failures, with only a modest increase in nonperforming loans (NPLs). However, banks have increased their reliance on wholesale funding, including foreign borrowing.

8. Norwegian banks have remained profitable and well capitalized. NPLs are low, and profitability has been stable and higher than in most peer countries (Table 2, Figures 4 and 5). Banks' risk-weighted capital ratios have increased significantly since the adoption of Basel II in 2007, due partly to reduced risk weights by banks adopting the internal ratings-based (IRB) approach. The authorities have taken strong measures to limit excessive reductions in risk weights by banks, including through tightening the requirements on banks' IRB models and maintaining the "Basel I floor rule" that ensures that the risk-weighted assets (RWAs) of banks using IRB models for capital requirements purposes are not lower than 80 percent of the Basel I RWAs . At 6½ percent, the leverage ratio for Norwegian banks is well above the proposed 3 percent minimum leverage ratio under Basel III.

Table 2. Norway: Financial Soundness Indicators (FSIs)
(In percent)

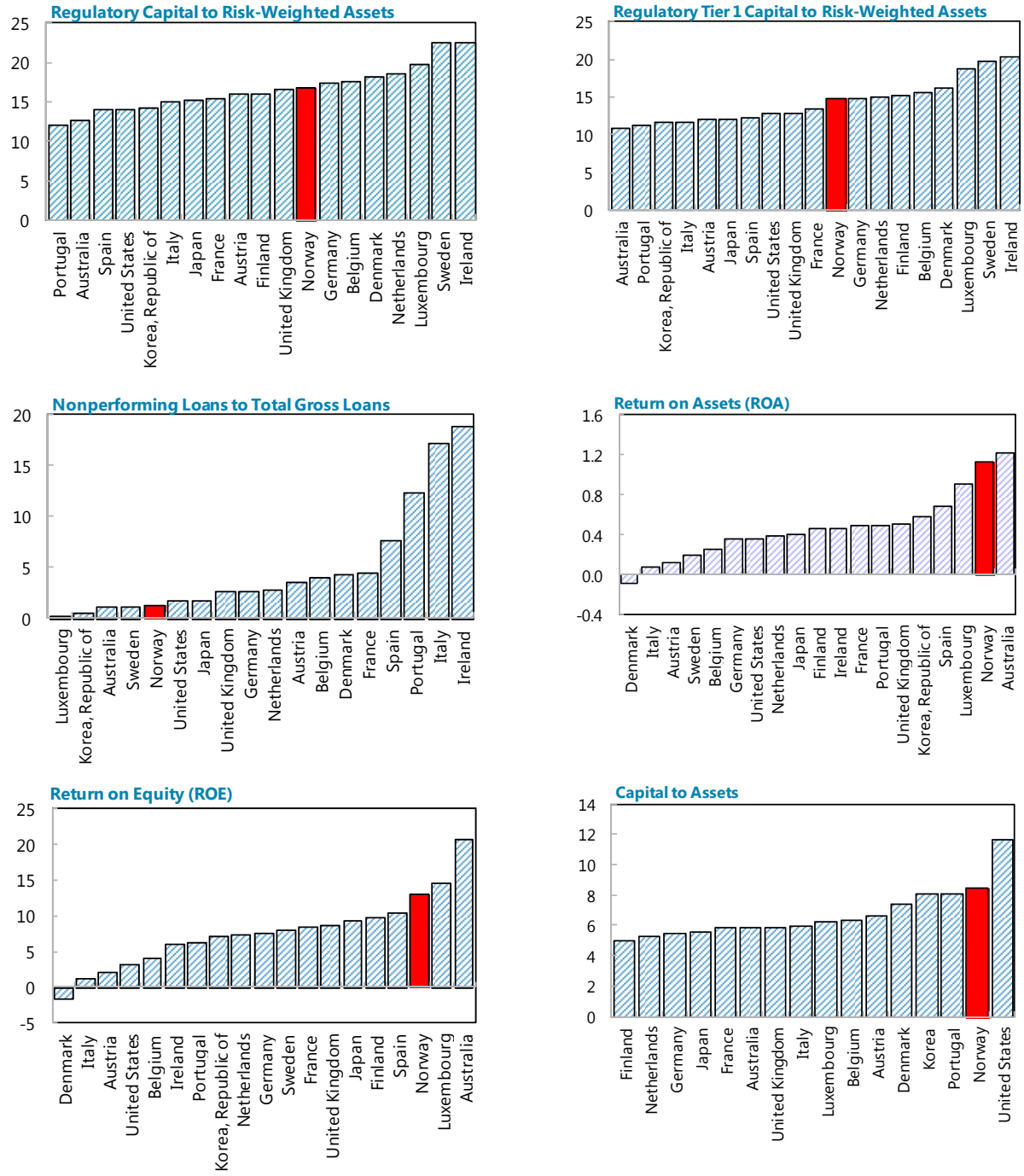
	2006	2007	2008	2009	2010	2011	2012	2013	2014
Deposit-taking institutions 1/									
Regulatory capital to risk-weighted assets	11.2	11.7	11.2	13.0	14.2	13.6	14.5	15.5	16.5
Regulatory Tier 1 capital to risk-weighted assets	8.7	9.3	8.6	10.5	11.8	12.1	13.2	13.8	14.5
Nonperforming loans net of provisions to capital	4.4	3.8	5.7	9.4	10.9	10.9	10.2	8.5	7.1
Bank provisions to nonperforming loans									
Provisions to nonperforming loans	26.9	22.4	21.4	21.0	22.1	21.5	19.4	20.9	20.1
Nonperforming loans to total gross loans	0.6	0.5	0.7	1.3	1.6	1.6	1.6	1.4	1.3
Sectoral distribution of loans to total loans									
Deposit-takers	0.2	0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.5
Nonfinancial corporations	26.8	27.0	29.1	30.5	32.5	33.6	34.7	32.9	29.8
Households (including individual firms)	63.9	55.7	47.6	47.3	43.9	41.7	38.6	38.4	37.2
Nonresidents (including financial sectors)	3.9	9.1	13.9	12.0	14.4	15.1	13.8	17.8	22.8
Return on assets (ROA) 2/	0.9	0.8	0.5	0.5	0.8	0.6	0.6	0.7	0.8
Return on equity (ROE) 2/	16.5	15.6	11.1	10.4	14.1	10.5	9.5	10.7	12.7
Interest margin to gross income	64.3	66.5	80.6	63.4	64.1	68.8	63.6	60.7	56.0
Noninterest expenses to gross income	51.2	49.9	55.2	49.0	46.1	51.4	46.8	47.6	41.8

Source: Norwegian authorities.

1/ These may be grouped in different peer groups based on control, business lines, or group structure.
2/ Consolidated data for the seven main banking groups (IFRS).

Figure 4. Norway; Banking Sector Indicators, latest

(In percent)



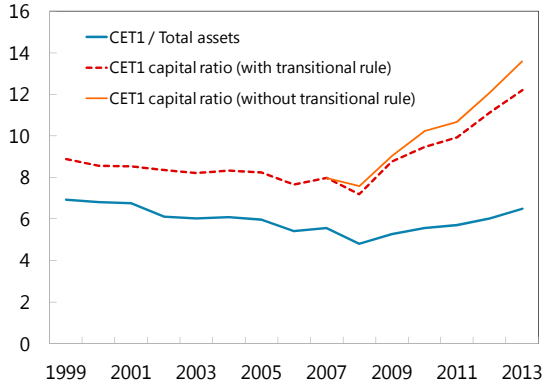
Source: IMF, *Financial Soundness Indicators (FSI)* database.

Figure 5. Norway; Banking Sector Developments

Risk-weighted capital adequacy has risen significantly, but leverage ratios have seen only a small increase.

Banks' Solvency Ratios

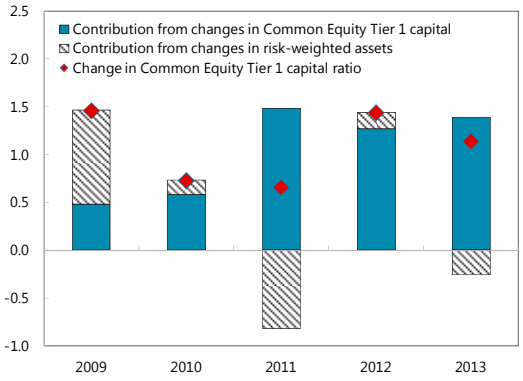
(In percent)



Some of the increase in the capital adequacy ratio was due to changes in risk weights.

Evolution of Common Equity Tier 1 Capital Ratio

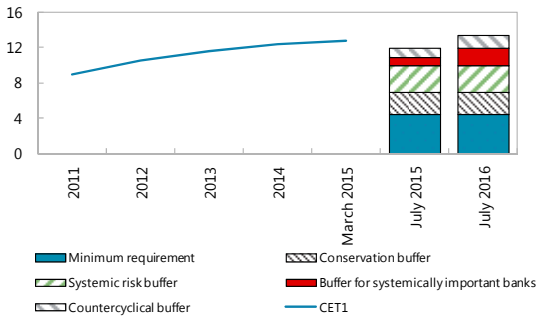
(Percentage points)



Banks are expected to meet the new capital requirements.

Banks' Capital Ratios

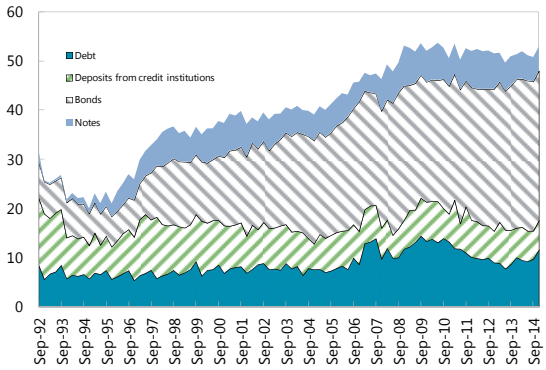
(In percent)



Banks heavily rely on wholesale funding.

Composition of Banks' Wholesale Funding

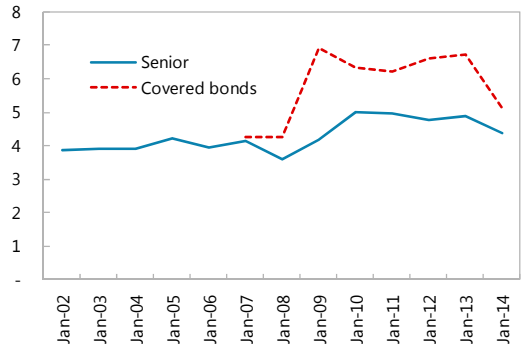
(In percent of total assets)



While they have increased the maturity of their liabilities.

Maturity of Bonds

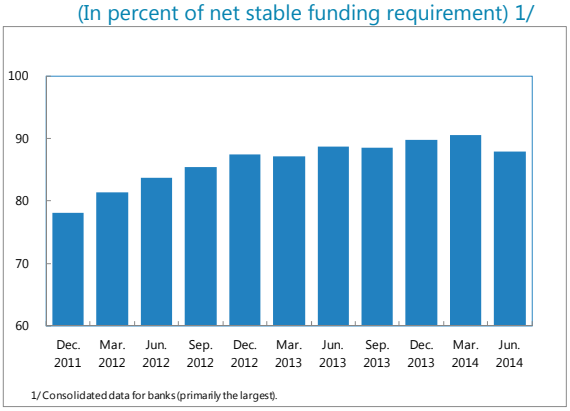
(Years)



Recently stable funding ratio has somewhat declined.

Stable Funding

(In percent of net stable funding requirement) 1/

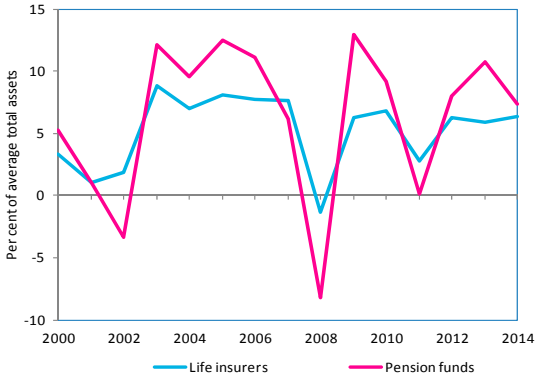


Sources: FSA; Statistics Norway; and Fund staff calculations.

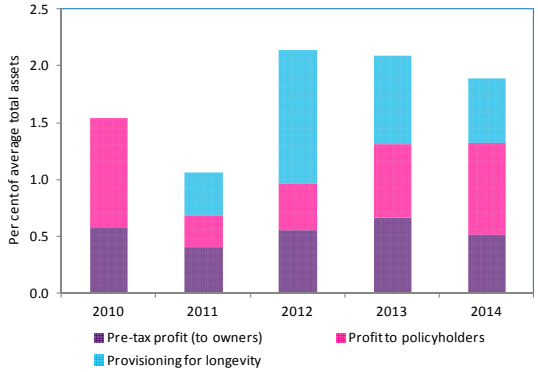
9. The financial condition of insurance companies and pension funds under Solvency I has been satisfactory. The insurance sector is relatively small and concentrated. Insurance companies have low expense ratios, and stable solvency levels under Solvency I (Figure 6).

Figure 6. Insurance Sector Performance Indicators

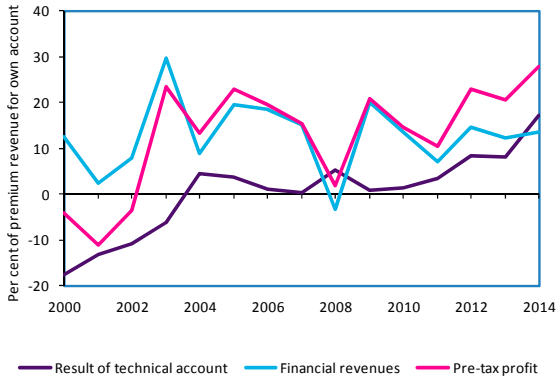
Life insurers have recorded relatively strong returns in the collective portfolio (guaranteed products)…



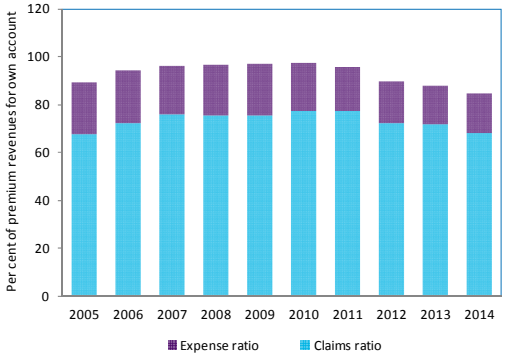
…and, have been profitable in recent years.



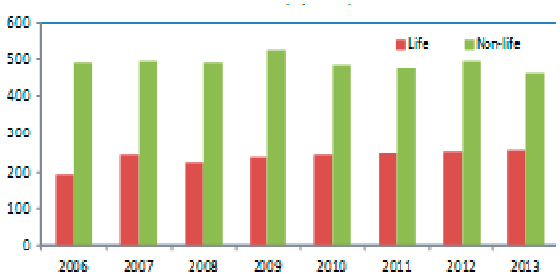
Recently, non-life insurers' earning performance has been even stronger…



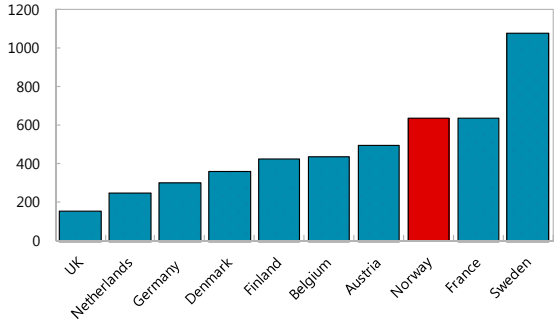
…while they have been able to reduce their combined ratio.



Solvency ratios have been broadly stable.



The solvency ratio in the non-life sector is among the highest in the world.



Sources: Norweigan authorities; EIOPA; and IMF staff estimates.

10. Good progress was made in implementing the 2005 FSAP recommendations, although only limited steps were taken to strengthen the formal independence of the FSA (Appendix I).

RISKS REQUIRE PROACTIVE MITIGATING EFFORTS

Key financial stability risks are related to the impact of sharp reductions in oil prices and their durability over the medium term, high and rising household debt and property prices, banks' reliance on wholesale borrowing, and regional interconnectedness. The impact on financial institutions of lower oil prices (particularly if continued over the medium term), declining oil investments, and a housing price correction would come mainly through weaker economic activity, higher unemployment, and deteriorating corporate and household balance sheets.

A. Macrofinancial Risks

11. A protracted period of low oil prices or slow growth in advanced and emerging economies or a disruption in global liquidity could have a major impact on the Norwegian economy. The sound policy frameworks and large fiscal buffers notwithstanding, protracted lower oil prices could have significant adverse effects on growth and employment, which, in turn, would erode the quality of bank loan portfolios. Furthermore, the economy is exposed to real and financial shocks through its close interconnectedness with the Nordic region and the rest of the world. Similar to the experience during the global financial crisis, a potential disruption in global liquidity could have a strong impact in Norway (Appendix II).

12. In this context, high household indebtedness presents a key source of vulnerability. Along with rising house prices, household indebtedness has increased to high levels (Figures 7 and 8).[1] Household debt was at about 220 percent of disposable income at end-2014, one of the highest among members of the Organization for Economic Co-operation and Development (OECD). About 85 percent of household debt is residential mortgages, typically with variable interest rates; and about 14 percent of new loans are interest only. Banks are highly exposed to households through mortgage lending, which accounts for about 57 percent of total bank lending.

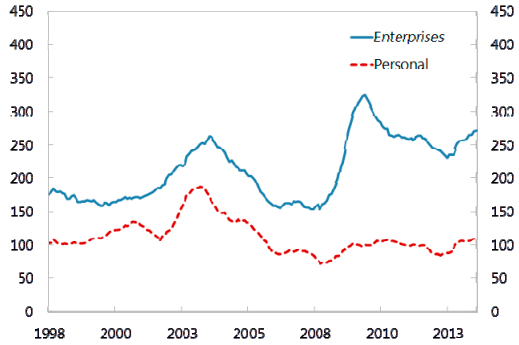
13. Households are particularly vulnerable to house price corrections and interest rate risks. A sharp rise in interest rates—especially if coupled with large declines in house prices or in household income and employment—could force households to cut consumption sharply to be able to continue to service the debt. This could, in turn, hurt the banking sector indirectly, due to a

[1] House prices have risen steadily in real terms since the early 2000s with short-lived reversals in 2007–2008 and 2013. Various factors have contributed to the housing boom, including demand and supply factors (rapid income growth; immigration-driven increase in the population; low interest rates; supply constraints related to regulations on land use and minimum unit size) and institutional factors (preferential tax treatment for owner occupied properties including full deductibility of mortgage interest payment and lower wealth tax than on other financial assets). Estimates suggest that housing prices may be overvalued by about 25–60 percent, depending on measures of overvaluation (Figure 7).

rise in credit risks related to a slow-down in the corporate sector. Under current conditions, risks seem contained, including because of Norway's well-developed safety nets, but the share of vulnerable household debt could rise if economic conditions deteriorate significantly (Box 1).[2]

14. Corporate borrowing from banks has recently slowed, and enterprises have raised more capital in the bond market and abroad. The debt servicing capacity of the enterprise sector has been stable at the pre-crisis level, and the equity ratio has increased since the global financial crisis (Figure 9). The commercial property sector is a source of vulnerability due to the large share of bank lending to this sector, with particularly large exposures to the commercial property market in Oslo, where prices have increased more rapidly than residential house prices since the mid-2000s. Banks' total exposures to other "risky sectors" such as shipping, fisheries and fish farming are modest, but individual bank exposures can be large.

Number of Bankruptcies
(Total bankruptcies, 12 months MA)



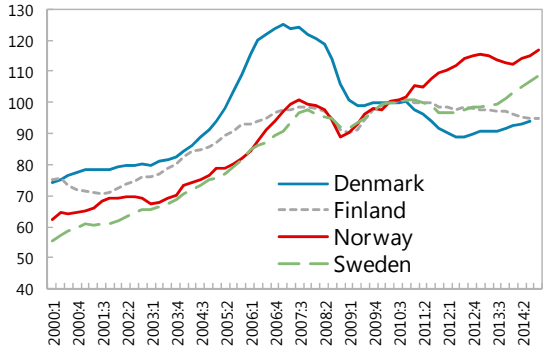
Source: Norwegian authorities.

[2] Household lending has historically not generated significant increases in NPLs or large losses for banks, reflecting the facts that (1) mortgages are full recourse loans (although a framework exists that allows a reduction in the unsecured part of the debt burden for borrowers in severe payment difficulties, with the cost borne by lending banks), and (2) a well-developed and generous social welfare system supports households' ability to service their debt during downturns.

Figure 7. Real Estate Prices

Housing prices have grown steadily in Norway.

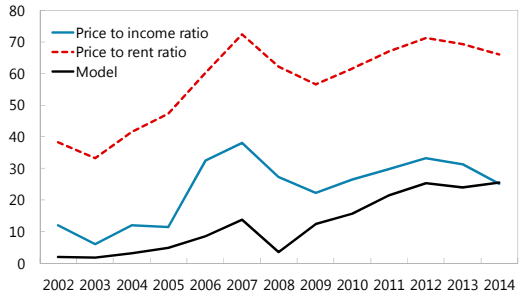
Residential Property Prices in the Nordic Area



Housing prices are estimated to be significantly overvalued.

Estimated House Price Valuation Gaps in Norway 1/

(In percent)

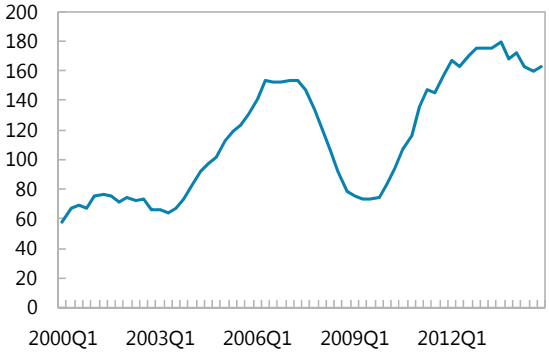


1/ Based on the methodologies as in the 2013 NRR and 2013 Norway Article IV selected issues.

Building orders for residential properties have softened recently…

Stock of Building Orders for Residential Buildings

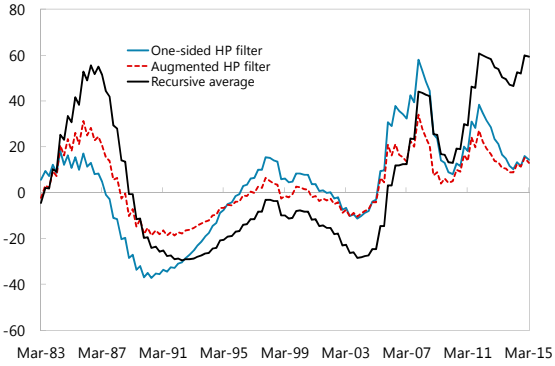
(Index, 2010=100)



…while real commercial property prices started to cool off.

Real Commercial Property Price Gap measures

(In percent)

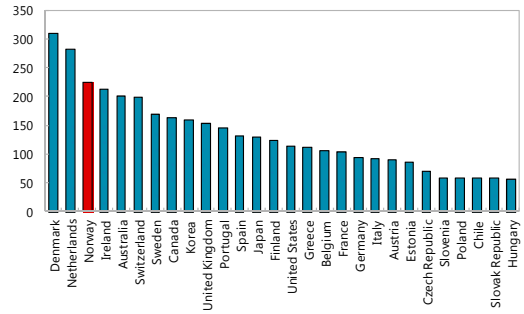


Sources: Norwegian authorities; OECD; and IMF staff estimates.

Figure 8. Household Debt Burden

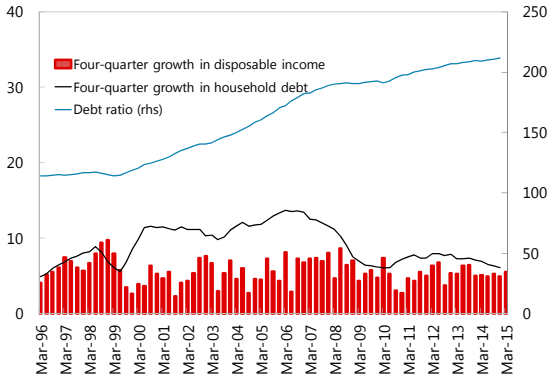
Household debt is among the highest in OECD countries.

Household Debt to Income Ratio
(2013 or latest available)



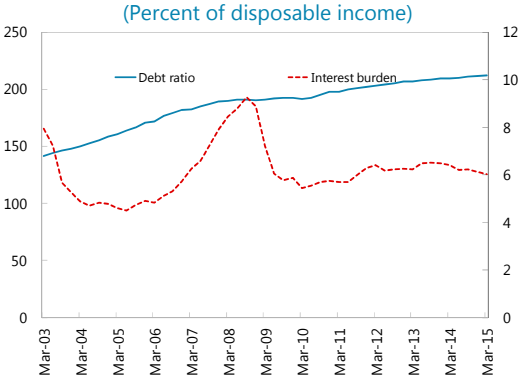
With the household debt-to-income ratio almost doubling in the last decade.

Household Debt to Disposable Income Ratio
(Percent)



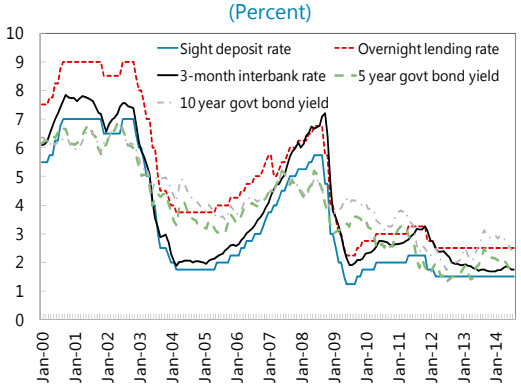
Nevertheless, the interest burden is not high…

Household Debt and Interest Burden
(Percent of disposable income)



…due mainly to low interest rates.

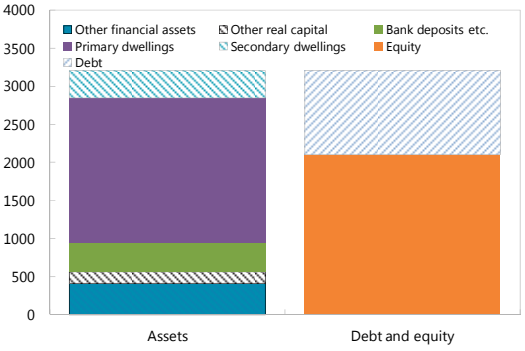
Interest Rate Developments
(Percent)



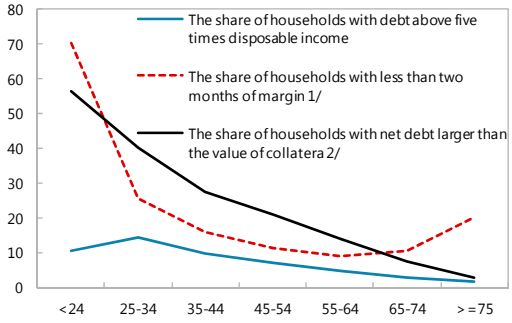
Households' high share of property assets and small liquid asset buffers imply that housing price shocks can adversely affect consumer spending.

Some groups of households are more vulnerable.

Households' Balance Sheet based on Assets Values, 2013 (Thousands of NOK)



Distribution of Vulnerability by Ages of Main Income Earners (Percent, 2012)



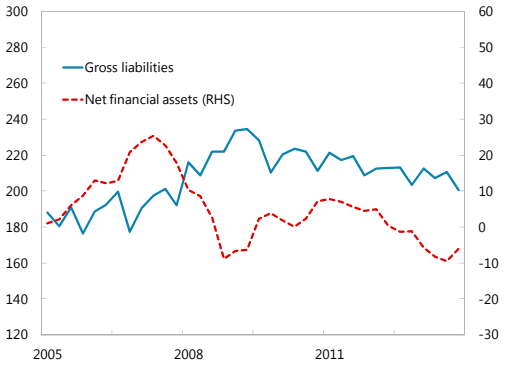
1/ Defined as income minus taxes, interest and standard cost of consumption) below two months of after-tax income.
2/ Net debt is defined as total gross debt minus deposits.

Sources: Statistics Norway; OECD; Norges Bank; and IMF staff estimates.

Figure 9. Corporate Sector Finances

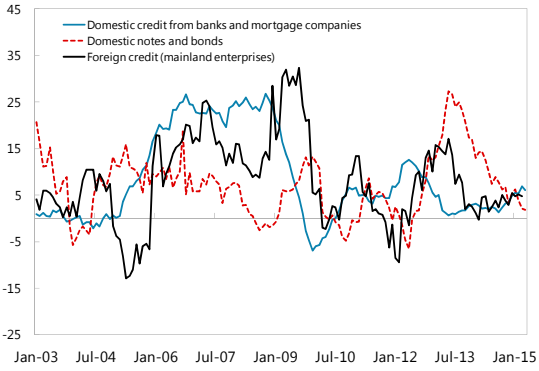
Corporate financial position has stabilized.

Nonfinancial Corporation Financial Position
(In percent of mainland GDP)



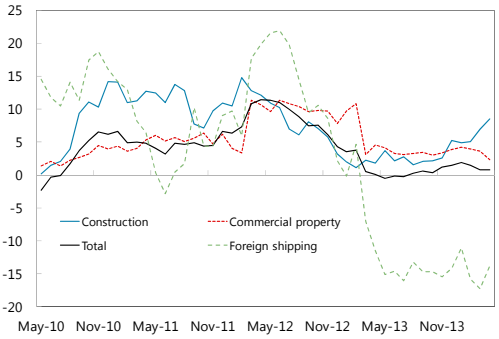
Corporate borrowing from banks has recently slowed…

Credit from Selected Funding Sources to Norwegian Non-Financial Enterprises
(12-month growth; in percent)



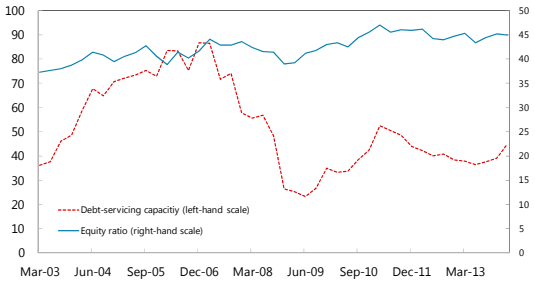
…while banks' lending to the construction and commercial property sectors has been growing.

Banks' Lending to Nonfinancial Enterprises in Selected Industries
(12-month growth; in percent)



The debt servicing capacity of the corporate sector has been stable, while its equity ratio has improved.

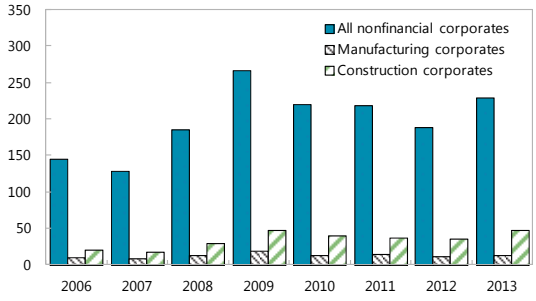
Debt-Servicing Capacity and Equity Ratio for Listed Companies 1/
(In percent)



1/ Pre-tax profit plus depreciation and amortization for the previous four quarters as a percentage of interest-bearing debt for non-financial companies included in the OBX index (excl. Statoil). Equity as a percentage of assets for non-financial companies on Oslo Bors.

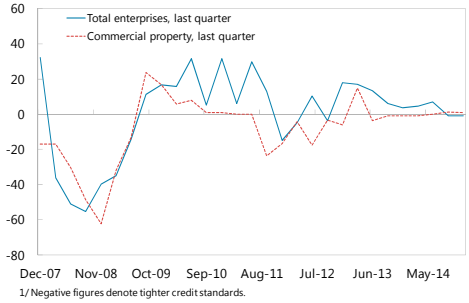
Bankruptcy numbers slightly increased in 2013.

Average Number of Bankruptcies
(Per month)



Banks' credit standards have remained broadly neutral.

Changes in Banks' Credit Standards for Nonfinancial Enterprises 1/
(In percent)



1/ Negative figures denote tighter credit standards.

Sources: Norwegian authorities; and Bloomberg.

Box 1. Household Debt Stress Tests

Despite high debt levels in recent years, Norwegian households do not appear to face significant payment capacity problems under current conditions.[1] A Norges Bank study found that only about 2 percent of household debt is "more vulnerable," and the proportion of vulnerable households is about 1 percent.[2] These results are based on households debt meeting three risk criteria: (i) debt above five times disposable income; (ii) financial margin (income minus taxes, interest and ordinary living expenses) below one month of after-tax income; and (iii) net debt (debt minus deposits) larger than the value of dwelling.

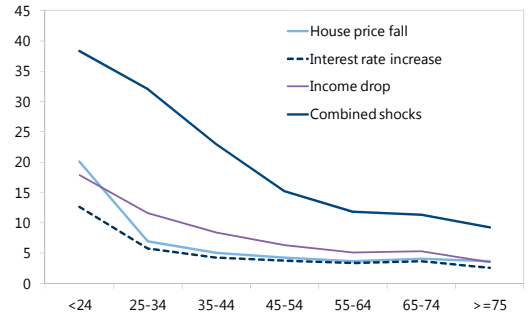
Share of Household Debt and Households Breaching the Three Criteria
(In percent)

	Debt	Households
Interest rate increase	4.6	1.9
House price fall	5.5	2.5
Fall in income	8.1	3.4
Combination of the three shocks	21.0	8.6

Note: Margin below two months after-tax income was used for the second criterion.

To gain insights into households' vulnerabilities to a change in economic conditions, the Norges Bank approach was expanded to include a set of shocks. These shocks are included separately and combined: (i) lending rate increase of 2 percentage points; (ii) real house price drop by 40 percent; and (iii) income (after tax) drop of 20 percent. The share of vulnerable debt rises to about 5 percent, 6 percent, and 8 percent, under each scenario, respectively. The proportion of vulnerable households rises but remains relatively low. On the other hand, under the severe scenario with combined shocks, the share of vulnerable debt increases to 21 percent, and the proportion of vulnerable households rises to about 9 percent. The impact varies across different income deciles and age groups. In particular, lower income and younger households are disproportionally more affected by the three combined shocks.

The Share of Vulnerable Household Debt by Age
(Percent, 2012)



Sources: Norges Bank and Fund staff calculations.

The proportion of vulnerable households remains below 10 percent under the severe scenario, but the aggregate number masks distributional effects. Household vulnerability could rise under severe stress scenarios, and these effects will be felt unevenly across different income and age groups.

[1] Norges Bank also conducts various scenario analyses using the household level data.

[2] See Norges Bank, *Financial Stability Report 2014*.

B. Financial Institutions

Banks

15. Banks are exposed to potentially high credit risks, which may materialize if macroeconomic conditions deteriorate significantly. The overall limited diversification of the economy, the high leverage of the private sector, and an overvalued real estate market in a low interest rate environment accentuate these risks.

- Lending to the private sector has increased considerably faster than GDP, raising the leverage in Norway well above the average for OECD countries. Since the mid-1990s, the ratio of credit to mainland GDP has almost doubled. Thus, a severe slowdown of the domestic economy can lead to a deterioration of household and corporate balance sheets.

- Banks' exposure to the oil sector could be larger than suggested by the lending share of merely 1 percent of banks' corporate lending portfolios. In particular, when measured by the percentage of banks' equity returns attributable to oil-related firms, banks' total exposure to the oil sector can be in excess of 30 percent.[3]

16. With 60 percent of wholesale funding from foreign sources (predominantly in foreign currency), banks are vulnerable to turbulence in foreign financial markets. About one-third of the foreign currency funding is used to finance domestic currency assets, equivalent to about 10 percent of banks' total assets. Although banks hedge foreign currency exposures, they do so with FX or basis swaps with maturities not necessarily corresponding to the maturity of the foreign funding, and may therefore be exposed to rollover risks. Even for covered bonds, for which mortgage companies are required to fully hedge currency risks for the maturity of the bond, it is common practice for them to arrange for those contracts with the bank holding company, which then could cover the position with shorter term hedges. [4]

17. Banks may face challenges in meeting the envisaged LCR.[5] Given the limited stock of high-quality liquid assets denominated in domestic currency, NB has proposed that the LCR requirement should be set at 60 percent in domestic currency, and the total "all currency" LCR requirement at 100 percent. The FSA recently proposed not to have individual currency LCR, but to address the issue under Pillar II supervisory process. There was also a gap between the longer-term lending and the available stable funding under the previous reporting requirements (the 17 largest banks' NSFR averaged below 90 percent at end-June 2014, down from 93 percent at end-2013), but not on average under the new reporting requirements.

[3] Bjornland and Thorsrud (2013) find very similar estimates for the contribution of oil-related activity to mainland GDP.

[4] This is only the case for fully-owned mortgage companies with an acceptable rating.

[5] According to EU regulation, LCR requirements will be implemented (gradually) from October 2015 and the NSFR requirements will be implemented in 2018.

18. The LCR and NSFR may not be sufficient to fully address vulnerabilities in funding positions. The largest Norwegian banks hold substantial liquid assets in foreign currencies, which could be funded by borrowing at marginally longer periods than the 30-day threshold period under the LCR. Although the requirement applies on a continuous basis, this inflates banks' liquidity ratios to some extent, rendering them less useful indicators of the liquidity situation.

19. Although banks' increasing reliance on covered bond issuance has yielded important benefits, it has also increased asset encumbrance, creating new risks. The issuance of secured debt has strengthened the maturity profile of the banks. At end-June 2014 the average maturity of the wholesale funding was 3.3 years for all banks, and 4.4 years for the largest banks which also are the most wholesale financed banks. On the other hand, the rising issuance of covered bonds increases losses that may be incurred for unsecured creditors in case of default, and reduces the amount of capital available for bailing in creditors in the event of a bank resolution. In particular, the high share of secured funding is disadvantageous for non-guaranteed depositors and the BGF.

20. In addition, because banks own substantial amounts of other banks' covered bonds, the system would become vulnerable in a crisis when banks may try to sell each other's covered bonds to meet liquidity needs. In this context, the authorities should consider measures to force banks to internalize the costs that such cross-ownership of assets may impose on the system, while being aware that many possible remedial measures may have negative side effects as well.

Insurance and Pension Sectors

21. Life insurers face major challenges going forward, which heightens the importance of sound risk management and effective oversight by supervisors. First, a continued low-interest rate environment would adversely impact earnings and the claims-paying capacity over the medium term, since some 83 percent of life insurers' liabilities carry guaranteed minimum rates of return: at end-2013, the guaranteed return averaged 3.2 percent, which was higher than the return on 10-year government bonds, and the difference seems to have widened in 2014–15. Second, life insurers are exposed to longevity risks. Third, pension providers are required to apply new mortality tables, which will significantly increase technical reserves; due to the large revisions, companies have been granted a transition period of seven years to increase the value of existing technical provisions. In response, insurers have recently started to encourage existing policyholders with guaranteed products to switch their policies to nonguaranteed products, thus shifting risks from insurers towards policy holders.

22. The implementation of Solvency II from 2016 represents additional challenges for life insurers (like in many peer countries). Under Solvency II, liabilities will be measured at fair value, applying the current low interest rates (instead of the guaranteed rate), which will increase the

estimated value of future liabilities.[6] Furthermore, the increased capital requirements on paid-up policies under Solvency II pose a particular challenge to insurers. The FSA has proposed to implement Solvency II through allowing (i) a 16-year transition period for implementing the Solvency II capital requirements and (ii) the use of volatility adjustment. In contrast, for non-life insurers, the transition to Solvency II is expected to lead to a reduction of technical provisions. This is because their current fluctuation provisions requirement represents a more demanding approach than the "best estimate" ("expected value") assessment under Solvency II.

C. Interconnectedness

23. The Norwegian economy and financial system are well integrated into the Nordic region, making it desirable to include a regional dimension in future stress tests. To a large extent, financial integration is through the direct provision of credit and services to non-financial sectors by foreign branches and subsidiaries—a business-driven model and not a cross-border wholesale funding model. Although this business-driven model of financial integration may be less sensitive to short-term financial shocks emanating from elsewhere in the Nordic region, it may make local credit markets more sensitive to macroeconomic developments in other countries in the region (see IMF 2013).

24. In addition to regional linkages, connections with global financial centers are also important. Evidence based on a variance decomposition of the volatility of equity returns suggests that Norwegian banks are significantly affected by the performance of banks in Sweden, the Euro Area, the United States, and the United Kingdom. American and British real estate companies and European insurers are the most significant non-bank sectors affecting the behavior of Norwegian banks' stocks. Norwegian insurers are significantly affected by banks from the major financial centers and by foreign insurers, while the Norwegian real estate sector is very exposed to the performance of American and British financial firms.

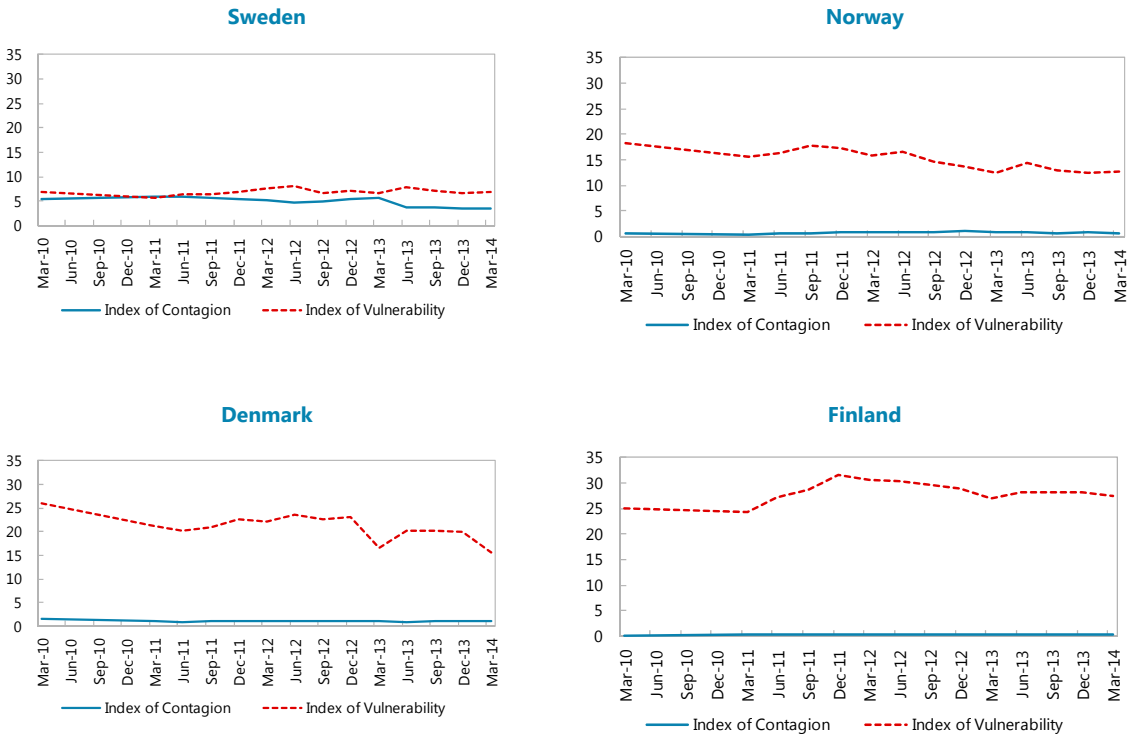
25. Foreign banks and institutional investors hold 70 percent of Norwegian covered bonds, but more detailed and complete data are needed on foreign ownership of bonds issued by banks and mortgage companies. A careful analysis of these data will serve to improve the quality of funding stress tests.

26. Although Norwegian financial institutions have limited potential as a source of shocks to foreign institutions, they are vulnerable to shocks stemming from abroad. An analysis based on data on bank claims from the Bank for International Settlements (covering only a part of funding risks) suggests that this vulnerability is similar to that of peer countries and has been declining (Figure 10). Similarly, simulations of funding shocks coming from global financial centers, namely the euro area, the United Kingdom, and the United States, show that Norwegian banks are now less exposed to such risks.

[6] The maximum guaranteed rate for new policies has been reduced several times, and was reduced from 2.5 percent to 2 percent starting in January 2015. The new rate will be used in the valuation only of new liabilities.

Figure 10. Vulnerability and Contribution to Contagion of Nordic Banks

Vulnerability to external funding shocks is lowest in Sweden and has been declining in Norway. Only Sweden displays some contagion potential to banks in other advanced economies.



Sources: BIS *Consolidated Bank Statistics*; and IMF staff calculations.

Note: Indices of contagion and vulnerability are based on Espinosa-Vega and Solé (2014). The vulnerability index for Country A roughly measures how often Country A's banking sector becomes insolvent if other banking sectors induce a funding shock. The contagion index for Country A roughly measures the number of banking sectors that become insolvent if Country A's banking sector does not roll over funding. The funding shock simulation underlying the indices assumes that 95 percent of claims owned by banks from a given national banking system over banks in other countries cannot be rolled over. Consequently, borrowing banks must liquidate assets to meet this shortfall but at a 50 percent loss, which erodes their equity. The indices only measure contagion and vulnerability to shocks originating from BIS reporting countries, do not take into account funding from central banks, do not take into account asset quality, and are not a measure of the overall financial strength of each country's banking sector.

27. The possibility of cross-sectoral contagion in Norway is to some extent limited by the regulations on exposures to companies in a conglomerate. In principle, institutions may not provide loans/guarantees to another company within their group without consent from the MOF. This rule covers also insurance companies' investments in bonds issued by another undertaking within the group, but deposits and covered bonds are exempted, within quantitative limits and governed by specific purposes. Overall, bank instruments are not a large fraction of Norwegian insurers' assets: at end-2014, insurers' investments in bank debt instruments averaged 7 percent of total assets in the life sector and 9 percent in the nonlife sector.

28. The analysis of spillovers across institutions suggests that the potential for the transmission of financial stress among Norwegian banks is a function of size, with the DNB and Nordea exhibiting the highest transmission potential. In this context, the authorities should consider resuming the regular monitoring of bank-to-bank direct and indirect exposures.

D. Stress Tests

29. The transmission of macroeconomic shocks to the Norwegian financial system was analyzed under a baseline and two versions of an adverse scenario. The baseline scenario is based on IMF staff projections as of end-2014. The adverse scenarios assume considerable negative deviations of economic activity from the baseline forecast path.

- The adverse scenario with no monetary policy response assumes an upsurge in global financial market volatility and a slowdown in global growth (Appendix II), possibly on concerns about weakening fundamentals globally. A slowdown of Norway's key trading partners leads, inter alia, to persistently low oil prices, with a strong downward impact on domestic growth, higher unemployment, and a sharp correction in real estate prices. The level of GDP declines by 16.1 percent below the baseline by 2019 (Figure 11).

- The adverse scenario with a monetary policy response assumes the same external shocks as above, but presumes a monetary easing (a 1½ percentage point cut in the policy rate in 2015-16; without fiscal measures) to counteract the effects of the shock, in line with NB's assumptions. The level of GDP declines 13.9 percent below the baseline.

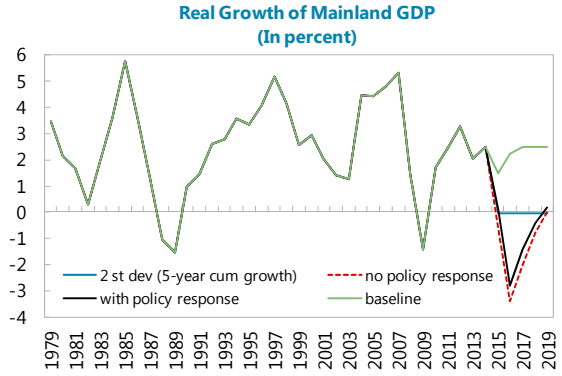
- The adverse scenarios were calibrated to reflect a severe deterioration of key macroeconomic factors, including: (i) sustained lower nominal oil prices at US$40 per barrel over the entire stress testing horizon, considerably below the baseline projection of US$77 by 2019; (ii) an increase in money market rates by about 200 bps and wholesale funding spreads by an additional 150 bps (relative to the baseline); and (iii) a 40 percent decline in real property prices over five years, in line with international boom-bust episodes.[7]

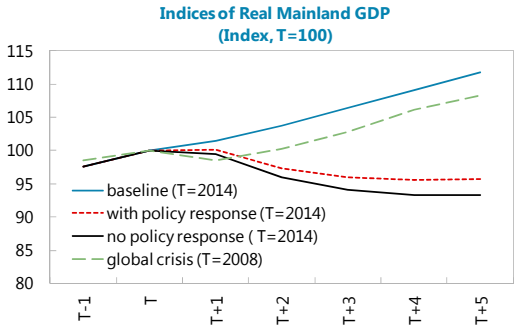
[7] The spike in funding costs is meant to capture the effect of dislocations in global funding and the FX swap markets, in view of the importance of the latter in Norwegian banks' funding models.

- These shocks translate to a decline of 2¾ to 3.1 standard deviations of five-year cumulative real GDP growth rate relative to the baseline. Such stress is considerably more severe than several other FSAPs, but broadly in line (albeit of longer duration) with assumptions in previous top-down (TD) stress testing exercises by the FSA and NB.

- The impact of these risks on the banking system was assessed through TD and bottom-up (BU) stress testing exercises.[8]

Figure 11. Real Growth of Mainland GDP under Various Scenarios





Sources: Norwegian authorities; and IMF staff estimates.

Bank Stress Tests

30. Solvency tests suggest that major banks' capital needs under severe stress should be manageable. Under the IMF TD approach**,** the CET-1 ratio would fall by 6.7 percentage points to 6.3 percent under the adverse scenario without policy response (Figure 12). The loss in capitalization is driven by higher loan losses, the rise of RWAs, and higher funding costs (contributing by about 1.4 percent, 0.8 percent, and 0.3 percent a year to the decline of the CET-1 ratio, respectively; Figure 13). The recapitalization needs under the adverse scenario without policy response is estimated at 4.6 percent of GDP by 2019 (Figure 14).[9] Parallel FSA and NB stress tests estimated slightly lower losses than the IMF, reflecting the IMF's use of parameters based on the global experience with severe crises.[10]

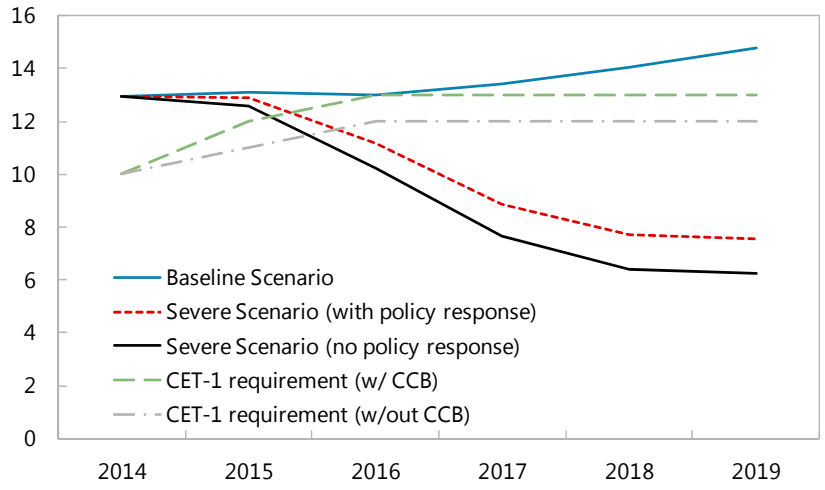
[8] For a more detailed discussion of bank stress tests, see the accompanying technical note on the subject.

[9] Of the potential recapitalization needs by 2019, about 1.4 to 1.9 percent of GDP would be attributable to the introduction of Basel III (depending on the TD approach).

[10] The IMF approach is based on empirically determined "rules of thumb" to capture the link between bank losses and macroeconomic conditions at times of extreme distress, based on international experience. See Hardy, Daniel C. and Christian Schmieder, 2013, "Rules of Thumb for Bank Solvency Stress Testing," IMF Working Paper, WP/13/232.

Figure 12. CET-1 Ratios under Various Stress Testing Scenarios

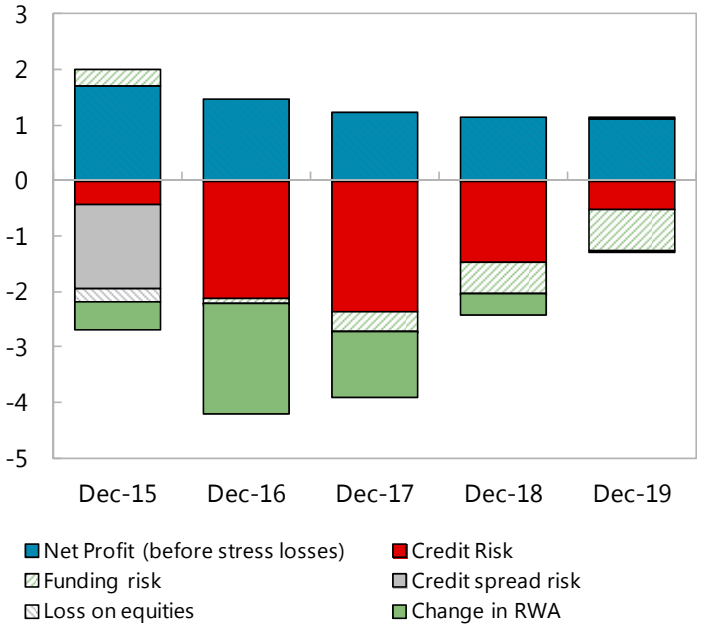
(In percent)



Sources: Norges Bank; FSA; and IMF staff estimates.

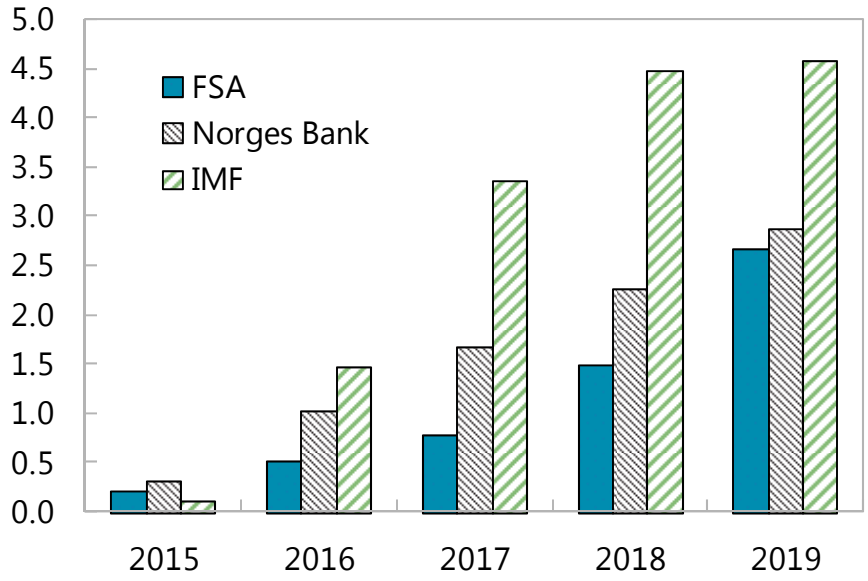
Figure 13. Contributions to Changes in CET-1 Ratios, IMF Estimates
Adverse Scenario without Policy Response

(In percent)



Source: IMF staff estimates.

Figure 14. Expected Recapitalization Needs
(In percent of GDP)



Sources: Norges Bank; FSA; and IMF staff estimates.

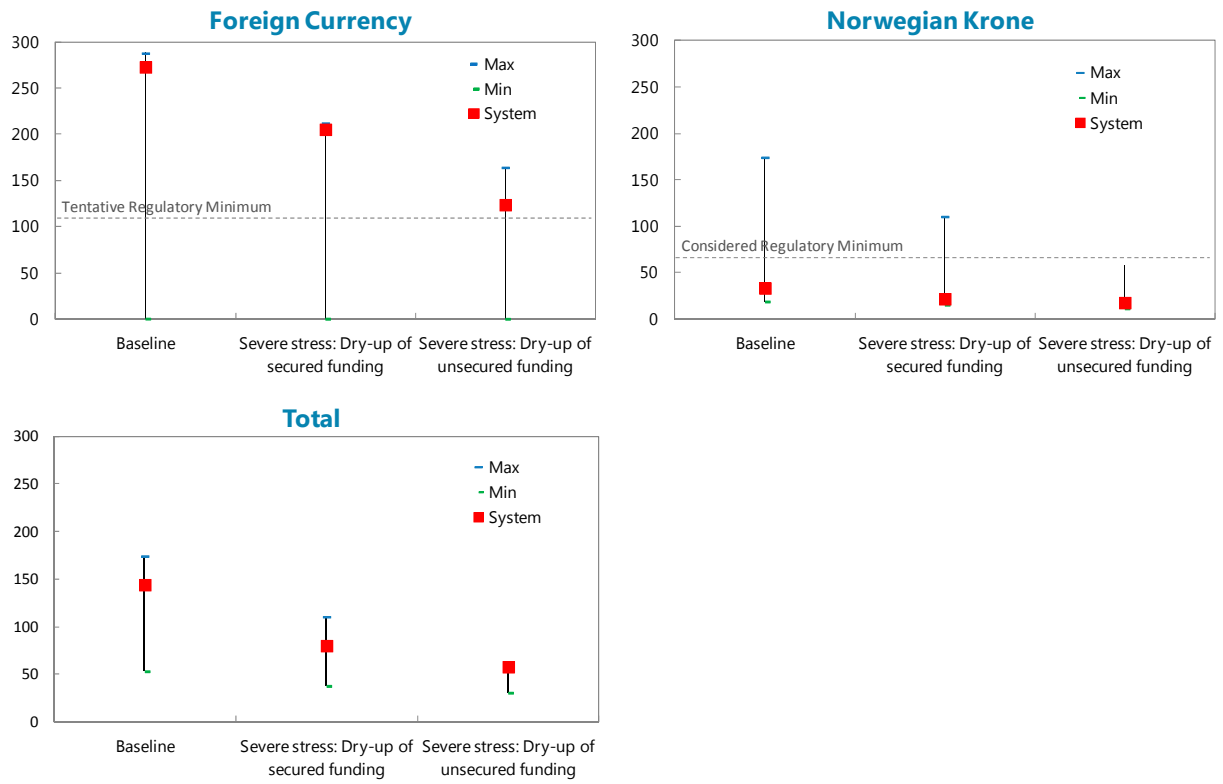
31. The adverse effects on capitalization are significantly milder in BU stress tests, suggesting that banks should consider introducing more conservative assumptions in their models. Under the BU approach, the CET-1 ratio for the banking sector declines by 0.6–1.4 percentage point over the stress testing horizon, far less than the 6.7 percentage point drop in the TD tests. The discrepancy is driven by much lower credit loss rates in the BU approach, reflecting in part expert judgment in modeling losses on large corporate exposures. Also, banks' estimates of household losses are relatively muted, given limited history of past losses.

32. Sensitivity tests suggest that Norwegian banks' risks related to credit concentration are limited. Credit concentration risk was evaluated via BU simulations of defaults of banks' largest borrowers (up to the 10 largest borrowers). Banks were found to be able to absorb defaults of their largest clients, with average CET-1 ratios remaining above the regulatory minimum.

33. Liquidity stress tests show that the Norwegian banking sector remains exposed to risks related to the limited availability of liquid NOK instruments. Potential stresses were evaluated based on two scenarios: (i) *a complete dry-up of unsecured wholesale funding*, motivated by the experience of the 2008 crisis; and (ii) *a complete dry-up of secured wholesale funding* (including corporate deposits), and strong outflows of committed credit and liquidity facilities. Even in the baseline (based on the assumptions under the standard LCR) some banks fall short of the 60 percent minimum NOK LCR, currently proposed by NB. The aggregate NOK LCR for the banking sector declines from 33 percent to 18 percent under a dry-up of unsecured wholesale funding, with the corresponding NOK liquidity gap growing to NOK 306 billion from NOK 120 billion in the baseline. Banks' FX liquidity positions are generally better. Most banks are above the 100 percent threshold under Basel III, with aggregate LCR at 124 percent in case of a complete dry-up of unsecured

funding. The FX funding gaps are generally small, and increase up to NOK5.3 billion in case of a complete dry-up of unsecured wholesale funding from NOK3 billion in the baseline (Figure 15). Banks' liquidity ratios improve only partly under the broader recognition of covered bonds as HQLAs in the new EU LCR rules.[11]

Figure 15. Liquidity Coverage Ratios in Baseline and under Stress, end-2014
(In percent)



Source: IMF staff estimates based on data from the FSA.

Note: The secure wholesale market dry-up scenario also assumes higher deposit and contingency funding run-offs relative to the unstressed LCR.

34. Although the authorities monitor closely banks' liquidity positions, there is scope for enhancing their liquidity stress testing frameworks. In particular, the authorities could consider performing liquidity stress tests using the structure of cash flows at various maturities; or performing

[11] Certain qualifying covered bonds can be categorized as Level 1 HQLA (in a newly created Level 1B category), up to a ceiling of 70 percent and at a haircut of 7 percent. Covered bonds that don't qualify as Level 1B assets can also be part of Level 2A HQLA (with haircuts in line with Basel rules), and as Level 2B assets (under the EU rules). Under the EU Delegated Act (adopted in October 2014), the set of permissible HQLAs was expanded to include high-quality covered bonds that meet certain criteria.

customized versions of the LCR more closely aligned with banks' funding profiles.[12] The adoption of such approaches could take place over time, particularly in view of the changing nature of banks' reporting requirements, but it would facilitate a more systemic approach to identifying potential liquidity difficulties.

Insurance Sector

35. Stress tests under Solvency II (simplified approach) combines the above shocks with a number of underwriting, counterparty default, and other insurance-related shocks, as applied under the FSA/ EIOPA stress tests.[13,14] A third scenario with a combination of ad hoc shocks better tailored to insurance companies' vulnerabilities, with more adverse consequences for insurers, was also analyzed. For example, instead of the 250 bp increase in interest rates, it is assumed that interest rates will decline by 100 bps (Appendix IV).[15]

36. The adverse scenarios have large negative effects on life insurance companies. The solvency indicators of the insurers drop substantially, with their capital buffer wiped out under all three scenarios (with severe shocks). Their buffer capital utilization ratio (BCU, reverse of the Solvency Coverage Ratio, SCR) would increase to 139, 142, and 180 percent, respectively, under the three scenarios. The largest contribution to the deterioration comes from the shocks to equity prices, real estate prices, and credit spread (Figure 16).[16]

37. The rules for the transition to Solvency II (over 16 years), including the envisaged volatility adjustment, imply a significant reduction in the estimated regulatory capital needs of the companies under the above scenarios. Without the transition rules, the companies' capital shortfall to fully cover all the risks (without restoring capital) would amount to 39 percent, 42 percent, and 80 percent of the sample's available capital before stress, in the three scenarios, respectively, or 1 percent, 1.1 percent, and 2.1 percent of 2014 GDP. With the transition rules, these capital needs are significantly reduced.

[12] Various TD supervisory liquidity stress testing frameworks are discussed in Basel Committee on Banking Supervision, 2013, "Liquidity stress testing: a survey of theory, empirics and current industry and supervisory practices", *Working Paper No. 24*. These include balance sheet approaches (e.g., Bank of Italy); simulation methods (e.g., Netherlands Bank); or more integrated approaches (e.g., Austrian National Bank).

[13] The shocks are assumed to happen instantaneously. Most liability side risks were estimated by the insurance companies under the FSA's stress tests, independent of the FSAP, which were taken as given by the FSAP team. More resources are needed for the FSA to assess the liability-side risks.

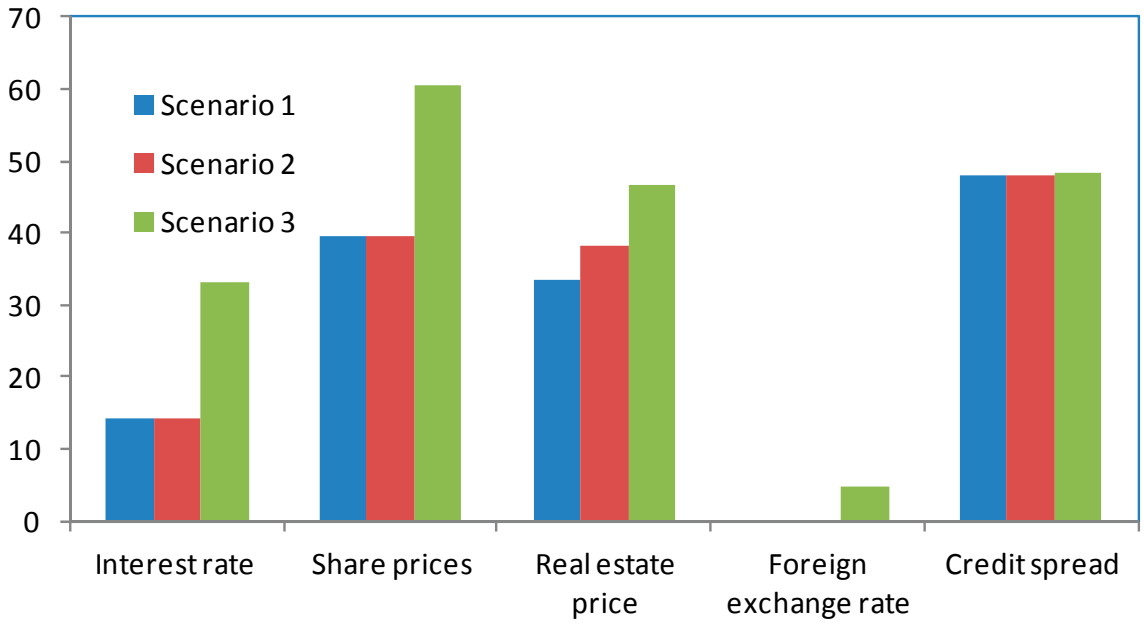
[14] The combination of risks under the FSA/EIOPA assumptions correspond to the Value-at-Risk of the basic own funds of insurers subject to a confidence level of 99.5% over a one-year period, implying that such a shock could happen once in about 200 years.

[15] For a more detailed discussion of insurance stress tests, see the accompanying technical note on the subject.

[16] While these results are similar to the results of the authorities' own stress tests under Solvency II, the authorities' stress tests under Solvency I and the companies' own stress tests (performed on a consolidated level) suggest much less vulnerability to shocks.

Figure 16. Life Insurance Stress Tests: Factors Contributing to Increases in BCU After Shocks

Most contributing market risk factors are risks related to credit spread, share prices, and real estate prices.



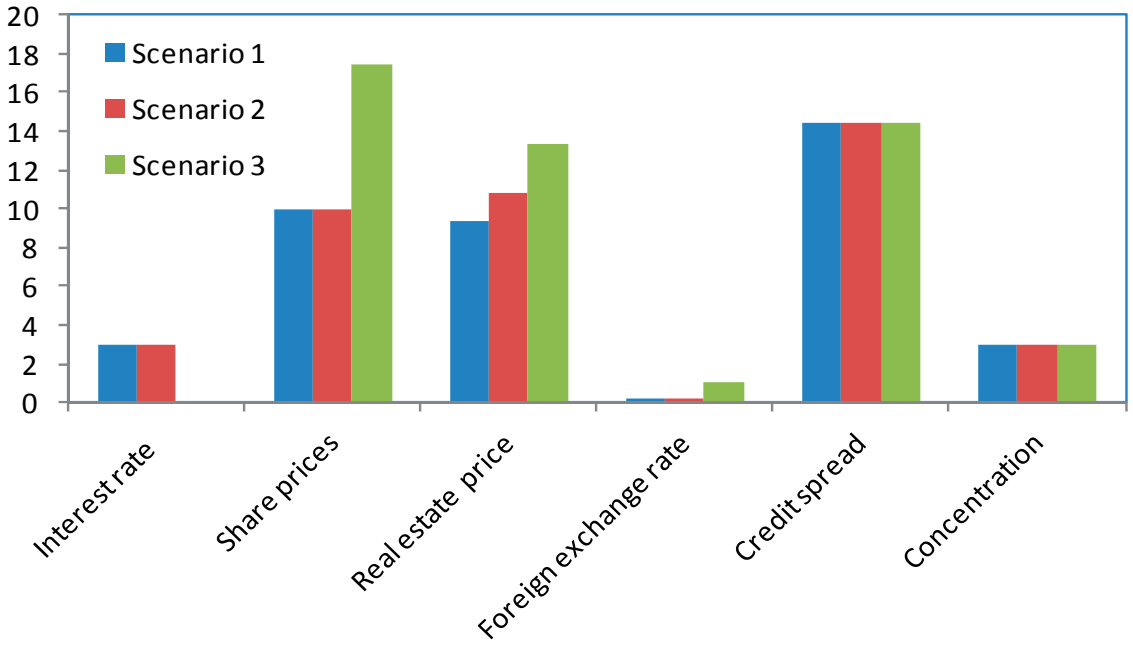
Sources: Norwegian authorities; insurance companies; and IMF staff estimates.

38. Non-life insurers show a much higher degree of resilience in the stressed scenarios. This is due mainly to their smaller asset-liability duration mismatches and the gain from discounting their insurance liabilities under Solvency II (Figure 17).

39. At a conglomerate level, financial institutions could weather the combined losses from their banking and insurance operations. However, during a crisis there could be competing demands on the conglomerate capital, which would make any resolution difficult. Therefore, the authorities should (i) require that the insurers with weak capital adequacy are recapitalized on a solo basis, and (ii) identify systemically important companies, and require them to prepare a resolution plan, and conduct their resolvability assessments. In this context, the FSA should continue to constrain dividend payouts by the weakly capitalized companies.

Figure 17. Non-Life Insurance Stress Tests: Factors Contributing to Increases in BCU After Shocks

Most contributing market risk factors are risks related to credit spread, share prices, and real estate prices.



Sources: Norwegian authorities; insurance companies; and IMF staff estimates.

PRUDENTIAL FRAMEWORK COULD BE STRENGTHENED FURTHER

40. Norway has robust prudential frameworks, with well-developed micro and macroprudential policies and practices to identify and contain financial stability risks, although there is scope for further improvements. The authorities have been proactive in containing risks and enhancing the resilience of the financial system to shocks, including through adopting more stringent capital requirements than in many peer countries. Nevertheless, imbalances have continued to build up suggesting that there is need for additional measures.

A. Macroprudential Framework[17]

41. While the ultimate responsibility for financial stability resides with the MOF, key macroprudential powers and responsibilities are allocated to NB and the FSA. Although the MOF generally bases its decisions on advice from NB and/or the FSA, there have been cases when it has overruled the FSA's advice. There is no committee for macroprudential policy. The arrangements by NB and the FSA for giving advice differ across the various instruments—with NB's advice on

[17] For a more detailed discussion of macroprudential policy, see the accompanying technical note on the subject.

countercyclical capital buffer (CCB) based on a transparent and elaborate framework, regularly published, while the FSA's advice on LTV is not discussed with NB—could pose challenges in coordinating individual measures. The CCB and LTV are two examples of macroprudential instruments where powers could be further delegated by the Ministry of Finance.

42. This organizational structure has not resulted in "inaction bias," and the authorities have introduced macroprudential measures to address systemic risks. Norway was among the first countries to establish an analytical framework for the countercyclical capital buffer. Requirements for risk-weighted capital are higher relative to Basel III (e.g., Basel I floor on RWAs), and CRR/CRD IV capital and buffer requirements have been implemented earlier than envisaged by the EU timetables. By July 2016, Norwegian banks will be subject to more stringent capital requirements than most European peers, including a minimum CET1 requirement of 7 percent (including the capital conservation buffer), a 3 percent systemic risk buffer, a 2 percent capital D-SIBs surcharge, and a 1.5 percent countercyclical capital buffer.[18,19] In addition, the FSA makes active use of Pillar 2 capital requirements. Banks are also required to implement an 85 percent LTV ceiling on residential mortgage lending and an affordability test by applying a 5 percentage point increase in the interest rate when granting mortgage loans.

43. Good progress has been made in ensuring that macroprudential measures apply to all banks operating within Norway. Most of the measures apply to the branches of foreign banks operating in Norway, through bilateral agreements with the supervisory authorities in Sweden and Denmark, the reciprocity conditions within relevant EU legislation, and the application of guidelines on lending standards to all banks. However, the Basel I RWA floor does not apply to the branches of foreign banks, while reciprocity on the systemic risk buffer will be subject to the incorporation of the CRR and CRD4 into the EEA Agreement. The authorities should continue to make progress on establishing and implementing reciprocity agreements.

44. The authorities have been proactive in adopting measures, including after the FSAP mission was conducted, but there is scope for improvement in some areas. In July 2015, while the requirements on debt servicing capacity and LTV were not changed, the framework was tightened by replacing guidelines with regulations, which provide a stronger basis for follow-up action, for example by allowing corrective orders on banks that breach the requirements. In addition, loans that do not meet the requirements are now limited to 10 percent of the lender's total new loans. The regulation also specifies yearly repayment of at least 2.5 percent of the initial loan (or what the repayment would be on a 30-year annuity mortgage, if lower) for loans with an LTV above 70 percent. Nevertheless, the authorities should consider the following additional measures:

[18] These capital add-ons are appropriate given the high degree of exposure of the economy, and hence the financial system, to volatile commodity prices and inward spillovers (see the IMF Staff Guidance Note on Macroprudential Policy at http://www.imf.org/external/np/pp/eng/2014/110614.pdf).

[19] A number of material weaknesses, found by the Basel Committee on Banking Supervision in the CRR/CRD IV capital framework compared to Basel III, are either not incorporated in the Norwegian capital framework or have limited significance for Norwegian banks.

- **Take additional measures to contain systemic risks from the growth of house prices and household indebtedness.** These could include stricter LTV, and considering loan-to-income or debt service ratio limits to supplement the affordability test.

- **Take additional measures to contain risks related to banks' wholesale funding.** Limits could be placed on (i) the proportion of short-term wholesale funding from abroad, subject to the constraints imposed by the European Union's CRR regulations; and (ii) mismatches between the maturity of currency swaps (and other hedging techniques) and the maturity of the underlying exposures to mitigate roll-over risk. When setting the individual currency LCR requirement, the authorities should consider whether it provides sufficient incentives to banks to limit their short-term wholesale funding. Running more severe funding and liquidity stress tests could help the authorities to identify the most effective measures.

- **Continue close monitoring of banks' issuance of covered bonds, and consider the point at which such issuance should be limited.** The NB's proposal to increase transparency about asset encumbrance is welcome, and the FSA should use its power to restrict excessive asset encumbrance, if needed. Adoption of TLAC/MREL in due course will limit asset encumbrance.[20]

- **Improve the existing institutional structure.** This should include more standardized and transparent procedures for giving advice to the MOF; a transparent "comply or explain" approach by decision-makers; an annual, broader overview of the collective purpose, impact, and effectiveness of the use of macroprudential instruments; and, in due course, greater delegation of decision-making powers over macroprudential instruments to NB or the FSA, based on clear mandates, objectives, and accountability. Alternatively, some macroprudential policy functions could be exercised through a formal committee.

- **Over time, build a more comprehensive and coordinated framework for macroprudential policy.** This should include a clear specification of the overall objectives of macroprudential policy and instruments, both individually and collectively; the expected benefits and costs; and (notwithstanding significant challenges involved) post-implementation reviews of their effectiveness. The authorities should also consider setting medium- to long-term broad ranges for key financial stability ratios (e.g., wholesale funding) as a communication tool to explain their actions.

- **In addition, the authorities should consider fiscal and structural measures to reduce longer-term demand and supply imbalances in the housing market.** In particular, the tax incentives for home ownership could be phased out, and planning and building requirements could be relaxed to stimulate the supply of new housing units.

[20] The TLAC/MREL reform requires banks to hold some unsecured debt that can be bailed-in in a resolution after equity and subordinated debt but ahead of other liabilities. This funding should reduce the issuance of secured funding, including covered bonds, over time.

B. Microprudential Framework

45. The BCP assessment suggests that the regulatory and supervisory framework is generally good. It is largely based on EU supervisory laws which, as a member of the EEA, Norway transposes into national laws. The FSA employs a risk-based approach to supervision with an enhanced focus on institutions of systemic importance and important risks. Its supervisory framework is comprehensive, taking into account macroeconomic and system-wide aspects. Supervision of large banks is frequent and intensive. The supervisor challenges banks and has shown its willingness to act to ensure the safety and stability of the whole sector and individual institutions. Consolidated supervision of financial groups is satisfactory. Solid cross-border supervisory cooperation is taking place, including participation in the supervisory colleges both for banks and insurance firms. This is particularly strong among the Nordic supervisors. Supervisory information is shared with foreign supervisors as necessary.[21]

46. Nevertheless, a number of weaknesses exist in the system. In particular, the authorities should further (i) strengthen the de jure operational autonomy of the FSA, increase supervisory resources to allow an increase in the frequency and depth of inspections of small institutions, and expand the range of its sanctioning tools; (ii) upgrade the rules on related party lending, which are currently narrowly defined; and (iii) improve on limited AML supervision. In addition, there is room for expanding the frequency of the supervisory assessment for small banks and the range of sanctioning tools, and strengthening banks' non-ICT operational risk management.

47. For the insurance sector, a new law incorporating Solvency II was adopted in 2015. This will apply to all life and nonlife businesses, excluding very small marine insurers. Pension funds will not be subject to Solvency II, but will be required to report stress tests based on a simplified Solvency II approach. All insurers have been asked to undertake a forward-looking assessment of own risks and solvency (ORSA) and report the results to the FSA.

C. Financial Market Infrastructure

48. Norway's financial market infrastructures (FMIs) are modern and stable. There is a strong legal basis for the supervision and oversight of FMIs, and the authorities have adequate resources to discharge their duties. Assessments of FMI critical service providers are ongoing.

49. The supervisory and oversight framework for FMI appears to be effective, but there is room to strengthen regulatory cooperation to handle potential risks related to the dependence of FMIs on critical service providers. Risk reducing measures include (i) leveraging by the NB of the FSA's operational and technical expertise in payment systems and establishing oversight expectations for FMI critical service providers. In addition, the crisis management framework in existing cooperation arrangements should be reviewed, and the role of the Financial

[21] For the details, see the accompanying Detailed Assessment of Compliance with BCPs for Effective Banking Supervision.

Infrastructure Crisis Preparedness Committee led by the FSA should be enhanced; and the Norwegian authorities should enter into foreign cooperation arrangements with foreign authorities to oversee central counterparties that have been licensed to operate in Norway.[22]

50. The outsourcing of operations in systemically important payment systems has helped enhance their efficiency, but also raised oversight challenges. Potential improvements could include (i) strengthening the risk management framework and governance arrangements in the NICS; (ii) improving the business continuity plan in the NBO and NICS; and (iii) requiring FMIs to conduct and publish regular assessments (every two years) against the CPMI-IOSCO Disclosure Framework for FMIs.

D. Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT)

51. Norway's AML/CFT framework underwent a comprehensive assessment by the Financial Action Task Force (FATF) in 2014 which found a number of important shortcomings.[23] It recommended, among other things, the following priority actions: (i) commencing work on a more robust national risk assessment with a comprehensive assessment of ML/TF risks and full engagement by all stakeholders, and consequently developing AML/CFT national policies and strategies based on those risks; (ii) updating the AML/CFT law to ensure that preventive measures are consistent with the FATF 2012 Recommendations; and (iii) enhancing AML/CFT supervision so that it is undertaken on the basis of ML/TF risks and assesses the effectiveness of reporting entities in implementing preventive measures, and ensuring that any identified AML/CFT deficiencies are subject to supervisory actions that are dissuasive, proportionate, and effective.

[22] For the details, see the accompanying technical note on FMI.

[23] See FAFT, "Anti-money Laundering and Counter-terrorist Financing Measures", December 2014 at: http://www.fatf-gafi.org/media/fatf/documents/reports/mer4/Mutual-Evaluation-Report-Norway-2014.pdf

SAFETY NETS COULD BE IMPROVED

52. The legal and institutional foundations for crisis management, safety nets, and resolutions are generally well developed, though certain matters will need to be addressed in the transposition of the EU Bank Recovery and Resolution Directive (BRRD) into local law.[24]The legal framework for early intervention, resolution, and winding-up and liquidation contains substantial powers that have been effectively used to resolve banks in the past. However, the framework will require enhancements to bring it into compliance with international best practices and standards, including the FSB *Key Attributes* (KAs). Responsibilities for crisis management and bank resolution among the four safety net players—MOF, FSA, NB, and BGF—are generally well defined. However, establishing adequate operational independence of the resolution authorities remains a challenge. Also, the BGF should consider spinning out its liquidity and solvency support functions to another institution and reconsider having a board comprised of active bankers.

53. Recovery planning for the largest banks is on track, but resolution planning by the MOF, the lead resolution authority, has yet to be initiated. The MOF should initiate resolution planning for banks that could be systemically significant if they fail, including assessing impediments to resolvability, and delegate explicit responsibilities to the FSA. It should also (i) adopt policies for the information it requires on the local aspects of the recovery and resolution plans for subsidiaries and branches of foreign banks that could be systemically significant; and (ii) assess impediments to resolvability of those subsidiaries and branches as stand-alone entities as a contingency.

54. Sources of funding for liquidity and solvency support are in place, but the BGF requires formal policies for provision of ELA and solvency support[25] and a committed back-up funding facility, and the MOF requires a source of resolution funding under its control. NB policies for provision of ELA are in place, and limit assistance to solvent banks. The BGF can offer ELA and solvency support to members, but needs to adopt policies addressing the circumstances, terms, and conditions for such support. It also needs to adopt policies specifying when board members must recuse themselves, considering actual and prospective conflicts of interests in, for example, taking decisions on providing financial support to members. BGF does not have a committed back-up funding facility and should put one in place. The MOF does not have a ready source of resolution funding and should establish one.

55. The authorities have made good use of unilateral, bilateral, and tripartite crisis simulation exercises to enhance preparedness. They should consider (i) adopting a domestic level MOU on crisis preparedness, and (ii) the means to better integrate the BGF into crisis preparedness arrangements and exercises.

[24] For a more detailed discussion of these and other issues relating to the legal framework, please refer to the Technical Note on Crisis Management, Bank Resolution, and Financial Safety Nets.

[25] These should be guided by criteria set out in Article 11 of the EU Deposit Guarantee Scheme (DGS) Directive.

56. The existing legal framework for bank resolution contains some of the recommended key resolution tools, but will require enhancements to fully align with the FSB KAs. Key issues include:

- Clear identification of the roles and responsibilities of each resolution authority and ensuring operational independence.
- Establishing distinct sets of rules for going concern and gone concern resolution.[26]
- Legal protection for the authorities that carry out resolution actions, their officers and staff, for good-faith actions in resolution, including for administration boards under Chapter 4 of the GSA.
- Provisions authorizing use of bridge banks and asset management companies in resolutions.
- Full bail-in powers as a formal resolution power.
- Establishing earlier triggers for resolution.
- Ensuring that the framework adequately addresses cross-border resolutions, in particular transparent and expedited mechanisms to give effect in Norway to foreign resolution measures.
- Suspending early termination clauses that might otherwise be triggered by initiation of resolution but provide appropriate safeguards for financial contracts.

Ensuring that courts cannot unwind resolution actions and in the event a decision is considered unlawful, the remedy is limited to monetary compensation.

[26] Going concern resolution generally refers to official control of an institution without its closure, which can permit a broad range of resolution techniques. Gone concern resolution refers to official control of an institution that is to be wound up and liquidated. In some cases, a resolution may involve the use of both.

Appendix I. Status of the Recommendations of the 2005 FSAP

Recommendations	Status
Key short-term stability-related issues	
Continue carefully monitoring the evolution of household debt and the housing market, and examine whether banks have concentrations of exposures to more vulnerable subgroups of household borrowers.	The authorities monitor the evolution of household debt regularly. Concentrations of exposures to more vulnerable subgroups of household borrowers are monitored through the yearly home mortgage loan survey and through onsite examinations. In the home mortgage loan survey, borrowers are categorized by age. Borrowers with a high debt burden and a large proportion of mortgages with a high LTV ratio are usually in the younger age groups. The FSA has also issued guidelines for prudent mortgage lending for residential purposes. Banks must assess the customer's ability to service overall debt on the basis of his/her income and all costs of subsistence. Their assessment must make allowance for an interest rate increase of at least 5 percentage points. Home mortgage loans must normally not exceed 85 percent of the property's market value. Higher LTV ratios require either additional collateral or a special prudential assessment. FSA monitors banks' adjustment to the home mortgage lending guidelines both through offsite investigations and onsite inspections. These guidelines were made into regulations effective July 1, 2015. Further, FSA has done a sensitivity analysis of household's interest burden. FSA, in conjunction with Statistics Norway, has calculated the interest burden (interest expenses/income after tax) in the household sector for 2013. Stress test have been performed to see what the situation for households would have been had the interest rate at end-2013 been, respectively, 2 and 5 percentage points higher than today's level.
Given the reduced risk weighting of mortgages under Basel II, carefully consider whether additional capital requirements for banks should be required under Pillar 2.	This issue is addressed by amendments in Pillar 1.
Continue to carefully monitor the risk of spillovers, in extreme events, resulting from the two-tier payments arrangements, and examine the scope for increasing the use of collateral in interbank market exposures.	NB oversees the risk stemming from two-tier payment arrangements. The oversight unit receives reports if, for example, banks exceed the limits given to them by private settlement banks. The event of changing settlement bank (from any of the two major private settlement banks to direct participation in NBO) has been prepared and tested at a central level. This implies that if a private settlement bank is no longer able to provide services to Tier 2 banks, the Tier 2 banks can quickly settle their payments directly in NBO. This would require that Tier

	2 banks manage their short term liquidity more actively.
In the securities settlement system, ensure that measures are taken to reduce market and liquidity risk in VPO, in the event of a key bank failing to settle. And in the retail payments system, examine the scope for shifting more payments from NICS Retail to the NBO system, and/or for introducing more settlement cycles in NICS Retail during the day.	A consultation paper (in Norwegian) on handling insolvencies in the securities settlement systems was published by the MOF on February 18th, 2015, and is due for comments on May 19th, 2015. This includes a prescript to clarify insolvency provisions in the Payment Systems Act. If this prescript becomes effective, NB and VPS can change their rules so that transactions from a failed participant in the securities settlement system can be settled even in the case of insolvency. Daily settlement cycles for NICS netting/clearing results have increased from two to four during the last few years. Netting of payments of different formats in NICS has been merged, so there is e.g. no longer a separate Swift netting cycle. Payments larger than NOK 25 million are automatically excluded from the NICS netting and are settled on a gross basis at NBO. An exception to this rule is transactions involving smaller banks that are sent to NICS and not to NB directly. However, the number of such transactions is small.
Continue working with other Nordic authorities on the evolving framework for cross-border crisis management and coordination of last resort lending; and domestically, ensure appropriately coordinated contingency plans in the unlikely event of a major problem at the largest, partly state-owned, bank.	In 2010, a "Cooperation agreement on cross-border financial stability, crisis management and resolution between relevant Ministries, Central Banks and Financial Supervisory Authorities of Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden" was signed, see http://www.norges-bank.no/en/about/Mandate-and-core-responsibilities/financial-stability/Crisis-management/Cooperation-with-the-authorities/. The agreement established the Nordic Baltic Stability Group (NBSG), with representatives from all the parties to the agreement, to continue work on cross border crisis management issues in the region. Domestically, the three authorities conducted crisis exercises in 2012 and 2013, and one is planned for early 2016. The banking law commission has been assigned the task of revising the current banking crisis resolution legislation in accordance with the EU's Bank Recovery and Resolution Directive.
Formalize more regular high-level meetings between the FSA, the MOF and NB on financial stability issues, and consider establishing a formal tripartite financial stability MoU on respective roles and responsibilities.	In 2006, so-called tripartite meetings on financial stability chaired by MOF and involving NB, and the FSA were established. Information about, among other things, Norwegian and international economic developments and the state of financial markets is exchanged in the tripartite meetings. The meetings constitute an important channel for the exchange of information between the three authorities, and contribute to a comprehensive overview of the financial stability outlook. Such meetings are generally held every six months, but more frequently when needed. Tripartite meetings were held more frequently during the financial crisis and in subsequent periods of volatility of international financial markets. Regulatory issues are not discussed at the meetings so as to not interfere with the constitutional division of responsibilities between the three

	institutions.
Key structural and longer-term issues	
Reexamine key aspects of the deposit guarantee arrangements, including whether, and how to achieve greater international comparability in coverage levels.	From January 2013, members of the Bank Deposit Guarantee Fund shall pay the full premium irrespective of the size of the fund. Previously, the premium could be set at zero if the capital in the fund exceeded a certain level. From the same date, the fund is required to pay eligible depositors in distressed banks their claims within one week of a decision by the FSA that guaranteed deposits should be paid out. Previously, the payment period could be up to three months. According to the new EU Directive on deposit guarantee schemes, the coverage level shall be EUR 100,000 for all counties within the EEA, with a transitional period of five years (until 2018) for countries with a higher coverage level. The current Norwegian coverage level of NOK 2 million is likely to be reduced accordingly through implementation of the directive into the EEA agreement.
Examine whether the clearing of medium and smaller interbank payments in NICS SWIFT-net could be phased out.	The current situation is that all payments (SWIFT and others) above NOK 25 million are automatically settled on a gross basis in NBO, while smaller transactions are cleared four times daily (all payment formats jointly) in NICS. Payments below NOK 25 million can be settled gross as well, if requested.
Review the continued desirability of state ownership in DNB. In the interim, consider further entrenching appropriate commercial autonomy and accountability for the bank through clearly specifying--in law, regulation or at least in a public policy statement--the principles that will be followed with respect to the government's relationship with DNB-NOR.	Every few years, the Ministry of Trade and Industry presents a white paper to the Storting (parliament) on state ownership in Norway. The most recent white paper was presented in June 2014, and is available here: http://www.regjeringen.no/nb/dep/fin/dok/nouer/2011/nou-2011-1/26.html?id=631406 (for the time being only available in Norwegian). In the white paper, the objectives of the various state ownerships are defined and divided into four categories: (1) commercial objectives; (2) commercial objectives and national anchoring of head office functions; (3) commercial and other specifically defined objectives; and (4) sectoral policy objectives. State ownership of DNB is placed in Category 2, and described as follows (unofficial translation): "The objective of state ownership in DNB ASA is to maintain a large and competent financial group with head office functions in Norway. The company shall be operated on a commercial basis and with a view to deliver competitive returns. The government points out that a state-ownership share that gives negative control contributes to this. The government will therefore maintain the state's stake in DNB ASA, and do not foresee to reduce the government ownership to less than 34 percent." The Ministry of Trade and Industry presents, as mentioned, white papers on state ownership every few years. The assessment of

	the DNB ownership has been more or less unchanged over the last few years. White papers presented in 2006 and 2011 are available in English here: 2006 paper: http://www.regjeringen.no/Rpub/STM/20062007/013EN/PDFS/STM200620070013000EN_PDFS.pdf. 2011 paper: http://www.regjeringen.no/pages/36076278/PDFS/STM201020110013000EN_PDFS.pdf.
Refinements to supervisory arrangements and other technical recommendations	
Increase the level of powers delegated to FSA in respect of licensing and similar authorizations, and for issuing prudential regulations and supervisory decisions; strengthen and make more explicit some aspects of the regulations relating to, e.g., connected lending, treatment of insiders, and enforcement measures; and complete the development of risk-management guidelines for various other types of risks.	No substantial change made on the legal framework related to the powers delegated to the FSA, although the FSA's views and opinions are generally respected. While a number of powers—including those on licensing and authorizations—are delegated to the FSA, the MOF retains the authority over certain cases and the demarcation is not clear. Only limited powers are delegated to the FSA for issuing prudential regulations. While risk-management guidelines have been developed and put to use, improvement in rules related to connected lending and treatment of insiders needs to wait the enactment of the planned new law. Some enforcement measures are still unavailable to the FSA.
Formalize and publish supervisory requirements and standards for payments and securities settlement systems, and formalize monitoring, in NB's Payment System Department, of NBO's compliance with standards.	NB's "Financial Infrastructure Report" describes NB's responsibilities for supervision and oversight of financial infrastructure systems, and how and against what standards these tasks are performed. The last report also contains an evaluation of all Norwegian FMIs (including NBO) against the new principles from CPSS-IOSCO. The Financial Infrastructure Unit (formerly the Payment Systems Department) of NB oversees the NBO. A document signed by the directors of the relevant NB departments describes the organization of NBO oversight and states that it will be based on the FMI principles from CPSS-IOSCO. It is also stated on NB's web pages that NBO will be run according to international principles (from CPSS-IOSCO).
Further strengthen NB risk management arrangements in relation to the collateral it accepts from banks	The requirements regarding collateral for loans from NB have been revised several times since 2005. In 2008, the requirements were temporarily eased in order to increase banks' access to credit from NB in a situation when private sources of funding dried up. The most important changes involved withdrawal of the requirements regarding credit rating, stock exchange listing, and minimum outstanding volume of Norwegian securities. Money market fund units were approved as collateral even if the funds invest in certain securities that are not eligible according to the rules. In 2010 and 2012, these temporary amendments were

	gradually reversed and the requirements were tightened. The most important tightening was an increase in haircuts, tighter standards for asset-backed securities, and the amendment that securities issued by domestic or foreign banks or financial institutions were no longer eligible as collateral.

Appendix II. Risk Assessment Matrix[1]

Source of Risk and Relative Likelihood (High, medium, or low)	Expected Impact if Threat is Realized (High, medium, or low)
High / Medium **Protracted period of slower growth in key advanced and emerging economies** • **Euro Area and Japan:** Weak demand and persistently low inflation from a failure to fully address crisis legacies and appropriately calibrate macro policies, leading to a"new mediocre" rate of growth. • **Emerging markets:** Maturing of the cycle, misallocation of investment, and incomplete structural reforms leading to prolonged slower growth.	**High** • Protracted slower global growth would weaken non-oil exports and contribute further to lower oil prices. This would result in economic slowdown and higher unemployment, due to a fall in exports and less oil investments. • Lower asset prices would impact negatively GPFG's rate of return.
High **A surge in global financial volatility** • Prices of risky assets drop abruptly as investors reassess underlying risk and move to safe assets, associated with a rise in actual and expected volatility. Global growth would be impacted negatively as some countries face a tight policy mix, given higher financing costs and fiscal sustainability concerns, and constraints on accommodative monetary policies.	**Medium** • Renewed stress in global wholesale funding markets would lead to liquidity strains for Norwegian banks that rely on FX wholesale funding. The large presence of foreign-owned banks increases spillover risks. • Impaired global demand would lead to an economic slowdown, due to a fall in exports, less oil investments, and impaired consumer confidence.
Medium **Protracted low energy prices** • Persistently low energy prices are triggered by supply factors, reversing only gradually, and weaker demand.	**High/Medium** • Persistently low oil prices would weaken growth directly via a reduction in oil-related demand for mainland goods and services, and indirectly via a reduction in demand for housing due to confidence effects or a reversal of immigrant inflows.
Medium **A significant drop in house prices** • Norway has the highest house price-to-rent ratio relative to its historical average among OECD economies. Although this can be partly explained by fundamentals, there is a risk of significant overvaluation.	**High** • A fall in house prices would dampen private consumption and reduce residential investment. • The high household debt level may cause a sharp contraction in household consumption and retail sales, leading to a potential rise in default rates and higher solvency risks for banks.

[1] The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path (the scenario most likely to materialize in the view of IMF staff). The relative likelihood of risks listed is the staff's subjective assessment of the risks surrounding the baseline ("low" is meant to indicate a probability below 10 percent, "medium" a probability between 10 and 30 percent, and "high" a probability between 30 and 50 percent). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly.

Appendix III. Stress Test Matrix (STeM) for the Banking Sector

SOLVENCY				
Domain	**Assumptions**			
	Bottom-up by Banks	**Top-down by Finanstilsynet**	**Top-down by Norges Bank**	**Top-down by the IMF**
Institutions included	• Top 6 commercial and savings banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, and Sparebanken Vest.	• Top 6 commercial and savings banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Vest.	• Top 6 commercial and savings banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Vest.	• Top 6 commercial and savings banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Vest.
Market share	• 75 percent of banking sector assets (excluding mortgage companies; unconsolidated basis). • 67 percent of banking sector assets (including mortgage companies; consolidated basis).	• 75 percent of banking sector assets (excluding mortgage companies).	• 67 percent of banking sector assets (including mortgage companies).	• 75 percent of banking sector assets (excluding mortgage companies).
Data and baseline date	• Banks' internal data as of December 2014.	• Bank-by-bank supervisory data as of December 2014.	• Bank-by-bank commercial data and aggregate data as of September 2014.	• Bank-by-bank supervisory data and aggregate data as of December 2014.
Consolidation	• Consolidated and unconsolidated basis (2 tests).	• Unconsolidated basis.	• Consolidated basis (including mortgage finance companies).	• Unconsolidated basis.
Methodology	• Banks' internal risk management framework. • Guidance from FSAP team.	• Finanstilsynet models.	• Norges Bank's models.	• Global "rule of thumb" approach and balance sheet solvency framework.

SOLVENCY				
Domain	**Assumptions**			
	Bottom-up by Banks	**Top-down by Finanstilsynet**	**Top-down by Norges Bank**	**Top-down by the IMF**
Stress test horizon	• 5 years.	• 5 years.	• 5 years.	• 5 years.
Exposure coverage	• Credit risks related to: (i) aggregate exposures; (ii) sectoral exposures (e.g., corporate, mortgages, other household lending; other financial institutions; FX loans); (v) exposures to industries; and (vi) exposures up to 10 largest obligors.	• Credit risk-sensitive (corporate and household loans) and market risk-sensitive exposures (equity and debt).	• Credit risk-sensitive (corporate and household loans) and market risk-sensitive exposures (equity and debt).	• Credit risk-sensitive (corporate and household loans) and market risk-sensitive exposures (equity and debt).
Shocks	*Scenario analysis (scenarios generated by the Norges Bank macroeconomic model)* • **Baseline:** IMF staff macroeconomic projections as of December 2014, estimated via NB's macro model. • **Upsurge in global financial volatility and a considerable slowdown of global growth (w/out policy reaction):** A permanent rise in domestic and global spreads (money market spreads: up to 200 basis points; wholesale market spreads: to 150 basis points), starting in 2015; a slowdown of the world economy; sustained drop of oil prices (to $40) over stress-testing horizon, starting in 2015; a real house price decline of 40 percent over 5 years; a cumulative 5-year decline of 6.7 percent in real Mainland GDP (16.1 ppts cumulative drop relative to baseline). • **Upsurge in global financial volatility and a considerable slowdown of global growth (w/ policy reaction):** Identical scenario, but allowing for monetary policy easing (policy rate at 0 percent); a cumulative 5-year decline of 4.3 percent in real Mainland GDP (13.9 ppts cumulative drop relative to baseline).			
Shocks	*Sensitivity Analysis* • Exchange rate depreciation: Effect on the net open positions in the trading book. For each currency, the shock is	• N/A	• N/A	• N/A

SOLVENCY				
Domain	**Assumptions**			
	Bottom-up by Banks	**Top-down by Finanstilsynet**	**Top-down by Norges Bank**	**Top-down by the IMF**
	set at two times the maximum shift of the annualized FX volatility from its long-term level. • Credit concentration risk: default of the largest one, three, five and ten exposures.			
Risks / factors assessed	• Market risk (incl. sovereign debt). • Funding cost risks.	• Market risk (incl. sovereign debt). • Funding cost risks.	• Market risk (incl. sovereign debt). • Funding cost risks.	• Market risk (incl. sovereign debt). • Funding cost risks.
Behavioral adjustments	• Balance sheets are assumed to be static, except for credit growth, based on macro model (no deleveraging allowed). Corresponding funding increases in line with projections from macro model. Credit growth does not take into account any contemporaneous asset impairments. • No changes in structural business models and in managerial decisions (e.g., strategic asset disposals; changes in funding structure; dynamic RWA management) allowed. • Dividend payout ratio assumed to be zero under stress. • Income composition assumed to remain constant. • Asset disposals not permitted (apart from credit growth projection). • No rising of new capital allowed.			
Behavioral adjustments	• Risk-weighted Assets (RWA) assumed to be adjusted in line with PDs (IRB approach or standardized approach,	• RWA assumed to follow the Basel IRB approach; TTC PDs estimated as updated on long-term average PiT PDs.	• RWA for credit risk set to increase in line with problem loan shares. For new lending, the marginal risk weight is assumed to be 40% for lending	• Risk-weighted Assets (RWA) for credit risk assumed to follow the Basel IRB approach; TTC PDs estimated as updated

SOLVENCY				
Domain	**Assumptions**			
	Bottom-up by Banks	**Top-down by Finanstilsynet**	**Top-down by Norges Bank**	**Top-down by the IMF**
	depending on bank).		to households and 80% for lending to corporates. Norway's transitional rule of the Basel I floor is taken into account. • RWA for operational risk estimated at 15 percent of (Net interest income + Net commission income + (net) Other income) * 12.5. • RWA for market risk is set as a fixed share of the holdings of financial instruments (at fair value).	on long-term average PiT PDs. • RWA for operational risk estimated at 15 percent of (Net interest income + Net commission income + (net) Other income) * 12.5. • RWA for market risk is set as a fixed share of the holdings of financial instruments (at fair value).
Regulatory standards	• RWA per Basel 2.5 and III. • Hurdle rates for regulatory capital (CET-1) based on Norway's schedule (accelerated Basel III schedule).			
Reporting format	• Post-shock solvency ratios and losses by type of exposure. • Distribution of capital ratios across the banking system; aggregated basis.			

LIQUIDITY	
Domain	**Assumptions**
	Top-down by the IMF
Institutions included	• Top 6 commercial and savings banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, and Sparebanken Vest.
Market share	• 67 percent of banking sector assets (including mortgage companies; consolidated basis).
Baseline date	• September 2014 and December 2014.
Consolidation	• Consolidated basis.
Risks	• Systemic funding and market liquidity risks (withdrawal and market freeze; uniform shocks across banks; independent of solvency tests).
Buffers	• Counterbalancing capacity accessed via unencumbered assets at market values net of haircuts (by type of securities).
Test horizon	• 30 days.
Methodology	• LCR / NSFR. • Analysis assumes wholesale funding difficulties and deposit withdrawals (funding risk), and fire sales of assets (market liquidity risk) to meet liquidity constraints (market liquidity risk). Asset-specific haircuts are assumed.

Shocks	• The magnitude of the shocks is in line with the severe liquidity difficulties experienced by banks globally after the Lehman bankruptcy (first scenario) and IMF analysis of past liquidity episodes (second scenario). Both scenarios are more severe than the historical experience in Norway.
	  • *Dry-up of unsecured wholesale funding:* Inability to rollover maturing unsecured wholesale funding.
	  • *Dry-up of secured wholesale funding:* Inability to rollover maturing secured wholesale funding; deposit runs and withdrawal of contingent liabilities.

Regulatory Standards	• LCR ratios; liquidity gaps; NSFR ratios.

LIQUIDITY	
Domain	**Assumptions**
	Top-down by the IMF
Reporting format	• Distribution of banks with LCR under 100 percent (FX liquidity) and 60 percent (domestic liquidity). • Liquidity shortfall (in absolute terms), both FX and LCR.

CONTAGION	
Domain	**Assumptions**
	Top-down by the IMF
Institutions included	• 8 banks for domestic bank analysis: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Vest, Sparebanken Sør, and Eika Gruppen. • 9 banks for domestic bank analysis: Nordea Group, Svenska Handelsbanken Group, Swedbank Group, Seb Group, Danske Bank, Jyske Bank, Sydbank and Pohjola Bank. • BIS reporting banks (undisclosed).
Market share	• 95 percent of banking sector assets in Norway.
Data and baseline date	• Institutions' own data, BIS public and restricted data, and public data; 2010—2014Q3.
Methodology	• Bank network analysis (Espinosa and Sole, 2014); network connectedness approach (Diebold and Yilmaz, 2014); distress dependence analysis (Segoviano and Goodhart, 2009). • Balance sheet model (institutions' own data on bilateral exposures; BIS data at the country level); and market-based model (equity returns, CDS spreads, and EDF). • Pure contagion: default of institutions, market closure, and retrenchment of cross-border claims.

CONTAGION	
Domain	**Assumptions**
	Top-down by the IMF
Shocks	• Funding shock: 95 percent of funding is not rolled over; asset sale at 50 percent discount. • Credit shock: 50 percent loss-given-default (LGD).
	• LCR ratios; liquidity gaps; NSFR ratios.
Reporting format	• Pass or fail (institutions' own data and BIS data). • Contagion and vulnerability indices; network connectedness metrics; Bank Stability Index (Segoviano and Goodhart, 2009).

Appendix IV. Stress Test Matrix (STeM) for the Insurance Sector

Domain		Assumptions Bottom-Up by Insurance Corporations
Insurance Sector: Solvency Risk		
1. Institutional Perimeter	Institutions included	• Three large life insurance and three large non-life insurance companies
	Market share	• Life: 80 percent (assets). • Non-Life: 60 percent (premiums); 51 percent (assets).
	Data and baseline date	• Data provided by the FSA. • Reference date: 31/12/2014. • Solo-entity basis.
2. Channels of Risk Propagation	Methodology	• IMF&FSA staff estimates and companies' internal models.
	Valuation	• Market-consistent valuation of assets and liabilities.
	Stress test horizon	• Applying cumulative changes in 2015-19 in bank stress testing scenarios. • Instantaneous shocks in sensitivity analyses.
3. Tail shocks	A combination of single factor analysis	• Scenario 1 and 2. Severe declines in asset prices, increasing interest rates • Scenario 3: Severe declines in asset prices, and a sudden decline in interest rates
4.Risks and Buffers	Risks/factors assessed	• Interest rates, equity, property, FX, credit spreads, lapses, concentration risks. • Underwriting risks, counterparty risks, and operational risks. • Summation of risks within scenarios with diversification effects.
	Buffers	• Absorption effect of technical provisions (profit sharing and policyholder buffer funds) for some products.
	Behavioral adjustments	• Limited to rules in place at the reference date.

5. Regulatory and Market-Based Standards and Parameters	Calibration of risk parameters	• Interest rates: +250 bp parallel shift/-100 bp parallel shift. • Equity: -45 percent for ordinary shares (-55 percent for others). • Real estate: -29 percent, -33 percent, and -40 percent. • FX: 6.5/5.6/30 percent depreciation of NOK, 30 percent appreciation of NOK. • Spread risks: ratings based. • FSA/EIOPA assumptions for other risks.
	Regulatory/Accounting and Market-Based Standards	• Solvency II.
6. Reporting Format for Results	Output presentation	• Impact on the buffer capital. • Capital shortfall for companies with a BCU above 100 percent. • Contribution of individual shocks.