LAPSE OF TIME

SM/20/102

July 8, 2020

To: Members of the Executive Board

From: The Secretary

Subject: **Norway—Financial System Stability Assessment**

Board Action:	Executive Directors' **consideration** on a lapse of time basis
Deadline to Request Board Meeting:	**Monday, July 20, 2020** **12:00 (noon)**
Proposed Decision Deemed Approved:	Wednesday, July 22, 2020
Provisional Board Meeting Date: (if requested)	Wednesday, July 22, 2020
Additional Information:	The FSSA for Norway is being issued for discussion on a stand-alone basis because the mission work was concluded prior to the outbreak of the pandemic, so the FSSA has been completed, as envisaged in Extension of Consultation Cycles Due to Covid-19 Pandemic (SM/20/89).
Publication:	Yes*
Questions:	Mr. Hofman, MCM (ext. 38415)
Document Transmittal in the Absence of an Objection and in accordance with Board policy:	After Board Consideration—Food and Agriculture Organization, Organisation for Economic Cooperation and Development, World Food Programme, World Trade Organization

***Unless an objection from the authorities is received prior to the conclusion of the Board's consideration, the document will be published.**

INTERNATIONAL MONETARY FUND

NORWAY

FINANCIAL SYSTEM STABILITY ASSESSMENT

July 8, 2020

KEY ISSUES

COVID-19 crisis: The report is mostly based on Financial Sector Assessment Program (FSAP) work that was conducted prior to the COVID-19 pandemic. The FSAP's findings and recommendations for strengthening policy and institutional frameworks remain pertinent. The report includes risk analysis that quantifies the possible impact of the COVID-19 crisis on bank solvency.

Context: In the run-up to the COVID-19 crisis, the low-interest rate environment and supply constraints contributed to a multi-year uptrend in residential and commercial real estate prices. Household debt rose in tandem and is high by international comparison. The government has considerable fiscal buffers, including a large sovereign wealth fund. The banking sector is sizable, with significant foreign presence. Banks are highly exposed to real estate and international wholesale funding markets.

Findings: Solvency stress tests indicate that while the COVID-19 shock is expected to have a significant impact on capital ratios, all banks in the test would continue to meet conservative hurdle rates of around 10 percent. Liquidity stress tests suggest short-term resilience, but potential for tensions over longer horizons. Given the unprecedented nature of the pandemic, the findings are subject to uncertainty and downside risks. A novel assessment of climate-related transition risk suggests that sharp increases in carbon prices would have a significant but manageable impact on banks' loan losses.

Policies: The authorities eased macroprudential policies and took measures to support bank liquidity in response to the COVID-19 crisis, which has helped mitigate its impact. More broadly, financial sector oversight is well-developed though scope for improvement remains. The macroprudential policy framework is comprehensive but could be strengthened by defining a policy strategy and further improving interagency coordination. The operational independence of the supervisory authority should be increased and the risk focus of its supervisory activities strengthened, involving greater scrutiny of smaller banks and foreign branches. The authorities should guard against a weakening of capital requirements arising from the implementation of European regulation. They are also encouraged to strengthen the oversight of banks' liquidity and funding risks and close data gaps. Remaining weaknesses in the effectiveness of AML/CFT supervision should be addressed. While the cybersecurity risk framework is advanced, cybersecurity risk oversight of payment systems should be intensified.

Approved By
James Morsink
Philip Gerson
Prepared By
Monetary and Capital Markets Department

This report was prepared in the context of the Financial Sector Assessment Program (FSAP) missions that visited Norway during October 2019 and January–February 2020. The FSAP findings were discussed with the authorities.

- An IMF team visited Norway during October 9–29, 2019 and January 28–February 13, 2020 to conduct an assessment under the Financial Sector Assessment Program (FSAP). The team was led by David Hofman (Mission Chief) and Mustafa Saiyid (Deputy Mission Chief), and included Frank Adelmann, Rachid Awad, Mark Buessing-Loercks, Pierpaolo Grippa, Tjoervi Olafsson, Peter Lohmus, Samuel Mann, Maksym Markevych, and Yuanyuan Sophia Zhang (all IMF), as well as William Coen, Emran Islam, and Bernhard Mayr (external experts). The FSAP was supported by Donna Tomas, Wenyue Yang, Christine Luttmer, and Joanna Zaffaroni from IMF headquarters.

- The mission met with Norges Bank Governor Øystein Olsen and Deputy Governor Jon Nicolaisen; Finanstilsynet (FSA) Director General Morten Baltzersen and Deputy Director General of Banking and Insurance Supervision Ann Viljugrein; Director Generals at the Ministry of Finance Geir Åvitsland (Financial Markets) and Amund Holmsen (Economic Policy); as well as other senior officials and staff at Norges Bank, the FSA, and the Ministry of Finance; ØKOKRIM, the Banks' Guarantee Fund, credit registry companies, Oslo Børs, commercial banks, insurance firms, auditors, investment funds, commercial real estate companies, mortgage companies, academics, and think tanks.

- 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 according to SM/13/304 (11/18/2013), 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 David Hofman and Mustafa Saiyid with contributions from the FSAP team.

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Glossary

AML/CFT	Anti-Money Laundering / Combating the Financing of Terrorism
BGF	The Norwegian Banks' Guarantee Fund
BMR	Benchmark Regulation (of the European Union)
BRRD	Banking Recovery and Resolution Directive
CCB	Counter-Cyclical Buffer
CET1	Common Equity Tier 1 Capital Ratio
CPMI	Committee on Payments and Market Infrastructures
CRE	Commercial Real Estate
D-SIB	Domestic Systemically Important Bank
DLT	Distributed Ledger Technology
DSGE	Dynamic Stochastic General Equilibrium (macroeconomic model)
DSTI	Debt Service to Income Ratio
DTI	Debt-to-Income Ratio
ELA	Emergency Liquidity Assistance
FSA	Finanstilsynet (The Financial Supervisory Authority of Norway)
FSAP	Financial Sector Assessment Program
FSSA	Financial System Stability Assessment
GFC	Global Financial Crisis
GPF-G	Government Pension Fund-Global
IRB	Internal Ratings-Based
IOSCO	International Organization of Securities Commissions
LCR	Liquidity Coverage Ratio
LTV	Loan-to-Value Ratio
NBO	Norges Bank Settlement System
NEMO	Norwegian Economic Model
NIBOR	Norwegian Inter Bank Offer Rate
NICS	Norwegian Interbank Clearing System
NOK	Norwegian Krone
NOWA	Norwegian Overnight Weighted Average Rate
NPL	Nonperforming Loan
NSFR	Net Stable Funding Ratio
RRE	Residential Real Estate
RTGS	Real Time Gross Settlement
RWA	Risk-Weighted Asset
SRB	Systemic Risk Buffer
WEO	IMF World Economic Outlook

EXECUTIVE SUMMARY

Much of the work of the FSAP was conducted prior to the COVID-19 outbreak. The FSAP's findings and recommendations for strengthening policy and institutional frameworks remain pertinent. The risk assessment quantifies the impact of the COVID-19 crisis on bank solvency.

Norway took welcome steps to strengthen the financial system after the last FSAP. Regulatory capital requirements for banks were raised and actions were taken to bolster the weak capital position of insurers. Alongside other macroprudential measures, temporary borrower-based measures for residential mortgages were introduced, which seem to have had some moderating impact on segments of the housing market. The resolution framework was also strengthened, with the implementation of the Bank Recovery and Resolution Directive (BRRD) and the designation of Finanstilsynet (FSA) as the resolution authority.

Nonetheless, several vulnerabilities remained on the eve of the pandemic. Several risk factors identified in the last FSAP remained prominent. These included banks' high exposure to real estate risks against a backdrop of elevated residential real estate (RRE) valuations and high household debt levels, as well as banks' reliance on international wholesale funding markets. New risks had also emerged, including from a tight commercial real estate (CRE) market. Meanwhile, even as regulatory and institutional frameworks had evolved, some key weaknesses had not been fully addressed.

Stress tests suggest that banks entered the COVID-19 crisis well-prepared, but the current uncertainty calls for vigilance. The solvency stress tests show resilience of the banking sector under COVID and market risk scenarios, although in the most severe scenario a few banks would exhaust their capital buffers above the hurdle rates of about 10 percent CET1 ratio. Banks' liquidity positions were found to be generally robust in the short-term, but risks become significant over longer horizons. While the stress tests suggest considerable resilience of banks, they highlight the sizable impact that shocks—such as the COVID-19 pandemic—can have. This suggests a need for caution given the high uncertainty of the current moment and underscores the importance of continued strong financial sector policies.

A novel assessment of climate-related transition risk suggests that sharp increases in carbon prices would have a significant but manageable impact on banks' loan losses. Given Norway's role as a major oil producer, transition risks to higher carbon prices are important. Following a price hike for corporate carbon emissions, banks' overall debt-at-risk would remain small, though the impact varies across banks. A permanent fall in global oil demand due to higher carbon prices would lead to loan losses for banks comparable to those experienced during the 2014–16 oil price decline.

The macroprudential policy setup should be strengthened further to ensure its continued effectiveness. Developing and publishing a macroprudential policy strategy would foster accountability, facilitate communications and help prepare the market for possible adjustments of bank capital and liquidity buffers. Also, semiannual meetings between the Ministry of Finance (MoF), Norges Bank, and the FSA should be used more effectively to jointly discuss risks and specific policy

actions to address them. To bolster the macroprudential perspective in times of systemic stress, Norges Bank should be given recommendation powers over capital and liquidity tools that can be relaxed. The temporary borrower-based measures for RRE should be made permanent features of the framework. Consideration should be given to broadening the toolkit for addressing CRE risks.

Microprudential oversight is thorough, but there remains scope for further improvement. To ensure that the FSA can effectively fulfill its mandate, it should be given more independence in its regulatory powers and operations, and over its budget. In the prioritization of its supervisory activities, the FSA should give more consideration to banks' risks, which would strengthen oversight over systemic foreign branches and small banks. Given the importance of real estate and funding risks, scrutiny of banks' risk management in these areas could also be increased. Meanwhile, the authorities should continue their efforts to maintain strong capital levels after the adoption of the EU capital framework, including through the FSA's oversight of banks' Internal Ratings-Based (IRB) models. The risks emanating from the unfolding COVID-19 shock make these recommendations even more pertinent. In the area of insurance supervision, the FSA needs to step up its risk monitoring and conduct its own stress tests of the insurance sector. The authorities should also address remaining weaknesses in the effectiveness of AML/CFT oversight.

Norway's cybersecurity risk mitigation framework is advanced, but potential threats are evolving rapidly. Building on an already strong basis, there is scope to further strengthen the authorities' cybersecurity risk supervision and oversight. In particular, the collection, sharing, and handling of information on cybersecurity incidents could be further improved. Both the FSA's cybersecurity risk supervision of financial institutions and Norges Bank's cyber security oversight of payment systems would benefit from more structured and comprehensive approaches, with clearly-defined expectations and procedures. Critical service providers for payment systems should be monitored more closely, including by mandating audits or on-site inspections.

While substantial progress has been made, the resolution framework and crisis management arrangements should be further developed. In particular, the new legal framework for resolution would be enhanced if the FSA, as the resolution authority, had clearly defined statutory resolution objectives and accountability. A stronger integration of the Banks' Guarantee Fund (BGF) into the resolution framework would also be desirable. In addition, it is key that the new resolution tools included in the updated Financial Institutions Act are made operational without delay. In the area of crisis management, it would be beneficial to establish an overarching coordinating body with a mandate for system-wide coordination of activities related to crisis prevention and management. Finally, as a host to significant foreign bank branches, Norway would benefit from further strengthening the cross-border crisis management arrangements within the Nordic-Baltic region.

Additional efforts in data collection and development of analytical models would help to strengthen financial systemic risk monitoring. The authorities should collect data on the liquidity position of foreign bank branches; expand data gathering on commercial real estate; maintain accurate and updated "maps" of the internal composition of borrower groups; accelerate improved data collection for derivatives transactions and related counterparty risk; and seek to collect more granular data on bank lending to allow further development of models of banks' credit risk.

Table 1. Norway: Key Recommendations	
Recommendations and Authority Responsible for Implementation	**Time[1]**
Systemic Risk Oversight and Macroprudential Policy	
Develop and publish a macroprudential policy strategy. (MoF, Norges Bank, FSA)	ST
Use existing triparty meetings more effectively to discuss risks and policy actions needed to address them. (MoF, Norges Bank, FSA)	I
Give Norges Bank recommendation powers over macroprudential policy tools that can be relaxed under stress, with a comply-or-explain mechanism. (MoF)	I
Make key household sector measures permanent features of the framework. (MoF)	ST
Consider broadening the toolkit for mitigating CRE vulnerabilities, including sectoral capital tools. (MoF)	MT
Banking and Insurance Supervision	
Strengthen the FSA's prudential powers, operational independence, and budgetary autonomy. (MoF)	ST
Expand review of banks' risks in supervisory activities to strengthen oversight over systemic foreign bank branches and domestic medium and small sized banks. (FSA)	ST
Further enhance the oversight of banks' IRB models, in view of the implementation of CRD IV. (FSA)	I
Intensify oversight of banks' risk management of real estate loans and funding/liquidity conditions. (FSA)	ST
Strengthen risk-monitoring of individual insurers. (FSA)	ST
Complement EIOPA efforts with Norway-specific in-house stress tests of the whole insurance sector. (FSA)	MT
Cybersecurity Supervision	
Make processes for cybersecurity risk supervision and oversight more structured and comprehensive. (FSA, Norges Bank)	I
Establish incident reporting and crisis management frameworks for systemic cyber incidents. (FSA, Norges Bank)	ST
Anti-Money Laundering / Countering Financing of Terrorism (AML / CFT) Supervision	
Enhance AML/CFT supervision by increasing the frequency of targeted and thematic inspections and improving the risk-based approach and tools for AML/CFT risk assessments. (FSA)	I
Ensure appropriate use of sanctions, including monetary penalties, for AML/CFT violations. (FSA)	I
Financial Crisis Management and Safety Nets	
Make the new resolution tools operational and strengthen the crisis preparedness framework. (FSA, MoF)	ST
Ensure BGF's integration into the broader resolution framework. (BGF, FSA).	ST
Systemic Liquidity	
Monitor banks' collateral eligible for central bank liquidity. (Norges Bank)	ST
Develop, test and implement a mechanism for acceptance of mortgage loan collateral for emergency liquidity support to solvent banks. (Norges Bank)	ST
Financial Stability Analysis	
Upgrade data collection for risk monitoring to include more granular data on bank lending (including for commercial real estate), group mappings, and liquidity positions of foreign branches. (FSA, Norges Bank)	ST
Improve collection and analysis of derivatives exposure data and analyze banks' margin arrangements. (FSA, Norges Bank)	ST

[1]I Immediate (within 1 year); ST Short term (1-3 years); MT Medium Term (3-5 years)

BACKGROUND

A. Context

1. Norway is a major oil exporter with significant financial buffers. Over the past few decades, since the discovery of oil, the country has amassed one of the largest sovereign wealth funds in the world with about US$1 trillion in assets, or about 260 percent of GDP. Public finances were in rude health at the onset of the COVID-19 pandemic. Social safety nets are strong. Norway had a major banking crisis in the early 1990s but proved mostly resilient during the global financial crisis (GFC). The pandemic is having a major impact on Norway and has come to dominate the short-term outlook. In the longer-term, the potential of the economy will face structural headwinds from population aging, slow productivity growth, and an anticipated decline in oil production.

2. The 2015 FSAP found the financial sector broadly resilient to shocks but identified also key vulnerabilities—many of which remain in place. Risk factors pertaining to house prices, household debt, and wholesale funding remain as relevant today as they were in 2015. Meanwhile, regulatory frameworks have evolved but several key weaknesses highlighted in the last FSAP are yet to be partly or fully addressed (Table 2). The 2020 FSAP revisited these areas and focused on the authorities' ability to effectively manage persistent real estate and funding risks. In view of advanced digitalization of payments in Norway, the FSAP also assessed cyber risk oversight.

3. Much of the work of the 2020 FSAP was conducted prior to the COVID-19 outbreak. This report has been updated to reflect key developments and policy changes since the mission work on the FSAP was completed. Also, new risk analysis was added that quantifies the possible impact of the COVID-19 crisis on bank solvency.

B. Macrofinancial Developments

4. The Norwegian economy had shown strong performance since the last FSAP, until the COVID-19 pandemic caused major disruptions. Following a slowdown after the 2014-oil price drop, growth recovered strongly during 2016–18, supported by rebounding oil prices, accommodative policies, and krone depreciation (Figure 1, Table 3). Subsequently, the economy maintained this positive growth momentum until, starting from late February 2020, the global COVID-19 shock hit Norway hard, including on account of a nation-wide lockdown and the sharp drop in oil prices. The adverse developments triggered a sharp decline in economic activity, a spike in unemployment, and substantial further depreciation of the krone. Whereas Norges Bank had raised its key policy rate four times between September 2018 and September 2019, to 1.5 percent, during March–May 2020 it cut rates to zero percent in three quick steps. These were part of a strong set of emergency measures that the authorities took in response to the COVID-19 crisis (Box 1).

5. Real estate prices and household debt have risen strongly over past decades. Continuing an uptrend that started in the 1990s, residential real estate (RRE) prices increased by 70 percent over the last decade, while rising more in the larger cities (particularly Oslo, where they doubled). The housing boom can be attributed to a combination of factors including population

growth, cheap financing in the prolonged low-interest rate environment, and supply constraints. Higher house prices have led households to take out larger mortgages, which has fueled household debt levels (Figure 2). These now exceed 200 percent of disposable income on average, high compared to peers. The distribution of household debt is an additional concern as the share of households with debt levels exceeding five times their gross income has been on an upward trajectory. Commercial real estate (CRE) has also boomed especially Oslo's prime office market. Corporate debt levels are about average in international peer comparison.

Box 1. Norway's Financial Sector Policy Response to COVID-19

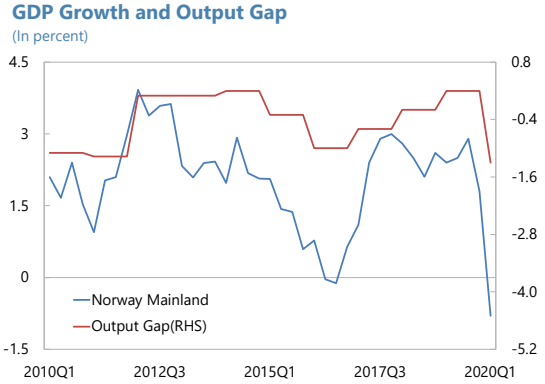
COVID-19 has had a major impact on Norwegian society and on economic activity. As COVID-19 cases started to emerge in Norway from February/March 2020, the government swiftly implemented measures to contain the spread of the disease, including travel restrictions, social distancing measures, and closures of schools, universities and businesses. As elsewhere in the world, these measures had a deep negative impact on economic activity, which was compounded by the tightening of global financial conditions and a sharp drop in oil prices. In this backdrop, the authorities have taken wide-ranging policy measures to stabilize the economy—including extensive fiscal support to corporates and households—and to ensure financial stability. The latter set of financial sector measures is elaborated below.

Key Policy Measures to Safeguard Financial Stability:

- ***Monetary policy*** actions have focused on providing liquidity to the financial sector to address heightened interest rate volatility and higher risk premia in money markets as the crisis unfolded. The actions also included three rate cuts, which have brought the main policy rate to zero percent (from 1.5 percent). The measures aim to lower borrowing costs for corporates and households, while supporting banks' asset quality.
  - Norges Bank has provided liquidity support to banks through extraordinary NOK loans with maturities ranging from 1-week to 1-year and with full allotment. Collateral requirements for liquidity support were also eased by removing limits on the use of non-government securities. Meanwhile, the FSA underscored that the use by banks of high-quality liquid assets held to satisfy the LCR requirement is permitted, provided it is properly reported.
  - Norges bank agreed a US dollar swap line with the Federal Reserve for up to US$30 billion and has provided US dollar liquidity to Norwegian banks.
- ***Macroprudential measures*** include a relaxation of the countercyclical capital buffer (CCyB) from 2.5 percent to 1 percent, to ease constraints on bank lending and thereby support continued provision of financial services. The authorities also indicated that no increase in the CCyB is anticipated until at least the first quarter of 2022. Mortgage lending regulation was also relaxed by temporarily allowing banks to deviate from LTV, DTI, and other requirements for up to 20 percent of new loans during 2020Q2, compared to a previous "speed limit" of 10 percent (8 percent in Oslo). This could support debt restructuring and temporary home-equity withdrawals to reduce borrowers' financial distress.
- ***Microprudential actions*** include appeals by the FSA and MoF on banks and insurers to restrict dividend payouts until economic uncertainty is reduced. Regulatory reporting of short sales of domestic equity shares has been enhanced.

Figure 1. Norway: Indicators of Macrofinancial Conditions

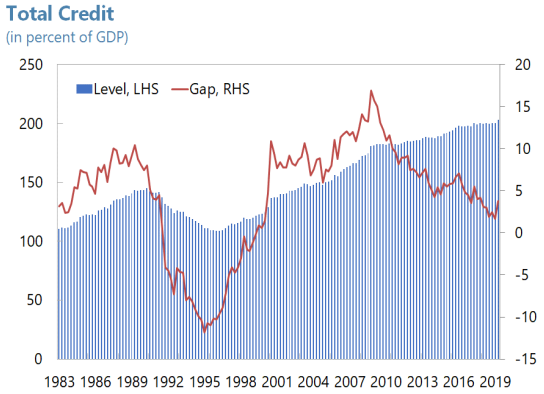
The Norwegian economy was performing well when the COVID-19 shock hit and caused major disruption.



Source: IMF staff estimates, Norges Bank

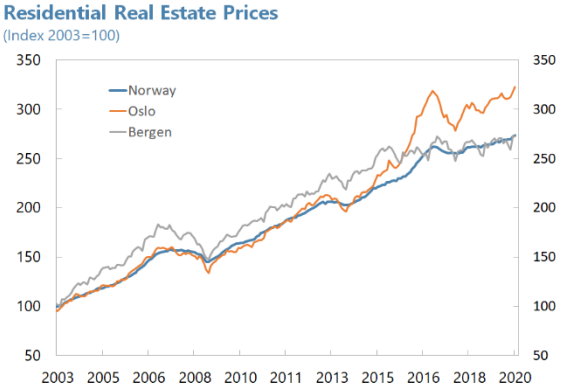
Source: Haver Analytics, IMF staff calculations, Norges Bank.

Norway was in a late stage of the credit cycle and the credit gap had been on a downward trend since the GFC.



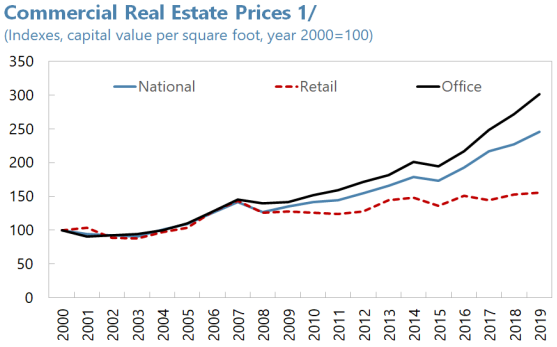
Sources: Statistics Norway, IMF staff calculations.

Residential housing prices had risen sharply in recent decades, particularly in the major cities…



Source: Haver Analytics

…and commercial real estate prices, notably offices, had followed a similar path.



1/ The MSCI indexes shown may suffer from data and methodological limitations, including valuation lags, smoothing and small sample sizes.

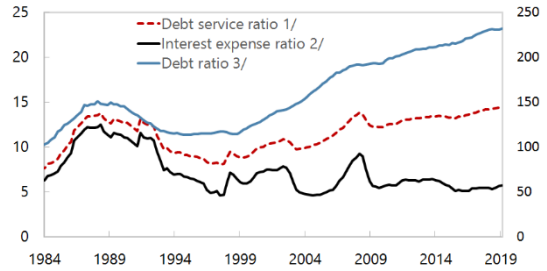
Sources: MSCI, IMF staff calculations.

6. Monetary and macroprudential policy tightening had already led to some moderation in the residential housing market before the COVID-19 shock. Stepwise increases in the countercyclical capital buffer (which had been raised to 2½ percent as of end-2019), and the introduction of temporary household sector tools—including a stressed-interest rate debt servicing test for borrowers, loan-to-value ratio (LTV) caps and amortization requirements—aided by Norges Bank's policy rate increases, had had some success in curbing RRE price increases in more recent years—although CRE price increases had mostly continued. The sharp downturn caused by the COVID-19 crisis may now cool real estate markets, although data through May 2020 has shown resilience thus far. In any event, historical experience suggests that housing market tensions are likely to eventually return once a recovery takes hold.

Figure 2. Norway: Sectoral Balance Sheets

Despite low interest rates, household debt servicing burdens have risen significantly over the past two decades...

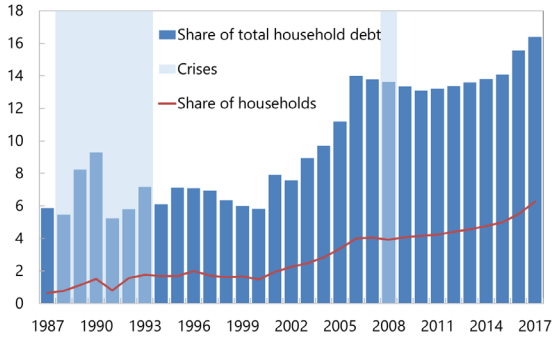
Household Debt Burden
(Percent of disposable income measures)



Source: Norges Bank
1/ Debt service ratio is interest expense plus estimated principal payments over disposable income and interest expense; 2/ Interest expense ratio is interest expense over the same denominator; 3 / Debt ratio is loan debt over disposable income only

...and the share of highly leveraged households is higher than it was in past domestic financial crises.

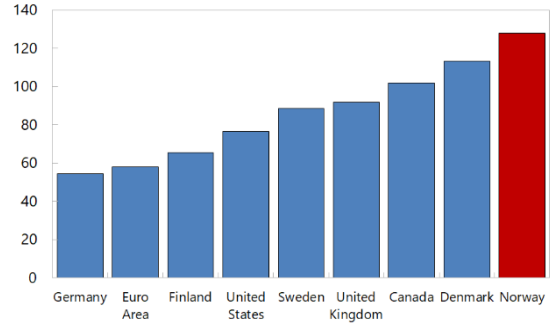
Households with Debt in Excess of Five Times their Income
(Percent)



Sources: Statistics Norway, FSA and Norges Bank.

Household debt is high compared to peers...

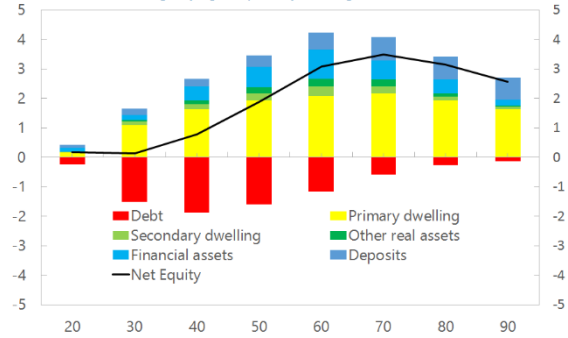
Household Debt to GDP Ratio
(Percent, 2019Q4 or latest)



Source: IMF FSI database and Trading Economics

...but households, in aggregate, have significant asset buffers, including liquid assets.

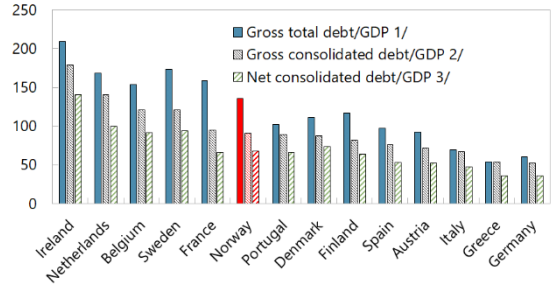
Household Assets and Liabilities
(millions of NOK, average by age of primary earning individual) 1/



Source: Norges Bank

Corporate debt levels are average compared to peers

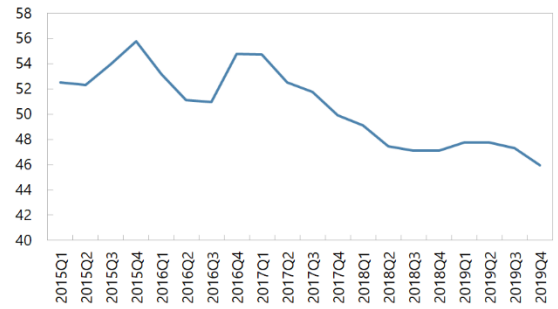
Non-Financial Corporate Debt
(In percent)



Sources: BIS, Norges Bank
1/ Sum of long and short-term loans plus bonds and certificates
2/ Excluding inter-company debt
3/ Excluding cash holdings

...and corporate leverage has been edging down in recent years.

Corporate Leverage 1/
(In percent)

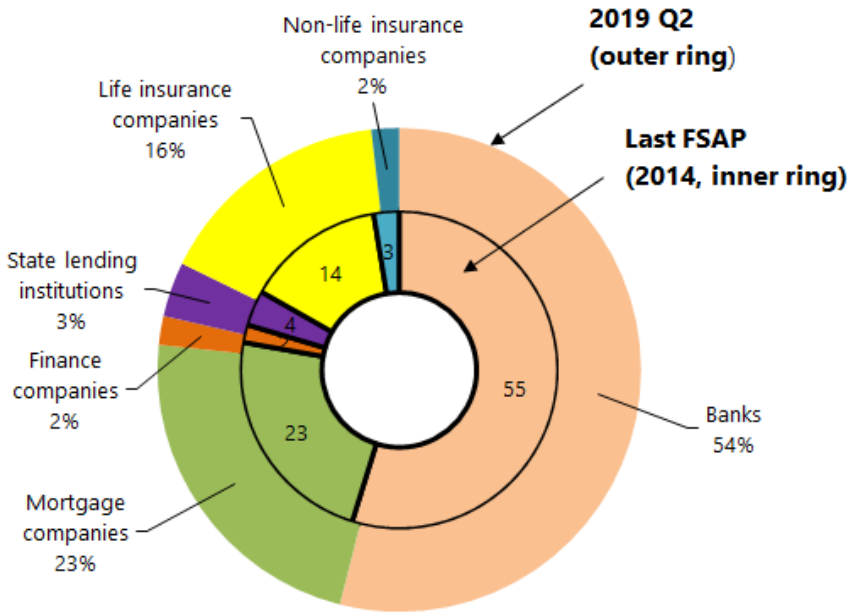


Source: Statistics Norway
1/ Leverage of non-financial corporates defined as (debt securities plus loans)/equity

C. Structure of the Financial System

7. The Norwegian financial sector is sizable. Financial sector assets, excluding the globally-invested government pension fund (GPF-G), total 290 percent of GDP (Figure 3; Table 4). The GPF-G is another 260 percent of GDP as of mid-2019. The financial sector comprises 135 commercial banks (54 percent of financial system assets), mortgage companies (held mainly within the banking groups; 23 percent), insurers (18 percent), state-lending institutions (3 percent), and finance companies (2 percent). Branches of foreign banks account for about one-quarter of banking system assets, making up about 35 percent of lending to corporates and 20 percent of retail lending, with similar shares for deposits. Foreign banks are mainly from the Nordic region.

Figure 3. Norway: Evolution of Financial System Structure
(Percent of total assets; 2019 Q2 versus at last FSAP) [1, 2, 3]



Source: Norges Bank, 2019.

[1] System assets total about 10.2 trillion NOK (1.2 trillion USD, or 290 percent of GDP), excluding the GPF-G, which at mid-2019 had assets of about 9.2 trillion NOK, or 260 percent of GDP.

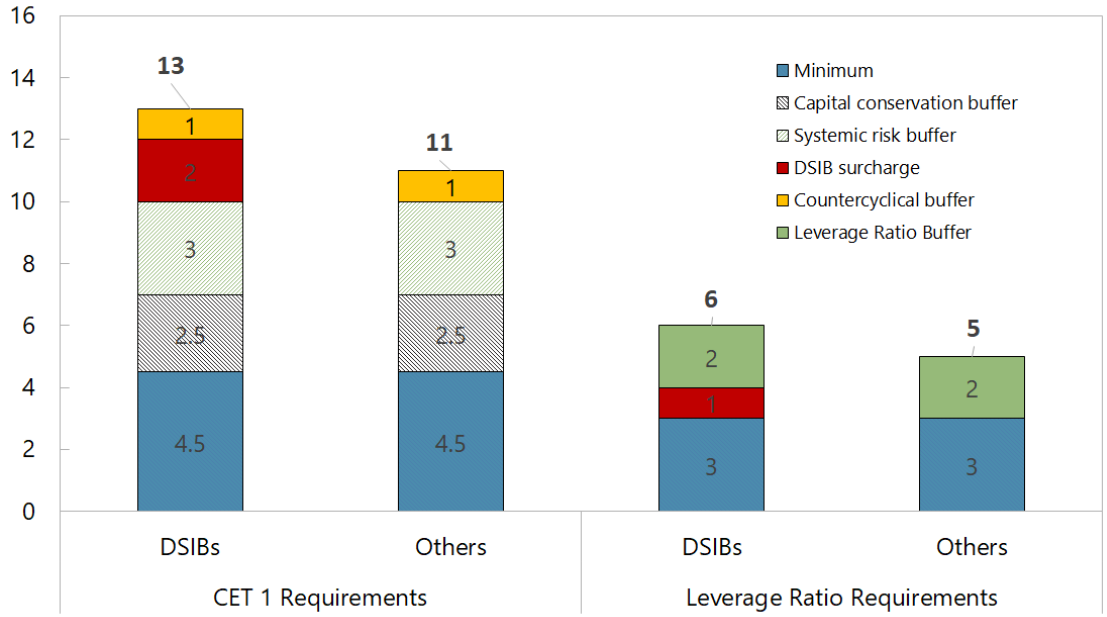
[2] Inner ring is for 2014, outer for 2019 Q2 as reported in November 2019 Norway Financial Stability Report

[3] The "Banks" category includes branches of foreign banks.

8. Banks exhibited high capitalization and liquidity ratios before the COVID-19 shock (Figures 4-7). Banks' total regulatory capital ratio was 24.2 percent as of end-2019, with a Common Equity Tier 1 Capital Ratio (CET1) capital ratio of 18.0 percent, in line with local regulatory requirements that are consistent with Basel III (Table 5). Two domestic systemically important credit institutions face an additional two percent requirement. Banks' liquidity levels were in full

compliance with the liquidity coverage ratio (LCR) requirements, which follow the EU framework. Liquidity coverage in foreign currencies generally exceeds that in Norwegian krone owing to a shortage of domestic, high-quality liquid assets (HQLA). Bank profitability was strong in peer comparison, owing to low operating expenses (partly due to high digitalization) and low credit losses. Asset quality was high overall, with nonperforming loans (NPLs) below one percent, though NPLs on consumer debt (four percent of bank lending) are much higher at 11 percent at end-2019. Banks' provisions provide about 85 percent coverage of NPLs.

Figure 4. Norway: Banks' CET1 and Leverage Ratio Requirements[1]
(In percent; March-2020)



Source: Norges Bank.

[1] These requirements apply to branches of foreign banks operating in Norway as well.

9. Banks have high exposures to real estate. Overall, close to 60 percent of banks' lending is related to residential and commercial real estate, with most loans at variable-rates. The high exposure makes banks vulnerable to adverse developments in these markets.

10. Wholesale markets are an important source of funding. As credit demand structurally exceeds deposits and the scope for expanding the deposit base is limited, Norwegian banks obtain nearly half their overall funding from wholesale markets. The maturity of such market funding has lengthened, however, since the last FSAP and about two-thirds of wholesale funding now comes from covered bonds. The latter have partially substituted for other riskier sources of wholesale funding, such as senior-unsecured and short-term wholesale funding. There is substantial cross-ownership of covered bonds between banks, however, as they hold these as HQLA. This further adds to the real estate exposure on the asset side of banks.

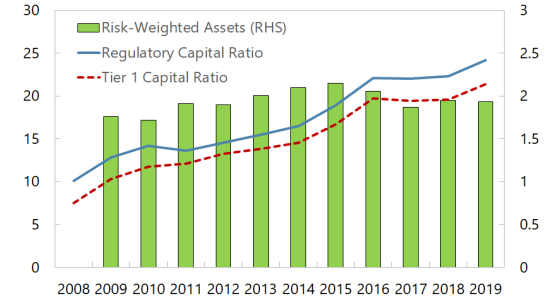
Figure 5. Norway: Banking Developments[1]

(2019 Q4 or Latest Available)

Banks' capital ratios have risen over the past decade...

Bank Capital and Risk-Weighted Assets

(Percent and trillions of NOK respectively)

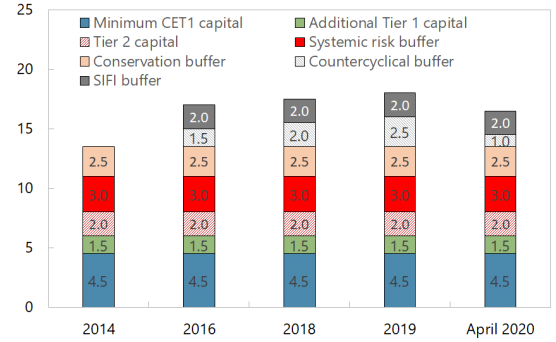


Source: IMF FSI

...as the authorities raised capital requirements.

Evolution of Capital Requirements

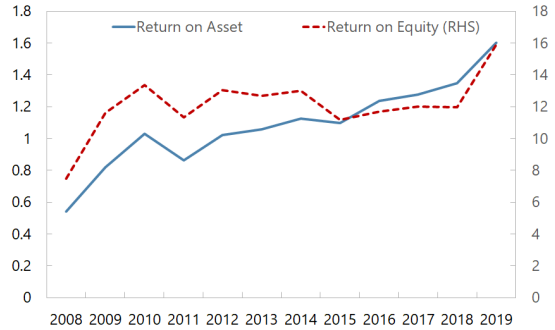
(Percent of RWA)



Banking profitability has been high...

Profitability

(Percent)

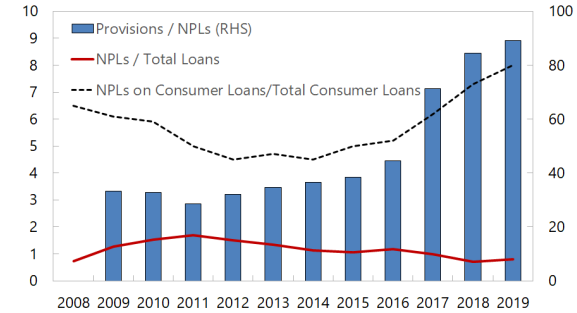


Source: IMF FSI database

...even though provisions have been raised.

Banks' Asset Quality

(Percent)

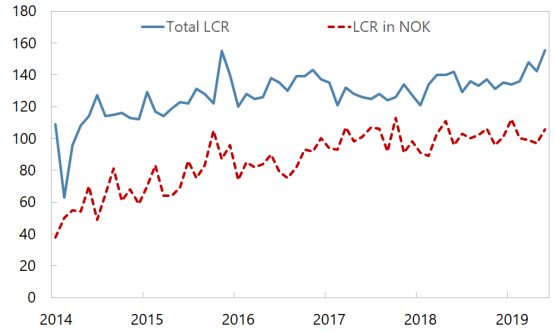


Sources: IMF FSI, Finanstilsynet and staff calculations

Note: Consumer loans for 2019 reflects 2019Q1

Banks' liquidity coverage has improved although domestic currency LCR remains relatively weak.

Liquidity Coverage Ratio

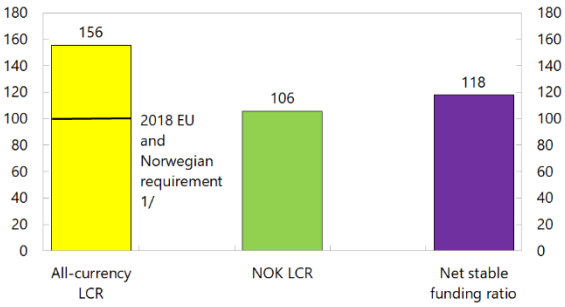


Source: Norges Bank

On the eve of the COVID-19 shock, banks generally exceeded liquidity and net stable funding benchmarks.

Liquidity and Stable Funding Measures

(percent for all banks, 2019Q2)



Sources: Norges Bank and Fund staff calculations.

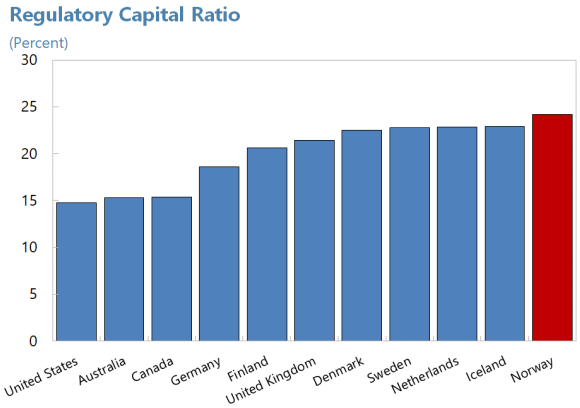
1/ The LCR requirement for three SIFIs was set at 100 percent from 2016 onwards.

[1] Data shown is for domestic banks only.

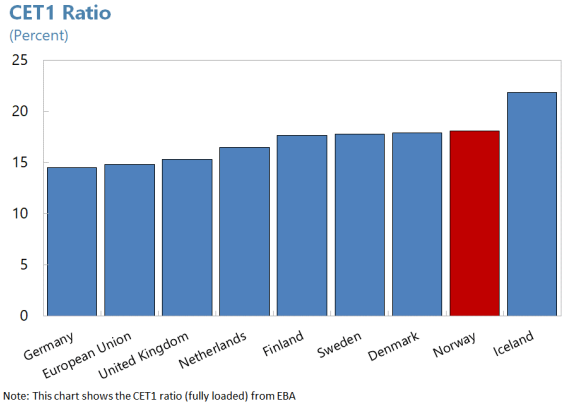
Figure 6. Norway: Comparison of Selected Financial Indicators[1]

(2019 Q4 or Latest Available)

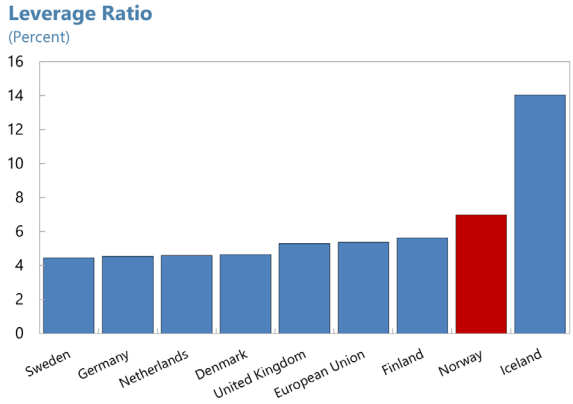
Banks' regulatory capital ratios are high in peer comparison…



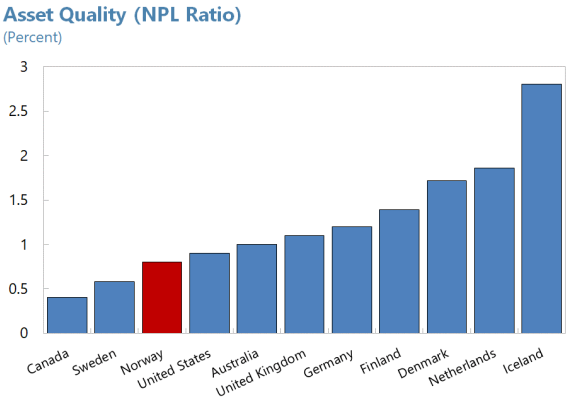
…including for CET1 capital.



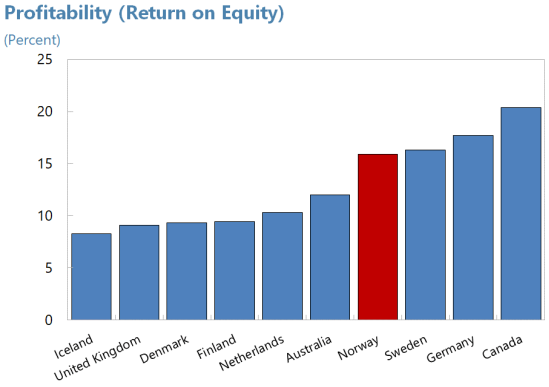
The leverage ratio is also high…



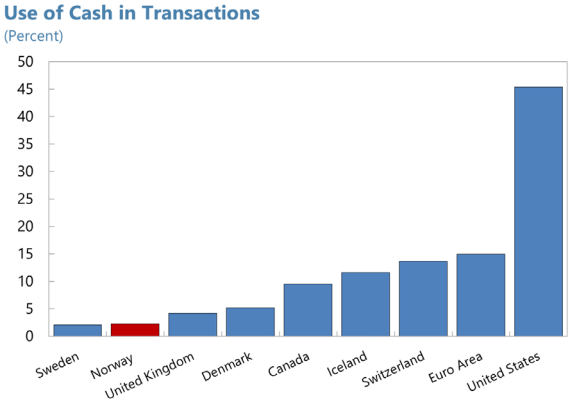
…and asset quality is generally strong.



Banks' profitability also compares favorably.



The use of cash has been virtually phased out.



Sources: IMF Financial Soundness Indicators, European Banking Authority, Norges Bank, Country Authorities.

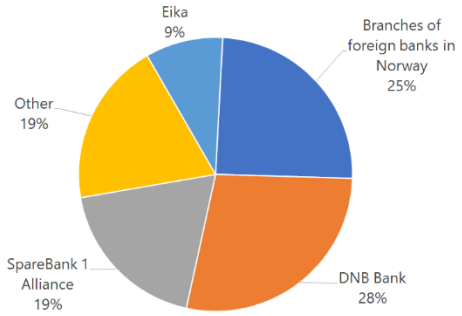
[1] Data relating to Norway is for domestic banks only and excludes branches of foreign banks operating in Norway.

Figure 7. Norway: Banking Asset-Liability Structure[1]

(2019 Q2 or Latest Available)

The banking system is dominated by one large domestic bank while branches of foreign banks are significant.

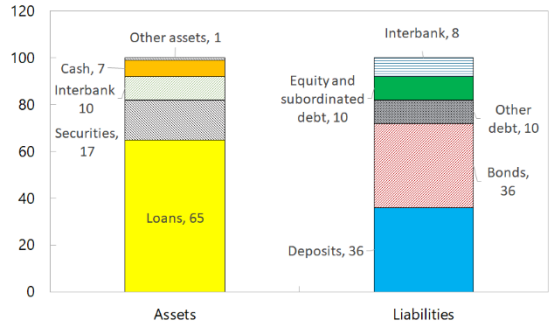
Lending Shares in Banking System (Overall)
(In percent of total)



Source: Norges Bank, IMF Staff Estimates (2019)

Banks are heavy users of market-based funding…

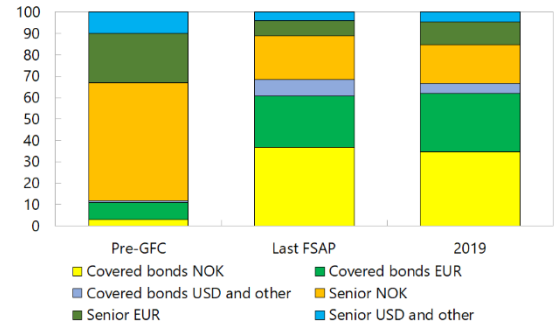
Bank Assets and Liabilities
(Percent)



Source: Norges Bank

…including from covered bonds and in foreign currencies.

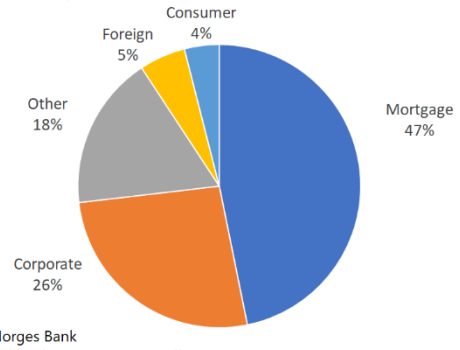
Composition of Wholesale Funding
(Percent)



Source: Norges Bank

Banks have significant exposure to real estate assets ……

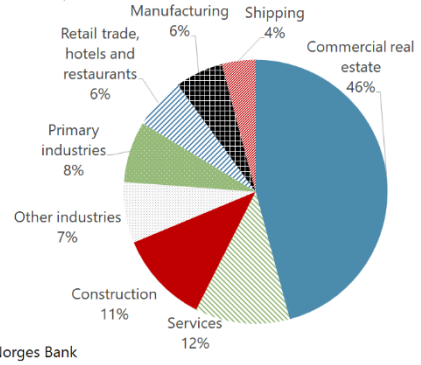
Banks' Loan Portfolio
(In percent of total)



Source: Norges Bank
Note: Total lending is NOK 5720 million.

…including for commercial properties.

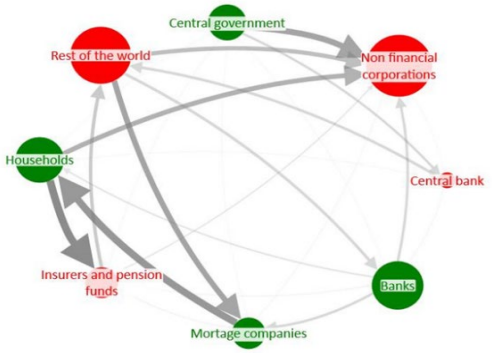
Banks' Corporate Lending
(In percent of total)



Source: Norges Bank

Foreigners play a key role in funding real estate exposures.

Norwegian Financial Sector—Net Exposures (Assets Minus Liabilities, 2018 or latest available) 1/



Sources: Norges Bank, IMF staff calculations
1/ Width of each arrow denotes size of exposure; size of each bubble corresponds to assets of entity

[1] Data is for domestic banks and mortgage companies, the latter being mainly included within banking groups.

SYSTEMIC RISK ANALYSIS

A. Vulnerabilities and Risks

11. Key underlying vulnerabilities in Norway pertain to banks' high exposures to domestic real estate—both residential and commercial—and wholesale funding (see Risk Assessment Matrix in Table 6). A deterioration in the ability of highly leveraged households or corporates to service their loans, a sharp real estate price correction, or a combination of these, will affect banks' asset quality. And while banks have a diversified funding structure—which should generally contribute to overall funding stability—and prudently manage foreign exchange (FX) and interest rate risks, their relatively high dependence on international wholesale funding and derivatives markets implies risks in situations when liquidity in these markets were to be compromised.

12. A deterioration in borrowers' debt servicing capacity can arise from a sharp slowdown in economic growth and from rising borrowing costs. The first could follow from a domestic output shock, lower growth in key trading partners, or a combination of both—as is currently unfolding amid the COVID-19 pandemic. The impact will be pronounced if the growth shock is accompanied by a sustained drop in oil prices—a potent transmission channel for Norway. Rising borrowing costs may result from an increase in global risk aversion. With the scope for a monetary policy offset constrained by the effective lower bound, increases in spreads will raise funding costs for banks, which could be quickly passed onto corporates and households given the prevalence of variable-rate loans. Such a development is likely to push up NPLs and put pressure on real estate valuations. There could be a feedback loop from slowing credit to the overall economy.

13. Other significant structural sources of risk relate to climate change, cybersecurity threats, and financial integrity. While physical risks from climate change are low by international comparison, the impact of an abrupt transition to a low-carbon economy (so called transition risk) could be high given Norway's reliance on the production and export of oil. Operational risks are important as well. A cyber attack on a critical payment infrastructure could result in severe dislocations in Norway's mostly cashless system. This could hurt confidence and lead to deposit outflows. The emergence of more episodes of financial misconduct or violations of market integrity—as the alleged breach of customer due diligence rules at DNB, Norway's largest bank—could also lead to a loss of confidence and financial losses, including from sanctions.

B. Banking System Resilience and Stress Testing

14. Several of the vulnerabilities and risks mentioned above have been considered in stress tests of banks. These include both solvency and liquidity stress tests, as well as a tentative exploration of banks' exposure to climate-related transition risk.[1]

Solvency Assessment

15. The top-down solvency exercise analyzes risks over a 3-year horizon and includes the 11 largest domestic banks. These banks account for about 80 percent of domestic banking assets

[1] The FSAP did not stress test the insurance sector because such an exercise had been performed in the 2015 FSAP and the health of the insurance sector has improved since then. Instead, the FSAP allocated resources to the targeted assessment of insurance oversight, which was not covered in the previous FSAP.

(i.e., excluding the Norwegian assets of branches of foreign banks) and 60 percent of total banking system assets. The hurdle rate for each of the exercises includes all capital requirements and buffers in place after the adoption of the European capital framework but excluding the Capital Conservation Buffer (CCB) and the Countercyclical Capital Buffer (CCyB) in line with Basel Committee guidance on buffer usability. While precise hurdle rates differ per bank, they average about 10 percent, which is conservative in comparison with the Basel minimum requirement of 4½ percent. The assessment encompasses both COVID scenarios and the FSAP's original *market shock* analysis.

COVID-19 Solvency Stress Test

16. Given the sharp deterioration of the outlook after the FSAP missions, additional scenario analyses have been performed to quantify the impact of COVID-19. The COVID scenarios are calibrated with the same satellite models estimated for the *market shock* scenario (see below) and were estimated over the same 3-year horizon. They also incorporate the effects of the measures already taken by the authorities to ease financial conditions (Box 1). A "central" and a "downside" scenario are considered.

- The *COVID central* scenario reflects the projected baseline outlook—for Norway and the global economy—as of June 2020.[2] In this scenario, Norwegian mainland GDP contracts by almost 5½ percent in 2020 (Table 7). The economy starts to rebound from the second half of 2020.
- The *COVID downside* scenario corresponds to a situation of persistent uncertainty and a further deepening of the downturn. This is approximated by a downward divergence of a 1 standard deviation of the core variables (GDP, employment, oil price) from the central path, resulting in a GDP decline of about 7 percent in 2020 and a more gradual recovery from that point.[3]

17. The illustrative scenarios show that the COVID-19 shock will likely have a large impact on banks, though they would continue to meet capital requirements. At the end of the risk horizon the aggregate CET1 ratio for the in-sample banks drops by about 4 percent under the central scenario and 4½ percent under the downside one. Under the COVID downside scenario, one bank would exhaust its buffers in excess of the hurdle rate, though without breaching it.

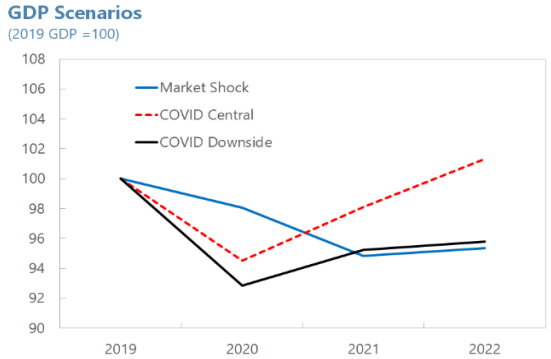
18. While uncertainty is high and worse outcomes are possible, the COVID scenarios show a somewhat less severe impact than the *market shock* scenario analyzed during the missions (Figure 8). Although the frontloaded profile of the COVID-19 shock causes a comparable or worse impact on capital in the first year of the stress tests, in the second and third years the *market shock* scenario leads to significantly larger losses. The differences reflect both a comparatively faster recovery under the COVID scenarios and the easier financial conditions that help mitigate the real economic shock and prevent a sharper impact on banks' net income.

[2] The COVID-19 stress tests are based on a preliminary version of the June WEO forecasts for Norway. The forecasts were subsequently revised up somewhat (the latest forecasts are shown in Table 3).

[3] The GDP path in the COVID downside scenario is comparable in severity to the adverse scenario in the June 2020 WEO Update, while the assumed oil price drop is substantially larger than in the WEO scenario. Market variables such as equity and house prices are estimated with models based on the path of the core macro variables.

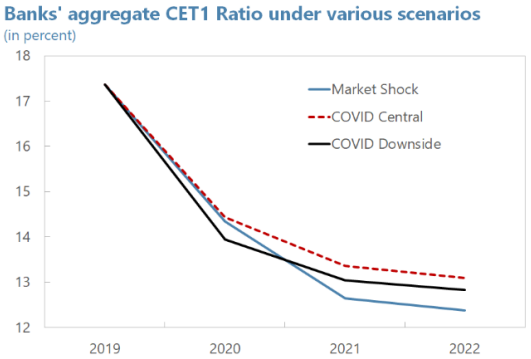
Figure 8. Norway: Solvency Stress Test Results—COVID Scenarios

GDP drops sharply in the COVID scenarios, but the decline does not exceed the market shock scenario ...



Source: IMF staff estimates

...and the impact of the market shock scenario on banks' capital is overall more pronounced.



Source: IMF staff estimates

Market Shock Solvency Stress Test

19. The FSAP's *market shock* analysis remains relevant as it also examines the impact of a sharp tightening of financial conditions, combined with a deep real estate market slump. These elements feature less prominently in the COVID scenarios. While the forceful international monetary policy response and liquidity support operations have thus far mitigated market risks, stress testing such additional shocks is highly relevant given Norwegian banks' specific exposures. For the exercise, FSA and Norges Bank ran parallel top-down solvency stress tests, based on the same scenario.[4] A bottom up stress test using the same assumptions was conducted by the three largest domestic banks, which comprise 60 percent of domestic banks' assets.

- The *market shock* scenario assumes a multi-year recession that causes a fall in the level GDP of over 5 percent by the second year—an almost 3 standard-deviation shock from the long-term GDP trend—with only a very limited recovery in the third year. The cumulative drop in GDP in this scenario is worse than in the COVID scenarios and more severe than that experienced during the banking crisis of the late 1980s and the global financial crisis (Figure 9, top left panel). Property prices decline over the risk horizon by 35 percent for RRE and by more than 50 percent for CRE. Equity prices fall by 40 percent over the first two years, and the oil price drops to US$27 per barrel. To allow a clear view on the impact of the shock, no policy response is assumed.

20. Under the *market shock* scenario, the banking system is hit hard. NPL ratios would increase substantially, up to levels not seen since the mid-1990s (Figure 9). Loan losses would rise in all sectors, with the mining sector (including oil extraction and related services) and transport and storage particularly affected (Figure 9, middle right panel). The results are driven by the protracted recession and the real estate slump, with the latter accounting for about 30 percent of overall losses.[5] Loan loss provisions would be the primary drain on capital, with additional losses from debt and equity portfolios and the increase in risk-weighted assets contributing to an overall average drop in the CET1 ratio of 5 percentage points by the end of the risk horizon (Figure 9, bottom left panel). The results of the FSA exercise are similar on average, while the exercise performed by

[4] Time and resource constraints did not allow for similar parallel and bottom up exercises for the COVID-19 exercise.

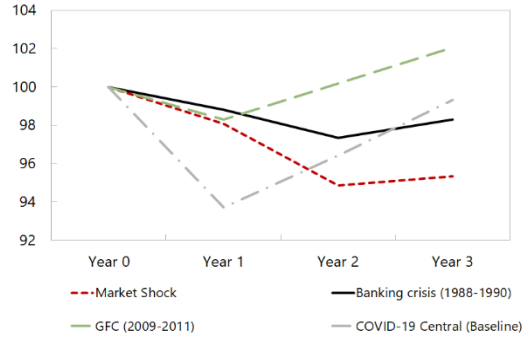
[5] This assumes that about three-quarters of the losses from retail loan portfolios are related to mortgages.

Norges Bank estimates a somewhat larger average drop in the CET1 ratio—on the order of 6.2 percentage points (Figure 9, bottom right panel).

Figure 9. Norway: Solvency Stress Test Results—Market Shock Scenario [1/]

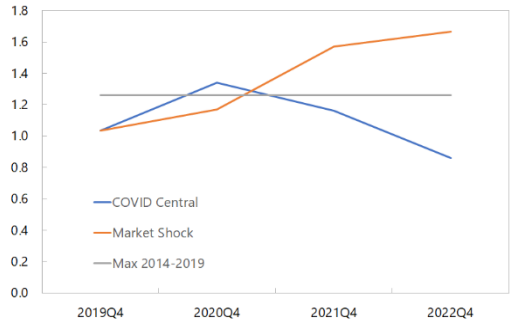
The GDP path under the Market Shock scenario is more severe than in past crises…

GDP Paths Under the Market Shock Scenario and Comparators



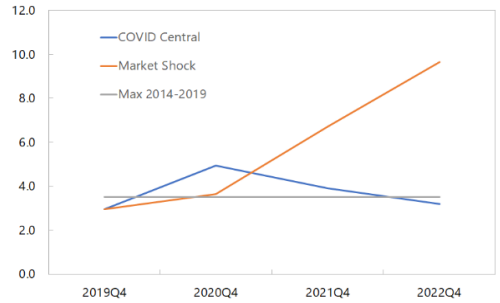
…. leading to a sharp increase in NPL ratios in the retail …

NPL Ratio in Retail Sector
(percent)



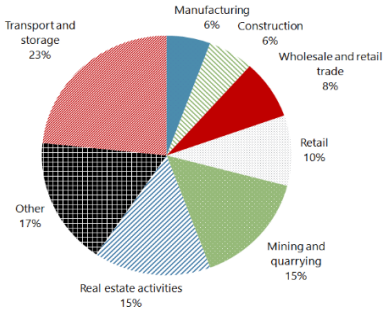
….and corporate portfolios, up to levels not seen since the mid-1990s.

NPL Ratio in Corporate Sector
(percent)



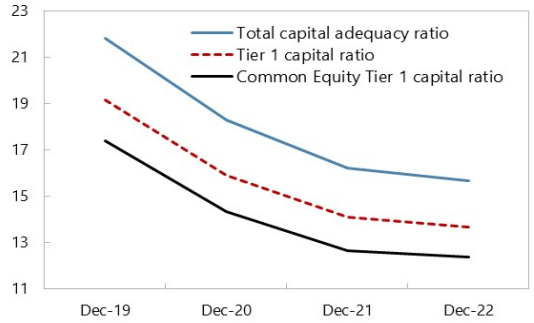
Loan losses would heavily impact some segments of the lending market …

Distribution of Losses Over the Risk Horizon Under the Market Shock Scenario



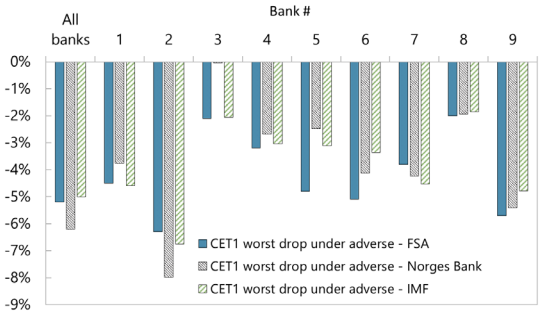
…and with losses also on debt securities and increases in Risk-Weighted Assets, capital ratios would decline sharply.

Capital Adequacy Ratios (percent)



The results are broadly similar across the three top-down exercises.

FSA, Norges Bank and IMF Top-down Solvency Stress Test: Banks with Worst CET1 Ratio Drop Over the Risk Horizon



Sources: Finanstilsynet, Norges Bank, IMF

1/ Results are for domestic banks only and exclude branches of foreign banks operating in Norway

21. However, also under this scenario there are no material breaches of the hurdle rates in the FSAP and FSA exercises. In the FSAP top-down test, buffers in excess of the hurdle rates would be depleted only partially for most banks and fully for three of them. The bottom-up stress tests run by the three largest banks also projected a decline in their capital ratios, though more contained than in the top-down exercises. The solvency stress test is complemented by a sensitivity analysis on securities market risk, which shows that risks from banks' securities holdings are largely contained. The banks in scope of the bottom-up stress tests also ran sensitivity tests of their interest rate and FX risks, revealing low levels of risk. This result is consistent with the banks' hedging of such risks.

Liquidity Stress Tests

22. The liquidity stress tests reveal broad short-term resilience, but with potential tensions arising over longer time horizons. The liquidity of 11 banks (the same as in the top-down solvency stress test) was assessed at different time horizons by stressing the LCR under standard assumptions and through a cash-flow analysis. The potential for specific liquidity spillovers from declines in real estate prices was not tested separately owing to data limitations. In practice, substantial mandatory degrees of overcollateralization of covered bond issuances limit immediate risks, but in the event of very severe house price declines the liquidity of these instruments could still be compromised. During the international financial turmoil surrounding the onset of the COVID-19 crisis in March 2020, Norwegian banks' liquidity held up well—including with precautionary nonstandard central bank FX liquidity support—and potential tensions did not materialize.

23. Banks' liquidity positions appear solid over the 1-month horizon of the LCR. The LCR stress testing was based on the combination of three "haircut" scenarios with seven "outflow" scenarios. The first scenarios assume, starting from LCR standard assumptions, increasing haircuts on banks' counterbalancing capacity (i.e., on the assets that banks rely on to obtain liquidity in secondary markets or through standard central bank facilities). The outflow scenarios include (i) a regulatory scenario, (ii) three stress scenarios routinely used in FSAPs, assuming shocks on retail funding, wholesale funding, and both, and (iii) three stress scenarios designed by the FSA and Norges Bank consistent with their own liquidity stress test. In all individual scenarios, the average LCR for the 11 banks would remain above 100 percent over a one-month horizon, though some banks would breach the threshold under more severe scenario combinations (Figure 10, top left panel). Similarly, the LCR in domestic currency—for which a 50 percent floor applies for some banks—remains above the threshold on average, with only one bank experiencing difficulties under a severe scenario combination (Figure 10, top right panel). Norwegian banks are generally very liquid in EUR and USD and their LCR in these currencies remains well above 100 percent in all cases.

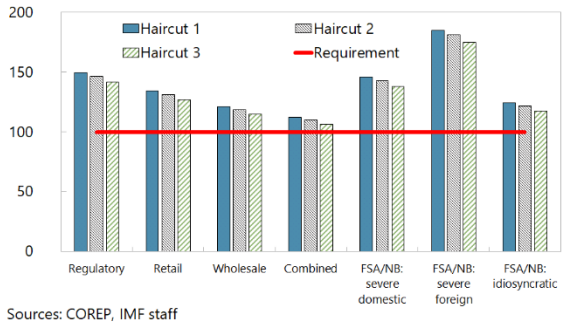
24. Over longer time-horizons, an additional cash flow analysis points to some gaps in the counterbalancing capacity under severely adverse conditions. The cash flow analysis explores the balance between outflows, inflows, and counterbalancing capacity over 18 maturity buckets (from overnight to one year). The analysis is run under mildly and severe adverse scenarios, based on carefully calibrated assumptions about the stress factors (run-off, roll-off, and haircut rates). All banks would comfortably handle net outflows up to one year with their initial counterbalancing capacity under the mildly adverse scenario, though some would encounter difficulties under a severely adverse one. Starting from the 3–4 months bucket, the whole system would experience counterbalancing capacity gaps under the severely adverse scenario (Figure 10, middle right panel). A delicate role is played by debt issuance, highlighting rollover risks that banks would face under dislocations in capital markets (Figure 10, bottom panel). Difficulties in rolling over derivative

transactions for hedging interest rate and FX risks also contribute to liquidity shortages. Difficulties could be compounded by possible margin calls, though an assessment of such additional drains would require detailed transaction-level data that are currently not available.

Figure 10. Norway: Liquidity Stress Test Results[1]

Liquidity appears solid within the 1-month horizon of the LCR, both overall ...

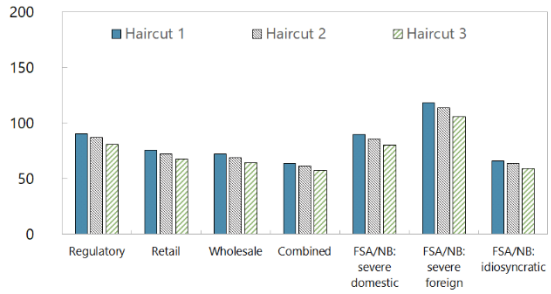
Average Stressed LCR Ratio Under Different Combined Scenarios - All Currencies
(Outflow Scenarios, percent)



Sources: COREP, IMF staff

....and when assessed separately for domestic and significant foreign currencies.

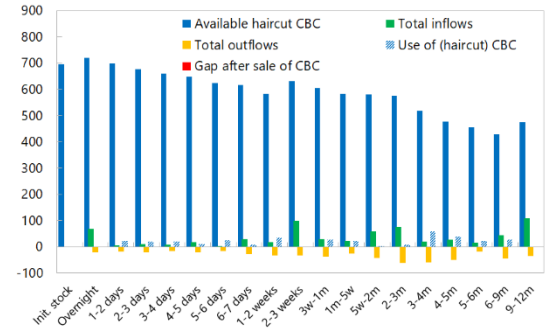
Average Stressed LCR Ratio Under Different Combined Scenarios - NOK
(Outflow Scenarios, percent)



Sources: COREP, IMF staff

The cash flow analysis suggests resilience under a mildly adverse scenario ...

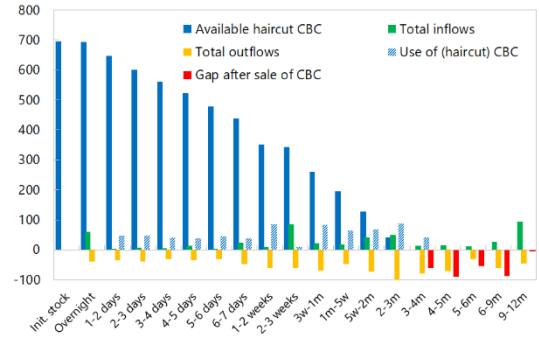
Cash Flow Analysis - Mildly Adverse Scenario
(10 Banks, Total Currencies, June 2019, In Billions of NOK)



Sources: COREP, IMF staff

...but potential tensions could emerge beyond 1 month, under severely adverse conditions...

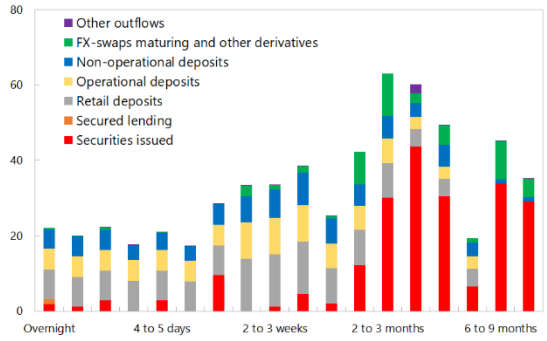
Cash Flow Analysis - Severely Adverse Scenario
(10 Banks, Total Currencies, June 2019, In Billions of NOK)



Sources: COREP, IMF staff

...as a result of sizeable potential net outflows if the rollover of debt issuance ...

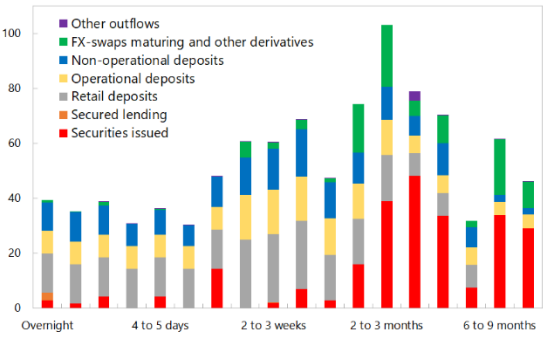
Breakdown of the Outflows - Mildly Adverse Scenario
(10 Among Largest Domestically Incorporated Banks, Jun 2019, Billions of NOK)



Sources: COREP, IMF staff

....and derivative contracts is threatened by dislocations in international markets.

Breakdown of the Outflows - Severely Adverse Scenario
(10 Among Largest Domestically Incorporated Banks, Jun 2019, Billions of NOK)



Sources: COREP, IMF staff

[1] Results are for domestic banks only and exclude branches of foreign banks operating in Norway.

Interconnectedness

25. A partial analysis of the linkages among banks in the Nordic region suggests that interconnectedness remains important but varies over time. The 2015 FSAP conducted an in-depth analysis mapping linkages and interconnectedness in the financial system, finding that these played an important role in the system. The mission used market data to gauge how those linkages have evolved since. Specifically, spillovers between the market-valuations of large, publicly listed Nordic banks were analyzed, following the approach by Diebold and Yilmaz (2014). The analysis suggests that spillovers tend to vary considerably through time, with some weakening of the links since 2017. The results, however, should be interpreted with care. Due to data limitations, the analysis is partial and does not necessarily capture, for example, the implications of the derivatives exposures among banks. The latter are likely important and significantly concentrated. An interaction of these exposures with the cross-holdings of securities could possibly result in significant shock amplification. Norges Bank recently carried out a separate assessment of direct and indirect contagion effects within the banking sector and found that these could amplify capital depletion under stress by 1 percent on average and up to 2.5 percent in the worst case considered.[6]

Climate Transition Risk

26. Two partial-equilibrium analyses explore climate-related transition risks. These risks originate from the transition to an economy that emits fewer greenhouse gases and can be driven by changes in policy, advances in technology, or a combination of both.[7] Due to Norway's role as a major producer of oil and gas, transition risks play a larger role than physical risks from climate change (such as those related to flooding or hurricanes), to which it is comparatively less exposed. The analysis examines two questions. First, how would an increase in domestic carbon prices impact Norwegian banks' credit exposures? Second, how would a fall in oil sector revenues affect Norwegian banks' loan losses? The sensitivity tests are conducted in partial equilibrium and, among other simplifications, do not account for the use of revenues from higher carbon taxes.

27. Following a price hike for corporate carbon emissions, banks' debt-at-risk remains small for the system as a whole, though the impact varies across banks. To analyze the impact of higher domestic carbon taxes on banks' corporate credit exposures, a firm-level balance sheet approach is used. The exercise investigates how the additional cost from higher carbon taxes would impact firms' debt-servicing ability and, thereby, the stability of banks. Specifically, banks' *debt-at-risk* is calculated, defined as the share of exposures where the interest coverage ratio of firms' earnings drops below a threshold value. An increase of carbon prices is simulated, to an average of US$75 and US$150, respectively—levels drawn from the literature as considered necessary to achieve emission reductions in line with Paris targets. Under these assumptions, firms employed in emission-intensive sectors such as waste management and transportation would be materially impacted (Figure 11, top panel). Banks' increase in debt-at-risk remains small on average but is significant in banks with lending concentrated to exposed sectors (Figure 11, middle panel).

[6] See 'Assessment of Contagion Effects in The Banking Sector', Financial Stability Review 2019, Norges Bank.

[7] Vermeulen et al. (2018) *An energy transition risk stress test for the financial system of the Netherlands.* De Nederlandsche Bank Occasional Studies, Volume 16–7.

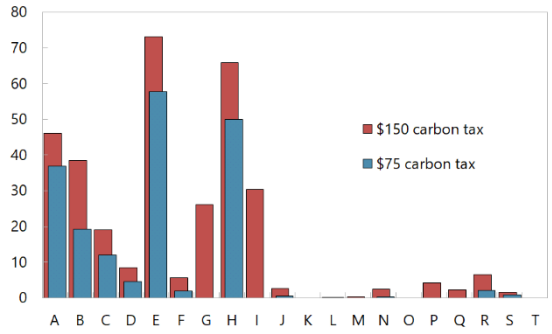
28. A permanent fall in global oil demand would lead to significant loan losses for Norwegian banks. Higher global carbon taxes would put a wedge between the global oil supply and demand curves and would structurally reduce external oil demand. This would result in a fall in oil revenues that could potentially impact financial stability. To examine this channel, the impact of lower Norwegian oil sector revenues on the Norwegian economy is estimated. The analysis suggests that loan losses of banks and mortgage corporations would be significantly impacted by shocks in oil revenues. The fall in revenues stemming from a carbon price of US$75 is estimated to increase loan loss rates by about 0.3 percentage points—a doubling from current levels—while a carbon price of US$150 would to lead to an increase by roughly 0.4 percentage points. These results are comparable to the increase in loan loss rates experienced during the oil price decline of 2014–16. This said, dynamics under a carbon price scenario can be expected to differ from past episodes since perceptions of the persistence of the shock will be different in case of a permanent policy change.

Figure 11. Climate Transition Risk Analysis

Agriculture, waste management and transportation sector can be materially impacted by carbon price increase.

Sector Impact Given Carbon Price Increase

(Percentage of firms by sector for which ICR drops from 2>ICR>1 to below 1)



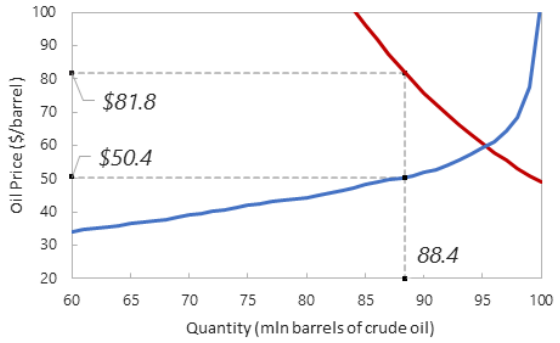
Source: IMF Staff Estimates

Note: A = Agriculture; B = Mining; C = Manufacturing; D = Electricity, gas; E = Water supply; sewerage, waste management; F = Construction; G = Wholesale; repair of motor vehicles; H = Transportation; I = Accommodation; J = Information; K = Financial and insurance activities; L = Real estate activities; M = Professional, scientific and technical activities; N = Administrative and support service; O = Public administration and defence; P = Education; Q = Human health and social work activities; R = Arts and entertainment; S = Other service activities; T = Activities of households.

Share of Banks' Corporate Debt at Risk from Higher Carbon Prices

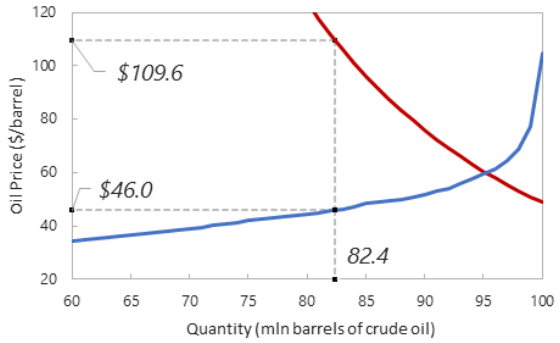
Uniform carbon price of	US$75		US$150	
(in percent)	Drop below ICR 2	Drop below ICR 1	Drop below ICR 2	Drop below ICR 1
All banks	2.25	2.22	4.04	3.95
Most exposed bank	9.03	9.08	15.87	15.78

Global Equilibrium for US$75 Carbon Price



Sources: Rystad Energy, IMF Staff Estimates

Global Equilibrium for US$150 Carbon Price



Sources: Rystad Energy, IMF Staff Estimates

Note: Supply curves are based on break-even prices for global oil production sites as provided by Rystad Energy. Demand curves are based on median price elasticity of oil demand from estimates in the literature.

Risk Monitoring and Data

29. The authorities are encouraged to further strengthen their own analysis of financial sector vulnerabilities. While data availability is generally good, in the context of the stress testing work some important gaps emerged. In particular, authorities should establish a regular collection of data on the liquidity position of foreign bank branches; maintain accurate and updated 'maps' with the internal composition of borrower groups; accelerate the data collection and methodological steps needed to analyze margining arrangements for derivative transactions and related counterparty risk; and develop more analytical and granular models for credit risk at the bank and asset-class levels.

FINANCIAL SECTOR OVERSIGHT

A. Macroprudential Policy

30. Norway's unusual institutional set up for macroprudential policy remains unchanged since the last FSAP. The Ministry of Finance (MoF) is the single ultimate macroprudential decision-maker in Norway, which is rare in international practice.[8] Norges Bank and the FSA play important advisory roles, however, and operate most of the policy tools. They each also have relatively sophisticated risk monitoring frameworks and publish financial stability reports. Coordination across the three institutions has a long history but relies mostly on informal traditions. Norges Bank and the FSA make policy recommendations to the MoF for selected tools, some with explicit 'comply-or-explain' mechanisms. Policy debate mostly takes the form of public consultations (initiated by the MoF) during which the FSA and Norges Bank state their respective positions in public letters. Biannual triparty meetings take place but do not play a major role in policy formation.

31. However, the authorities have demonstrated a strong willingness and ability to act in recent years. Although the central role of the MoF has the potential for politicization of macroprudential policy, in practice the authorities have taken substantive and wide-ranging measures over the past decade, and more than observed in most other advanced economies (Figure 12, Table 8).

- **Broad-based tools**. Since the introduction of a CCyB in 2015, to address growing cyclical risks, the buffer was raised three times to reach 2½ percent from end-2019. To provide for structural risks, a systemic risk buffer (SRB) was introduced in 2013. Initially set at 2 percent over all banks' exposures, and raised in 2014 to 3 percent, the authorities had envisaged raising the SRB further to 4½ percent from end-2020, though narrowing its basis to domestic exposures only. This active use of capital tools has contributed to banks' high capital levels, which now provide

[8] Denmark has a somewhat similar set-up, with the Minister for Industry, Business and Financial Affairs designated as macroprudential authority under CRD IV. However, Denmark's *Systemic Risk Council* is the macroprudential authority established in accordance with ESRB recommendations. Denmark effectively has two authorities, Norway only one.

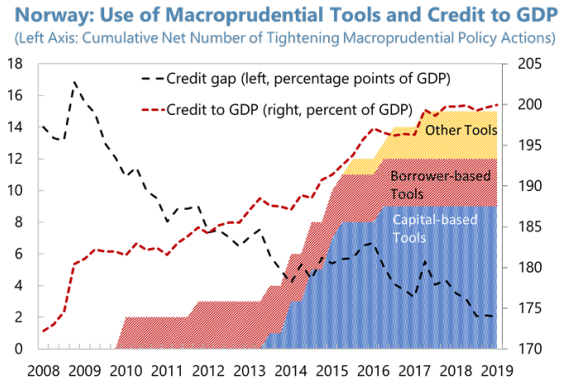
valuable buffers in the COVID-19 shock and have allowed the authorities to reduce the CCyB to 1 percent in March 2020, while leaving space for further relaxation.

- **Borrower-based household measures.** To address high and rising household debt and cool the housing market, the authorities converted prior mortgage guidelines—including on LTV limits and stressed financial margins—into binding regulations. The regulations expire periodically (12 or 18 months) but have thus far been renewed. A debt-to-income (DTI) limit of 500 percent, and tighter underwriting restrictions for Oslo were also introduced. The borrower-based tools are subject to a "flexibility quota" (or "speed limit"), which during normal times allow banks to deviate from the requirements for 10 percent of lending (8 percent in Oslo). In the context of the COVID-19 outbreak, the flexibility quota was temporarily increased to 20 percent for all new loans extended during 2020Q2.

- **Measures to address CRE risks.** These include: the introduction of a 100 percent risk-weight floor on CRE exposures for banks using the standardized approach in 2014, intensified oversight and Pillar II capital add-ons for banks with concentrated exposures in 2018; as well as the CCyB increases discussed above. A new temporary risk weight floor for CRE of 35 percent for IRB banks is slated to become effective end-2020 (as part of a package of measures designed to offset the weakening of capital requirements implied by the adoption of EU rules—see ¶40).

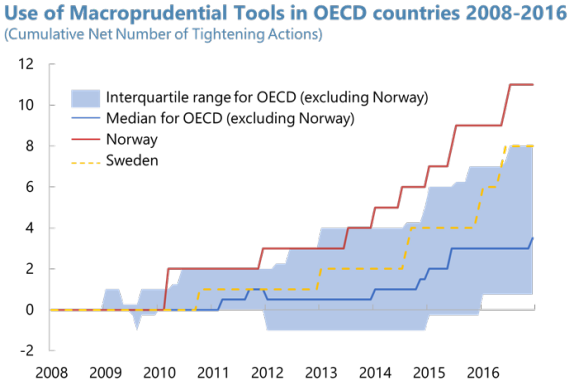
Figure 12. Norway: Macroprudential Policies

Significant macroprudential tightening in recent years has helped to lower the credit gap…



Source: 2019 IMF Macroprudential Policy Survey.

…as Norway took more actions than most peers.



Source: 2019 IMF Macroprudential Policy Survey.

32. To help ensure continued effective policy action, the institutional framework could be further strengthened by articulating a strategy, and closer interagency coordination. The existing institutional setup has important desirable features, including a high level of transparency. While these strengths should be preserved, enhancements can further improve the robustness and effectiveness of the framework. Developing and publishing a macroprudential policy strategy would help further insure against inaction bias, foster accountability, facilitate external communications and prepare the market for possible adjustments to buffers. Regarding process, the semiannual

triparty meetings should be used more effectively to jointly discuss risks and the specific policy actions needed to address them.

33. To bolster the macroprudential perspective in times of systemic distress, Norges Bank should have advisory powers over tools that can be relaxed. Norges Bank should be given recommendation powers, with a comply-or-explain mechanism, over tools—such as the SRB and the LCR in significant currencies—that could be considered for relaxation in case the structural risks they target materialize. Doing so would send a welcome signal about the potential for (partial) easing of these tools during severe stress episodes, and it would complement the recommendation powers Norges Bank already has over the CCyB.

34. Key elements of the temporary household measures should be made permanent features of the framework. The duration of the measures should match the structural nature of the risks they address. This argues for making them permanent, as was also recommended in recent Article IV consultations. Keeping household tools in place (and adjusting them occasionally if needed) would be more prudent and cost effective than removing and reintroducing them over the housing cycle.

35. Although CRE market risks are now on the downside, broadening the toolkit for CRE vulnerabilities could help address these in a more targeted manner during future upswings. The authorities should consider the introduction of a sectoral CCyB, which has been used effectively in Switzerland, or a sectoral SRB to specifically address banks' CRE exposures. Such targeted tools would help contain CRE risks without imposing undue costs on banks with low CRE exposures.

36. To facilitate systemic risk analysis and tool calibration, data collection should be expanded. Data quality and availability is generally good, and further progress was recently made with the establishment of a credit registry for consumer lending. Nonetheless, there are important remaining data gaps. Specifically, it would be useful to collect data on NPLs and financial distress for households to guide calibration of borrower-based tools. As recommended in the last Article IV consultation, the collection of more granular and comparable data on CRE is also desirable to facilitate monitoring and analysis, as well as the possible future development of new instruments.

B. Banking Sector Supervision

37. The FSA has thorough supervisory processes and tools, with key improvements made in recent years. The oversight framework is solid, and the FSA has the required supervisory powers to limit or address unsound bank practices and risk-taking behavior. The framework has also been further strengthened since the last FSAP. Improvements included the adoption of higher regulatory capital requirements and key updates to supervisory modules. Also, new temporary requirements were introduced for RRE and consumer loans, and the LCR was fully phased-in.

38. However, weaknesses remain in the FSA's operational independence and oversight of smaller banks and foreign branches. Two key issues identified by the 2015 FSAP remain. First, the FSA's operational independence continues to be limited, with the MoF setting the FSA's budget. The MoF also has the power to decide on prudential regulations, set goals and issue instructions, grant

and revoke bank licenses, and to overturn the FSA's supervisory decisions. Second, the FSA adopts an approach to supervision that focuses mostly on the largest domestic banks. Consequently, there is less focus on other banks' risk profiles, which could leave medium and smaller-sized banks—particularly those with elevated risks—inadequately supervised individually or in the aggregate. Prudential oversight of foreign bank branches (some systemic) is conducted by the home supervisors, and the FSA's engagement is mainly through cross-border cooperation and participation in supervisory colleges.

39. The FSA should be given more independence in its regulatory powers, operations, and budget. To ensure the ability of the FSA to effectively fulfill its mandate, its independence should be strengthened. The FSA should have powers to issue binding regulations and to decide on bank licenses and their withdrawal. In addition, the MoF's powers to issue instructions to the FSA and decide on appeals to FSA supervisory decisions should be limited. More budgetary autonomy for the FSA, appropriately paired with a higher level of accountability, would help it to manage and control its resources more effectively.

40. Greater consideration of banks' risk profiles and stronger oversight of systemic foreign bank branches is also warranted. The FSA's current supervisory approach is understandable given the systemic reach of the largest banks. However, when planning and performing its supervisory activities, a deeper consideration of banks' risk profiles would help ensure better coverage of high-risk medium and small-sized institutions which, in aggregate, can be significant to the banking system. Notwithstanding the FSA's active involvement in cross-border supervisory cooperation with the home supervisors of foreign banks, the FSA should also consider increasing its direct monitoring and onsite supervision of foreign branches, especially systemic ones. These improvements may require an increase in the FSA's resources, which underscores the importance of granting the FSA more budgetary autonomy.

41. The authorities should continue their efforts to maintain strong capital levels after the adoption of EU rules. The adoption of the EU capital adequacy framework in 2020 represents a weakening of existing requirements in Norway, including because of the removal of the Basel I floor and the introduction of the supporting factor for loans to small and medium-size companies (SMEs). The European framework also limits the authorities' room for maneuver under Pillar 1 (i.e., minimum capital requirements). In response, the MoF increased some capital requirements and the FSA has initiated steps to enhance the requirements of the IRB models for credit risk. The mission supports these efforts and encourages the authorities to monitor the implications of the transposition of the EU rules on banks' capital and take actions as needed to maintain strong capital levels. In this context, the FSA should continue to enhance its oversight of banks' IRB models. It should also provide banks with a transparent and detailed description of its Pillar 2 approach and decisions.

42. The FSA should further bolster the regulatory framework for banks' credit risk and its oversight of related systems and models. Credit risk, particularly in real estate lending, is the predominant risk exposure of Norwegian banks. The FSA should therefore develop supervisory guidance on prudential aspects of loan loss provisioning and the valuation of real estate. Making the temporary prudential regulations for residential real estate and consumer lending permanent (see

above) will also be important in this regard. The authorities should also develop supervisory guidance on CRE exposures to supplement their intensified supervisory scrutiny of this asset class.

43. Prudential oversight of banks' liquidity and funding should be strengthened. The LCR has been in force since 2015 and minimum requirements for LCR in significant currencies were added in 2017. However, liquidity oversight could usefully be extended beyond this. In particular, the Net Stable Funding Ratio (NSFR), currently reported by banks, should be introduced as a requirement according to the EU framework timeline. Given banks' significant reliance on covered bonds in their liquidity management and funding—and the more lenient treatment of such instruments in European LCR framework—the FSA should also further enhance its oversight of banks' liquidity and funding risk management. This is important because cross-holdings of covered bonds among banks and their link with the real estate market may exacerbate risks.

C. Insurance Sector Supervision

44. Norway has a significant insurance sector. The sector has balance sheet assets of NOK 1820 billion, or about 18 percent of the total financial system. The life insurance business, including pensions, dominates and accounts for 90 percent of the sector. Non-life (property and casualty) makes up the remaining 10 percent. Many insurers are part of broader conglomerates.

45. Capital levels of insurers have improved significantly in recent years. At the time of the last FSAP, the Norwegian insurance sector was under considerable pressure from the low-interest rate environment and capital levels had weakened. Since then, and in the run-up to the adoption of Solvency II, the authorities took several steps to boost capital for the industry, including by requiring greater profit retention. Insurers also increased capital through the issuance of subordinated debt, reduced costs, and lowered their investment risk.

46. Several insurers continue to face challenges from the protracted low interest-rate environment, though changes to their business models are gradually reducing these risks. Life insurers in the private sector have ceased offering products with interest rate guarantees or significantly reduced them. Similarly, a transition from defined-benefit to defined-contribution schemes in occupational pension plans is reducing solvency risks in the long run. However, as guarantees in Norway have been often provided for life, the legacy of past commitments will continue to affect insurers' solvency position for a considerable time.

47. While oversight is robust, the FSA's risk analysis of insurers could be enhanced. In particular, the FSA should strengthen risk-monitoring at group and industry-wide levels to better cover systemic risks. The FSA should also conduct its own market-wide stress tests of the insurance sector, instead of relying on EIOPA exercises, which covers only the two largest insurers. The authorities should monitor banking-insurance conglomerates more closely to assess the aggregation of any counterparty linkages and common exposures.

48. The FSA should also consider a broader set of risk measures to guide its supervisory activities. The FSA follows a risk-based approach to supervision and prioritizes its supervisory review of insurers based on two factors—risk and impact, with impact is measured by insurers'

market share and risk measured by a firm's solvency ratio. The FSA should consider strengthening the risk dimension of their classification by adding additional metrics. These could usefully include market risk, credit risk, profitability and liquidity, as well as the quality of risk management and governance in the supervised entities. These metrics should help identify not only current risk levels, but also their evolution over time.

49. Recent measures to reduce regulatory arbitrage between banks and insurers are welcome but more can be done to contain insurers' risks from housing exposures. To minimize incentives for regulatory arbitrage within conglomerates, steps were recently taken to make capital requirements on holdings of mortgage portfolios more consistent for banks and insurers. These measures are welcome, but the FSA should also consider establishing a comprehensive monitoring and reporting framework to track the evolution of the real estate market and risks from residential mortgage lending faced by individual insurers. In addition, it will be useful to monitor closely how the new rules affect insurers' and conglomerates' investment behaviors.

D. Cyber Resilience

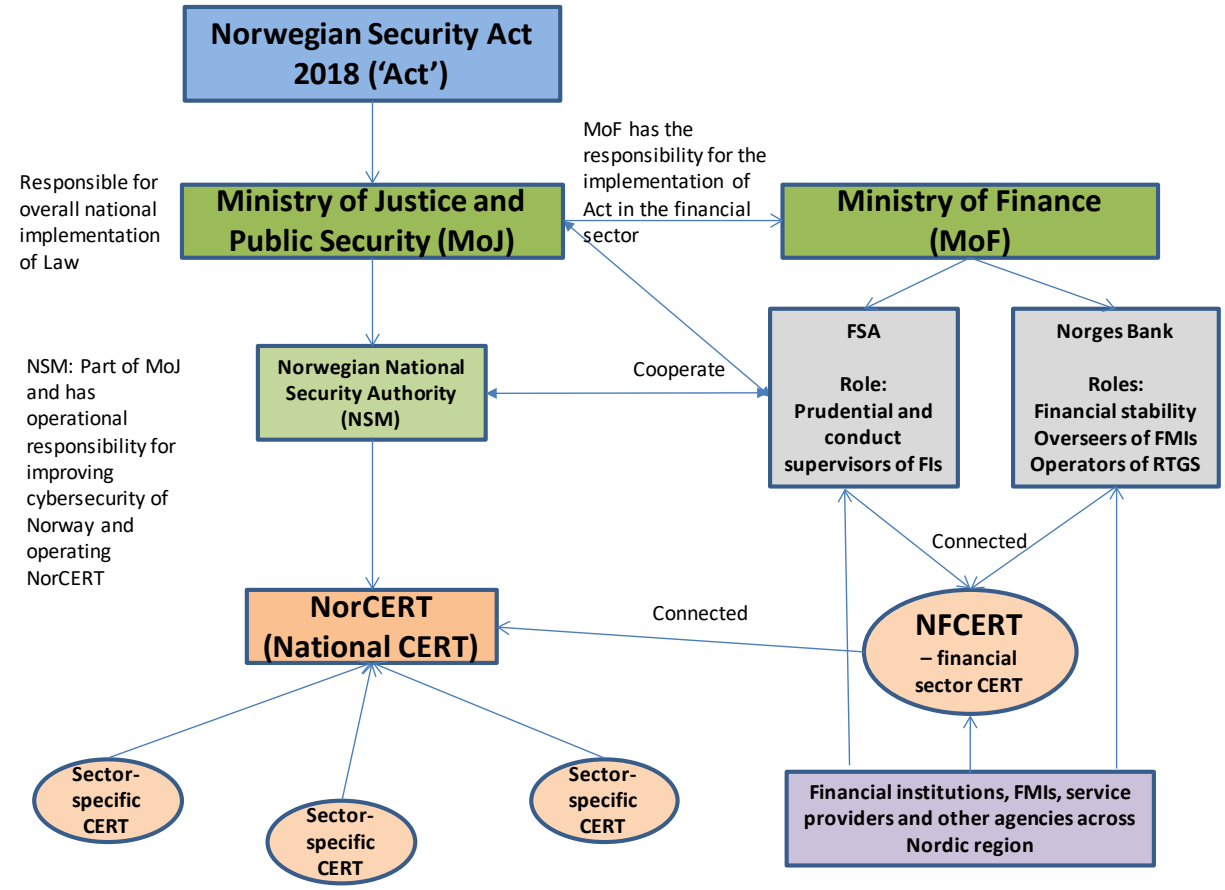
50. In a backdrop of considerable vulnerabilities, the cybersecurity risk mitigation framework is mature and advanced (Figure 13). Norway has been at the forefront of digitalization of payments and financial services, which has made continuously evolving cyber threats an increasingly prominent risk factor. A specific concern is outsourcing of information technology (IT) services by critical payment systems to external service providers, which are not directly supervised by the authorities. Given the elevated risks, threat-intelligence collection and crisis management platforms used by financial institutions and Financial Market Infrastructures (FMIs) are well developed. Also, cybersecurity risk regulation and supervisory practices are generally sound. The FSA has adequate regulatory tools and expertise to fulfill its responsibilities, though cyber expertise at the payment systems oversight function in Norges Bank is comparatively less developed.

51. Building on a strong basis, there is scope to further strengthen cybersecurity risk supervision and oversight. As a pilot exercise, the Norway FSAP has been the first to cover cybersecurity risk mitigation. Although existing regulation and supervisory practices are sound, the assessment of the cybersecurity framework suggests room for further improvement. In particular:

52. The incident reporting and crisis management frameworks for systemic cyber incidents could be further improved. Norway has a well-established cybersecurity information and threat-sharing system that promotes the timely sharing of information. However, the incident-reporting framework could be further improved by setting clearer qualitative or quantitative thresholds for cyber incidents and by further defining processes and formats for incident reporting, including to facilitate swift corrective measures when needed. Norges Bank and the FSA would also benefit from information sharing agreements on cybersecurity incidents between them as well as a clearly defined crisis management framework on how to maintain financial stability if systemic cybersecurity incidents occur.

53. Cybersecurity risk supervision at the FSA would benefit from a more structured and comprehensive approach. The FSA has adequate expertise and regulatory tools to fulfill its responsibilities as cybersecurity risk supervisor. However, it could follow a more structured approach for cybersecurity risk supervision. This should include a clear description of how off-site supervision on cybersecurity should be conducted, and how assessments influence the overall risk assessments of institutions by the general supervisors. The FSA is also encouraged to issue additional enforceable guidance to the supervised institutions on IT/cybersecurity risk and to increase the intrusiveness of on-site cybersecurity risk inspections.

Figure 13. Norway: Cyber Security Oversight Landscape[1]



Source: IMF staff

[1] CERT refers to a Computer Emergency Response Team.

54. Norges Bank's cybersecurity risk oversight of payment systems should be intensified. Following a more structured and comprehensive approach to cybersecurity risk would also help increase the effectiveness of the oversight function at Norges Bank. This includes utilizing a portfolio of tools and techniques to assess cybersecurity risk against set expectations, reaching clear conclusions and identifying specific remedial measures. Further cybersecurity training for overseers is also important, to strengthen the oversight function's capabilities. Additionally, clear communication of expectations by Norges Bank to the market, supplementing the Committee

on Payments and Market Infrastructures-International Organization of Securities Commissions (CPMI-IOSCO) guidance, would increase the cyber-resilience of inter-bank payment systems. Finally, the oversight function should be given adequate independence and resources to conduct thorough oversight of the Norwegian Real Time Gross Settlement (RTGS) system (NBO).

55. More attention needs to be given to critical service providers. Given the importance of a small number of external service providers for interbank payment systems, the oversight function should use its existing legal powers to seek greater assurance and transparency from critical service providers. This could include, amongst other tools, performing or mandating regular cybersecurity audits and/or onsite inspection.

E. Anti-Money Laundering and Countering Terrorism Financing (AML/CFT)

56. A recent assessment by the Financial Action Task Force (FATF) indicates that the Norwegian authorities have made progress in addressing AML/CFT deficiencies. Norway's previous AML/CFT mutual evaluation, conducted by FATF in 2014, found shortcomings both on technical compliance with standards and in the effectiveness of ML/TF risk mitigation. Since the 2014 evaluation, Norway has substantially strengthened its AML/CFT legal framework, including by adopting a new AML Act and regulations in 2018. This has improved legal compliance, resulting in higher ratings on 20 (out of 40) FATF recommendations in the recent reassessment, leaving only five recommendations less than *largely compliant*. The 2019 FATF follow-up assessment also noted progress regarding the framework's effectiveness. In particular, Norway has demonstrated significant improvement of its understanding of ML/TF risks, developed a national AML/CFT strategy, improved national coordination and operational cooperation, and prioritized awareness of vulnerabilities in high-risk areas, including banking and payment institutions. This progress has resulted in higher ratings on the understanding of risks and national AML/CFT coordination.

57. However, the FATF assessment also points to important remaining weaknesses. Notwithstanding the progress noted, the FATF's rating on the overall level of effectiveness of AML/CFT oversight has remained unchanged at "moderate." Although the FSA has taken actions to link supervisory activities to identified ML/TF risk, in practice the scope, intensity and frequency of its supervision remains insufficient and not always in step with the identified level of risk. In particular, AML/CFT supervisory activities relating to banks (including foreign bank branches) and money transfer services are not proportionate to the high levels of risk in these sectors. The FATF also noted that the FSA had not used its powers to impose monetary penalties. However, after the assessment the FSA imposed penalties on three banks for breaches of AML/CFT compliance.

58. Further improvements are needed to strengthen the effectiveness of AML/CFT supervision. Specifically, the FSA should increase the frequency of its onsite AML/CFT inspections of banks, including branches of foreign banks, particularly in the form of targeted and thematic inspections. The recent increase in the FSA's budget for AML / CFT inspections is welcome. In addition, the FSA should further improve its risk-based approach to AML/CFT and its supervisory tools and methodologies. Building on the recent progress made in applying the new sanctioning

powers under the recent AML act, the FSA should also pursue an active enforcement approach by applying monetary penalties as needed to address banks' AML/CFT deficiencies.

SYSTEMIC LIQUIDITY

59. The FSAP assessed the functioning and resilience of key funding markets. Given a limited deposit base, Norwegian banks rely on a diversified funding mix with a relatively large role for market-based funding. Banks' high usage of market funding, and related foreign currency exposures and cross holdings of covered bonds, make them vulnerable to changes in investor sentiment and market conditions, both domestically and abroad. Against this background the FSAP reviewed the functioning of key funding and hedging markets, as well as the authorities' ability to manage liquidity conditions in normal times and times of stress.

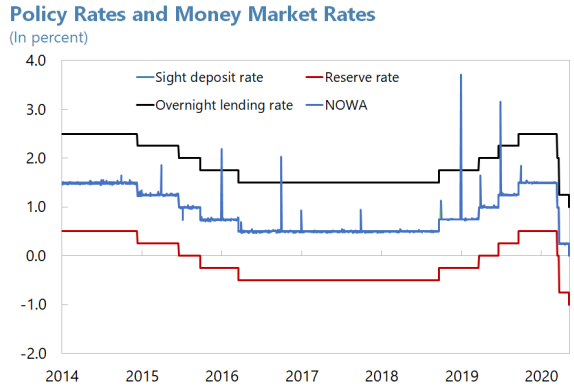
60. FX swap and covered bond markets—which are key to bank funding operations—are functioning well, though there are important tail risks. The functioning and resilience of FX swap markets is key for Norwegian banks because of the role swaps play in their liquidity management and their importance as a hedging instrument for funding in foreign currencies. In the assessment of the FSAP, these markets function well, and their trading activity has demonstrated resilience with stable turnover during past episodes of financial market turbulence as well as during the COVID-19 related volatility thus far The same can generally be said of primary and secondary covered bond markets, where the investor base is stable and mostly comprises institutions with long-term investment horizons (e.g., pension funds and insurance companies). Fundamentally, however, the demonstrated resilience of these markets in the past does not preclude possible liquidity problems in the future. The potentially high impact of funding and liquidity disruptions require effective systems for liquidity management and support.

61. Norges Bank has an effective framework for managing liquidity in normal times. Norges Bank carries out well-established operations that are generally effective in keeping banking system liquidity neutral in a context of often-large government transactions. The high correlation between the policy rate and the operational target (Norwegian Overnight Weighted Average rate, NOWA) confirms the effectiveness of the liquidity forecasting framework and the regular open market operations. However, the reported NOWA rate spikes at quarter-end, suggesting that banks are unwilling to lend at these times when they have to meet leverage ratio requirements (Figure 14). The authorities should consider whether the leverage ratio requirement could be averaged over each quarter to reduce incentives for this behavior.

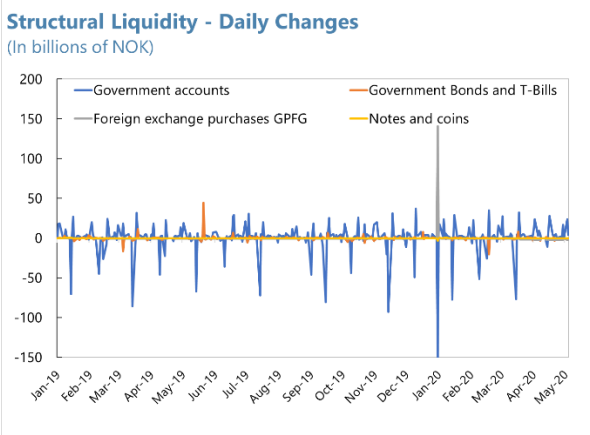
62. The framework for managing liquidity during stress is also well-defined. Norges Bank can provide bilateral emergency liquidity assistance (ELA), including in foreign currency, to eligible financial institutions and has developed a framework to provide market-wide liquidity support, which can be carried out through longer term lending operations. Norges Bank's forceful response to the liquidity pressures following the COVID-19 shock—which included extended lending operations in NOK and USD—confirms this assessment.

Figure 14. Norway: Developments in Structural Liquidity

The quoted NOWA rate has experienced sharp spikes in recent years



Government transactions have been a key driver of structural liquidity in the banking system



Source: Norges Bank.

63. However, it would be useful to analyze and monitor more closely the availability of collateral across eligible counterparties. Monitoring information on the amounts of eligible collateral, including high-quality liquid assets, held by banks would allow Norges Bank to gauge the impact of liquidity regulation, for example relating to the LCR requirement, and assess in real time developments in, and risks to, the liquidity buffers of banks.

64. Completing ongoing work to facilitate acceptance of loan portfolios as nonstandard collateral would improve Norges Bank's capacity to provide liquidity in times of stress. Such a framework would substantively broaden the universe of potentially acceptable collateral and improve Norges Bank's capacity to provide both bilateral ELA and market-wide liquidity support. The preparation should involve relevant counterparties to develop and test the exchange of relevant loan and portfolio information in a timely and accurate manner.

65. The authorities have improved the accuracy and integrity of key benchmark interest rates. The European Union Benchmark Regulation entered into force in Norway in December 2019 and the framework for the Norwegian interbank offered rate (NIBOR) was changed with effect of January 1, 2020. Further adjustments to the improved NIBOR should be made if and as needed to ensure smooth market functioning and market integrity.

FINANCIAL SAFETY NETS AND CRISIS MANAGEMENT

66. Progress has been made with the resolution framework and crisis management arrangements. An important step has been the adoption of the European Bank Recovery and Resolution Directive (BRRD) per January 2019, which has led to several changes to the resolution framework. The FSA has now been formally designated as the resolution authority and the resolution framework has been enhanced, including by the introduction of a bail-in tool framework for senior unsecured liabilities. Financing arrangements for bank resolutions were recently established by moving part of the funds accumulated in the deposit insurance fund—the Banks'

Guarantee Fund (BGF)—into a new resolution fund, with a separate fee structure. Key governance reforms were also implemented at the BGF, particularly by reducing the number of active bankers in its board. Regarding crisis management, the continuing close cooperation between the Nordic-Baltic authorities is commendable. However, a recent cross-border crisis-simulation within the Nordic-Baltic Stability Group revealed weaknesses in communication and coordination on ELA.

67. The legal framework should be further enhanced by giving the FSA, as the resolution authority, clearly defined statutory resolution objectives and accountability. While the FSA has been established as the resolution authority, the MoF retains significant resolution powers under the new legislation. To effectively perform its designated role, however, and consistent with the FSB Key Attributes, the FSA should be able to autonomously execute its resolution mandate without undue interference from the government or industry. Government involvement should be limited to resolutions that require public funds. Also, the new framework needs to be refined by clarifying the responsibilities, accountabilities, procedures and information-sharing arrangements among the relevant bodies. This includes a stronger integration of the BGF with the resolution framework. The authorities should exclude any active bankers from the BGF Board. The BGF should not provide open bank assistance, given the risks to which it exposes the deposit insurer.

68. The new resolution tools should be made operational without delay. This includes establishing the mechanics of a bridge bank and asset separation tools as well as preparing modalities to finance the relevant operations. The resolution fund should be made operational as soon as possible. Since the resolution tools are untested in Norway, the authorities should continue to conduct intra- and cross-institutional crisis simulation exercises to test those tools. The build-up of MREL, including the subordinated component, is a high priority. More work is also needed for the practical execution of the bail-in tool, given that the large majority of MREL (subordinated) instruments are likely to be held by foreign investors. The FSA should consider applying multiple resolution options, in particular given the limited experience with bail-in. It would also be advisable for the existing court-based winding-up and liquidation procedures to be integrated in the new administrative resolution framework. The authorities should consider taking a policy decision to the effect that the public interest test is met by default for most banks.

69. The authorities should consider establishing an overarching system-wide crisis management framework. While the informal channels for interaction on crisis management are well-established and actively used by the FSA, Norges Bank and the MOF; it would nevertheless be beneficial to establish a high-level coordinating body that would have a mandate for system-wide contingency planning and for coordination of policies and information sharing across relevant agencies in all aspects related to crisis prevention and management.

70. As a host to significant foreign branches, Norway would benefit from enhancing cross-border crisis management arrangements within the Nordic-Baltic region. The Nordic-Baltic Stability Group (NBSG) meets regularly, at least annually, and can meet more often under extraordinary circumstances; relevant EU authorities (e.g., the ECB and SRB) can be invited as guests. The establishment of resolution colleges and the work carried out there has been an important step in strengthening the cross-border bank resolution framework. However, the resolution colleges should not be seen as substitutes for (high-level) official crisis management preparedness.

Proposed Decision

The following decision, which may be adopted by a majority of the votes cast, is proposed for adoption by the Executive Board:

The Executive Board takes note of staff's analysis and recommendations in the report on Norway's Financial System Stability Assessment (SM/20/102, 7/8/2020).

Table 2. Authorities' Comments on Status of Key Recommendations of the 2015 FSAP	
Recommendation	**Progress**
Systemic Stability	
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.	**Done.** The FSA and Norges Bank have finalized a framework for liquidity stress testing. The set up uses cash flow structures at different maturities and funding gaps are calculated under three different stress scenarios. Stress tests of the seven largest Norwegian banks were conducted in the fall of 2018 and the results were (anonymously) published in the FSA's Risk Outlook report in December 2018. Norges Bank also published results from the stress test in its Financial Stability report in October 2018. The framework has been used in a few on-site inspections. There are plans to further develop the framework with regards to feedback effects, systemic dimensions and possibly linking solvency and liquidity stress testing. With regards to cross-ownership of covered bonds, the FSA has started a project to look into the concentration of covered bonds in Norwegian banks' liquidity buffer (LCR).
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.	**Ongoing.** The Solvency II legislation entered into force on January 1, 2016. Norwegian undertakings participated in the European Insurance and Occupational Pensions Authority (EIOPA) stress-test in 2016 and 2018. The FSA conducted thematic on-site inspections at the three largest life insurance undertakings during the autumn of 2016, and a further three inspections at medium sized undertakings during March to May 2017. The focus of the inspections was calculation and validation of the technical provisions and the solvency capital requirement. The inspections covered governance, documentation and validation on an overall basis, as well as more detailed issues on methods, assumptions and data used. Similar inspections have been conducted in the remaining undertakings in 2018 and in the first half of 2019. In 2018, the FSA conducted a survey that included all life insurance companies, where the purpose was to compare and challenge the calculated levels of the best estimate of technical provisions. A similar survey will be conducted in 2019.
Achieve recapitalization of weakly capitalized insurance companies in the current environment. Continue to restrict dividend payouts by such companies.	**Ongoing.** In a January 2017 letter to all life insurance undertakings the FSA stated that life insurance undertakings should not pay dividends as long as surplus on the insurance policies are used to strengthen reserves according to new requirements (new mortality tables). The letter stated further that where life insurance undertakings have been allowed to use the transitional rule for technical provisions, FSA assumes that the board of insurance undertakings make proper reviews of the need for capital accumulation in the undertaking both in the short and long term. Today, capitalization of life insurance companies is more satisfactory overall. Nevertheless, the FSA continues to challenge certain companies' target levels for when dividends can be paid. As of 2019, all Norwegian life insurance companies were satisfactorily capitalized.

Table 2. Authorities' Comments on Status of Key Recommendations of the 2015 FSAP (Cont.)	
Recommendation	**Progress**
Financial Sector Oversight	
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.	**Partly done.** The FSA has been given substantial sanctioning powers under the AML/CFT regulatory framework (see also below). Further, the FSAs budget has seen steady increases over the last years, in particular for 2019. This has among other things been allocated to supervision in relation to AML/CFT.
AML / CFT	
Upgrade substantially the FSA's supervisory approach towards the AML/CFT issues, including by increasing supervisory activities and providing guidance on the topic.	**Ongoing.** The FSA assesses the ML/TF risk in the institutions subject to supervision on a yearly basis. Risk assessments are updated annually and form the basis for the FSA's prioritization of its work against ML/TF. In the last year, the FSA has conducted AML/CFT on-site inspections in several institutions, including, banks, insurance undertakings and insurance intermediaries, investment firms, real estate agents, auditors and external accountants. The inspections are partly general inspections where AML/CFT is covered as one of several topics, and partly where AML/CFT is the main or sole topic. AML/CFT is also part of some off-site inspections. The number of inspections covering AML/CFT is rising, and more resources have been allocated to this work. As a result of increases in resources and supervisory activity, the FSA has decided to set up a dedicated Section for AML, which is planned to be operational from April 2019. A new AML Act was passed by the Norwegian Parliament in June 2018. It entered into force on the October 15, 2018, together with a new AML regulation. The AML Act implements the EU's Fourth Anti-Money Laundering Directive (2015/849) and the 2012 FATF Standards. The Act, among other things, gives the FSA powers to sanction non-compliance with administrative fines. The FSA has published general and sector-specific guidance papers on AML/CFT in 2016 and 2017. Guidance tailored to the new AML Act was published in May 2019.

Table 2. Authorities' Comments on Status of Key Recommendations of the 2015 FSAP (Cont.)	
Recommendation	**Progress**
Macroprudential Framework and Policies	
Consider additional measures to contain systemic risks arising from the growth of house prices and household indebtedness (e.g., stricter LTV ratios, and loan-to-income or debt service ratio to supplement the affordability test).	**Mostly done.** In June 2015, the Ministry of Finance adopted a regulation on requirements for residential mortgage loans, which converted FSA guidelines into explicit requirements, effective from July 1, 2015 to end-2016. The requirements were retained in a new regulation from January 1, 2017, which also introduced a debt-to-income limit, tighter down-payment requirements, and a lower "speed limit" for Oslo (the percentage of new mortgages that can deviate from mortgage requirements). The Ministry of Finance extended in June 2018 these regulations until end-2019.
Consider measures to contain risks related to banks' wholesale funding.	**Partly done.** LCR regulation was introduced in Norway in 2015, and the phase-in period was completed by the end of 2017. The regulation imposes LCR requirements for all currencies in total (of 100 percent), In addition, LCR requirements for significant currencies have been introduced. Banks and mortgage companies with EUR or USD as significant currencies must have LCR in NOK of at least 50 percent. In addition, a NSFR requirement is expected to be introduced after final EU rules are adopted. Even though the NSFR requirement has not yet been introduced, the NSFR is implemented as a reporting requirement. All Norwegian banks had a NSFR ratio of at least 100 percent as of Q3 2018.
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 decisionmakers; and, in due course, greater delegation of decision-making powers over macroprudential instruments to Norges Bank or the FSA.	**Under consideration.** The Central Bank Law Commission's proposal includes a proposal to establish a committee for monetary policy and financial stability at Norges Bank. The Commission proposes that the committee be assigned responsibility for the use of monetary policy instruments and efforts to promote financial stability and chaired by the Governor of Norges Bank. The proposal also includes somewhat more independence than today, by for example raising the threshold for when government instructions can be issued to Norges Bank. The proposal has been publicly heard and is now under consideration in the Ministry of Finance.

Table 2. Authorities' Comments on Status of Key Recommendations of the 2015 FSAP (Concluded)	
Recommendation	**Progress**
Financial 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.	**Ongoing.** On 1 January 2019, the new legal framework corresponding to the EU's BRRD framework, including rules on resolution planning entered into force. The FSA is designated as the resolution authority in Norway and has started resolution planning for the largest banking groups in accordance with the BRRD framework.
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.	**Mostly Done.** As all essential elements of the BRRD have been implemented, the Norwegian legal framework mostly complies with the FSB Key Attributes. However, the issue of operational independence remains.
The BGF should adopt policies specifying under what conditions board members must recuse themselves, considering actual and prospective conflicts of interest.	**Done.** The BGF has adopted new policies specifying the following circumstances under which board members must recuse themselves: • When there is a possibility that a company the board member has an interest in would bid on a problem bank or part of its assets; • When there is a possibility that the whole bank in which the board member has an interest, or parts of its assets or its deposit portfolio, may be sold. The board members must consider whether to recuse themselves based on these criteria before a meeting where support from the BGF will be discussed. When the problem situation is over, the board shall review how the recusal was handled. These policies are available on the BGF's website (in Norwegian only). Effective from January 1, 2019, a new Board was appointed to the BGF. The new Board was appointed by the MoF rather than elected by member banks. The new Board has adopted the same principles as the previous Board regarding recusal and conflict of interest.
Financial Market Infrastructures	
Strengthen operational risk management related to outsourcing in systemically important payment systems.	**Done.** The risk management framework for the Norwegian Interbank Clearing System (NICS) has been improved, and now appears to be compliant with the CPMI/IOSCO principles. Organizational changes and plans for some increased resources for the NICS system ownership function have been implemented. A new operational set-up for the NICS system is under preparation. An enhanced contingency solution for the NBO (RTGS) system was implemented in November 2015.

Table 3. Selected Economic Indicators, 2017–22

Population (2019): 5.4 million
Per capita GDP (2019): US$ 76,981.4 — Quota (3754.7 mil. SDR/0.78 percent of total)
Main products and exports: Oil, natural gas, fish (primarily salmon) — Literacy: 100 percent

				Projections		
	2017	**2018**	**2019**	**2020**	**2021**	**2022**
Real economy (change in percent)						
Real GDP 1/	2.3	1.3	1.2	-3.9	3.9	3.1
Real mainland GDP	2.0	2.2	2.3	-4.5	3.5	3.0
Final Domestic demand	3.1	2.0	2.2	-2.9	4.3	3.4
Private consumption	2.2	1.9	1.5	-6.5	4.0	3.8
Public consumption	1.9	1.4	1.7	4.0	1.8	1.2
Gross fixed capital formation	8.4	1.5	3.1	-11.5	4.2	3.8
Exports	-0.1	3.6	4.8	-6.3	4.0	3.5
Imports	2.4	2.3	5.5	-9.9	5.9	4.2
Total Domestic demand(contribution to growth) 2/	2.9	2.1	3.1	-6.6	4.6	3.6
Net exports(contribution to growth)	-0.9	0.1	-0.8	2.1	-1.1	-0.6
Offshore GDP	4.6	-3.7	-5.7	0.2	6.5	3.7
Gross capital formation	-10.4	2.8	15.4	-10.0	8.7	4.0
Exports	5.1	-6.0	-4.1	4.7	3.8	2.8
Unemployment rate (percent of labor force)	4.2	3.9	3.7	7.7	5.5	4.5
Output gap (mainland economy, - implies output below potential)	-0.6	-0.2	0.2	-5.1	-3.5	-1.0
CPI (average)	1.9	2.8	2.2	1.2	2.8	2.3
CPI (end of period)	1.6	3.5	1.4	2.2	2.6	2.0
Core Inflation	1.4	1.5	2.3	2.4	2.2	2.0
Public finance						
Central government (fiscal accounts basis)						
Non-oil balance (percent of mainland GDP) 3/	-8.0	-7.5	-7.5	-16.4	-11.2	-10.8
Structural non-oil balance (percent of mainland trend GDP) 4/	-7.6	-7.2	-8.0	-13.8	-10.4	-9.9
Fiscal impulse	0.2	-0.4	0.8	5.7	-3.4	-0.5
in percent of Pension Fund Global Capital 5/	-2.9	-2.5	-3.0	-4.3	-3.4	-3.2
General government (national accounts definition, percent of mainland GDP)						
Overall balance	5.9	9.9	10.2	-4.0	2.6	4.7
Net financial assets	372.7	350.2	401.3	417.0	408.8	404.7
of which: capital of Government Pension Fund Global (GPF-G)	304.0	284.0	338.0	351.6	347.3	346.3
Money and credit (end of period, 12-month percent change)						
Broad money, M2	6.0	5.3	4.2	...	...	...
Domestic credit, C2	6.4	4.9	5.1	...	...	...
Interest rates (year average, in percent)						
Three-month interbank rate	0.9	1.1	1.5	...	...	...
Ten-year government bond yield	1.6	1.9	1.5	...	...	...
Balance of payments (percent of total GDP)						
Current account balance	4.6	7.1	4.1	0.6	1.2	2.0
Exports of goods and services (volume change in percent)	1.7	-0.2	1.5	-2.4	3.9	3.2
Imports of goods and services (volume change in percent)	1.9	1.9	5.2	-9.3	5.7	4.2
Terms of trade (change in percent)	4.7	8.7	-8.4	-15.1	3.5	3.7
International reserves (end of period, in billions of US dollars)	65.1	63.8	65.1	65.1	65.1	65.1
Gross national saving	32.4	34.5	33.1	27.2	28.9	29.7
Gross domestic investment	27.8	27.3	29.0	26.6	27.6	27.7
Crude Oil Price	52.8	68.3	61.4	36.2	37.5	40.8
Fund position						
Holdings of currency (percent of quota)	93.5	88.0	83.4	...	...	...
Holdings of SDR (percent of allocation)	102.7	97.9	106.4	...	...	...
Quota (SDR millions)	3754.7	3754.7	3754.7	...	...	...
Exchange rates (end of period)						
Exchange rate regime						
Bilateral rate (NOK/USD), end-of-period	8.3	8.6	9.0	...	...	...
Real effective rate (2010=100)	85.6	86.1	83.7	...	...	...

Sources: Ministry of Finance, Norges Bank, Statistics Norway, International Financial Statistics, United Nations

1/ Based on market prices which include "taxes on products, including VAT, less subsidies on products".
2/ Includes the contribution from the mainland GDP residual.
3/ Projections based on authorities's 2019 revised budget removes both petroluem revenues and expenditures.
4/ Authorities' key fiscal policy variable; excludes oil-related revenue and expenditure, GPFG income, as well as cyclical effects. Non-oil GDP trend from MOF.
5/ Over-the-cycle deficit target: 3 percent of Government Pension Fund Global

Table 4. Structure of the Financial System, 2019 Q2

	Number	Assets billions of NOK	Assets billions of USD	Percent of Total
Banks	135	5,524	648	54.0
of which foreign banks' branches	14	1,476	173	14.4
Mortgage companies	33	2,325	273	22.7
Life insurance companies	11	1,629	191	15.9
State lending institutions	3	375	44	3.7
Finance companies	41	197	23	1.9
Non-life insurance companies	55	189	22	1.8
Total financial system	278	10,239	1,200	100.0
Memorandum items:				
GDP (2018)		3,533		
Mainland GDP (2018)		2,900		
Exchange rate (NOK / US dollar)		8.530		

Source: Norges Bank, IMF World Economic Outlook (WEO), IMF staff estimates.

Table 5. Financial Soundness Indicators for the Banking Sector

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Capital adequacy												
Regulatory capital to risk-weighted assets	10.1	12.8	14.2	13.6	14.6	15.5	16.5	18.9	22.1	22.0	22.3	24.2
Regulatory tier 1 capital to risk-weighted assets	7.5	10.3	11.8	12.1	13.2	13.8	14.5	16.7	19.7	19.4	19.6	21.4
Asset quality												
Non-performing loans to total gross loans	0.7	1.3	1.5	1.7	1.5	1.3	1.1	1.1	1.2	1.0	0.7	0.8
Provisions to non performing loans		33.3	32.8	28.5	32.0	34.6	36.5	38.4	44.5	71.2	84.4	89.1
Sectoral Composition of Loans: Residents												
Households		46.0	43.9	41.8	39.5	39.5	38.3	38.9	41.1	40.1	42.0	38.3
Non financial corporates		32.5	34.2	34.8	36.2	34.5	31.9	32.0	32.6	32.7	33.6	33.9
Inter-bank loans		0.1	0.2	0.2	0.1	0.1	0.4	0.4	0.3	0.2	0.1	0.2
General government		0.3	0.2	0.4	0.3	0.2	0.5	0.5	0.4	0.5	0.3	0.7
Other domestic		10.1	8.4	8.6	11.0	9.5	8.0	7.8	9.5	10.3	8.3	11.1
Sectoral Composition of Loans: Nonresidents		10.9	13.1	14.1	12.8	16.3	20.9	20.4	16.0	16.2	15.6	15.8
Profitability												
Return on assets (ROA)	0.5	0.8	1.0	0.9	1.0	1.1	1.1	1.1	1.2	1.3	1.3	1.6
Return on equity (ROE)	7.5	11.6	13.4	11.3	13.0	12.7	13.0	11.2	11.7	12.0	11.9	15.9
Interest margin to gross income	43.2	37.6	39.5	37.6	36.1	36.2	35.8	34.9	37.2	58.4	66.2	61.8
Non interest expenses to gross income	77.5	71.0	68.1	71.8	67.7	67.0	65.0	69.2	62.5	47.2	46.3	42.1
Liquidity												
Liquid assets to total assets	8.2	6.4	5.0	10.5	11.2	9.2	6.3	5.1	10.0	8.8	8.2	10.0
Liquid assets to short term liabilities	24.8	19.0	14.0	29.4	30.7	23.5	15.1	10.0	19.5	16.9	15.8	20.0
Total LCR							127.0	131.0	139.0	126.0	140.0	155.5
LCR in NOK							49.0	75.0	82.0	113.0	111.0	105.6
Other												
Housing Index	69.3	70.7	76.5	82.6	88.2	91.7	94.3	100.0	107.1	112.4	114.0	116.8

Sources: Norges Bank, FSI database, Haver analytics.

Table 6. Risk Assessment Matrix

Nature/Source of Main Threats	Overall Level of Concern	
	Likelihood of Severe Realization of Threat in the Next 1–3 Years (high, medium, or low)	**Expected Impact on Financial Stability if Threat is Realized** (high, medium, or low)
1. Prolonged COVID-19 outbreak and more protectionism.	**High** • Extended containment measures and uncertainty about the intensity and duration of the COVID-19 outbreak reduce supply (through disruption of global value chains) and domestic and external demand, which result in a synchronized and prolonged growth slowdown globally. • Deteriorating economic fundamentals and the associated decline in risk appetite would result in a second wave of financial tightening and in debt service and refinancing difficulties for corporates and households. • Pandemic-prompted protectionist actions (such as export controls) stay in place, while weaker economic conditions re-ignite broader protectionist measures.	**Medium / High** • Reduced domestic consumption and external demand for exports along with weaker investment translates into lower domestic growth and rising unemployment. • The performance of banks' loans to corporates and households weakens significantly.
2. Widespread and prolonged real estate market downturn.	**Medium / High** • Rising unemployment due to temporary or permanent layoffs weakens already stretched household balance sheets, which leads to higher NPLs for banks and reduces bank risk appetite and the availability of credit for real estate purchases or refinancing reducing real estate market turnover. • Changes in work and shopping habits could affect CRE. • Shutdown of global funding markets for covered bonds, reduces credit available for purchase or refinancing of residential and commercial real estate, which weakens prices.	**Medium** • A substantial decline in the prices of residential and commercial real estate would weaken private consumption, lower residential and commercial investment, and lead to significant deterioration of banks' balance sheets on both asset and liability side. • A vicious feedback loop of falling house prices, higher non-performing loans, tighter bank credit, and lower activity amplifies the downturn.

Table 6. Risk Assessment Matrix (Concluded)		
Nature/Source of Main Threats	**Overall Level of Concern**	
	Likelihood of Severe Realization of Threat in the Next 1–3 Years (high, medium, or low)	**Expected Impact on Financial Stability if Threat is Realized** (high, medium, or low)
3. Sharp rise in global risk premia.	**High** • Sustained rise in risk premia linked to concerns about debt sustainability globally on account of fiscal stimulus efforts by sovereigns and reduction in corporate earnings in relation to existing debt. • Political or social instability arising from extended lockdowns contributes to higher global risk premia.	**Medium** • Banks face more difficult and expensive funding conditions. • Banks' asset quality weakens sharply due to relatively high direct lending exposure to corporates. • Second round impact through slower growth on the overall quality of banks' assets.
4. Oversupply in the oil market.	**High** • Oil prices remain depressed for an extended period on account of global demand contraction. • Supply exceeds expectations due to failures of agreements between major suppliers to coordinate production cuts. • The global transition to a low-carbon economy accelerates.	**Medium** • The sharp decline in energy prices reduces demand for oil-related mainland goods and services, as in 2014–16. • Liquidity conditions tighten and lift the cost of capital. • Falling profit margins of energy-related companies weaken their debt-servicing ability and increase banks' corporate NPLs.
5. Cyber-attack.	**Low** • Cyber-security breaches and cyber-attacks engineered by state or non-state actors on a bank or critical payments infrastructure disrupt financial intermediation and the flow of goods and services.	**Medium** • Significant disruptions of banks or payment systems dent confidence in the financial system. • Individual institutions suffer large losses and potentially fail. • The cost of capital rises.

Table 7. Key Variables in Stress Test Scenarios

	COVID Baseline			COVID Downside			Market Shock		
	2020	2021	2022	2020	2021	2022	2020	2021	2022
Real GDP - Mainland (y/y percent change)	-5.5	3.8	3.3	-7.1	2.6	0.6	-1.9	-3.3	0.5
Unemployment rate	8.2	6.6	4.5	8.8	7.2	5.1	5.9	8.9	9.3
Consumer price index (y/y percent change)	2.5	2.8	2.0	2.5	2.8	2.0	2.1	2.2	2.2
Crude oil price	36.2	37.5	40.8	24.1	19.5	19.0	34.0	27.0	26.0
Equity index (OSEAX)	-24.2	35.3	30.7	-39.1	20.2	14.1	-33.0	-10.0	14.0
House price index (y/y percent change)	0.8	7.5	7.1	-1.8	7.2	6.0	-16.6	-11.9	-11.2
3-month money market rate (average)	1.0	0.3	0.3	1.0	0.3	0.3	2.2	2.6	2.9

Source: IMF staff.

Table 8. Key Macroprudential Measures Related to the Housing Market

Category	Instrument	First introduced	Current level
Borrower-based requirements for mortgages	Tolerate higher interest rate (stress test)	2015	5 percentage points
	Loan-to-value (LTV) ratio	2015	85 percent (60 percent for loans secured on secondary homes in Oslo)
	Principal repayment requirement	2015	2.5 percent annually with LTV above 60 percent
	DTI ratio	2017	5 times gross income
	Flexibility quota / "speed limit"[2/]	2015	10 percent (8 percent or up to NOK 10m for loans secured on dwellings in Oslo) *In March 2020, in the context of the COVID-19 outbreak, the flexibility quota was increased to 20 percent for all new loans*
Borrower-based requirements for consumer credit	Tolerate higher interest rate (stress test)	2019	5 percentage points
	Principal repayment requirement	2019	Monthly principal repayment, maximum term 5 years
	Debt-to-income (DTI) ratio	2019	5 times gross income
	Flexibility quota / "speed limit"	2019	5 percent

Table 8. Key Macroprudential Measures Related to the Housing Market (Concluded)

Category	Category	Category	Category
Banks' weighted capital requirements (share of risk-weighted assets)	Pillar 1 Minimum CET1 requirement	2013	4.5 percent
	Pillar 1 Minimum Tier 1 requirement	2013	6 percent
	Pillar 1 Minimum regulatory capital	2013	8 percent
	Pillar 1 Combined buffer requirements:		
	Capital conservation buffer	2013	2.5 percent
	Systemic risk buffer	2013	3 percent
	Buffer for systemically important financial institutions (SIFIs)	2015 2019	2 percent 2½ percent
	Countercyclical capital buffer	2020	1 percent (after COVID)
	Pillar 2 requirements	2016	Varies across banks
Banks' unweighted capital requirements (share of exposure measure)	Leverage ratio	2017	3 percent minimum requirement + 2 percentage points buffer requirement + 1 percentage point buffer requirement for systemically important banks
Liquidity requirements	Liquidity Coverage Ratio (LCR)	2015	100 percent
	LCR in individual currencies	2017	100 percent
	LCR in NOK	2017	50 percent (for banks with EUR/USD as significant currencies)
Minimum requirement for own funds and eligible liabilities (MREL)	Loss absorption amount	2019	Minimum requirement for regulatory capital + Pillar 2 requirements + combined buffer requirements
	Amount necessary for recapitalization	2019	Minimum requirement for regulatory capital+ Pillar 2 requirements + combined buffer requirements excluding countercyclical capital buffer requirement

Source: Norges Bank, Financial Stability Report, October 2019.99

Table 9. Financial Sector Policy Recommendations in Recent Article IV Consultations	
2019	It is too early to loosen macro prudential policy given remaining overvaluation and still rising household leverage. The increase in the countercyclical buffer is appropriate in light of mounting risks from CRE valuations. Full compliance with the recently improved AML/CFT legal framework will be paramount. As recommended in recent years, mortgage regulations could also be made permanent.
2018	The temporary 2017 mortgage regulations should be made a permanent part of the prudential toolkit—parameters would then be adjusted up or down as the financial cycle requires. In addition, although measures like the 500 percent DTI limit are much more binding in Oslo than elsewhere in Norway, expanding the regional differentiation of measures should be considered if house price overvaluation diverges further across regions. To more durably address housing risks, action is also needed to reduce still-generous tax preferences for housing and to further relax constraints on new property construction to underpin the supply of housing. The authorities should stand ready to tighten prudential policies further if risks intensify. This includes Pillar II add-ons for CRE.
2017	The authorities have taken several important decisions, which include: (i) an increase in the CCB to 2 percent from December 31, 2017; (ii) a new mortgage regulation (effective from 2017 to mid-2018), which introduced a DTI limit of five times the borrower's gross annual income, (iii) a leverage ratio requirement for banks of 5 percent (6 percent for the largest bank) from June 30, 2017. Additional targeted measures to help contain systemic risks could include: tighter LTV limits, higher mortgage risk weights, deployment of macroprudential tools (such as a sectoral CCB to contain banks' CRE exposures). Reducing generous tax preferences for housing investment would help prevent excessive leverage and dampen housing cycles.
2016	Additional targeted measures could help contain systemic risks arising from the growth of house prices and household indebtedness. The current LTV ratio cap of 85 percent is relatively high, and additional tools to be considered include: (i) higher mortgage risk weights; (ii) tighter LTV limits; and (iii) supplementing the affordability test by adding loan-to-income (LTI) or debt-service-to-income (DSTI) ratio limits. Given the divergent housing market developments across regions, some measures could be tailored towards individual regional markets. Enhance stress tests to account for funding risks and take additional measures to monitor and possibly limit banks' wholesale funding including on the mismatch between the maturity of currency swaps and underlying exposures. Strengthen the generally well-developed legal and institutional framework for crisis management, safety nets, and bank resolution. The authorities should finalize recovery plans, initiate resolution planning, and conduct resolvability assessments for the largest banks. Regional cooperation on financial stability issues should be strengthened.
Source: IMF Staff.	

Annex I. Banking Sector Stress Testing Matrix (STeM)

Domain		Bottom-Up Stress Test by Banks	Top-Down Stress Tests by FSA and Norges Bank (NB)	Top-Down Stress Test by FSAP Team
Banking Sector: Solvency Risk				
1. Institutional Perimeter	Market Share of Institutions Included	• 3 banks in scope of account for 45 percent of the NO banking sector by assets (60 percent of total assets held by domestically incorporated banks): DNB Bank, SpareBank 1 SR-Bank, Sparebanken Vest.	• FSA: 20 banking groups included in ST account for about 77 percent of Norwegian banks' aggregate total assets at end-2018. Additional analysis on sample identical to FSAP (11 banks). • NB: One "macro bank" comprising nine large banks (about 60 percent of NO banking market by assets): DNB Bank, SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sor, SpareBank 1 Ostland, SpareBank 1 Nord-Norge, Sbanken and Sparebanken More.	• ST comprises 11 largest domestic banks which hold approximately 60.5 percent of domestic banking sector assets. The ST does not include branches of foreign banks operating in Norway.
	Data Source/ Baseline Date	• Internal audited data (where available) and other internal data. • Baseline date: June 30, 2019.	• Data from CRD IV reporting, reporting of banks' corporate client exposures, and other supervisory and public data sources. • Baseline date: June 30, 2019.	• Supervisory and publicly available data. • Baseline date: June 30, 2019.
2. Channels of Risk Propagation	Approach	• Balance sheet-based approach.	• FSA: Balance-sheet approach based on consolidated data (source: FINREP), covering 20 banking groups. • FSA: For distribution of loan losses: unconsolidated data (source: ORBOF) covering smaller banks. • NB: Balance sheet-based approach based on consolidated public accounts, delivered by SNL/S&P MI.	• Balance sheet-based approach.
	Satellite Models for Macro-Financial Linkages		• FSA: Total loan losses generated by proprietary macro model and assigned to individual banks according to risk in loan books. • NB: Satellite models for loan losses.	• Satellite models for PDs, LGDs, and NPL ratios for credit losses.
			• FSA: Satellite-proxy PD model for distribution of loan losses on loans to NFC. • FSA: Satellite model for market risk. • NB: Banks' loan losses in the stress scenario follow "rule of thumb" for total losses on corporate and household loans as a function of GDP developments.	• Market losses from holdings of debt instruments (sovereign and other) based on modified duration and shocks to rates as assumed under scenarios.
			• FSA: Non-interest income projections based on growth in total assets. • FSA: NII developments based on output from macro model and expert judgement.	• Non-interest income projections based on nominal GDP growth and expert judgment.
	Horizon	• 3 years (2020–2022).		

Annex I. Banking Sector Stress Testing Matrix (STeM) (Cont.)

Domain		Bottom-Up Stress Test by Banks	Top-Down Stress Tests by FSA and Norges Bank (NB)	Top-Down Stress Test by FSAP Team
Banking Sector: Solvency Risk				
3. Tail Shocks	Scenario Analysis	• Scenario-based tests, that assess the impacts on the entire portfolio including the loans and, if applicable, the trading book. The COVID scenarios have been used exclusively in the FSAP team exercise.		
		• The COVID central scenario is based on a preliminary version of the June 2020 WEO projections. The Market Shock and COVID downside scenarios are based on a given deviation of GDP from its long-term trend and COVID central, respectively. They all involve a series of domestic and global macroeconomic and financial variables.		
		• The Market Shock Scenario is simulated using the IMF's Flexible System of Global Models for the global variables and Norges Bank's NEMO model for Norwegian variables. For the COVID scenarios the paths of most variables are obtained as conditional forecasts in a Vector AutoRegression conditional on the June 2020 WEO projections for GDP, unemployment and inflation, plus the WEO forecast for the oil price. A few remaining variables (e.g. interest rates) are calibrated judgmentally.		
		• All scenarios are driven by a combination of external shocks and amplified by domestic characteristics. They include existing vulnerabilities and policy constraints.		
		• Under the Market Shock Scenario, the Norwegian economy goes through an L-shaped growth path, with annual GDP growth of -1.94 percent, -3.27 percent, and +0.51 percent during 2020, 2021, and 2022, respectively. This corresponds to a cumulative deviation of real GDP growth of close to -9 percentage points over the first two years compared to the long-term trend (almost 3 standard deviations). The COVID scenarios are based on a growth path with a different profile: in both scenarios GDP bottoms out in the second quarter of 2020, but at different depths and speed of subsequent rebound. In particular, under the COVID central GDP growth is -5.5, 3.8, and 3.3 percent in 2020, 2021, and 2022, respectively; under the COVID downside it is -7.1, 2.6, and 0.6 percent in the three years, respectively. The drop of GDP in the first year corresponds to a divergence from the long-term growth path of more than 4 and 5 standard deviations under the COVID central and downward scenarios, respectively.		
		• This economic slowdown is accompanied by an increase in the unemployment rate of close to 6 percentage points over the 3-year horizon under the Market Shock , and of approximately 1 and 1.6 percent under the COVID central and COVID downside scenarios, respectively (after peaking at 4.7 and 5.3 percentage points above 2019 in 2020, respectively). The cumulative house price decline reaches -35 percent over the risk horizon under the Market Shock scenario, while under the two COVID scenarios house prices record a cumulative growth of 16.2 (central) and 11.6 percent (downside).		
		• In all scenarios NOK depreciates by 8.7 percent in the first year, leading to a cumulative appreciation / depreciation of 10.7 percent at the end of the third year.		

Annex I. Banking Sector Stress Testing Matrix (STeM) (Cont.)

Domain		Bottom-Up Stress Test by Banks	Top-Down Stress Tests by FSA and Norges Bank (NB)	Top-Down Stress Test by FSAP Team
Banking Sector: Solvency Risk				
3. Tail Shocks	Behavioral Adjustments	• Passive balance sheet assumption: - Balance sheets are assumed to be static, apart from credit growth, which is linked to nominal GDP growth. - Balance sheet composition remains constant throughout the stress test horizon. - The rate of increase of lending and funding is applied as of the end of the previous period, without taking into account the impact of defaulted exposures and the stock of outstanding loans during the current period. - Asset disposals and acquisitions are not permitted, except where in line with aggregate credit growth. - Banks' credit portfolio composition is assumed to remain unchanged.		
		• Capital increases are not permitted, unless these were approved prior to the cut-off date.		
		• Defaulted exposures do not generate interest income after they become impaired.		
		• Dividend payouts made according to the most recent payout experience in case of positive net income and no payouts in case of negative net income.	• Banks are assumed to make dividend payouts of 50 percent for periods with positive net income and no payouts in case of negative net income (no dividend payouts in the whole stress period in the NB exercise).	• Dividend payouts made according to the most recent payout experience in case of positive net income and no payouts in case of negative net income.
	Sensitivity Analysis	• Sensitivity analyses are conducted to supplement the scenario analysis. They evaluate impacts of single risk factors (one at a time) on the existing capital buffers: - FX shock - Interest Rate Risk in the Banking Book (IRRBB) - Credit concentration risk.		
				• Climate change transition risks

Annex I. Banking Sector Stress Testing Matrix (STeM) (Cont.)

Domain		Bottom-Up Stress Test by Banks	Top-Down Stress Tests by FSA and Norges Bank (NB)	Top-Down Stress Test by FSAP Team
Banking Sector: Solvency Risk				
4. Regulatory and Market- Based Standards and Parameters	Calibration of Risk Parameters			• Projected losses distributed across different asset classes.
				• Point in time credit risk proxies/parameters calibrated by FSAP team.
	Regulatory/ Accounting and Market-Based Standards		• FSA: National framework.	• National framework.
			• FSA: Hurdle rates: CET1, Tier 1, and total capital ratios, including SRB and D-SIB buffers and Pillar 2 requirements; leverage ratio, including 2 percent buffer and additional (1 percent) buffer for D-SIBs.	• Hurdle rates: CET1, Tier 1, and total capital ratios, including SRB and D-SIB buffers and Pillar 2 requirements; leverage ratio, including 2 percent buffer and additional (1 percent) buffer for D-SIBs.
5. Reporting Format for Results	Output presentation		• FSA: System-wide capital shortfall.	• System-wide capital shortfall.
			• FSA: Number of banks and percentage of banking system assets in the system that fall below the capital hurdle. Norges Bank: CET1 ratios for the 'macro' bank and for each of the 9 banks comprising the 'macro' bank are reported. •	• Number of banks and percentage of banking system assets in the system that fall below the capital hurdle.
			• FSA: Impact of different result drivers, including profit components, losses due to realization of different risk factors.	• Impact of different result drivers, including profit components, losses due to realization of different risk factors.

Annex I. Banking Sector Stress Testing Matrix (STeM) (Cont.)

Domain		Bottom-up Stress Test by Banks	Top-down Stress Tests by FSA and Norges Bank (NB)	Top-down Stress Test by FSAP Team
Banking Sector: Liquidity Risk				
1. Institutional Perimeter.	Market Share of Institutions Included		• Stress test can be run on all Norwegian banks (unconsolidated). The model also includes links between banks and covered bond companies. • FSA and Norges Bank are collaborating on developing a liquidity stress testing framework for Norwegian banks and mortgage companies.	• ST comprises 11 largest domestic banks which hold approximately 60.5 percent of domestic banking sector assets. • Based on data availability, foreign branches could partially be involved into the exercise
2. Channels of Risk	Data Source and Baseline Date		• CRD IV— LCR and NSFR • Non-CRD IV reporting—Balance sheet data, "Refinancing under stress."	• Supervisory and publicly available data.
			• Baseline date: June 30, 2019.	
	Methodology		• Cash flow analysis of inflows and outflows from assets, liabilities and off-balance sheet items.	• Cash-flow based liquidity stress test using maturity buckets. • Basel III LCR and NSFRs. • Separate analysis for NOK, EUR and USD.
3. Risks and Buffers	Risks		• Model tests different scenarios: • Bank-specific stress, such as bank ratings downgrade. • Domestic/global market stress triggering house price decline and NOK depreciation.	• Shock to funding (stressed outflow and inflow factors) and available liquidity (haircuts).
	Buffers		• Banks' liquidity reserves with haircuts. • LCR buffer. • Extended liquidity reserve (includes non-LCR available securities and bank deposits). • Possible new issuances of covered bonds (where loans are readily available for transfer to the CB company and/or there are free cover pool assets within the CB company).	• Available and unencumbered liquid assets.

Annex I. Banking Sector Stress Testing Matrix (STeM) (Cont.)

Domain		Bottom-up Stress Test by Banks	Top-down Stress Tests by FSA and Norges Bank (NB)	Top-down Stress Test by FSAP Team
Banking Sector: Liquidity Risk				
4. Tail shocks	Size of Shock		• Projections are based on the expected behavior of banks, customers and depositors as well as other banks and market actors.	• Run-off rates calculated following historical events and based on IMF methodology (for cash flow analysis).
			• The stress factors are generally applied for a 30-day period. The model assumes declining stress. The same stress factors are applied for the next period (day 30 to 90) and reduced to zero after three months.	• Bank run and dry up of wholesale funding markets, taking into account haircuts to liquid assets.
5. Regulatory and Market-Based Standards and Parameters	Regulatory Standards		• National regulatory framework.	
			• LCR: 100 percent, consistent with Basel III LCR framework. • NOK LCR: 50 percent (only applies to seven largest banks).	
6. Reporting Format for Results	Output Presentation		• Survival horizon – time from initial event to net liquidity < 0. • Net liquidity equals the difference between financing gap and the bank's liquidity reserves.	• System-wide liquidity gaps.

Annex I. Banking Sector Stress Testing Matrix (STeM) (Concluded)

Domain		Bottom-up Stress Test by Banks	Top-down Stress Test by Norges Bank (NB)	Top-down Stress Test by FSAP Team
Banking Sector: Interconnectedness				
1. Institutional Perimeter	Institutions Included		• 20 institutions for which there is data coverage (including 11 largest).	• Largest 11 banks which hold approximately 60.5 percent of the domestic banking sector assets.
	Data Source and Baseline Date		• Source: Supervisory data. • Baseline date: June 30, 2019.	• Source: Supervisory data. • Baseline date: June 30, 2019.
2. Channels of Risk Propagation	Methodology		• Combined direct and indirect contagion model based on Cont and Schaaning (2017) and Hueser et al. (2017).	• Balance sheet-based interbank model by Espinosa-Vega and Solé (2010). • Market price-based spillover model by Diebold and Yilmaz (2014). • Cross-border network model by Espinosa-Vega and Solé (2010).
3. Risks and Buffers	Risks		• Risk of indirect contagion due to price impact from fire sales of cross holdings, risk of direct contagion due to potential bail-in of MREL cross-holdings.	• Credit and funding losses related to interbank cross-exposures (and cross-border banking exposures).
	Buffers		• Banks' own capital buffers.	• Banks' own capital and liquidity buffers.
4. Tail Shock	Size of the Shock		• Initial shock results from top-down stress test and may trigger funding difficulties.	• Pure contagion: Assumed failure of institutions.
5. Reporting Format for Results	Output Presentation		• Contagion analysis: additional amplification (pp of CET1 ratio) of shock from solvency stress test.	• Network analyses with supervisory data. • System-wide capital shortfall. • Number of undercapitalized and failed institutions, and their shares of assets in the system. • Evolution and direction of spillovers.