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SWEDEN

FINANCIAL SYSTEM STABILITY ASSESSMENT

March 2023

This paper on Sweden was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 10, 2023.

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KEY ISSUES

Context: Sweden recovered rapidly from the Covid1-19 crisis, and GDP reached its pre-pandemic level in mid-2021. In the context of a robust supervision and regulation framework, the financial sector exited the crisis with substantial capital and liquidity buffers. Going forward, growth is expected to slow amid higher energy prices, tighter financial conditions, and reduced confidence following sharply lower house prices. Given stubborn inflation, the Riksbank has been normalizing rates more aggressively than expected last year. Systemic risks to the financial system arise from (i) high exposure of banks to the commercial real estate (CRE) sector; (ii) limited liquidity in corporate bond markets; (iii) high indebtedness of households and sensitivity to higher interest rates. The banking system is nearly three times 2021 GDP and is interconnected domestically and regionally.

Findings: Stress tests indicate that banks are broadly resilient to simulated shocks as their capital should remain above minimum requirements. However, some scenarios, including losses due to an increase in CRE exposures, cut into capital buffers, and amplification effects (such as dislocations in corporate debt markets) could lead to starker outcomes. Banks have sufficient liquidity buffers, but some investment funds are exposed to illiquid corporate securities. The frequency and intrusiveness of onsite supervisory inspections is insufficient, and AML/CFT oversight has been weak. The fintech sector is growing rapidly in size and relevance, raising risks that some firms evade the regulatory perimeter. The introduction of CBDC could lead to structural changes in the banking sector, and potentially lower profits. The rapid digitalization of the Swedish payment system raises risks of cyber-attacks and of supervision falling behind.

Policy advice: Authorities should consider higher capital requirements for banks given CRE and residential real estate risks. They should also address resource constraints to strengthen supervision of banks and fintech firms. The macroprudential policy toolkit should be expanded and institutions should better coordinate. The materiality of CBDC risks on the financial system should be further evaluated. Authorities need to enhance operational capacity and internal practices for crisis management and remove remaining barriers to resolvability. AML/CFT supervision should leverage new data tools. Authorities also need to enhance supervisory and oversight regimes for critical payment system providers. Finally, a comprehensive cyber resilience supervisory framework is needed.

Approved By
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Prepared By
Monetary and Capital Markets Department

This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Sweden in March and June 2022. The FSAP findings will be discussed with the authorities during the Article IV consultation mission expected in Q1 2023.

- The FSAP team was led by Tommaso Mancini-Griffoli and included Mindaugas Leika (Deputy Mission Chief), Leonard Chumo, Agnija Jekabsone, Elisa Letizia, Marcello Miccoli, and Etienne Yehoue (MCM); Svetlana Vtyurina (EUR), Steve Dawe (LEG); Fabiana Amaral, Rhiannon Sowerbutts, Nick Strange, Massimo Ferrari, and Eamonn White (experts). Carlos Chavez (MCM) provided research assistance, and Erica Sandoval (MCM) provided administrative support. The mission met the Riksbank Governor, Mr. Stefan Ingves; the Minister for Financial Markets, Mr. Max Elger; the Director General of Finansinspektionen, Mr. Erik Thedéen; and the Director General of the National Debt Office, Ms. Karolina Ekholm. The mission also met industry associations, banks, fund managers, fintech companies, academics, and market analysts. The team would like to thank all counterparts for their hospitality, cooperation, and fruitful discussions.

- 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.

- Sweden is deemed by the Fund to have a systemically important financial sector according to SM/10/235 (9/16/2010), 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 Tommaso Mancini-Griffoli, Mindaugas Leika, and the mission team.

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Glossary

AIM	Aide-Memoire
AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
BRRD	Banking Recovery and Resolution Directive
BCP	Basel Core Principles for Effective Banking Supervision
BRSA	Banking Regulation and Supervision Agency
CBDC	Central Bank Digital Currency
CCP	Central Counterparty
CCyB	Countercyclical Capital Buffer
CET1	Common Equity Tier 1 Capital Ratio
CPIF	Consumer Price Index with a Fixed Interest Rate
CRE	Commercial Real Estate
CSE	Crisis Simulation Exercise
CRR	Capital Requirement Regulations
DSIB	Domestic Systemically Important Bank
EBA	European Banking Authority
ELA	Emergency Liquidity Assistance
FI	Finansinspektionen
FMI	Financial Market Infrastructure
FSAP	Financial System Assessment Program
FSC	Financial Stability Committee
FSSA	Financial System Stability Assessment
FVOCI	Fair Value through Other Comprehensive Income
FX	Foreign Exchange
ICR	Interest Coverage Ratio
IFRS	International Financial Reporting Standards
IRB	Internal Ratings Based Approach
IOSCO	International Organization of Securities Commissions
LCR	Liquidity Coverage Ratio
LMT	Liquidity Management Tool
LTV	Loan-to-Value Ratio
MoF	Ministry of Finance
ML	Money Laundering
NBFI	Non-Bank Financial Intermediation
NII	Net Interest Income
MSB	Swedish Civil Contingencies Agency
NDO	National Debt Office
NFC	Non-Financial Corporates
NPL	Nonperforming Loan
NCSC	The National Cyber Security Centre
NSFR	Net Stable Funding Ratio
PD_{PiT}	Probability of Default (Point in Time)

PD_{TTC}	Probability of Default (Through the Cycle)
PFMI	Principles for Financial Market Infrastructures
PSD2	Payment Services Directive (revised)
RAM	Risk Assessment Matrix
RWA	Risk-Weighted Assets
SIBs	Systemically Important Banks
STeM	Stress Testing Matrix
SME	Small and Medium Enterprise
TF	Terrorist Financing
VASP	Virtual Asset Service Providers
WEO	World Economic Outlook

EXECUTIVE SUMMARY

The Swedish Financial sector weathered the global COVID-19 crisis well, to a large extent due to significant capital and liquidity buffers, the Riksbank's interventions in bond markets, as well as public support for the real and financial sectors. Swedish banks entered the COVID-19 crisis with substantial capital and liquidity buffers, thus allowing them to continue providing credit to the real sector. The economy recovered rapidly in 2021 as the Riksbank stepped in to support diminishing liquidity in markets and the government had ample fiscal space to support struggling companies. Growth is expected to slow down due to higher energy prices, tighter financial conditions, higher geopolitical uncertainty due to the war in Ukraine, as well as supply side constraints and lower property prices.

The cyclical risks to financial stability emerge from a potential turn in the credit cycle, lower real estate prices, higher funding costs, and illiquid markets for corporate debt. The Riksbank brought forward the path of monetary policy tightening, raising the policy rates and starting a reduction of its balance sheet. Higher policy rates in Sweden and in other advanced economies, while necessary to tackle inflation, are increasing debt servicing costs for households and especially highly leveraged corporates. This could further weigh on consumption and investment, demand for credit, and ultimately real estate prices.

Growing structural vulnerabilities—such as historically high household and CRE sector indebtedness—amplify cyclical risks to financial stability. Household debt is at its historic peak and a large fraction is at variable rates,[1] thus sensitive to higher interest rates, which have risen significantly since the FSAP mission. Further hikes are possible, as are further declines in housing prices. The latter should not induce a spike in household defaults, as loans have full recourse and there are generous social benefits, such as unemployment insurance. However, debt servicing costs have risen and could rise further. While households can withstand a large shock to interest rates, consumption will get squeezed, further reducing growth and straining the corporate sector, which is also highly leveraged with debt securities accounting for nearly half of its funding. The CRE-sector is highly indebted and concentrated, and exposed to funding rollover and interest rate risks and further declines in rental rates resulting from a structural shift to remote work, all of which could weigh on yields and cash flows.

A large and concentrated banking sector has high current and contingent exposures to CREs. The banking sector size is nearly three times 2021 GDP, twice the European median, wholesale funding accounts for a large share of its liabilities, and banks are highly interconnected with other financial institutions at both the domestic and regional levels. Yet, in the last five years, banks' role in domestic financial markets declined slowly, as investment funds increased their size.[2] Banks'

[1] About 50 percent of mortgages are at variable rates (1 year horizon).

[2] In addition, Nordea moved its headquarters to Finland. Nordea's Swedish subsidiary is systemically important (category 1) and hence subject to closer supervision in line with the adopted risk-based framework and will also receive an O-SII buffer of 1 percent of RWAs.

exposure to the mortgage and CRE sector is high, but so too are regulatory capital ratios. While the authorities introduced risk weight floors for CRE and mortgage exposures, capital ratios are still supported by relatively low risk weight densities.

FSAP bank solvency stress tests (ST) suggest that the banking system appears resilient to simulated adverse shocks, though capital buffers decline more if CRE exposures were to grow further. Under a scenario that envisages tighter domestic and global financial conditions and fall in asset prices, the impact of shocks on capital is high. While no bank falls below the minimum capital requirements, systemwide CET1 ratio is depleted by 620 bps, especially for banks heavily exposed to the commercial CRE sector. Banks benefit from high lending margins in the adverse scenario, which partially cushions the negative impact of loan-loss provisions and market losses. However, if CRE exposures increased, for instance through credit lines being drawn down, the negative impact on bank capital would be an additional two hundred basis points.

Despite its substantial share of wholesale funding, the Swedish banking system appears resilient to large liquidity shocks. Liquidity stress tests suggest that banks can withstand large outflows of wholesale and retail funding and the closure of covered and corporate bond markets for up to 3 months. Accumulated reserves at central banks constitute the largest share of liquid assets immediately available. FX swap and derivative markets activities, as well as credit lines, require additional monitoring to better identify and quantify contingent liquidity as well as wholesale funding risks.

Most of the investment funds would be able to withstand severe but plausible redemption shocks, except those not sufficiently diversified or heavily exposed to unrated or poorly rated debt. More than 70 percent of investment funds analyzed appear to have enough highly liquid assets to meet investors' redemptions. However, many corporate bonds are traded infrequently, thus limiting the ability to gauge the price impact of redemptions in times of stress.

Macroprudential policy can help attenuate cyclical and structural risks. Greater use of "soft powers" and joint communication by institutions comprising the Financial Stability Council (FSC) could help sway firms' behavior. CRE firms could be encouraged to disclose their contingency funding plans in their annual reports and bond prospectuses. Collecting better data on household assets and liabilities would help calibrate macroprudential (and monetary) policy. And the financial supervisory authority, Finansinspektionen (FI), should consider higher capital requirements or buffers for banks' exposures to CRE risks due to notable amplification and spillover channels from CRE solvency to the macro-economy.

The shift to digital means of payments, from central bank digital currency (CBDC) to outsourcing and cyber-attacks, brings new risks that need to be contained. The introduction of CBDC could lead to structural changes of the banking sector and potentially lower profits. The fintech sector is growing rapidly in size and relevance and needs to be better understood. The decision to adopt foreign payment systems and the development of a new Nordic payment system requires managing outsourcing risks. In addition, regulation and cross-border supervisory arrangements must adapt to these changes. Cyber threats have become more prominent, hitting

many Swedish financial institutions. A framework for comprehensive operational and cyber resilience is needed.

Bank supervision has been effective though could be improved, in great part by increasing resources. Onsite inspections must become more frequent and intrusive. More efficient analytical tools and risk dashboards could facilitate offsite monitoring of banks and help optimize limited resources by ensuring that supervisory activities are better targeted. FI should step up AML/CFT supervision targeted to high-risk areas, such as correspondent banks, and improve risk-based supervision of Virtual Asset Service Providers (VASPs). To enhance the supervisory ML/TF risk assessment and the analysis of financial flows, more quantitative and granular data on transactions, customers, and controls should be collected. More experienced resources are needed in specialized areas such as cybersecurity and IRB models. FI should receive greater and more stable funding to enhance resources, while it should develop a strategy to better attract and retain staff.

The crisis management and resolution framework has improved since the 2016 FSAP, though would still benefit from greater clarity and guidance in multiple areas. Operational details need to be elucidated, including a watchlist to identify banks at risk of failure and a consistent methodology to determine banks' solvency, viability, and systemic impact. To better prepare for future bank failures, banks must still remove barriers to resolvability. On managing failed banks, the National Debt Office (NDO) should stand ready to use its resolution tools to support effective crisis response involving failing systemic financial institutions. The MoF's role in approving NDO resolution decision-making that might have "*direct budgetary or systemic effect*" should be limited to resolutions that require funding from government budget only. Finally, the Riksbank should publish a policy framework describing the central bank's lender of last resort bilateral liquidity facilities, including funding in resolution.

Climate-related risks, while not presenting an immediate threat to financial stability, should be further integrated into the supervisory process. Authorities published several studies related to climate risk. While physical and transition risks are not a major source of concern for Swedish financial institutions for now, the authorities should expand their capacity to assess climate risks and encourage climate risk disclosures in the financial sector.

Table 1. Sweden: 2022 FSAP Key Recommendations			
	Reference	**Authority**	**Priority**
Systemic Risk Analysis			
Employ structural models (household and CRE) to complement bank stress tests; develop tools to analyze contingent liquidity risks from loss of longer-term wholesale funding as well as corporate exposures for the largest banks.	20, 24, 27	FI	Immediate
Require investment funds to offer redemption terms that are aligned with the liquidity profile of their portfolio; consider price- and quantity-based measures (e.g. swing pricing and gates); and provide guidance on liquidity stress tests.	31	FI, MoF	Medium-Term
Macroprudential Policies and Systemic Risk Oversight			
Introduce standards on the interest rate stress-tests that banks apply for mortgage loan applicants	54	FI	Short-Term
Commission an independent study to determine the costs and benefits of the tax deductibility of mortgage interest.	54	MoF	Medium-Term
Consider higher capital requirements and/or buffers for banks' exposures to CRE risks.	57	FI	Short-Term
FSC, FI, and the Riksbank to use soft powers and joint communication to ask CRE firms to disclose their contingency funding plans in annual reports and bond prospectuses.	56	FI and Riksbank	Short-term
Banking Supervision and Regulation			
Increase resources to improve on the effectiveness of supervision and improve supervisory toolkit further by enhancing offsite monitoring and screening tools, automating the collection and analysis of supervisory data, improving internal supervisory manuals, and deploying risk dashboards covering all the key risks.	45	FI	Immediate
Enhance supervision by: (i) increasing the frequency and intrusion of onsite inspections; (ii) comprehensive onsite inspection of banks, (iii) ongoing assessment of performance of the Internal Rating Based (IRB) models and banks' internal stress test processes, (iv) well-targeted thematic reviews for smaller institutions; and (v) heightened focus on small but high-risk institutions.	44, 46	FI	Short-term
Continue integrating climate-related risks into supervisory processes and ensure alignment of practice with emerging international standards.	67	FI	Medium-term
FI should strengthen its supervision of banks and VASPs targeted at ML/TF risks especially from cross-border operations by evolving risk management tools and collecting and analyzing more granular data.	64,65		Short-term
Cyber Resilience			
Clarify roles and responsibilities for cyber security risk management; develop contingency plans and crisis protocols for large-scale attacks; enhance information sharing among agencies and with the financial sector.	59	FI, MoF, the Riksbank NCSC, MSB	Immediate
Establish and maintain a database of essential service providers and outsourcing arrangements, including to identify concentrations and dependencies.	59	FI	Immediate

Table 1. Sweden: 2022 FSAP Key Recommendations (concluded)			
Financial Market Infrastructures			
Strengthen legal frameworks for weakly regulated FMIs to enforce compliance with the PFMI and other guidelines; strengthen regulation, oversight, and supervision of key service providers Getswish and Finansiell ID-Teknik BID AB.	62	MoF, FI, the Riksbank	Short-term
Crisis Management, Resolution and Safety Nets			
Develop crisis management capacity within and between the authorities by formalizing a watchlist process to identify banks at risk of failure.	69	FI	Immediate
Ensure bank resolution plans are fully operational by clarifying MREL regulation and removing other known barriers to resolvability; publish the approach for deploying bail-in and transfer tools and imposing losses on MREL holders.	71	NDO & FI	Immediate
Publish a policy framework describing the lender of last resort bilateral liquidity facilities, including funding in resolution.	72	Riksbank	Immediate
CBDC and Fintech**			
Extensively test the robustness and resilience of CBDC, and analyze the effectiveness of financial safeguards, and the impact on the payments and financial system.	38	Riksbank	Short-term
Facilitate exchange of information and enhance understanding of risks between Fintech firms and supervisors; collect additional data to support a more comprehensive analysis of fintech firms and conduct periodically a review of the adequacy of the regulatory perimeter.	41	FI	Medium-term
*Immediate (within 1 year), ST—Short term (within 1-2 years), MT—Medium term (within 3-5 years) **Priority for CBDC recommendations not inserted as time horizon will depend on whether the e-krona project continues.			

MACROFINANCIAL SETTING

A. Macrofinancial Developments

1. Sweden entered the COVID-19 crisis with substantial buffers and swiftly adopted policies to limit the economic fallout. Prudent fiscal policy kept public debt at 35 percent of GDP. This, together with the earlier tightening of macroprudential policies and a well-capitalized financial sector, positioned the economy well to deal with the COVID-induced economic crisis. The economy contracted significantly in 2020, though less than other EU advanced economies, in part because of the large macroeconomic policy response and less stringent containment measures, but also structural features, such as a small hospitality sector and buoyant pharmaceutical and machinery exports.

2. Risks to growth are substantial due to the war in Ukraine, geopolitical tensions, high commodity prices, and tightening of monetary policy in advanced economies. The economy recovered rapidly last year, with GDP reaching its pre-pandemic level in mid-2021, growing by about 5.1 percent by end-2021. This momentum continued in 2022 following the removal of COVID-19 restrictions. High energy prices and the war in Ukraine made monetary policy management

challenging. Both headline and core inflation are at historical highs. The Riksbank started policy tightening by raising interest rates and started to reduce its balance sheet much earlier than anticipated. While Sweden has few trade links with Russia and Ukraine, it is highly affected by the economic developments in countries that are key trading partners, especially Germany. Most banking links with Russia had been severed due to money laundering scandals in the Baltic subsidiaries of Swedish banks a few years prior to the war.

3. Corporate borrowing kept up throughout the pandemic albeit at a slow pace. Companies, on average, have had ample access to cheap credit (Figure 1). The positive credit-to-GDP gap suggested a build-up in vulnerabilities in 2020-21, though numbers have been volatile given significant GDP movements induced by the pandemic and subject to measurement issues. While Swedish companies mostly rely on bank funding (which remained stable during the pandemic), many larger companies increasingly turned to debt financing after mid-2020.[3]

4. Strong borrowing by households fueled residential housing price growth and vice versa (Figure 1)**.** The Riksbank started tightening of macroprudential regulations before Covid but reversed its actions during COVID. Overall, easing of macroprudential regulation and monetary policy, coupled with fiscal support during the pandemic, contributed to rising demand and a rapid increase in house prices. House prices peaked in Q1 2022 while total household debt in relation to income peaked in Q4 2021. Prices started to decline in the second half of 2022, registering a 12 percent decline by November from their February peak (Figure 1). However, interest rate payments in relation to disposable income remain at historically low levels, yet subject to further monetary policy tightening.

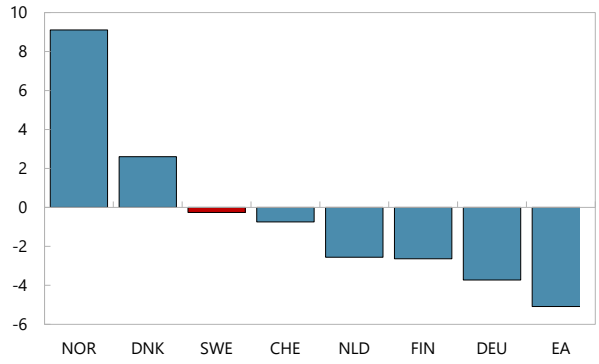
5. The CRE sector's debt kept growing during the pandemic, while reliance on bank financing remains high. CRE loans represent between 10 and 25 percent of the largest banks' lending to private sector. The share of CRE companies' non-bank debt has increased recently (above 40 percent of their total debt), thereby raising refinancing risks as market funding spreads widen. Thus far, risks to financial institutions from their exposures to CRE sector have been mitigated by the sector's healthy pre-crisis balance sheets, pre-crisis regulatory measures (e.g., additional capital requirements for the banks' exposures to CRE lending),[4] and the crisis response.

[3] Average loan duration is about 3.4 years, and bond maturity is about 5 years. About 55 percent of bonds are in foreign urrency against about 6 percent of bank lending.

[4] https://www.fi.se/en/published/press-releases/2020/increased-capital-requirements-on-bank-loans-for-commercial-real-estate/

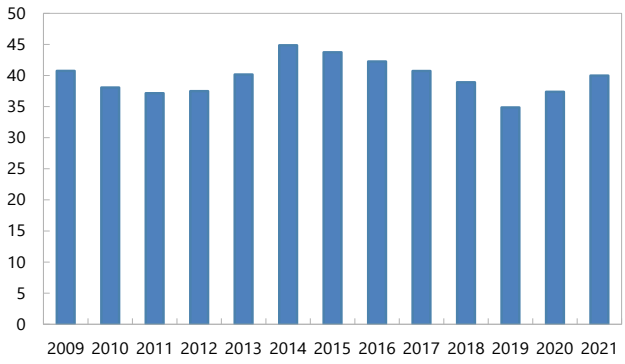
Figure 1. Selected Economic Indicators

Net Lending/Borrowing, 2021
(Percent of GDP, general government)



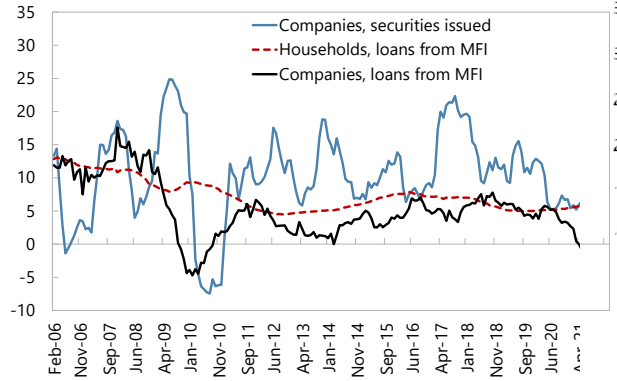
Source: IMF, World Economic Outlook.

Gross Public Debt
(In percent of GDP)



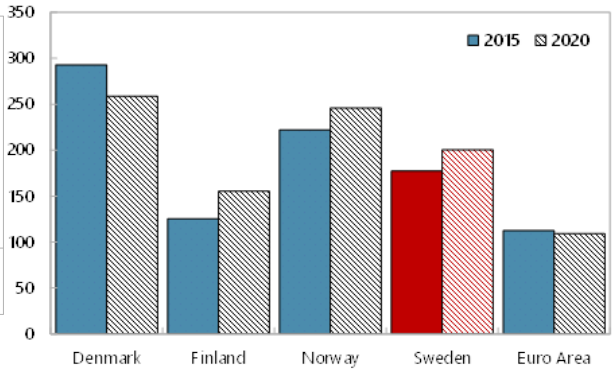
Source: Haver.

Household and Corporate Borrowing
(Annual percentage change)



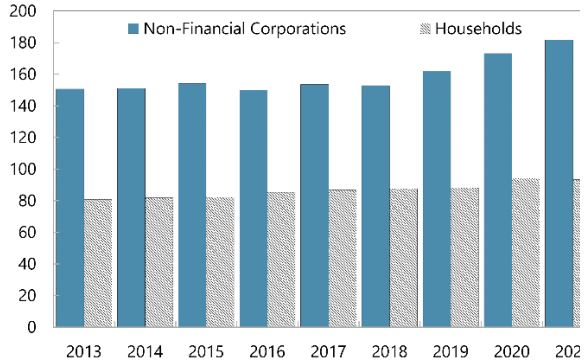
Sources: Statistics Sweden; Sveriges Riksbank; and IMF staff calculations.

Household Debt
(Percent of net disposable income)



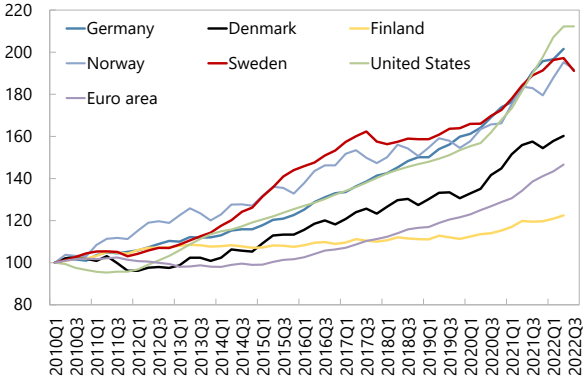
Source: OECD.

Non-Financial Corporations and Households Debt
(In percent of GDP)



Source: SCB, Haver and IMF's

House Prices
(Index; 2010Q1 = 100)



Sources: Bank for International Settlements; National Authorities; and IMF staff calculations.

B. Structure and Performance of the Financial Sector

6. The Swedish banking system is large and highly exposed to both residential and commercial real estate (including household mortgages). The banking sector assets were around 300 percent of GDP at end–2021, with the five largest banks—Svenska Handelsbanken (SHB), SEB, and Swedbank, as well as Nordea and Danske Bank's Swedish branches and mortgage companies—accounting for over seventy-five percent of deposits and lending. Banks dominate the financial system (Figure 2), yet their relative share is declining as non-bank financial intermediation grows due to yield chasing by clients as well attractiveness of market financing to large firms. Banks have high equity stakes in the insurance sector and are highly exposed to residential and commercial real estate. Mortgages constitute about fifty percent of banks' lending portfolios. Large banks finance mortgage loans by issuing covered bonds, held in turn by insurance companies and pension funds, as well as other banks. During the COVID pandemic, banks' business loan portfolio shifted towards SMEs and micro companies.

7. Swedish banks are highly interconnected regionally. Swedish banks are active across the entire Nordic-Baltic region and the United Kingdom, while exposure to Russia remains insignificant (Figure 3).

8. Non-bank financial intermediation (NBFI) is growing and providing credit to NFCs and individuals. Insurance and Pension Funds (ICPF) hold more than 150 percent of GDP in assets, while investment funds have almost tripled in size since 2015. All NBFI institutions have large equity portfolios (about 110 percent of GDP for investment funds, and 40 percent of GDP for ICPF), but also are increasingly investing in corporate bonds (on average around 12 percent of their assets). Sweden's capital markets are the thirteenth largest in the world. Moreover, Sweden hosts one of the thirteen EU CCPs—Nasdaq clearing—which clears cash equity, fixed income, as well as interest rate, equity, and commodity derivatives, mostly for members across the Nordic-Baltic region. Credit provision by non-bank fintech lenders is also increasing, mainly for mortgages and consumer credit. Mortgages provided by non-bank fintechs amount to around 2 percent of the total stock of mortgages. Many fintech companies are offering payment and money transfer services (around 105 companies[5] of around 450 active fintechs) and are starting to compete with banks in niche segments. Payment institutions and payment service providers offer various payment services such as payments, money transfers, payment initiation, and account information services.

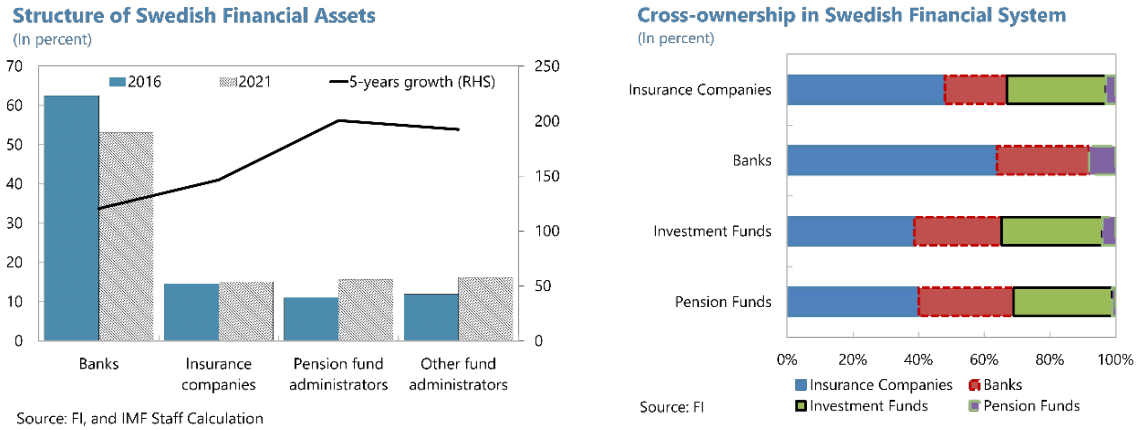
9. Sweden's financial sector remained profitable with solid fundamentals, in part because of low operating costs as well as limited effects of the COVID-19 crisis. Banks have structurally higher profitability than their European peers and high regulatory capital, partially driven by low risk weights (see Box 1), and liquidity positions that exceed regulatory minima (Figure 3). These positions have worsened only slightly during the crisis, sustained by timely policy measures, including: (i) a full release of the counter-cyclical capital buffer,[6] (ii) permission for banks to temporary fall below the

[5] November 2021 data, source investstockholm.com.

[6] The buffer remained at zero until September 29, 2022 when it was applied at 1 percent. A further rise, effective June 23, 2023, will put the CCyB at 2 per cent.

minimum liquidity coverage ratios (LCR), and (iii) the recommendation that banks postpone dividend payments; and (iv) the temporary exemption of borrowers from amortization requirements.[7]

Figure 2. Structure of Financial Sector



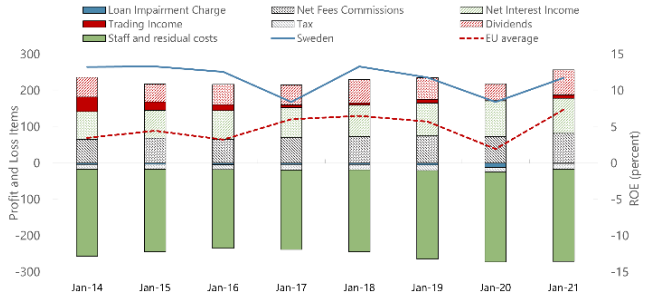
10. Banks' liquidity positions have been improving, yet significant exposures to foreign wholesale funding remain. Central bank reserves represent by far the largest share (67 percent) of counter balancing capacity (CBC). Swedish banks depend on international markets and domestic NBFI for their mortgage funding via covered bonds.[8] The extraordinary monetary support contributed to buttressing banks' liquidity buffers, together with increased retail deposits. Yet, the share of wholesale funding in three major banks remains high at 63 percent of total liabilities. All banks have more liquidity than the regulatory minimum of 100 percent LCR requirement in significant currencies (SEK, USD, EUR).

[7] The exemption expired in August 2021.

[8] As of 2021, foreign investors held around 30 percent of covered bonds issued by Swedish banks, domestic NBFI held around 34 percent while other banks, and the Riksbank, held around 15 percent each. Covered bonds denominated in SEK represent between 70 to 80 of banks covered bonds issuance.

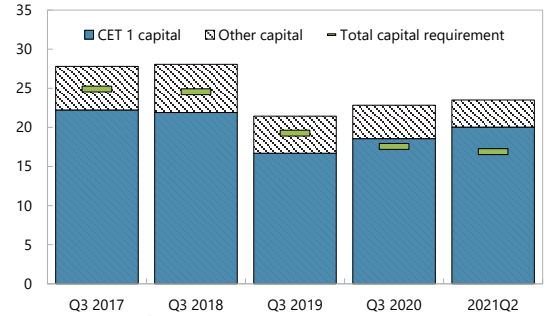
Figure 3. Selected Banking Indicators

Banks Profitability
(In SEK billion)



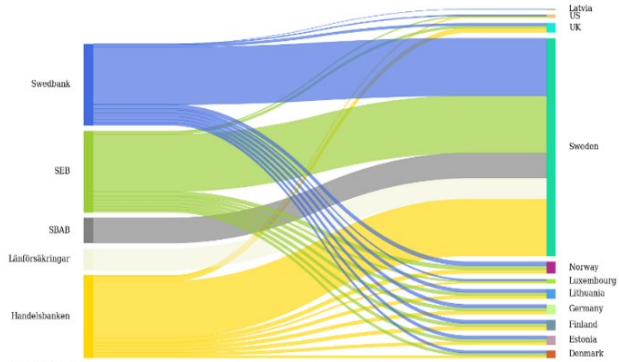
Source: IMF Staff's Calculations.

Regulatory Capital
(Percent of risk-weighted assets)



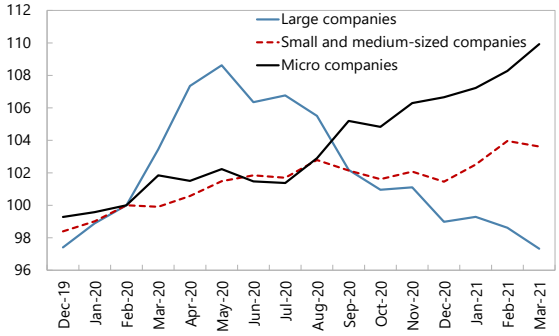
Note: Simple average for SEB, Swedbank, and Handelsbanken.
Sources: Finansinspektionen, and IMF Staff Calculations.

Geographical Exposure



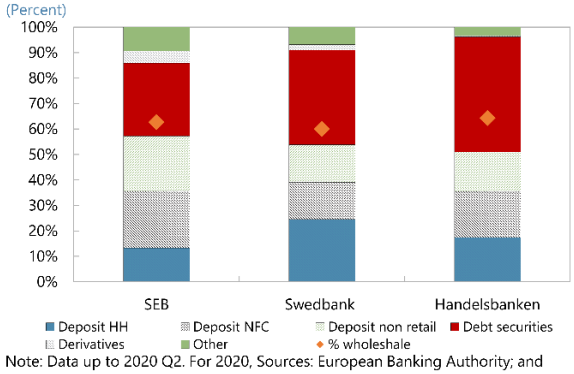
Source: EBA

Bank Lending to Swedish Companies
(Outstanding bank loans, Index February 2020=100)



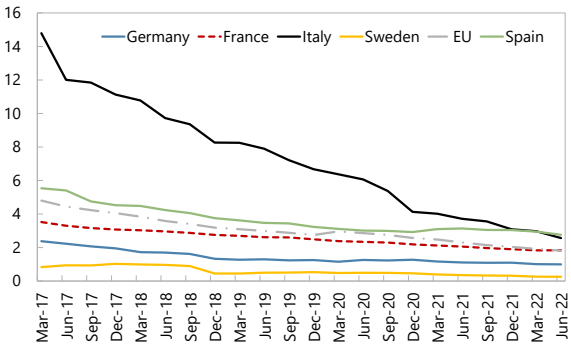
Sources: Statistics Sweden; and Sveriges Riksbank.

Major Banks' Liabilities Composition
(Percent)



Note: Data up to 2020 Q2. For 2020, Sources: European Banking Authority; and Riksbank.

Non-Performing Loans
(Percent of total lending)



Source: European Banking Authority.

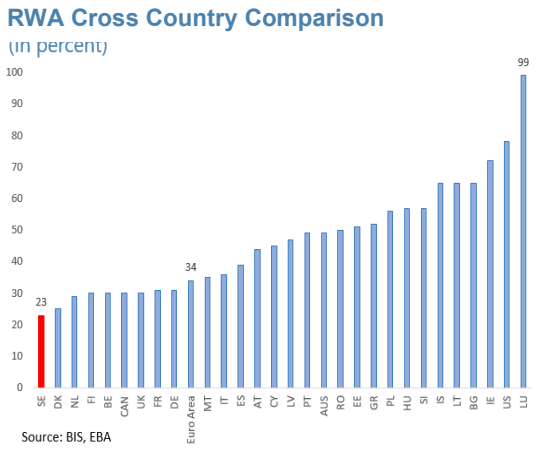
SYSTEMIC RISK ASSESSMENT

A. What are the Key Macro-Financial Risks?

11. Structural vulnerabilities highlighted in the previous FSAP (2016) remain including low Risk Weighted Assets (RWAs) and high levels of interest sensitive household debt. The relatively high capital adequacy ratios are partly explained by low RWAs related to low RW densities (Box 1). Low risk weights applied on mortgage loans and CRE exposures stem from the application of the IRB approach to capital requirements for credit risk. As a result, banks' loss absorption could be challenging if a scenario of widespread defaults materializes. This risk is further amplified by the high sensitivity to interest rate shocks of households and corporates owing to their high indebtedness.

Box 1. RWAs Density

Sweden's banks' RWAs density is the lowest in the EU and among the lowest worldwide. As of June 2021, average risk weights stood at just 23 percent, ten percentage points lower that the EU average of 34 percent. To a large extent, this is explained by the fact that Swedish Banks have a high portion of mortgage loans on their balance sheet and use IRB models. Also, when compared to international markets, Sweden is positioned in the lowest quartile as the global average is 29.4 percent, with first quartile at 25.7 percent—see BIS (2016).[1] These segments constitute the bulk of Swedish banks assets (57 percent), and they have not experienced crisis for the last thirty years, while the price of real estate collateral has grown substantially (+45 percent over the last 5 years). These two facts significantly impact the banks' estimated PDs and LGDs for internal models.



FI has addressed this issue by setting risk weight floors at 25 percent for mortgage exposures and residential CRE and 35 percent for commercial CRE since 2013. The risk weight floors have a significant impact on the largest five bank capital requirements. Low risk weights are one of the reasons why the reported capital adequacy ratios are high.

[1] Regulatory consistency assessment program (RCAP) - Analysis of risk-weighted assets for credit risk in the banking

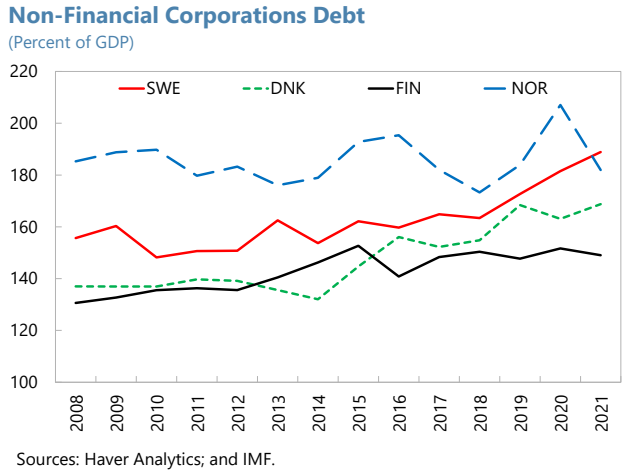
12. The investment fund sector is highly interconnected with the rest of the NBFI sector and has a structural liquidity mismatch. For instance, fund shares represent on average 16 percent of life insurers and pension funds' assets, excluding unit-linked products.[9] The COVID-19

[9] Including unit linked products, the ratio grows to 38 percent. For unit linked insurance products, while issued by insurance companies, the risk is borne by the policy holder, hence the exposure of households to the investment sector is material. A unit linked product is a life insurance policy which provides a combination of protection and investment.

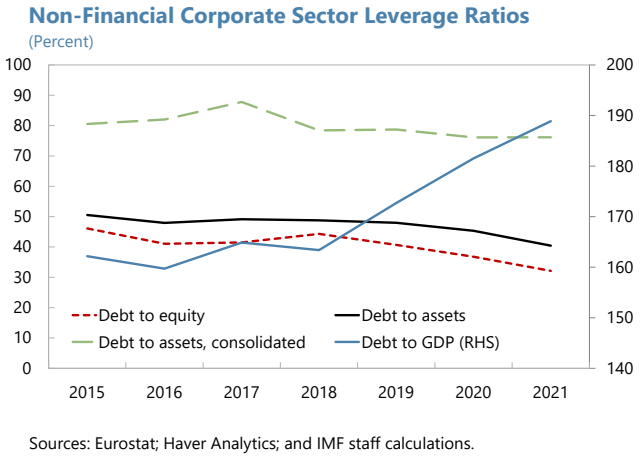
crisis highlighted a persistent liquidity risk for investment funds when faced by significant redemptions, due to the illiquidity of their investments, in particular corporate bonds.

13. The corporate sector's total nonconsolidated debt is high, in part due to large intercorporate lending (Figure 4). Swedish corporate debt should be viewed in the context of a sizable presence of large multi-national companies. This makes risks to debt servicing less dependent on Swedish domestic conditions. Intercompany lending, which is highest among the Nordic countries, is used, inter alia, to minimize companies' tax bill, balance currency risks, benefit from cheaper credit abroad, and overcome imperfections in local capital markets. Consolidated (net of intercompany lending) debt was around 121 percent of GDP in 2021.

Figure 4. Selected Corporate Debt Indicators



Sources: Haver Analytics; and IMF.



Sources: Eurostat; Haver Analytics; and IMF staff calculations.

14. The sustainability of CRE earnings is subject to risks (Figure 5). Rental income—a key source of CRE earnings—may be coming under stress as office vacancy rates are rising, increasing from about 3 percent in 2019 to close to 8 percent in 2021 in Stockholm, with similar trends in other major cities. This could trigger downgrades of CRE firms and exacerbate market funding conditions, ultimately forcing CREs to revert to banks to substitute market financing.

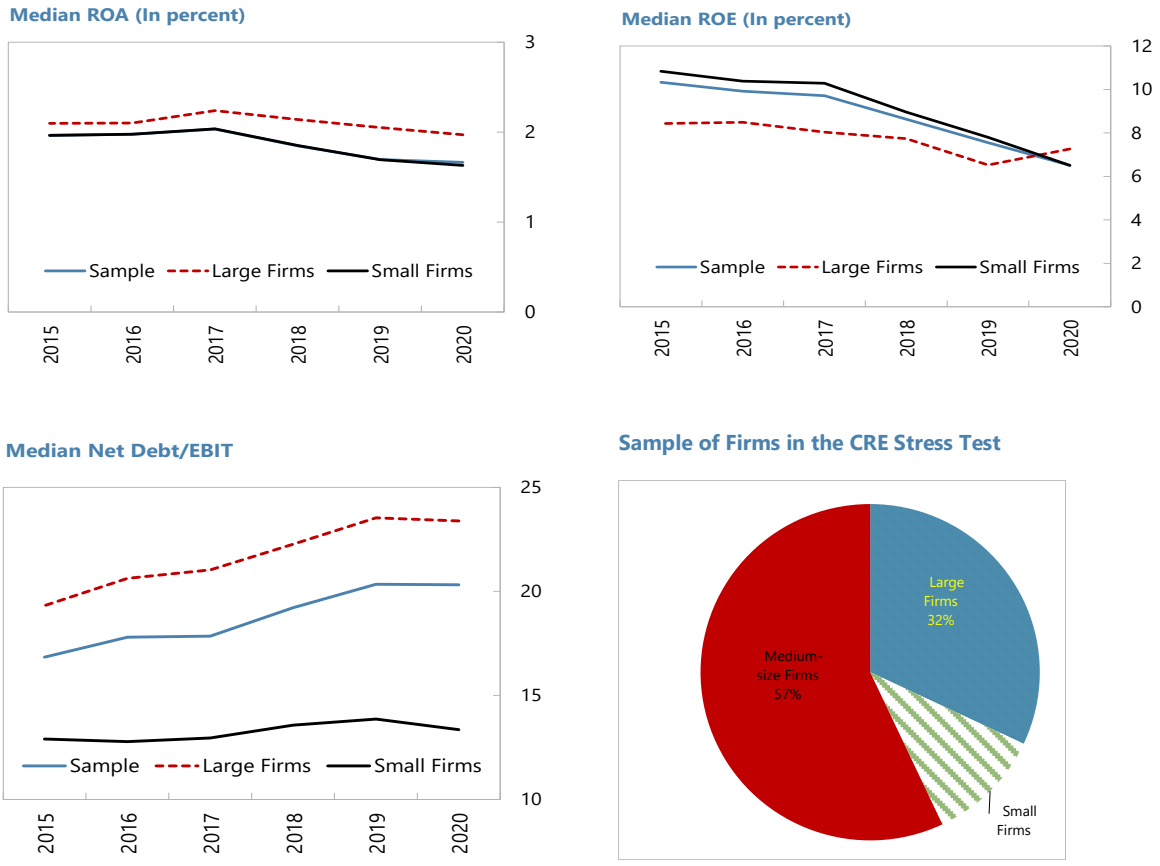
15. CREs are also large borrowers from banks and the bond market. A large share of CRE assets is domestically held, although the sector is expanding into neighboring countries.[10] Ownership concentration has recently increased, thereby raising risks of contagion. In the past few years, CRE prices have risen rapidly, despite high and increasing debt levels and returns on CRE projects have fallen.

16. Banks' exposure to the sector is significant and could lead to additional losses in times of stress. According to FI's analysis (2021), the vulnerability of CREs increased under certain stress

[10] For additional background, see Annex III in 2019 Article IV Consultation.

test scenarios of firms with bank loans.[11] The Riksbank's analysis (2017) of 100 largest Swedish-owned CRE companies determined that problems in the property sector may have tangible effects on banks.[12] Moreover, FI's stress tests (2020) show that rising market funding elevates refinancing risks when spreads increase.[13] Finally, Statistics Sweden indicates that over half of CRE bonds are held by foreign investors, who tend to divest faster in times of heightened global risk aversion.

Figure 5. Selected CRE Financial Ratios

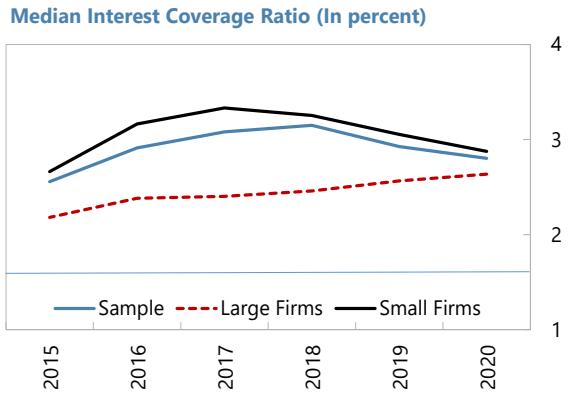


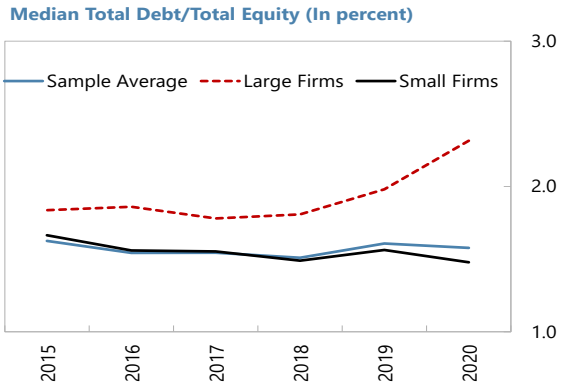
[11] A study based on 2019-20, loan data included such scenarios as a drop in earnings of 25 percent as a result of structural changes; an interest rate increase of 3 percentage points; and a combination of scenarios. None of the scenarios consider any measures that the firms or banks may undertake to mitigate the effects once they have occurred.

[12] These were listed by Fastighetsvärlden Real Estate Magazine in its 2016 Property Indicator analysis.

[13] CRE bonds comprise about half of the total local bond market issuance.

Figure 5. Selected CRE Financial Ratios (concluded)





Sources: Orbis, and IMF staff calculations.

B. Macrofinancial Risk Scenarios

17. The stress test analysis was based on a baseline and an adverse macroeconomic scenario. The scenarios' horizon spans three years (2022-24). The baseline scenario was aligned with the April 2022 *World Economic Outlook* (WEO) projections as well as Risk Assessment Matrix (Appendix VI).

18. The adverse scenario reflected the risk of stagflation (Appendix IV, Figure 6). It envisages:

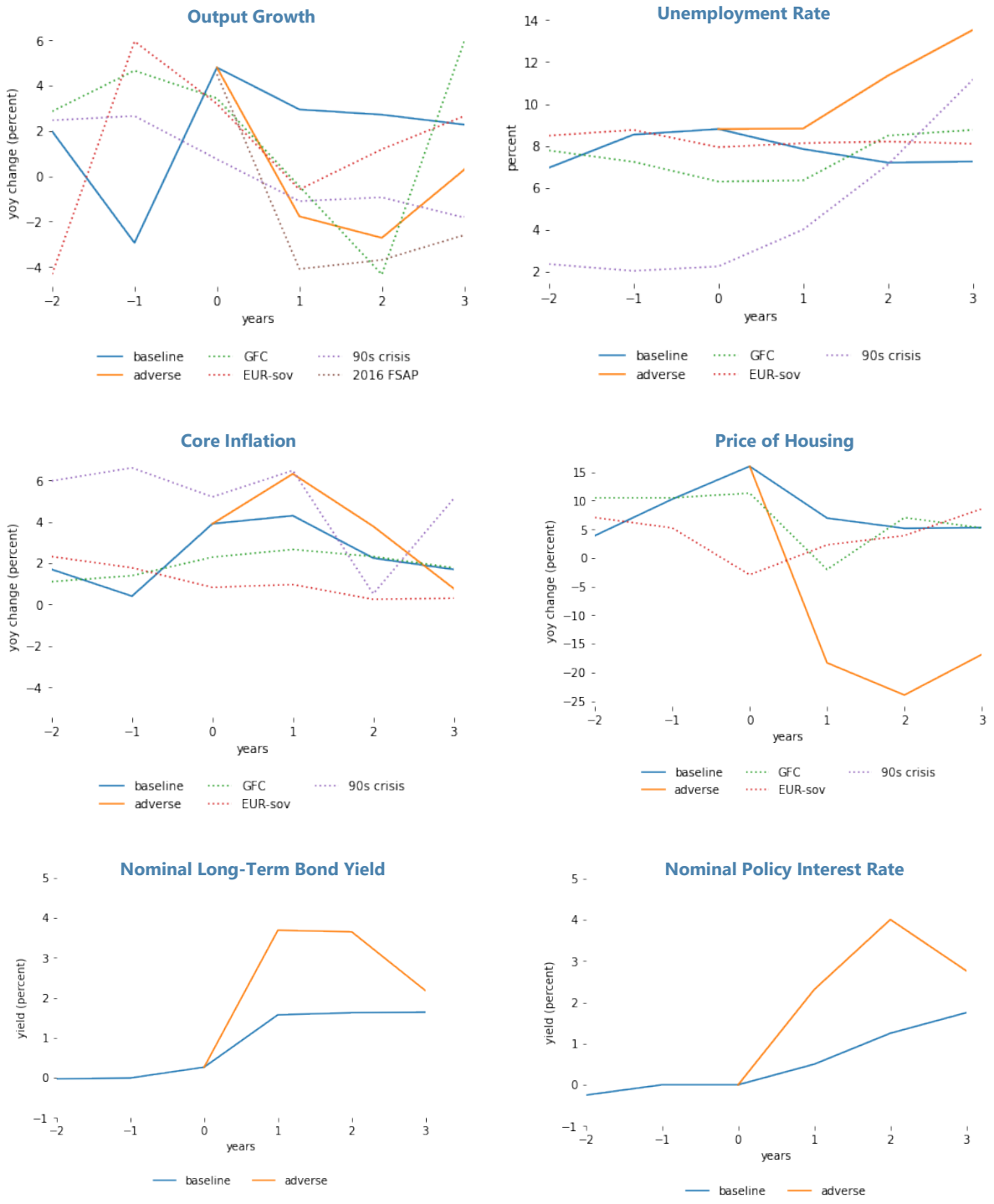
i. A de-anchoring of inflation expectations in the U.S. and advanced European economies amid persistent geopolitical tensions and continued pandemic-related shortages and supply chain issues;

ii. Widespread cost-push shocks in energy and food markets;

iii. Second round effects which lead to a coincident increase in advanced country policy rates (up to 400 basis points for the Swedish repo rate) contributing to a recession afterwards;

iv. Tighter financial conditions, lower confidence, a spike in risk premia, and a contraction in asset prices, especially in real estate (38 percent lower after two years, for both residential and commercial real estate).

Figure 6. Stress Test Macroeconomic Scenarios



Note: The dotted line provides comparison with historical adverse events, namely the Global financial crisis (GFC), the Europen sovereign debt crisis (EUR-sov), and the 90s Swedish crisis.

C. How Resilient is the Financial System?

CRE Sector Resilience

19. Stress tests indicate that CREs face debt servicing pressures even under a mild scenario. Stress tests were conducted on a sample of CRE firms (Figure 5 and 7).[14,15] The analysis focused on a set of customary financial ratios under current and stressed conditions. Shocks reflecting the adverse stress scenario were applied to gauge the response of firms' interest coverage ratio (ICR) to interest rate change, GDP change impact on revenues, and FX.[16] The joint occurrence of shocks, particularly the interest rate and GDP shocks, significantly weakened the ICR, with the median ICRs falling below 1.5, and below 1 under a more severe shock. Debt-at-risk was found to fluctuate between 20-35 percent.[17] Medium and large-size firms were affected similarly.

20. More granular data should be collected on CREs. The authorities should gather more data on firms' liabilities, especially in foreign currency. In general, data on CRE should be more comprehensive and at higher frequency. For instance, it should cover data on rental rates and prices, vacancies, and transactions. Moreover, data should be integrated into a single database. Finally, the authorities should collect data on the ownership structure of CREs to identify interlinkages across firms as well as associated vulnerabilities.

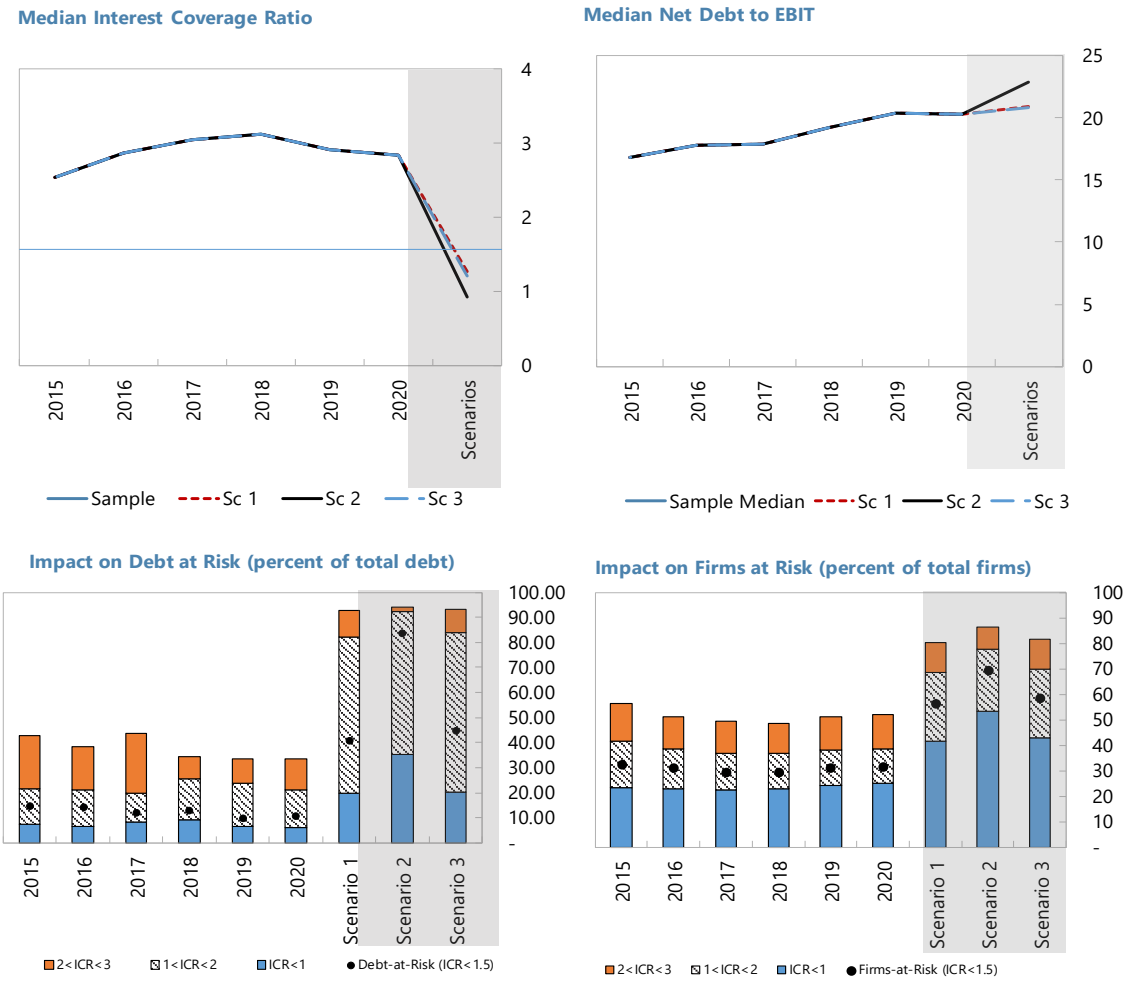
[14]A sample of about 3,800 firms with total assets amounting to US$482 billion (90 percent of GDP) and aggregate indebtedness of US$ 363 billon (70 percent of GDP), or around 40 percent of NFC debt.

[15] FI stress tests include 15000 CREs, including small CREs, which stand for around 40 per cent of the loan amount and around 90 percent of the number of CREs.

[16] For the fuller description of the framework see Sweden FSAP: 2022. Technical note on Risk Analysis and Stress Testing (2023) and T. Chow (IMF Working Paper 15/216).

[17] A firm is defined as having debt-at-risk when it is not generating sufficient revenues to service its debt without making adjustments, such as reducing operating costs, drawing down its cash reserves, or borrowing more.

Figure 7. CRE Stress Test Results[1]



**Firm size is derived from the country's sample firms by asset size: Large=Top 25th percentile; Small=Last 25th percentile; Medium=In between.

[1] See Sweden FSAP: 2022. Technical note on Risk Analysis and Stress Testing (2023) for scenario description.

Banking Sector Resilience

21. The team conducted bank solvency and liquidity stress tests. The forward-looking solvency analysis comprised the three Systemically Important Banks (SIBs) [18] and the two largest mortgage banks,[19] covering around 75 percent of Swedish banking sector assets. The solvency stress test covered market, credit, and interest rate/funding risks. Output included three-year bank-by-bank projections of earnings, costs, and balance sheets.[20]

22. The baseline scenario solvency stress test confirmed the Swedish banking sector's resilience to severe macroeconomic shocks, while revealing vulnerabilities as the economy adapts to higher interest rates (Figure 8). Banks' capital ratios increase slightly under the baseline scenario as banks' profitability before loan losses remains high and thus banks' capital base increases in the projection due to retained earnings. Simulated RWAs also increase, albeit from low starting point, as household and corporate defaults rise with higher interest rates. The adverse scenario negatively impacts banks' capital ratios, yet no bank sees its capital ratio fall below the hurdle rate.[21] This is largely due to the high initial capital ratio, as well as the high pre-provisioning income. On aggregate, the CET1 ratio declines by about 620 basis points by the 3rd year. Credit risk provisioning is the largest contributor to the decline in capital ratios at the system level. Banks benefit from higher net interest income (NII), but the increase in NII is lower than that projected in the baseline scenario due to an abrupt rise in funding rates, including because of higher risk premia, with banks not fully able to pass-through the increased cost of funding to their customers. The flow of new provisions stems from the high loss rates on CRE exposures. As a result, RWAs rise beyond the risk weight floor, which confirms the need to conserve capital and/or increase capital buffer requirements, particularly in relation to the CRE portfolio, to enhance banks' resilience in stress conditions.

23. Sensitivity analysis shows that banks would be able to further finance the CRE sector in the baseline and adverse scenarios (Figure 8). This analysis is motivated by the CRE sector's reliance on market funding and banks' potential incentive to avoid CRE defaults by extending further credit to the sector given existing large exposures. It is assumed that, under the same scenarios as the main stress test results, banks would extend loans equivalent to 35 percent of current CRE

[18]These are: Swedbank, SEB, Handelsbanken.

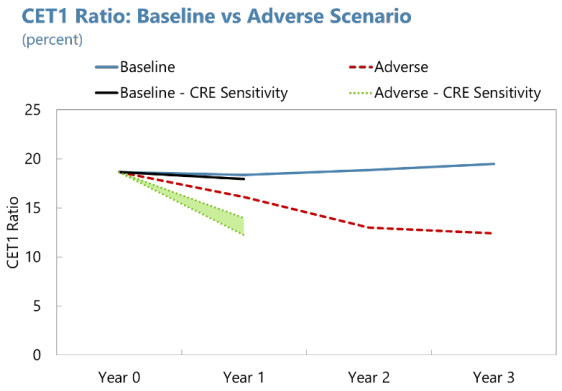
[19] These are: SBAB Bank and Länsförsäkringar Bank.

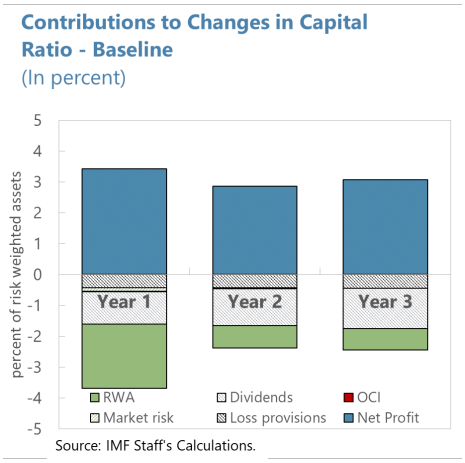
[20] Credit risk covers loans portfolios and bonds holdings; market risk will cover the trading book of government and corporate securities, with respect to a change in yields; interest rate/funding risk will cover interest bearing assets and liabilities by time of repricing and maturity—including wholesale funding.

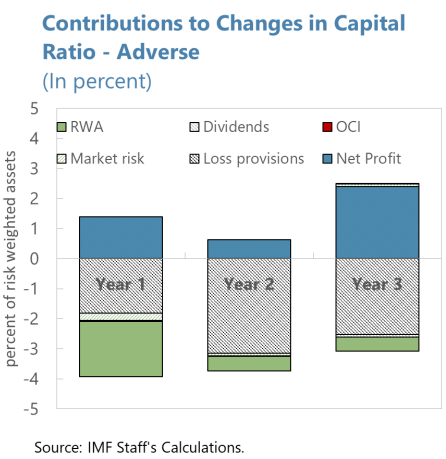
[21] The hurdle rates are bank specific. The hurdle rates applied in the stress test are set at the Common Equity Tier (CET1) regulatory minimum of a 4.5 percent Pillar 1 requirement, a fully phased Capital Conservation Buffer (CCB) of 2.5 percent, and a phased-in buffer of 3 percent for SIBs. This led to a CET1 hurdle rate ranging from 7.0 to 10 percent. In the baseline scenario, the phase-in of the countercyclical capital buffer starting from 2023 is also considered. See also: Capital requirements of Swedish banks as of Q4 2021 | Finansinspektionen.

market funding.[22] Under the baseline scenario, CET1 capital is depleted by 1 percentage point. Under the adverse scenario, CET1 capital is depleted by about 2.8 to 3.9 percentage points,[23] primarily for the change in RWA but also due to an increase in provisions.

Figure 8. Results of Scenario-Based Solvency Stress Test and Sensitivity Test



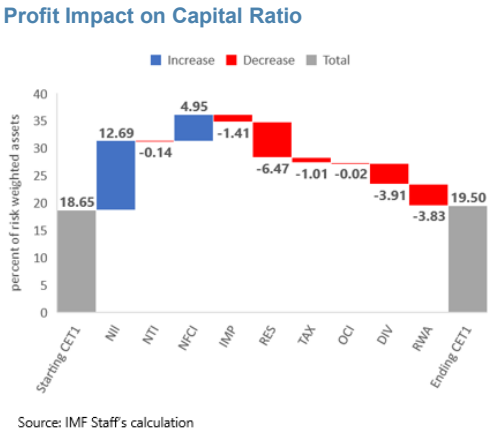




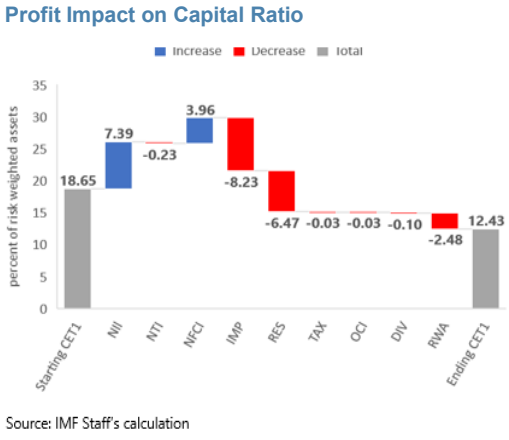
[22] This figure is calibrated by considering the fraction of CRE market funding maturing over the next two years and estimates of available collateral.

[23] The range is obtained by changing the pass-through between PD_{PiT} and PD_{TTC} to recognize the uncertainty underlining this scenario. The pass-through ranges between 5 and 35 percent.

Figure 8. Results of Scenario-Based Solvency Stress Test and Sensitivity Test (concluded)



Source: IMF Staff's calculation



Source: IMF Staff's calculation

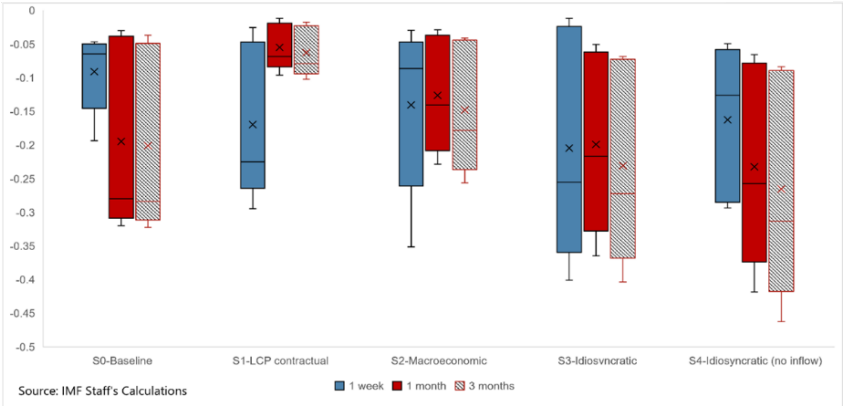
24. Multiple scenarios (Appendix VI) were considered to test the resilience of banks to liquidity outflows (Figure 9). The stress scenarios were formulated in terms of roll-on/roll-off rates and haircuts to Counterbalancing Capacity (CBC) and were designed to capture risks from net outflows of retail deposits, an increase in the use of committed credit lines by corporates, and a significant increase in risk aversion, with higher haircuts on counterbalancing capacity assets due to financial market stress in line with the macro scenario.

25. The cashflow-based stress test suggests potential liquidity gaps when extending the horizon beyond 30-days. In general, banks can withstand mild and medium liquidity outflows with their existing counterbalancing capacities, however their liquidity positions become weaker beyond one month. One bank is prone to liquidity shortfalls even in the short-term, due to its derivatives positions, and another is exposed to liquidity risk because of its large off-balance sheet exposures. The impact of the shocks is high, and in adverse scenarios the systemwide median CBC declines by from 10 to 20 p.p. of total assets due to the outflows from wholesale funding, contingent liabilities (Figure 9).

26. Given potential liquidity gaps over longer horizons beyond 30 days, authorities could focus on strengthening the stability of longer-term wholesale funding. Potential measures to address liquidity gaps could encompass requirements for banks to: (i) cover a predetermined threshold of wholesale funding outflows over a longer horizon, (ii) hold higher stock of HQLA to withstand liquidity stress tests, and (iii) increase the proportion of longer-term and demand deposits.

Figure 9. Results of Liquidity Stress Test[1]

Impact on Counterbalancing Capacity in Terms of Total Assets
(In percent)



Source: IMF Staff's Calculations

[1] The baseline scenario assumes business as usual outflows; contractual – contractual flows; macroeconomic – linked to the macro scenario, assuming haircuts on liquid assets, closure of wholesale unsecured funding markets; idiosyncratic – institution specific shocks; idiosyncratic (no inflow) – assumes institution specific shocks and full provision of credit to the customers (i.e., no inflows form maturing loan portfolio).

Investment Fund Sector Resilience

27. Most of the investment funds would be able to withstand severe but plausible redemption shocks. However, many funds would still run into difficulties. Around 75 percent of the investment funds analyzed would have enough highly liquid assets to meet investors' redemption requests and thus avoid a liquidity shortfall (Figure 10). This also means that a relevant portion of investment funds would be forced to sell assets that do not benefit from deep markets to meet redemption requests.

28. Several vulnerabilities arise in portfolios not sufficiently diversified or heavily exposed to unrated or poorly rated debt securities. These securities, especially under stressed market conditions, would have limited market liquidity. In some cases, the liquidity shortfall, defined as the difference between the redemption shock and liquid assets (in percent of Net Asset Value) would be above 10 percent. Funds holding domestic corporate bonds and pursuing long term buy-and-hold strategies appear more likely to have a shortfall, reflecting the limited depth of the underlying market and structural limitations in correctly assessing credit and liquidity risk.

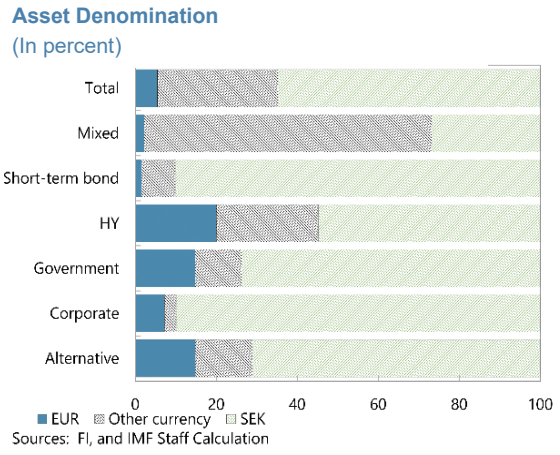
29. While the stress test exercise does not detect large price declines of domestic bonds, liquidity conditions in the corporate bond market are of concern. The corporate bond market appears extremely illiquid and structurally weak, with a relevant part of market liquidity that remains idiosyncratic or bond specific. The vast majority of the corporate debt instruments (84 percent) are traded on average less than 1 time per month and only a few are exchanged more than 5 times (Figure 10), thus impairing the price discovery process. This is concerning as orderly corporate bond market functioning is critical to the real economy.

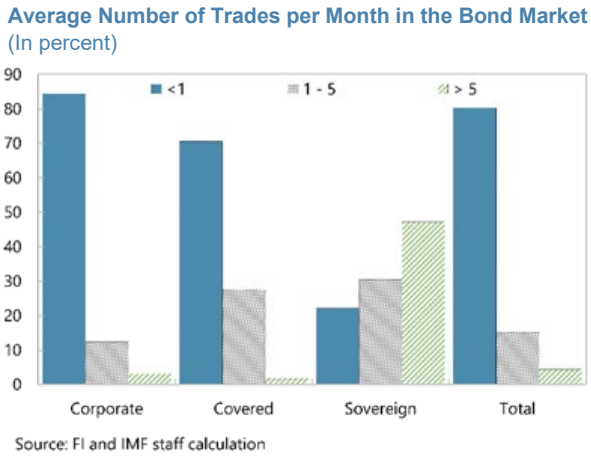
30. To address the issues in the investment fund market, the authorities should:

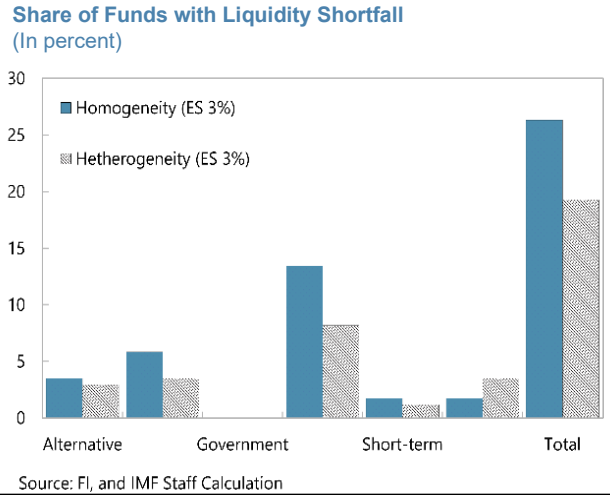
i. Require funds to better align liquidity on the liability and asset sides by adopting liquidity management tools (LMTs), such as: redemption terms that are more aligned with the liquidity profile of a fund's portfolio, swing pricing, and redemption gates.

ii. Provide industry guidance on liquidity stress tests for funds with relevant exposure to asset classes with limited market depth. Given the risk associated with abrupt changes in market conditions, FI should require asset managers to regularly perform liquidity stress tests for different market scenarios and then communicate the results.

Figure 10. Investment Funds Stress Test







D. What Are the Financial Stability Implications of Interconnectedness?

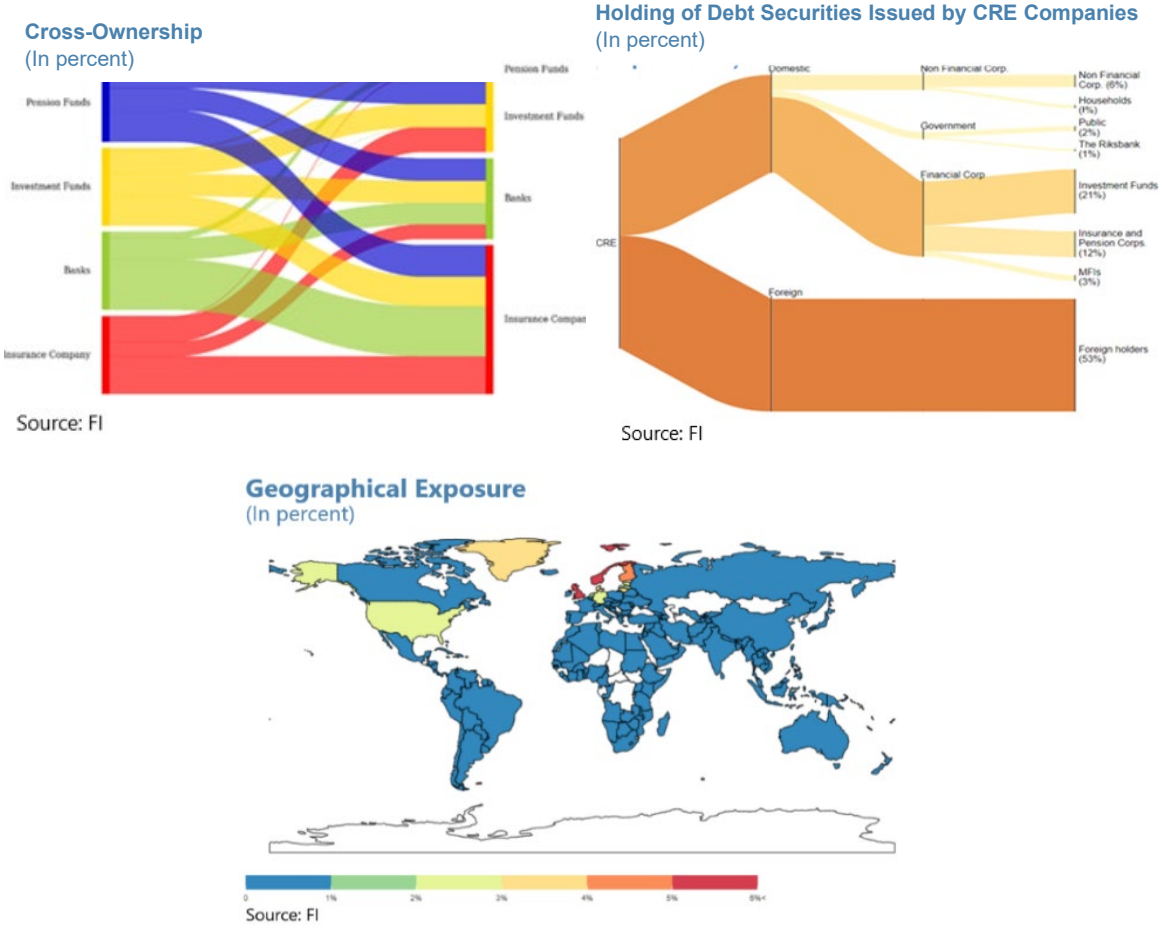
31. Interbank exposures across the five largest banks in Sweden are small thus pausing limited direct contagion effects. Stress testing interbank exposures assuming 100 percent loss rate did not yield significant depletion of CET1. This is to a large extent due to the current excessive

liquidity in the system (exposures to central banks as opposed to the interbank market), and heavy reliance on secured lending (repos and reverse repos).

32. Contagion across financial institutions due to similarities in portfolio holdings appear more prominent yet not easily quantifiable due to data constraints (Figure 11). CRE bonds is one of the key potential channels of contagion via exposure to the same issuer and/or security. For example, foreign investors hold 28 percent of Swedish corporate bonds and 53 percent of CRE bonds. The remaining 47 percent of CRE bonds outstanding are split between domestic investors, particularly investment funds (21 percent), insurance and pension companies (12 percent), non-financial corporations, the public sector, and the Riksbank. About 55 percent of CRE-issued bonds are Euro denominated.

33. Better data is required to gauge risks from banks' corporate exposures. Banks should disclose more data on their exposures to CREs; e.g., their contingent liabilities (such as credit lines) towards CREs and other large corporates. As discussed earlier, the results of the bank stress tests are sensitive to the initial exposure to CREs.

Figure 11. Interconnectedness



E. Are There Systemic Risk Issues from an Introduction of the E-Krona?

34. The potential issuance of Central Bank Digital Currency (e-krona) has multiple benefits yet could create systemic risks due to financial and operational issues. The Swedish authorities are evaluating the possibility to issue the e-krona. While the analysis here focuses on risks, the e-krone could bring several benefits, such as technological advances, increased contestability and resilience of payment market, and continued access to a liability of the central bank.[24]

35. Financial risks depend on whether the e-krona will be used as a means of payments or store of value, and if there is demand for e-krona from foreign countries. If the e-krona is used only for transaction purposes, risks would arise for the sustainability of current payment service providers, as they would experience higher competition. If instead the e-krona is used also as a store value, it would compete with bank deposits, potentially creating an outflow of deposits from the banking system, which could be fast (a bank run), or slow (a structural disintermediation).[25] Foreign e-krona demand could lead to currency substitution abroad, and to larger and more volatile capital flows in Sweden.

36. Operational and reputational risks arise from the complexity and novelty of the undertaking for a central bank. They include, for instance, risks arising from the treatment of personal data, integrity risks, and cyber risks. Reputational risks due to lower-than-expected demand of e-krona, especially if implementation costs are high, could also arise.

37. While the Riksbank is actively analyzing and testing the e-krona, more needs to be done to ensure that risks are mitigated and trust in the currency is upheld. Central banks are tasked to provide trust in the currency; financial and operational risks should effectively be mitigated. The Riksbank should conduct extensive testing and analysis of economic implications; evaluate incentives for e-krona adoption by the general public and the private sector; continue testing technical solutions and cooperate with other relevant authorities, for instance with FI and NDO.

F. Is the Fintech Sector Creating Systemic Risk?

38. Sweden has a growing fintech ecosystem. Fintech is technologically enabled financial innovation that could result in new business models, applications, processes, or products. According to data collected by Tillväxtanalys,[26] the number of active Fintech companies in Sweden increased to around 450 in 2019, from about 150 in 2010 (Figure 12). Swedish fintech firms mostly operate in payments, credit provision, and infrastructure, but many business models are hard to label, which points to the innovative nature of fintech activities.

[24] Since the focus of the FSAP is on systemic risk, this note does not evaluate benefits in what follows.

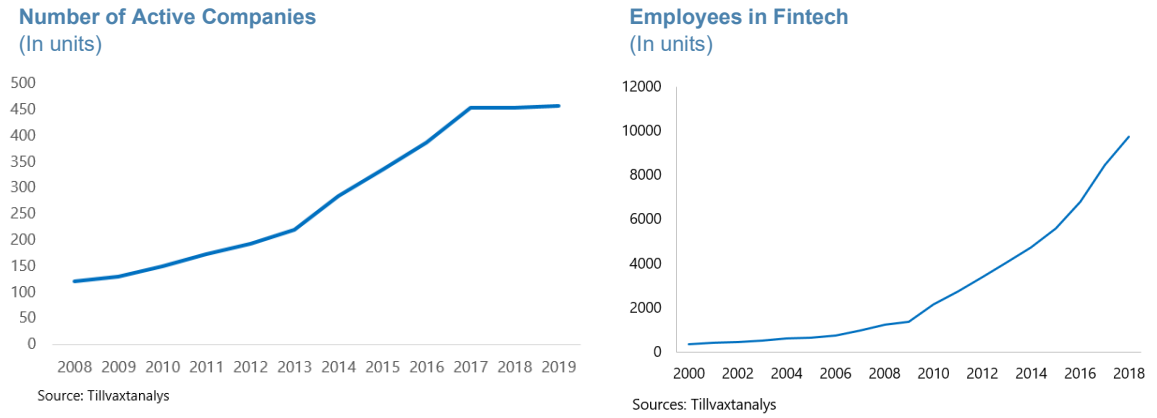
[25] Sight and term deposits of households and non-financial corporations account between 30 and 40 percent of the liabilities of major banks (Figure 3). Values for individual series are not available.

[26] Swedish Fintech, Tillväxtanalys, 2020/3, https://www.tillvaxtanalys.se/in-english/publications/pm/pm/2021-01-28-swedish-fintech.html.

39. Fintech could create systemic risks through its size, risk profile, interconnectedness, and concentration.[27] Fintech could potentially undermine financial stability, especially if fintech firms become large or highly interconnected to other players in the financial system while not being covered by regulation and supervision to the appropriate extent. The specific business models of fintech firms could also give rise to specific risks (e.g., cyber risks, third-party reliance, legal/regulatory risk, but also leverage, maturity and liquidity mismatch).

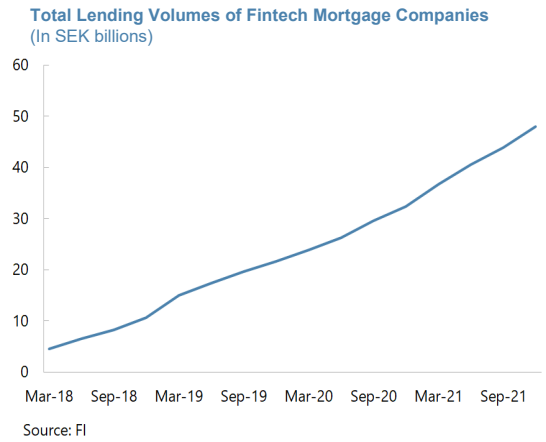
40. While systemic importance of the fintech sector seems limited, it should be monitored closely. From a limited scope analysis, fintech firms seem generally of small size, and have limited interconnections with the banking sector. However, the fintech sector should be monitored closely for several reasons: i) growth of fintech firms and activities can be quite fast, including cross-border; ii) fintech firms have many different business models and services provided, they are complex to analyze; time to learn about it might be short if a crisis arises; and iii) the fintech sector is highly visible despite its size, so that a supervisory failure will likely receive attention and could undermine the credibility of a supervisor and confidence in the financial system. While FI's monitoring of related risks for both incumbents and Fintech firms is embedded in its day-to-day supervision, it does not collect comprehensive data on Fintech firms that would allow to assess the development of the sector more broadly and analyze whether new activities and business models are emerging that are not adequately covered by existing regulations or even completely outside of the regulatory perimeter. FI should enhance its approach to fintech supervision, including through strengthened communication, expanded data collection, systematic review of the regulatory perimeter, and evaluation of FI's adequacy of resources. Finally, close monitoring is needed to ensure consumers are not exposed to fraud and unfair practices.

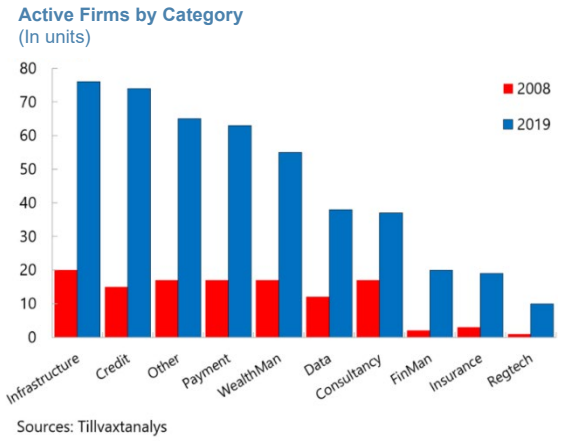
Figure 12. Developments in the Fintech Sector



[27] As there is no international framework to measure and assess the systemic risk of fintech, the FSAP mission took a practical approach in evaluating the materiality and potential systemic importance of the fintech sector.

Figure 12. Developments in the Fintech Sector (concluded)





FINANCIAL SECTOR OVERSIGHT

A. How Effective is Microprudential Supervision in Addressing Risks?

41. Since the last FSAP in 2016, the authorities have adopted several regulatory reforms. Yet, they need to allocate additional resources to address supervisory shortcomings. The key changes to the legal framework have mainly been a direct result of legal initiatives at the European Union (EU) level such as: (i) revisions to Capital Requirement Regulation (CRR) and transposition of European Directives[28]; (ii) implementation of International Financial Reporting Standard on Financial Instruments (IFRS 9); (iii) the revised Payment Services Directive (PSD2); and (iv) the Banking Recovery and Resolution Directive (BRRD)). Since the 2016 FSAP, country and transfer risk have been incorporated in the credit risk regulation, but there is still no supervisory process. The supervision of banks by FI is generally not as intrusive as is common in other jurisdictions, due to resource constraints in the banking supervision function of FI, as well as high staff turnover and inability to attract senior level risk experts.[29] This has resulted in: (i) inability to undertake more regular and intrusive supervision of systemic banks; (ii) challenges in meeting the set timelines for approval of IRB models; (iii) reliance on banks' internal controls and internal audit to ensure high quality data and information; (iv) investigations taking longer; (v) delays in the development of analytical tools, including those for offsite monitoring and screening of institutions; and (vi) a very limited engagement with high-risk but smaller institutions.

42. The supervisory (SREP) cycle is predominantly driven by the systemic importance of a bank and limited consideration is given to a bank's risk profile. This could adversely impact the

[28] Capital Requirement Directive (CRD), Banking Recovery and Resolution Directive (BRRD), Anti-Money Laundering (AML) Directive 4 and 5, Second Payment Service Directive and Payment Account Directive and the Mortgage Credit Directive.

[29] The time spend onsite by supervisors, which is noted as varying but rarely exceeding 3-4 days, is inadequate to undertake detailed assessment of bank's risk profile.

timeliness of supervisory action for high-risk institutions. Further, the requirement to closely monitor newly licensed institutions is currently not formalized. For example, the time within which institutions are required to undergo a full SREP or onsite examination should be specified, along with any additional reporting required from such institutions to facilitate their close monitoring.

43. Supervision of Pillar 1 credit risk models should re-introduce model performance reviews and evaluation of the quality of their deployment by credit institutions once the EBA review is finalized. The ongoing assessment of performance of IRB models should re-introduce a more comprehensive offsite monitoring and onsite testing process, including detailed testing of the performance of specific risk parameters such as Probability of Default (PD) and Loss Given Default (LGD) to determine that they fully capture the risk profile of banks' underlying exposures.[30] The process could potentially involve collection and analysis of granular model level data from banks, onsite evaluation of the quality of the deployment of the approved IRB models by banks including assignment of exposures to the specific regulatory approved IRB models, calculation of Risk Weighted Assets (RWAs), and review of banks' data management and model governance arrangements. This is critical to ensure the integrity of the models and process used by banks to generate capital requirements and the reliability of the solvency positions reported by major Swedish banks, which are under the IRB approach.

44. Concrete steps should therefore be taken to ensure that FI is adequately resourced and can attract and retain experienced risk experts. FI should develop a strategy for attracting and retaining staff, particularly risk specialists, that is anchored on competitive salaries which should be benchmarked against those in the private sector. To increase the resources dedicated to banking supervision of banks to the level that is adequate given the size and complexity of its banking system, FI requires additional funding from the government. FI could also explore the use of independent external experts for some specific supervisory tasks, as a way of addressing temporary staff shortage particularly in highly specialized areas where there are challenges recruiting staff with the required skills and experience.[31] Further automation of offsite monitoring process including the use of interactive risk dashboards and data collection to enhance the tracking of risks can help FI focus scarce resources on higher-risk and priority areas and institutions.[32]

45. The identified gaps in supervisory processes should be addressed by authorities in a phased approach. Priority should be given to: (i) optimizing current processes and tools; (ii) reviewing staff's retention strategy and phased recruitment of experts in IRB models, cyber risk and governance; and (iii) enhancing onsite inspections involving detailed testing of data quality, and

[30] This could also include testing, on a case-by-case basis, of risk differentiation and predictive power of the models, reasonableness of model assumptions, approach to generation of model inputs, control over manual overrides, etc.

[31] Independent external experts should not be used as a long-term solution to the shortage of staff.

[32] FI collects extensive supervisory information and should consider fully automating its analysis to facilitate a more efficient screening of risks and identification of vulnerabilities within the banking system to inform a better targeted reviews and timely supervisory intervention. This, amongst others, include information on credit exposures and qualitative information collected through a mandatory self-assessment questionnaire as part of the AML/CFT reporting requirements.

effectiveness of internal controls covering the material risks with priority initially being given to systemically important banks and more material risks.

46. There are gaps in legal and regulatory frameworks that require amendments to the banking law and development of new regulations. The Swedish laws does not recognize the concept of "senior management" and credit institutions are not legally obliged to notify FI of any material information that may undermine the suitability of a major shareholder. This constrains several supervisory activities such as: licensing, fit and proper assessment, and corrective action. For example, it is only the board members and the Chief Executive Officer (CEO) who are legally subject to a fit and proper assessment as per the current Swedish laws and can be removed by FI.

B. How Effective is Macroprudential Policy in Mitigating Systemic Risks?

Institutional Framework

47. The increase in market-based finance challenges macroprudential policy. Borrower-based measures for market-based finance for macroprudential purposes do not yet exist, and many market-based finance participants are outside the national regulatory perimeter.[33] Interlinkages and spillovers between different parts of the financial system mean that the actions of separate authorities can lead to suboptimal outcomes. In Sweden, responsibilities are concentrated in FI with the Riksbank also taking an important monitoring role. There is no overall decision-making body which internalizes and coordinates all financial stability decisions. The Financial Stability Council is a discussion forum, which should go some way to internalizing interactions, but its powers are limited in that constitutionally no authority can ask another to take an action.

48. The authorities should make more use of "soft power" and joint communication, especially when risks become more systemic as with market-based finance. A recent example is the joint article by the heads of three authorities to encourage firms to issue corporate bonds in line with the proposed benchmark. Communication is a powerful macroprudential policy tool and the FSC members should strategically use this power individually and separately. Communication can often be the only tool when the risks are outside the regulatory perimeter but can also be used to complement existing or newly introduced measures. Joint communication can also make it harder to be captured by short-term interests or particular special-interest groups, whether from the financial or political sphere.

Systemic Risk Monitoring

49. There are important data gaps for almost all sectors. A lack of household liquid asset data means that it is extremely difficult for authorities to examine the level of imbalances posed by high household debt and calibrate macroprudential tools optimally. A newly proposed data

[33] Many market-based finance participants are not included in the scope of macroprudential policy and/or they are regulated from a conduct perspective and not from a prudential perspective.

collection scheme will lead to substantial improvements, but delivery is not expected for a few years. Other data gaps include derivatives data as well as mutual fund asset data.

50. FI and the Riksbank should increase their resources for modelling tail risk, spillovers, and interconnectedness. As the financial system becomes increasingly complex and interlinked with the risks of market-based finance the need for these models will increase. However, models are complex. Technology for modelling tail risk such as GDP-at-Risk is evolving rapidly and modelling interconnectedness in financial markets requires extremely large datasets. Works has begun. In 2018 FI was commissioned to develop and present methods to identify and evaluate macroeconomic and financial stability risks. FI outlined several concrete actions and potential tools, but it has not yet been able to build and sufficiently develop these models due to resource constraints.

Key Systemic Risks: Household Indebtedness and CRE

51. High levels of household indebtedness create an imbalance of risks that complicates policymaking. While most households should still be able to pay their mortgage even after a substantial increase in interest rates, they will cut back on consumption. This increases the potency of monetary policy, but also complicates it when there is a trade-off between inflation and output stabilization, such as following a strong and broad-based cost-push shock, and if inflation expectations become de-anchored. Moreover, as a small open economy, Sweden will feel pressure to increase its policy rate, so that a depreciation of the krone does not fuel inflation. A large or rapid increase in interest rates could lead to a considerable fall in disposable income for many borrowers—particularly those with a high loan-to-income ratio—leading to a slowdown in the economy and potentially impairments in the corporate sector.

52. FI has a remit to redress financial imbalances that can affect the macroeconomy. This includes a remit to address things like high debts and high risk-taking among households and non-financial companies, which exacerbate fluctuations in the real economy, or which can threaten financial stability by leading to spillovers to other sectors and increase systemic risk. FI is unusual in having a specific remit to address wider financial imbalances. This allows FI to act on imbalances which can lead to large macroeconomic fluctuations and can lead to disruption in the provision of financial services.

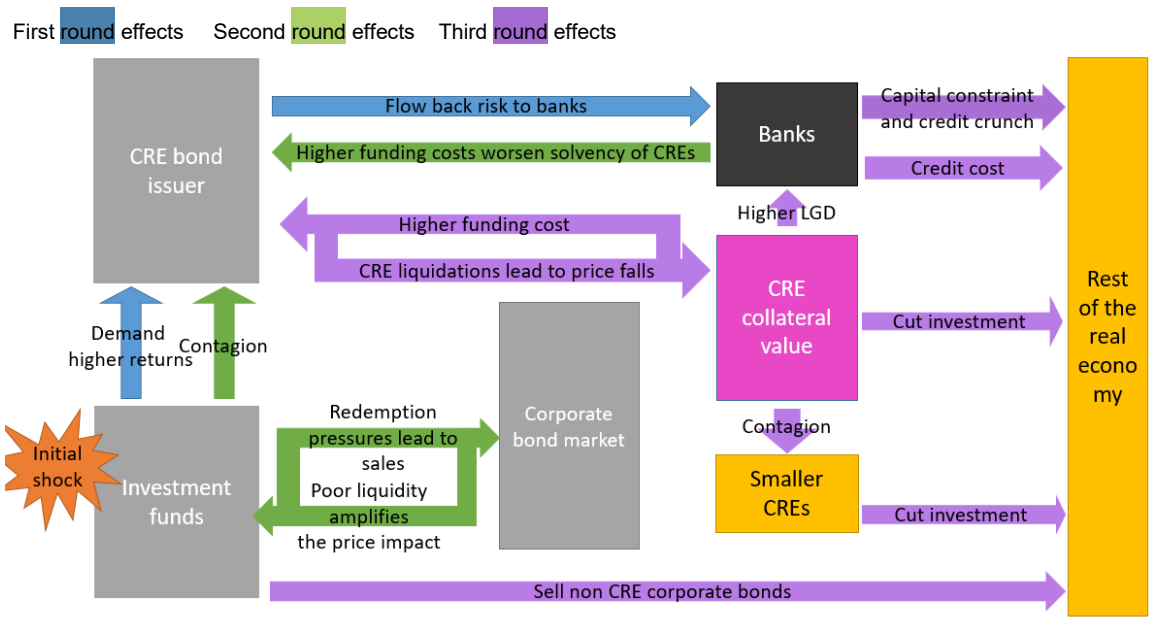
53. To satisfy this remit and address the issues of high indebtedness of households, FI and the government could revert to several tools:

i. FI could consider introducing an interest rate stress test based on interest and amortization payment as a proportion of income for banks to apply to customers seeking short-term variable rate mortgages. This would attenuate and potentially reverse a recent decline in lending standards (where the market standard has declined from testing customers' resilience to a 7 percent interest rate, to around 6 percent even with expectations of further increases in policy rates); and

ii. The government should commission an independent study into the distortions from the interest tax deductibility to evaluate costs and benefits of taxation. At around -30 percent Sweden's marginal effective tax rate for owner occupied debt-financed housing is the third lowest in the OECD.[34] The tax deductibility of interest payments encourages higher indebtedness and higher house prices. The competitive structure of the mortgage market will determine to whom the tax benefits accrue—to households or to the banks.

54. Commercial real estate imposes a substantial risk to the financial system due to funding risks as well as broader spillover effects to the real economy (Figure 13). In recent years CRE companies have made increasing use of market-based finance. This leaves them vulnerable to a change in market sentiment that could increase their funding costs, or even cut off funding all together. Some CRE firms might be able to draw down credit lines from banks. However, some may have to shed assets or declare insolvency. Several *amplification* mechanisms could worsen the outlook for commercial real estate: i) contagion effects could arise among CREs due to cross-ownership; ii) investors may pull back from all CRE issuance with little discrimination due to asymmetric and opaque information; iii) liquidity premia on funding costs will undermine CRE company profits and lead to further credit risk premia and thus higher funding costs; iv) redemptions from investment funds would further withdraw liquidity and in turn boost funding costs. Broader *spillover effects* could turn a CRE shock macro-critical. Liquidations of assets could lower property values across CRE and possibly residential real estate, weighing on consumption and investment, and in the end bank capital.

Figure 13. Contagion in the CRE Market



[34] OECD WP "Measuring effective taxation of housing", 2022.

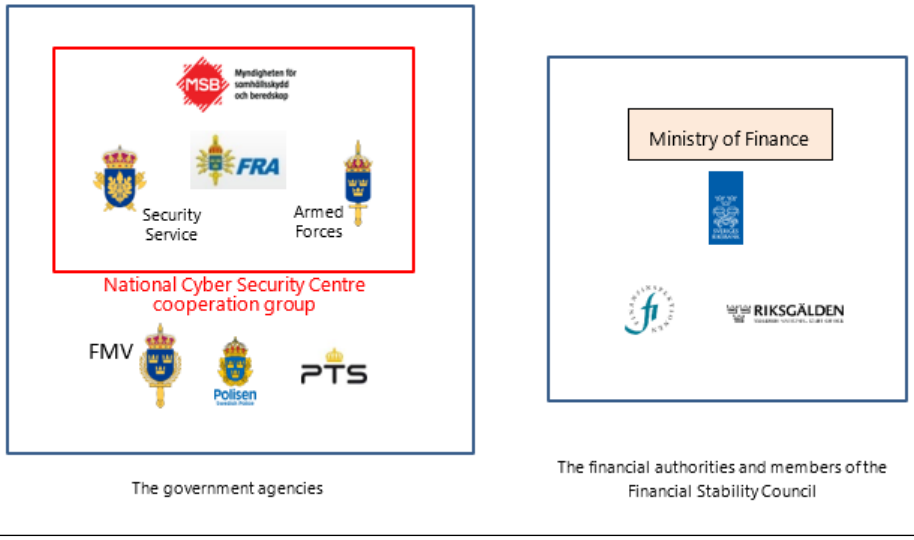
55. Short of borrower-based measures to curb market funding, CRE firms should improve their disclosures, including on contingency plans when market funding dries up. Disclosure should be included in the bond issuance template, and should be encouraged by the authorities, and potentially also by the securities market association. Having better disclosure will also ensure investors can distinguish between more solvent and less solvent firms, thereby reducing contagion across the sector.

56. The authorities should ensure that banks hold enough capital for their CRE lending, which could imply increasing capital requirements for banks. FI should consider further increasing capital requirements against CRE as the concentration, structural issues and feedback loops raised in this section suggest that the capital required by banks based on the micro-prudential stress tests alone is insufficient. Ideally, these feedback loops will one day be integrated in the stress-testing model.

C. How Well is Cyber Risk Being Incorporated in Financial Oversight?

57. Sweden's financial sector is highly digitalized and interconnected, and the related technological developments heighten cyber threats and vulnerabilities. The cyber threat landscape has evolved, with many Swedish financial institutions victims of Distributed Denial of Service (DDoS) attacks. Wider, more destructive attacks are also likely. Multiple agencies and authorities are involved in identifying, monitoring, and mitigating cyber threats (Figure 14). However, responsibility for cyber risk management and interagency cooperation is spread across several different agencies and authorities and there is a lack of clarity about each government agency and financial authority's specific responsibilities with respect to cyber security risk management. Furthermore, communication and information sharing other than between the Riksbank and FI is subject to perceived legal constraints and concerns about differing security classification. These factors make coordination difficult and impede information sharing.

Figure 14. Agencies and Authorities with an Interest in Cyber Security



58. Our recommendations follow the NIST framework:

Identify

i) The Swedish authorities, including the Government and the Riksbank, should (i) allocate clear responsibilities for cyber risk management and interagency cooperation in the financial sector; and (ii) identify and address barriers to information sharing between government agencies, the financial authorities and the private sector;

ii) The National Cyber Security Centre (NCSC) should engage fully with the financial sector, ideally as a case study on a simulated cyber-attack. This exercise would help in coordinating responses, share information and cooperation among financial firms and public agencies;

iii) The Swedish Civil Contingencies Agency (MSB,) and in due course the NCSC, should produce regular cyber threat intelligence reports available to all financial institutions; and

iv) FI should establish and maintain a central database of essential service providers and outsourced third-party arrangements, which are vulnerable to several risks, not least cyber incidents, and use the data to analyze and identify concentration risks.

Respond and Recover

v) The financial authorities and relevant government agencies should formalize an operational and cyber incident response framework and exercise it regularly.

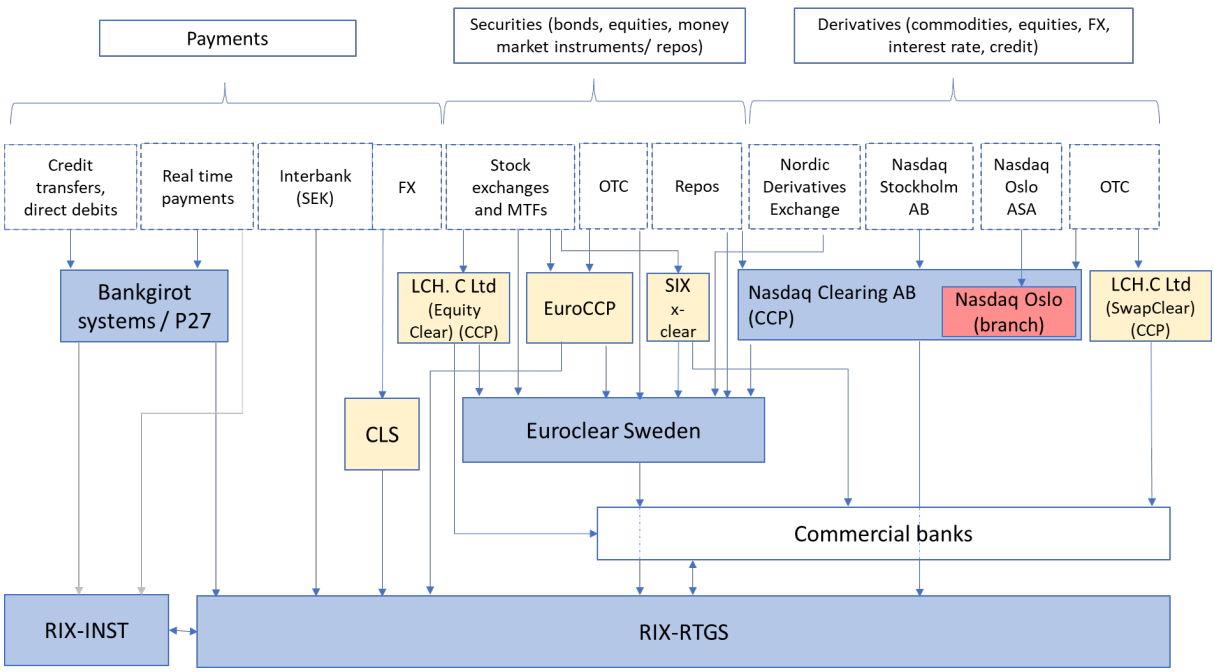
Regulation and Supervision

vi) FI should explore innovative means by which supervision resources can be augmented through secondments and increased use of existing powers to appoint auditors.

D. How Safe are Financial Market Infrastructures?

59. Sweden has modern, stable, and well-developed financial market infrastructures (FMIs) (Figure 15). There are clear and public criteria identifying which FMIs are subject to regulation, supervision, and oversight by the Swedish authorities. And the scope of the oversight and supervisory responsibilities of FI and the Riksbank is clearly defined.

Figure 15. FMI Landscape in Sweden



60. Digitalization of payments has been rising steadily in Sweden in combination with a major overhaul of payment infrastructure. Use of cash has been declining over the last years in favor of electronic means of payment. The financial sector is facing major transformations in the upcoming five years in the payments ecosystem from local and EU initiatives. Financial institutions, payment service providers, FMIs, and other entities are increasingly outsourcing their activities to reduce costs and improve flexibility and efficiency. RIX-INST is operated and maintained by the Eurosystem while Bankgirot and P27 have outsourced the maintenance and operations of payment platforms to private international companies. This introduces some risks, as the operational resilience and stability of an FMI depends on continuous and stable functioning of third-party service providers critical to the FMI's operations.

61. There are several key issues authorities need to consider when evaluating systemic risk stemming from payment system infrastructure:

i. Joining Eurosystem operated platforms will bring benefits but also create challenges related to governance, risk management, and the representation of Swedish interests and oversight;

ii. Bankgirot and P27 rely substantially on outsourcing core services. Bankgirot and future P27 services are critical for Swedish society as they process a majority of retail payments in Sweden. Given the systemic importance of P27, supervisory and oversight regimes for P27 should be enhanced; and

iii. Swish and BankID are widely used and are critical components of payments in Sweden, though are outside direct regulation, supervision, and oversight by FI. Both services exhibit high user dependency, high concentration, and very low substitutability. The authorities should consider establishing either a new regulatory framework for both entities or including them in an existing regulatory framework with stringent requirements for operational resilience, contingency requirements, cyber security, data protection, and other key risks.

E. How to Further Improve the Financial Integrity Framework?

62. Sweden has a strong AML/CFT framework, which it should strengthen further, with respect to domestic and cross-border supervision of banks.[35] Sweden is cooperative internationally, and its legal framework largely complies with several elements of the AML/CFT standards. Nevertheless, some gaps remain as evident in Sweden's and the broader region's exposure to high profile ML events in recent years which highlight the importance of effective domestic and cross-border AML/CFT supervision.[36]

63. FI needs to step up AML/CFT inspections based on improved understanding of ML/TF risks with a greater focus on cross-border dimensions. FI should include in its analysis more granular data on cross-border (including intra-EU) transactions, customer activity including in geographic terms, as well as more systematic assessments of the effectiveness of AML/CFT controls in order to strengthen the supervisory ML/TF risk assessment. This would improve AML/CFT supervision when it comes to targeting geographical, transactional, and customer risk. It would help in the selection of banks to be inspected but also in the scoping of inspections. FI's AML/CFT on-site inspections of banks were mostly focused on the largest banks due to their international businesses. The attention paid to correspondent banking seems insufficient given Sweden's risk profile. In response to the ML events that occurred in 2019, FI in its inspection of a bank with foreign operations in the region placed emphasis on group level controls.[37] This is welcome and should continue in a proactive manner. More guidance to regulated entities, especially for the identification of beneficial owners, would also help mitigate risks in the private sector. Finally, FI should pay more attention to correspondent banking and on group level controls, as it has begun doing in response to the ML events that occurred in 2019.[38]

64. FI's efforts to supervise VASPs should continue. Sweden has identified the ML/TF risks of virtual assets (VA) activities at the national level as early as 2013 and has regulated VA exchanges for AML/CFT. The framework has since then been brought in line with FATF revised standards on VA. FI

[35] Sweden's AML/CFT framework was last evaluated by the FATF in 2016 (full report).

[36] See: Sweden's progress in strengthening measures to tackle money laundering and terrorist financing (2020)

[37] The Working Group of Nordic-Baltic countries on AML/CFT supervision should be instrumental in further enhancing cooperation among AML/CFT supervisors in the region including in the form of joint inspections, which FI has started doing.

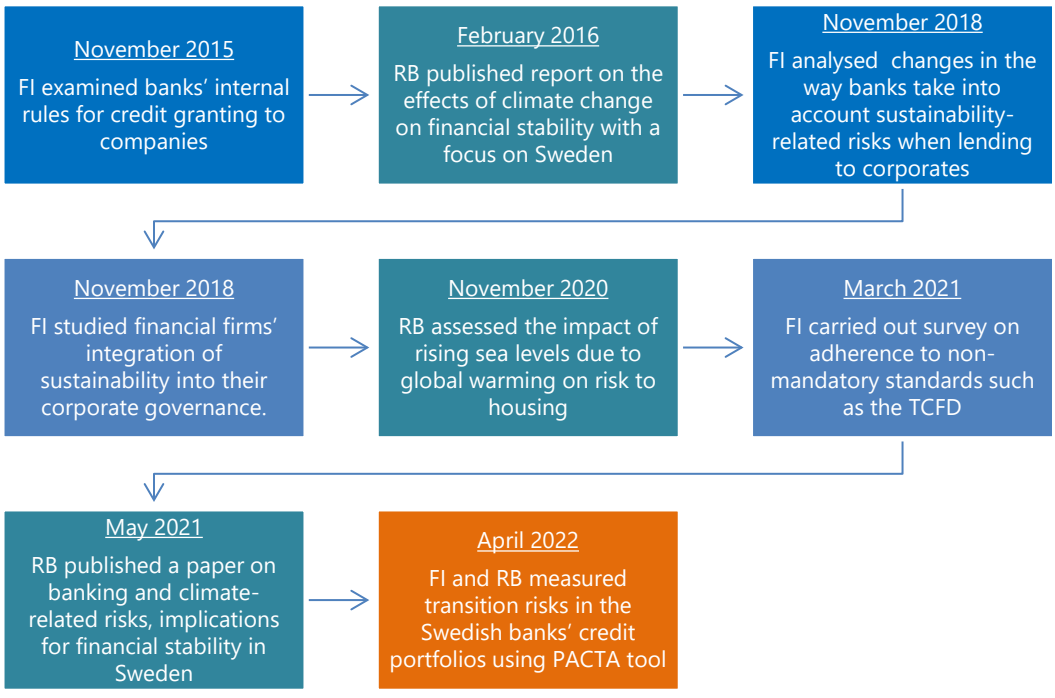
[38] A major Swedish bank was found to be involved in the money laundering scandal of Denmark's Danske Bank and heavily fined in 2020 serious deficiencies in its AML/CFT controls.

should continue its supervision of ML/TF risks of VASPs at the entity level. The collection of more information about VASP activities, as well as continued monitoring, would strengthen FI's understanding of ML/TF risks and enable supervision to target higher risk VASPs.

F. How to Adopt to Supervision and Regulation of Climate-Related Risks?

65. Sweden has begun integrating climate-related risks and wider sustainability issues into its supervisory processes (Figure 16). FI set up a Sustainability Committee to facilitate collaboration and experience sharing across supervisory sections (banking, insurance, and financial markets). FI has also set up a dedicated sustainability department which is responsible for driving sustainability-related analysis and developing regulations and processes. FI has explicitly included climate risk in the SREP assessment of credit risk and Business Model Analysis (BMA), but the assessment of climate risk currently does not impact on the risk rating of an institution. FI has also carried out several surveys aimed at assessing how financial institutions integrate climate risks into credit provision, corporate governance, and disclosures. The Riksbank has also analyzed the exposure of the Swedish banking system to firms that may be affected by climate transition risks and rising sea levels due to global warming. It has also piloted a stress test of climate risks. FI and the Riksbank have also jointly analyzed transition risks in banks' corporate portfolios.[39]

Figure 16. Timeline of Climate Risk Related Measures Adopted by FI



[39] Transition risks in the banks' loan portfolios – an application of PACTA, April 2022.

66. Some gaps should still be gradually addressed by FI to ensure a full integration of climate-related risks into supervisory processes. In particular, (i) banks should be required to report their exposure to climate-related risks as part of the supervisory reporting process; (ii) assessments of impact of climate-related transition risks should be broader in scope; (iii) regulation and supervisory guidelines should more clearly set expectations for banks to manage climate-related financial risk; and (iv) climate risks should be systematically integrated into the SREP including ensuring that the assessments appropriately impacts on the risk rating of individual institutions. In general, the supervisory approach should be implemented in a proportional manner considering other vulnerabilities to the banking sector.

CRISIS MANAGEMENT, RESOLUTION, AND SAFETY NETS

67. The Swedish financial safety net and crisis management arrangements rest on sound foundations that have been strengthened by legislative and policy reforms. The Banking Recovery and Resolution Directive (BRRD) established a well-developed statutory regime for supervisory early intervention, crisis management, and resolution in Sweden. The government has also implemented new EU regulations on recovery and resolution of CCPs via complementary Swedish legislation. The new Riksbank Act will provide an explicit statutory basis for the central bank to provide liquidity support to avert "a serious disruption to the financial system in Sweden." The historical use of public funds to manage a financial crisis in Sweden may no longer be a credible domestic crisis management strategy, given the growth in the size of the financial system relative to GGDP. The resolution framework has also imposed legal constraints on the use of public funds as a means for crisis management.

68. Still, improvements are needed to strengthen crisis management capacity within and between authorities, including for bank resolution. The authorities should develop shared operational plans, processes, procedures, and internal capacity to deploy crisis management and resolution tools quickly and with confidence in a coordinated manner. FI should: (i) formalize its internal monitoring arrangements for identifying and intensifying supervision of banks at increased risk of failure; and (ii) develop and share its framework for bank viability analysis with the NDO and the Riksbank. Such shared methodologies improve speed of coordination in crisis. It is important that the MoF's role in approving NDO resolution decision-making that might have "*direct budgetary or systemic effect*" be limited to resolutions that require funding from government budgets only. This should be clearly communicated in public policy. Public funds should not be judged to be at risk when the NDO's preferred resolution strategy can be implemented in an orderly manner, such as when the bail-in of "own funds and eligible liabilities" (MREL) is sufficient. The authorities also need to consider challenges created by new types of financial institutions, including providers of intermediary services (such as deposit aggregators with cross-border activities).

69. There is a continued need for close cross-border cooperation among Nordic-Baltic states and Banking Union authorities. In 2016, the NDO established resolution colleges for the

four major Swedish banking groups. The Swedish authorities should focus on developing crisis management capacity via its supervisory and resolution college arrangements, including by playing an active host authority role on the Nordea resolution college.

70. To better prepare for future bank failures, banks should remove known barriers to resolvability and enhance reporting capabilities with respect to (i) resolution valuation, (ii) funding in resolution, and (iii) operational services dependencies. The NDO, in coordination/ consultation with other financial authorities, should develop fully operational bank-specific resolution plans and require banks to remove all known barriers to resolvability under the bail-in resolution strategy. The NDO should further refine its minimum requirement for MREL policy and ensure that Swedish banks comply with its recently expanded resolvability expectations by the 2024 deadline. The NDO should also develop its capacity to manage failure of domestic CCPs by setting resolvability expectations.

71. On managing failed banks, the statutory resolution tools need to be usable at speed and with confidence to impose losses on the banks' creditors by applying bail-in or transfer tools. The NDO should develop its resolution tools to support effective crisis response involving failing systemic financial institutions. For example, it should prioritize the development of an "open bank" bail-in mechanic that relies on the suspension of liabilities and interim instruments**.**

72. The Riksbank should be transparent to the market that it is the lender of last resort in crisis response under the Swedish crisis management framework, including resolution, rather than the NDO. The NDO should not be considered as a primary source of liquidity for bank crisis management purposes. This clarification of roles will enable the Riksbank to invest in the development of the necessary internal crisis lending and credit assessment capabilities. Within the scope of the resolution regime, the Riksbank needs to be able to provide funding in resolution to banks recapitalized by the NDO's resolution action. The Riksbank should also establish the ex-ante operational capacity to take swift, decisive, and well communicated collateralized lending decisions in a crisis.

AUTHORITIES' VIEWS

73. The authorities broadly agreed with the IMF team's assessments and recommendations. They have found it helpful that the team has provided guidance on timing and priority of the key recommendations. Moreover, they welcomed the IMF's positive endorsement of Sweden's continued progress in strengthening regulation, supervision, and crisis management since the last FSAP in 2016. They agreed that their determined efforts to bolster financial sector oversight and crisis preparedness, not least through large capital and liquidity buffers in the financial sector, as well as the public support measures implemented helped Sweden to weather the global COVID-19 crisis well. Looking ahead, the authorities acknowledged the importance of ensuring that the regulatory framework and supervisory capacity keep pace with the evolving landscape.

74. The authorities agreed with the IMF team's risk assessment and that highly leveraged commercial real estate companies constitute a key risk. They underlined that several measures

have been taken to address the risks, not least the introduction of risk weight floors on CRE and residential real estate exposures as well as the reciprocation of measures by Norway and Denmark. The FSAP bank solvency stress tests indicate that the banking system appears resilient against potential shocks emanating from the CRE sector. While banks' high profitability offsets some of the effects, the higher impact on banks that are heavily exposed to the CRE sector warrants monitoring. In this respect, the authorities concurred that macroprudential policies can help attenuate cyclical and structural risks. The authorities also agreed with the FSAP's assessment of household risk given households' high indebtedness level.

75. The authorities agreed that there remain some data gaps particularly for households' balance sheets but disagreed that there are important data gaps for other sectors. They indicated that data collections such as the mortgage survey, the consumer loan survey, commercial real estate loan survey as well as KRITA covering all loans to non-financial firms are examples of high-quality micro data.

76. The authorities agreed with the need to be vigilant against the backdrop of the growing financial technology sector in Sweden and related increased cyber risks. The authorities noted the need for a framework for comprehensive operational and cyber resilience. Strengthening the legal framework for FMIs to enforce compliance with the PFMI and other guidelines as well as managing outsourcing risks in the payments area will be part of the agenda in the period ahead. The authorities took note of the insights and recommendations related to the ongoing work on a CBDC.

77. The authorities welcomed the recommendations pertaining to the banking supervision and regulation area as well as the crisis management area. They appreciated the confirmation that bank supervision is assessed as efficient given available resources. They broadly agreed that efforts to further optimize existing supervisory processes and tools could be warranted. Furthermore, they confirmed that the work on continuing to strengthen the AML/CFT regime is a priority. Regarding crisis management, the authorities shared the view that progress has been made since 2016, but that further efforts are needed to get the new crisis management framework fully operational. This framework would include a bail-in mechanism and further work on a policy for funding in resolution. The authorities also welcomed the IMF´s initiative to perform a pilot climate review and the FSAP's focus on managing climate-related risks to the financial sector. This is consistent with the authorities' own focus and plans to implement a sequenced work program in this area and the recommendations will be a guide in the future work.

Appendix I. Selected Economic Indicators

Sweden: Selected Economic Indicators (2020–28)

			Est.	Projections					
	2020	2021	2022	2023	2024	2025	2026	2027	2028
Real Economy (percent change)									
Real GDP	-2.2	5.1	2.8	-0.3	1.4	2.3	2.3	2.3	2.3
Domestic demand	-2.3	5.7	4.2	-0.6	0.7	2.1	2.0	2.0	2.0
Private consumption	-3.2	6.0	2.8	-0.2	1.5	2.8	2.8	2.8	2.8
Public consumption	-1.8	2.8	-0.2	0.2	0.7	1.0	1.0	1.0	1.0
Gross fixed investment	1.7	6.4	5.6	-2.3	1.0	1.7	1.7	1.7	1.7
Net exports (contribution to growth)	0.0	-0.3	-1.2	0.3	0.7	0.3	0.4	0.4	0.4
Exports of G&S	-5.5	7.9	4.4	0.1	3.4	3.4	3.5	3.5	3.5
Imports of G&S	-6.0	9.6	7.8	-0.4	1.9	3.0	3.0	3.0	3.0
HICP inflation (average) 2/	0.7	2.7	8.1	6.5	3.0	2.3	2.0	2.0	2.0
HICP core inflation (average)	1.5	1.6	5.5	5.2	2.6	2.2	2.0	2.0	2.0
Unemployment rate (percent)	8.5	8.8	7.5	7.7	8.0	7.9	7.9	7.9	7.9
Gross national saving (percent of GDP)	31.0	32.2	31.7	31.5	31.9	32.0	32.1	32.1	32.2
Gross domestic investment (percent of GDP)	25.1	25.9	27.9	28.0	27.9	28.0	27.9	27.9	27.9
Output gap (percent of potential)	-2.6	0.4	1.3	-0.9	-1.1	-0.5	0.0	0.0	0.0
Public Finance (percent of GDP)									
Total revenues	48.3	48.4	47.5	46.9	47.7	48.0	48.0	48.0	48.0
Total expenditures	51.0	48.5	46.8	46.8	48.0	48.0	47.7	47.7	47.7
Net acquisition of nonfinancial assets	1.6	1.3	1.2	1.2	1.4	1.3	1.3	1.3	1.3
Net lending	-2.8	-0.1	0.7	0.0	-0.3	0.0	0.3	0.3	0.3
Structural balance (as a percent of potential GDP)	-1.7	-0.2	0.2	0.4	0.1	0.2	0.3	0.3	0.3
General government gross debt, official statistics	39.5	36.3	31.3	31.1	30.5	29.5	28.4	27.2	25.9
Money and Credit (year-on-year, percent change, eop)									
M3	17.8	9.7	2.4	...	...	...	...	...	...
Bank lending to households	5.5	6.8	3.5	...	...	...	...	...	...
Interest Rates (percent, end of period)									
Repo rate	0.0	0.0	2.5	...	...	...	...	...	...
Ten-year government bond yield	0.0	0.3	1.5	...	...	...	...	...	...
Mortgage lending rate	1.4	1.4	3.4	...	...	...	...	...	...
Balance of Payments (percent of GDP)									
Current account	6.0	6.3	3.8	3.6	4.0	4.0	4.2	4.2	4.2
Foreign direct investment, net	0.7	1.0	1.6	1.7	1.4	1.3	1.2	1.1	0.8
International reserves, changes (in billions of US dollars)	-0.3	6.0	...	...	...	...	...	...	...
Reserves coverage (months of imports of goods and services)	3.2	2.8	2.7	2.7	2.7	2.6	2.5	2.5	2.4
Net international investment position	8.8	22.1	25.9	29.5	33.4	37.5	41.6	45.8	50.1
Exchange Rate (period average, unless otherwise stated)									
SEK per euro	10.2	10.3	10.9	...	...	...	...	...	...
SEK per U.S. dollar	8.4	9.1	11.1	...	...	...	...	...	...
Nominal effective rate (2010=100)	90.7	93.7	88.1	...	...	...	...	...	...
Real effective rate (ULC) (2010=100) 1/	93.8	97.2	91.1	...	...	...	...	...	...
REER ULC long run average deviation	-8.6	-5.1	-10.8	...	...	...	...	...	...
Real effective rate (CPI) (2010=100)	87.7	90.2	84.6	...	...	...	...	...	...
Fund Position (December 31, 2022)									
Quota (in millions of SDRs)	4,430								
Reserve tranche position (in percent of quota)	29.1								
Holdings of SDRs (in percent of allocation)	103.2								
Memorandum Items									
CPIF inflation (average)	0.5	2.4	7.7	...	...	...	...	...	...

Other Indicators
GDP per Capita (2021, USD): 60,029; **Population** (2021, million): 10.4.
Key Export Markets: Germany, Norway, and Netherlands.

Sources: IMF WEO, Riksbank, Swedish Ministry of Finance, Statistics Sweden, and IMF Staff calculations.
1/ OECD based Unit Labor Cost (ULC) real effective exchange rate indicator.
2/ The unemployment rate and inflation represent actual figures, not predictions.

Appendix II. Financial Soundness Indicators

Sweden: Financial Soundness Indicators (2015–21 1/)

	2015	2016	2017	2018	2019	2020	2021
Capital Adequacy							
Regulatory Capital to Risk-Weighted Assets	24.2	26.9	26.4	21.6	22.8	23.5	23.0
Regulatory Tier 1 Capital to Risk-Weighted Assets	21.2	23.2	23.4	18.8	20.4	21.1	20.9
Total Capital to Total Assets	5.6	6.3	6.3	3.8	6.2	6.0	6.7
Asset quality and exposure							
Non-performing Loans to Total Gross Loans	1.2	1.1	1.1	0.5	0.6	0.5	0.4
Non-performing Loans Net of Provisions to Capital	7.0	7.5	8.9	3.5	4.0	2.6	1.4
Earnings and profitability							
Return on Assets	0.8	0.8	0.8	0.5	0.9	0.7	1.1
Return on Equity	14.9	10.0	9.5	7.2	13.0	10.0	12.8
Non-interest Expenses to Gross Income, percent	49.1	54.3	56.6	53.1	51.5	55.0	48.6
Personnel Expenses as Percent of Noninterest Expenses	N.A.	50.6	50.8	49.3	47.9	47.7	49.5
Liquidity							
Liquid Assets to Total Assets (Liquid Asset Ratio)	9.8	18.2	18.2	17.1	17.6	21.0	24.8
Liquid Assets to Short Term Liabilities	140.3	30.1	28.7	26.7	26.6	30.5	23.6
Customer Deposits as Percent of Total (non-interbank) Loans	N.A.	44.9	44.8	41.8	43.1	47.6	60.6
Memorandum items							
Change in Housing Price Index (in percent, year average)	13.1	8.2	6.6	-0.9	2.5	4.2	10.2
Total Household Debt (in percent of GDP)	85.7	25.1	27.5	25.4	30.4	34.1	37.2
Total Household Debt (in percent of disposable income)	177.1	182.5	187.4	188.9	189.5	200.0	203.0
Household Interest Expenses (in percent of disposable income)	4.1	3.8	3.7	3.7	3.8	4.0	3.7
Gross Debt of Non-financial Corporations (in percent of GDP)	176.8	169.0	170.8	174.6	185.8	200.7	197.4

Sources: ECB; IMF Financial Soundness Indicators; Statistics Sweden; and OECD.

1/ Based on relative unit labor costs in manufacturing.

Appendix III. Implementation of 2016 FSAP Recommendations

Recommendations	Timeframe	Status
Banking and Financial Stability and Macroprudential Policy		
Introduce a cap on the debt-to-income ratio (FI/MoF; ¶12)	NT	Largely addressed
Remove tax incentives to hold real estate assets and fund them with debt (MoF; ¶2)	NT	Not addressed
Timely adoption of a leverage ratio as a backstop (FI; ¶24)	NT	Addressed
Monitor an extended (three-month) LCR in euro and U.S. dollar (FI; ¶27 and 46)	NT	Addressed
Introduce regular surveys on the distribution of household balance sheets (MoF; ¶40)	I	Ongoing
Introduce regular stress tests of corporate resilience (FI; ¶14)	I	Ongoing
Improve stress testing framework for banks and insurance companies (FI, RB; ¶23, ¶30)	I	Largely addressed
Financial Sector Oversight and Regulation		
Develop a five-year plan to increase resources and capacity to reflect the size and importance of the financial sector in Sweden	Near-term	Resourcing challenges still remains
FI should increase its resources through higher levies on the industry in accordance with its five-year plan	Near-term	Resourcing challenges still remains
FI should consider bringing bank supervisors in on secondment from other large supervisory agencies to act as mentors in support of its planned increase in resources	Near-term	Not fully addressed
As increased resources permit, Group Supervisor should be supplemented with dedicated core teams for Categories 1 and 2 bank	Medium-term	Issues still remain
FI should develop a retention strategy to reduce turnover and retain a cadre of experienced supervisors	Near-term	Issues still remain
FI needs to complete the roll-out of its Supervision Strategy. That is: complete internal guidelines, standards and analytical screening reports for institutions in categories 2, 3 and 4, and (ii) complete the risk-dashboard project	Near-term	Not fully addressed
FI should increase its frequency of supervisory interactions with bank boards, committees of the board, and managing directors.	Immediate and ongoing	Addressed
Deposit-taking should be limited to entities licensed & supervised by FI	Medium-term	Addressed

Recommendations	Timeframe	Status
The MoF and Government should give a high priority to amending laws or ordinances when required to give FI specific legal mandate to issue binding regulations on safety and soundness issues	Immediate and ongoing	Not addressed
Investigate the possibilities for limiting the circumstances in which supervisory actions could be stayed	Medium-term	Not addressed
Introduce a special resolution regime for non-systemically important financial institutions	Medium-term	Partially addressed
Crisis management and Resolution		
Under the FSC's auspices, ensure agency-specific and national financial crisis preparedness, including a national crisis management plan, updated bi- and multilateral cooperation MoUs, and regular single- and multi-agency financial crisis simulation exercises (MoF/NDO/FI/RB)	NT	Partially addressed
Seek to revamp the Nordic-Baltic Stability Group, supported by updated bi- and multilateral MoUs, to strengthen crisis preparedness and management, including regular financial crisis simulations exercises (MoF/NDO/FI/RB)	NT	Addressed
Expedite resolution planning for systemic financial institutions (NDO)	I	Partially addressed
Define strategies for liquidity assistance to banks in resolution, and conclude a cooperation agreement for the solvency and viability assessment of institutions that need ELA (RB/NDO/FI)	I	Not addressed

Appendix IV. Risk Assessment Matrix (June 2022)

Risks	Likelihood of Risk	Impact of Risk
Russia's invasion of Ukraine leads to escalation of sanctions and other disruptions. Sanctions on Russia are broadened to include oil, gas, and food sectors. Russia is disconnected almost completely from the global financial system and large parts of the trading system. This, combined with Russian countersanctions and secondary sanctions on countries and companies that continue business with Russia, leads to even higher commodity prices, refugee migration, tighter financial conditions, and other adverse spillovers, which particularly affect LICs and commodity-importing EMs.	H	**Medium:** - A negative shock would hit exports. if demand from Europe declines–particularly those on Sweden's vehicles and machinery exports–would dampen exports and investment and weaken growth. - Higher funding costs impact corporate borrowers, reducing credit availability, including from non-bank financial intermediaries.
De-anchoring of inflation expectations in the U.S. and/or advanced European economies. Worsening supply-demand imbalances, higher commodity prices (in part due to war in Ukraine), and higher nominal wage growth lead to persistently higher inflation and/or inflation expectations, prompting central banks to tighten policies faster than anticipated. The resulting sharp tightening of global financial conditions and spiking risk premia lead to lower global demand, currency depreciations, asset market selloffs, bankruptcies, sovereign defaults, and contagion across EMDEs.	M/L	**High** - Market losses in banks' unhedged fair value portfolios as asset prices fall. - Potential significant liquidity impact on banking sector, given high reliance on wholesale funding, including in FX. - Higher funding costs impact corporate borrowers, reducing credit availability, including from non-bank financial intermediaries. - Higher retail interest rates worsen household financial situation. Further pressure on banks' capital adequacy. Adverse spillover to other (viable) sectors through lower incomes and intermediate input demand. Higher unemployment due to bankruptcies.
Significant property price decline in Sweden due structural changes. Price declines could possibly affect commercial property markets and/or residential property.	L	**Medium:** - Investment and collateral values for lending could be undermined by sizable falls in commercial property prices. - Loan quality impacted, primarily of firms serving domestic market. Lending could be curtailed if doubts about the quality of covered bonds rise elevating bank funding costs.
Geopolitical tensions and deglobalization. Intensified geopolitical tensions, security risks, conflicts, and wars cause economic and political disruptions, fragmentation of the international monetary system, production reshoring, a decline in global trade, and lower investor confidence.	H	**Medium** Higher disruptions and barriers to trade would dampen exports and investment and weaken growth

Risks	Likelihood of Risk	Impact of Risk
Cyberthreats. Cyberattacks on critical physical or digital infrastructure (including digital currency platforms) trigger financial instability or widespread disruptions in socio-economic activities.	M	**Medium** Disruption is widespread including to supply of essential goods, payments systems, and financial market infrastructure

Appendix V. Stress Testing Matrix

Domain	Top-Down Stress Test Approach by the FSAP Team
Banking Sector: Solvency Stress Test	
Institutional parameters	• The 5 largest Swedish banks (Swedbank, SEB, Handelsbanken, SBAB Bank and Länsförsäkringar Bank), to cover about 75 percent of banking system assets.
Cut-off date	• December 2021
Data	• Quarterly supervisory data (COREP, FINREP) and reporting on Interest Rate Risk in the Banking Book (IRRBB), at the highest level of consolidation, are complemented by survey data on mortgages and securities holdings collected by the FI and the Riksbank, respectively

Methodology and risk drivers	• Semi-static balance sheet approach: annual GDP growth for year when positive, no change in recession time
	• Scenario-conditional forecasts of various drivers underlying headline capitalization metrics will be combined, including:
	  ○ credit risk (through loan loss provisions): structural model based on copula for HH mortgages, granular CRE stress test, BMA for corporate exposures
	  ○ interest rate risk: projection of effective interest rate for 7 types of interest bearing assets and liabilities .
	  ○ Net fee and commission income: granular projection based on past variation (1 std deviation shock)
	  ○ Market risk: repricing of securities based on a modified duration - granular data on bond holdings aggregated by issuer type, country and maturity. Change in yields were derived from the scenario
	• Tax rate 20.6 – effective rate in 2021
	• Dividend payout: Dividends are assumed to be paid out of current period net income after taxes by banks in compliance with supervisory capital requirements. A maximum allowed dividend payout is assumed to be equal to the dividend payout ratio (dividends over net income after taxes) in 2021, with a cap at 40 percent

Scenarios	• Baseline scenario aligned with Spring 2022 WEO • Bespoke adverse scenarios addressing the most relevant risks and vulnerabilities confronting the financial system, including aspects of the geopolitical tensions, war in Ukraine and COVID-19 pandemic, sharp rise in global risk premia, exchange rate depreciation, financial institutions' funding cost pressure, etc. • 3-year horizon
Policy and sensitivity analysis	• Sensitivity analyses on CRE exposures
Hurdle rates	• The hurdle rate for CET1 do not include capital conservation and countercyclical buffers. Banks that end the stress test horizon with a capital level below the relevant hurdle rates, are considered to have failed the test.

Domain		Top-Down Stress Test Approach by the FSAP Team
Banking Sector: Liquidity Stress Test		
Institutional parameters		• The largest 5 Swedish banks (Swedbank, SEB, Handelsbanken,SBAB Bank and Länsförsäkringar Bank)
Methodology and scenarios		• A cash flow-based liquidity stress test (LST) and a standardized Basel III-Liquidity Coverage Ratio (LCR) test was conducted to assess banks' ability to cover net cash outflows using their counterbalancing capacity. • Scenario's analysis to cover risks from: (i) asset price falls, (ii)run on retail deposits, (iii) run on wholesale funding, (iv) foreign and domestic investors different behavior, (v) run on FX deposits, (vi) scarce access to FX funding, for example via swaps. See Appendix VI for details on the scenarios. • Liquidity support from the Central Bank through emergency liquidity facilities was not be factored in, to assess banks' liquidity coverage profiles in the assumed absence of liquidity support from the central bank.
Commercial Real Estate Stress Test		
1. Institutional Parameters	Institutions included	• 3,800 firms (total assets amounting to 90 percent of GDP.
	Data	• Data on firms will be sourced from Orbis (No.68 Real estate activities under the industrial classification (NACE) Rev. 2 main section L: Real estate activities) • Data availability as of 2020.
2. Methodology and risk drivers	Methodology (TD)	• Scenario-based forecasts of income statement and balance sheet items • Calibration of interest rate, FX, and revenue shocks
3. Scenarios	Number of scenarios	• Baseline, and Combined Adverse scenarios in line with the bank solvency stress testing
4. Reporting Format for Results	Output presentation	• Impact on solvency (ICR) ratios • Debt-at-Risk measure
Contagion Analysis		
1. Institutional Parameters	Institutions included	• Exposure based bilateral domestic interconnectedness will include bilateral exposures between Swedish banks (same sample as in bank ST) •
	Data	• Domestic bank interconnectedness analysis as of end-2021 •
2. Channels of Risk Propagation	Methodology	• Network contagion based on Espinosa-Vega and Sole (2010), which allows default cascade simulations at different loss given default (LDG) rates will be used for the exposure based bilateral domestic and cross-border interconnectedness analyses.
3. Reporting Format for Results		• System-wide capital shortfalls (with min, max, and the median in the case of bilateral domestic bank contagion, without identifying individual names) •

Domain		Top-Down Stress Test Approach by the FSAP Team
Investment Funds Liqudity Stress Testing		
1. Institutional perimeter	Institutions included	• 171 Fixed-income, alternative and mixed funds
	Market share	• Varies by type of fund
	Data and baseline date	• Portfolio reporting date: Dec 31, 2021 or later • Portfolio holdings: Confidential supervisory data • Flows: Sourced from Morningstar, time interval 2008-2021 • Assets'Assets' characteristics: Sourced from EIKON
2. Channels of risk propagation	Methodology	• Several calibrations of redemption shocksshocks compared to level of highly liquid assets at the fund level • Redemption shocks based on historical netfund flow datausing VaR and Expected Shortfall methodologies with multiple thresholds
	Stress test horizon	• Weekly data frequency, instantaneous shocks
3. Tail shocks	Scenario analysis	• Pure redemption shock: severe outflows based on historical distribution
4. Risks and buffers	Positions/risk factors assessed	Risks • Liquidity risk: severe redemption shock Buffers • Level of highly liquid assets
5. Reporting format for results	Output presentation	• Number of funds with a redemption coverage ratio (ratio of highly liquid assets to redemptions) below one • Liquidity shortfall amount for individual funds after redemptions • Price impact on domestic corporate bonds issued in SEK

Appendix VI. Liquidity Stress Testing Scenarios

Outflows

Description	*Stress factor within stress horizon applicable within stress horizon*				
LT unsecured issuances = 020+030	0%	30%	70%	100%	100%
Secured issuances = 040+050+060	0%	10%	20%	30%	30%
ST paper due = 070	0%	30%	70%	100%	100%
Repo's against 0% RW securities = 120	100%	100%	100%	100%	100%
Repo's against 20% RW securities = 130	100%	100%	100%	100%	100%
Repo's against covered bonds = 140 + 180	100%	100%	100%	100%	100%
Repo's against corporate bonds = 220	100%	100%	100%	100%	100%
Repo's against RMBS = 260	100%	100%	100%	100%	100%
Repo's against other CB eligible assets = 270	100%	100%	100%	100%	100%
Repo's against non-CB elig. equities = 300	100%	100%	100%	100%	100%
Repo's against other non-CB elig. assets = 310 + 320 (or 290-300)	100%	100%	100%	100%	100%
Retail deposits: stable	0%	3%	5%	10%	15%
Retail deposits: unstable	0%	5%	10%	20%	25%
Corporate deposits: operational	0%	10%	15%	20%	30%
Corporate deposits: non-operational	0%	20%	30%	40%	50%
Central Bank dep. outflows = 380	0%	0%	0%	0%	0%
Other dep. outflows = 390	0%	20%	30%	40%	50%
Fin. inst. (not within IPS) dep. outflows = 420 - 470	0%	30%	65%	100%	100%
IPS outflows = 470	0%	15%	30%	50%	50%
FX-swap outflows = 490	0%	15%	30%	50%	50%
Derivative outflows = 500	0%	100%	100%	100%	100%
Other outflows = 510	0%	30%	65%	100%	100%

Inflows

Description	*Stress factor within stress horizon applicable within stress horizon*				
Rev. repo's against 0% RW securities = 580	100%	100%	100%	100%	100%
Rev. repo's against 20% RW securities = 590	100%	100%	100%	100%	100%
Rev. repo's against covered bonds = 600 + 640	100%	100%	100%	100%	100%

Rev. repo's against corporate bonds = 680	100%	100%	100%	100%	100%
Rev. repo's against RMBS = 720	100%	100%	100%	100%	100%
Rev. repo's against other CB eligible assets = 730	100%	100%	100%	100%	100%
Rev. repo's against non-CB elig. equities = 760	100%	100%	100%	100%	100%
Rev. repo's against other non-CB elig. assets = 770 + 780 (or 750-760)	100%	100%	100%	100%	100%
Retail inflows = 810	0%	0%	0%	0%	0%
Corporate inflows = 820	0%	0%	0%	0%	0%
Central Bank inflows = 840	0%	100%	100%	100%	100%
Other entities inflows = 850	0%	0%	15%	20%	30%
Fin. Inst. (not within IPS) Inflows = 880 - 930	0%	100%	40%	70%	0%
IPS inflows = 930	0%	15%	30%	50%	50%
FX-swap inflows = 940	0%	15%	30%	50%	50%
Derivative inflows = 950	0%	100%	100%	100%	100%
Other inflows = 970	0%	100%	100%	100%	100%

Counterbalancing capacity

Cash = 1040	*100%*	*100%*	*100%*	*100%*	*100%*
Central Bank exposures = 1050	100%	100%	100%	100%	100%
0% RW securities = 1070	100%	100%	99%	98%	98%
20% RW securities = 1140	100%	100%	98%	95%	95%
Covered bonds = 1200 + 1240	100%	97%	95%	93%	93%
Corporate bonds = 1280	100%	95%	90%	85%	85%
RMBS = 1320	100%	85%	75%	65%	65%
Other CB elig. assets = 1330	100%	68%	68%	68%	68%
Non-CB elig. equities = 1350	100%	75%	50%	25%	25%
Other non-CB elig. assets = 1340 - 1350	100%	0%	0%	0%	0%
Undrawn committed credit lines (not within IPS) = 1370 - 1380	0%	0%	0%	0%	0%
Undrawn committed credit lines from IPS members = 1380	0%	0%	0%	0%	0%