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GERMANY

FINANCIAL SYSTEM STABILITY ASSESSMENT

July 2022

In the context of the Germany's Financial System Stability, the following document has been released and is included in this package:

- The **Financial System Stability Assessment** (FSSA) for Germany, prepared by a staff team of the IMF for the Executive Board's consideration on July 18, 2022. This report is based on the work of an IMF Financial Sector Assessment Program (FSAP) mission to Germany during May 2021 and April 2022. The FSSA report was completed on June 27, 2022.

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International Monetary Fund
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June 27, 2022

KEY ISSUES

Context: Germany entered COVID-19 with strong public and private sector balance sheets, and large financial buffers. The financial sector has weathered well the shocks related to COVID-19 and the impact of the war has been limited so far. However, financial conditions have tightened recently and risks to the economy and the financial system have increased. The main risks relate to an escalation of the war that could be associated with a Russian gas shut off and higher commodity prices, a global resurgence of COVID-19 with extended supply chain disruptions, and de-anchoring of inflation expectations in the U.S. and advanced Europe. Structural vulnerabilities related to persistent low bank profitability and misalignments in the real estate sector prices indicated in the 2016 FSAP remain a concern.

Findings: Overall, banks are largely resilient to solvency and liquidity shocks, but there are pockets of vulnerabilities that require attention. The macroprudential framework is well developed but can be strengthened further. Good progress has been achieved in the strengthening of the microprudential frameworks for banking and insurance, with some remaining issues, including those related to BaFin's operational independence. There has also been significant progress on resolution planning and crisis preparedness, but the deposit insurance framework would benefit from a strong public backstop. Clearstream Banking AG Frankfurt (CBF) is a trusted part of the financial market infrastructure landscape. In line with the authorities' findings, the FSAP found climate transition risks to the banking sector appear to be small.

Policies: Going forward, the FSAP proposes the following directions for policies: (i) continued monitoring of large systemically important commercial banks' prudential ratios, and strengthening of interest rate risk monitoring of less significant institutions and conducting top down stress testing of interest rate risks; (ii) enhancing legislated powers over yet-to-be activated borrower-based instruments to facilitate their effective use, and rapidly introducing powers to set debt-to-income and debt service limits; (iii) introducing further reforms of the institutional framework to strengthen BaFin's operational independence, strategic coordination between BaFin and the Bundesbank, and the legal framework and approach to corporate governance in the financial sector; (iv) further strengthening and simplifying the insurer solvency framework, including BaFin's contingency and resolution powers for insurers; and (v) establishing a single mandatory deposit guarantee scheme as a public body, with access to a robust backstop liquidity line would facilitate greater risk pooling and diversification.

Approved By
May Khamis (MCM) and Laura Papi (EUR)
Prepared By
Monetary and Capital Markets Department

This report is based on the work of the Financial Sector Assessment Program (FSAP) hybrid and virtual missions between May 2021 and April 2022.

- The FSAP team was led by Prasad Ananthakrishnan (Mission Chief), and included Maria Oliva (Deputy Mission Chief), Mark Adams, Gerard Almekinders, Dan Cheng, Dirk Jan Grolleman, Argyris Kahros, Roland Meeks, Alla Myrvoda, Marco Pani, Thierry Tressel, Sebastian Weber (all MCM), Steve Dawe (LEG), Aiko Mineshima (EUR), and Dale Connock, Michael Hafeman, and Geraldine Low (external experts). Suellen Basilio provided administrative assistance.

- The mission met with Bundesbank Vice-President, Claudia Buch; Bundesbank Director Generals of Financial Stability and of Banking and Financial Supervision; BaFin President, Mark Branson; BaFin Director-General International Policy, Financial Stability and Regulation; Ministry of Finance Director-General for Financial Markets Policy; officials of European Central Bank and European Systemic Risk Board; Chief Executive Officer and other high ranking officials of Clearstream; as well as senior representatives of domestic and foreign banks, insurance companies, and the wider services industry.

- 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.

- Germany is deemed by the Fund to have a systemically important financial sector according to Mandatory Financial Stability Assessments Under the Financial Sector Assessment Program – Update (11/18/2013), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement.

- This report was prepared by Prasad Ananthakrishnan and Maria Oliva, with contributions from the members of the FSAP team.

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Glossary

AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
APP	Asset Purchase Programme
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht
BAU	Business-As-Usual
BCP	Basel Core Principles for Effective Banking Supervision
CBF	Clearstream Banking AG Frankfurt
CCP	Central Counterparty
CET1	Common Equity Tier 1 Capital Ratio
CIS	Collective Investment Schemes
CGE	Computational General Equilibrium
CRD/CRR	Capital Requirements Directives/Capital Requirements Regulation
CRE	Commercial Real Estate
CCyB	Countercyclical Capital Buffer
DIS	Deposit Insurance Scheme
DGS	Deposit Guarantee Scheme
DSIB	Domestic Systemically Important Bank
EA	Euro Area
ECB	European Central Bank
ELA	Emergency Liquidity Assistance
ETS	Emissions Trading System
FSAP	Financial System Assessment Program
FSC	Financial Stability Committee
FSCA	Financial Sector Conduct Authority
FSLAB	Financial Sector Laws Amendment Bill
FSSA	Financial System Stability Assessment
FX	Foreign Currency
G-RAM	Global Risk Assessment Matrix
GFC	Global Financial Crisis
GHG	Green-House Gas
ICR	Interest Coverage Ratio
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Commissions
IPS	Institutional Protection Scheme
LCR	Liquidity Coverage Ratio
LSI	Less Significant Institutions
LTV	Loan-to-Value Ratio
MaRisk	Minimum requirements for risk management (Mindestanforderungen an das Risikomanagement - MaRisk)
MFI	Monetary Financial institutions
MoF	Ministry of Finance (Bundesministerium der Finanzen)

MoU	Memorandum of Understanding
NDA	National Designated Authority
NFC	Non-Financial Corporates
NGFS	Network for Greening the Financial System
NPL	Nonperforming Loan
NSFR	Net Stable Funding Ratio
NT	National Treasury
O-SII	Other Systemically Important Institutions
PA	Prudential Authority
PaR	Price-at-Risk
PFMI	Principles for Financial Market Infrastructures
RAM	Risk Assessment Matrix
RRE	Residential Real Estate
RWA	Risk-Weighted Assets
SI	Significant Institutions
STeM	Stress Testing Matrix
SSyRB	Sectoral Systemic Risk Buffer
TLTROs	Targeted Longer-Term Refinancing Operations
WB	World Bank
WEO	World Economic Outlook

EXECUTIVE SUMMARY

1. The financial sector has weathered the impact of the Covid pandemic and the war in Ukraine relatively well so far, but risks remain elevated. High pre-crisis capital and liquidity buffers, strong public and private sector balance sheets, and unprecedented ECB support and fiscal measures supported the economy and the banking sector and helped keep nonperforming loans (NPLs) low. However, while Germany's financial system has a limited direct exposure to Russia, the war is likely to exert a material drag on GDP growth through higher energy prices, tighter financial conditions, and elevated uncertainty, as well as disruptions in supply chains, including energy supply; and inflation is expected to spike to above 7 percent in 2022.

2. The two structural vulnerabilities identified in the 2016 FSAP, namely low bank profitability and misalignments in the residential real estate prices, remain a concern. Rising interest rates may further squeeze banks' interest margins over the short-to-near term due to the growing duration mismatch between assets (mortgages) and liabilities (customer deposits). Furthermore, the residential real estate price overvaluation and higher tail risks since the onset of the pandemic suggest potential pockets of vulnerabilities in banks' exposures to real estate. The FSAP welcomes progress towards closing residential real estate data gaps to support risk monitoring and calibration of macroprudential tools, but more is needed for closing gaps on lending standards.

3. The FSAP solvency stress tests show that the significant institutions (SIs) and less significant institutions (LSIs) are overall resilient to an adverse scenario. The main risks to financial stability relate to a global resurgence of COVID-19 with extended supply chain disruptions, a scarcity of gas and oil, and de-anchoring of inflation expectations in the U.S. and advanced Europe. Under the FSAP's V-shaped adverse scenario, for SIs, the capitalization levels of three banks fall below the 8.25 percent hurdle rate in 2022-23 but remain above the minimum common equity tier 1 (CET1) ratio. LSIs' aggregate capital levels remain high under the adverse scenario, with the capital of 20 small banks (comprising 3 percent of total LSIs' assets) falling below the hurdle rate.[1]The analysis also portrays a banking system that appears generally resilient to liquidity stress. Under severely stressed conditions, some banks might require access to the central bank's U.S. dollar swap line. To ensure continued robustness of the banking system, the FSAP recommends continued close monitoring of large SIs' prudential ratios, establishing microprudential buffers (Pillar 2 guidance) for less-capitalized banks as needed, strengthening LSIs' interest rate risk monitoring and conducting top-down stress tests for interest rate risks, and continuing the close monitoring of larger LSIs with significant foreign exchange exposures.

4. Consistent with the authorities' findings, the FSAP found small vulnerabilities from climate transition risks to the banking system. The authorities should continue to expand their

[1] For SIs and LSIs, the hurdle rate includes the minimum CET1 ratio, the conservation buffer and the CCyB starting in 2023. A systemic risk buffer of 0.5 percent of RWAs is also added to the hurdle rate of SIs.

and banks' capacity for assessing climate risks and encourage climate-related disclosures in the financial sector. Conducting supervisory climate stress tests for LSIs could be considered.

5. Macroprudential policy is being tightened but rising cyclical vulnerabilities will require additional action. The announced increases in the countercyclical capital buffer (CCyB) of 0.75 percent by Q1 of 2023 and sectoral systemic risk buffers (SSyRB) were well timed and coordinated across the financial stability agencies. But complementary measures are needed and factors delaying the activation of borrower-based tools (e.g., legal and data gaps) need to be addressed. The FSAP recommends enhancing powers over the legislated, but yet-to-be activated, loan-to-value and amortization instruments to facilitate their effective use, and the rapid introduction of additional powers to set debt-to-income and debt service limits. It also urges the authorities to strengthen current guidance to banks on residential real estate lending standards, and develop a communication strategy to support the activation of borrower-based measures.

6. Good progress had been made in strengthening the microprudential frameworks for banking and insurance since the 2016 FSAP. In response to three idiosyncratic cases of bank distress since the 2016 FSAP, the Federal Ministry of Finance (MoF) launched the BaFin reorganization program with several legal and structural reforms. The authorities fully rolled out the European Central Bank (ECB)/Single Supervisory Mechanism (SSM) approach to the Supervisory Review and Evaluation Program to all LSIs in 2020 and enhanced the frameworks for liquidity and operational risks. Going forward, further reforms are required to streamline the current reporting to the MOF to strengthen BaFin's operational independence; and enhance strategic coordination between BaFin and the Bundesbank, the legal framework and approach to corporate governance, and certain aspects of the overall supervisory framework (e.g., the frequency of onsite inspections for banks and insurers and the role of external auditors). The FSAP also suggests that the authorities further strengthen and simplify the solvency framework and BaFin's contingency and resolution powers for insurers. Finally, as the largest host of fintech in continental Europe and a proactive participant in the development of European Union (EU) regulation, the FSAP recommends the national authorities step up efforts on fintech data collection, forward looking dynamic market monitoring, and related financial stability analysis.

7. The system of Deposit Guarantee Schemes (DGS)/Institutional Protection Schemes (IPS) needs reform, which should be informed by a review of the distortions resulting from depositors' high level of protection guaranteed under the current regime. There has been significant progress since the 2016 FSAP on resolution planning and preparedness, with resolution powers broadly in line with best practice and internal resolution processes well developed. Further reforms should include the adoption of a single mandatory deposit guarantee scheme, established as a public body and with a robust government-backed liquidity backstop. This would facilitate greater risk pooling and diversification. The authorities should also address the systemic risk associated with IPS in their recovery and resolution planning work.

8. Clearstream Banking AG Frankfurt (CBF) is underpinned by a solid legal basis and comprehensive and robust frameworks for managing risk. To further enhance CBF practices, the FSAP recommends strengthening the independence of internal control functions at the level of the Executive Board and appointing an independent member as Chair of the Risk Committee.

Table 1. Germany: Key Recommendations		
	Timing[1]	Agency
Systemic Risk Analysis		
Given the elevated uncertainty from a financial stability perspective, continue to closely monitor large SIs prudential ratios and set microprudential (Pillar II guidance) buffers for large SIs, as needed. (¶33)	NT	ECB
Perform top-down stress tests of interest rate risks. (¶33)	I/NT	BaFin/ Bundesbank
Strengthen monitoring of larger LSIs with significant FX (USD) exposures to mitigate liquidity risk. (¶31)	NT	BaFin
Climate Transition Risks		
Expand the analytical capacity of banks for assessing climate risks, promote the disclosure of climate risks; conduct supervisory climate stress tests for LSIs to facilitate such efforts. (¶38)	NT	BaFin/ Bundesbank
Macroprudential Framework and Policy		
Enhance the legislated powers over yet-to-be activated borrower-based instruments to facilitate their effective use, and rapidly introduce powers to set debt-to-income and debt service limits. (¶44)	NT	MoF/BaFin/ Bundesbank
Strengthen current guidance on residential real estate lending standards. (¶44)	NT	MoF/BaFin/ Bundesbank
Initiate the development of a communication strategy in support of the activation of borrower-based measures. (¶44)	NT	MoF/BaFin/ Bundesbank
Close data gaps on lending standards to monitor existing and evolving risks. (¶23)	I	Bundesbank
Supplement the toolkit to assess real estate risks with price-at-risk model for commercial and residential real estate prices. (¶22)	NT	Bundesbank
Supervision and Regulation: Banking and Insurance		
Strengthen BaFin's operational independence and strategic cooperation between BaFin and Bundesbank on banking supervision. (¶48, 49)	I	BaFin/ MoF/ Bundesbank
Align the corporate governance framework with international best practices; provide additional supervisory guidelines to align MaRisk with EBA Guidelines on key banking risk issues. (¶50, 52)	NT/MT	BaFin/ Bundesbank
Review the minimum engagement level and inspection frequency, strengthen the ability to effectively challenge external auditor's work, and make earlier use of corrective and sanctioning powers. (¶51, ¶53, ¶67)	NT	BaFin/ Bundesbank
Step up efforts on fintech data collection, forward looking dynamic market monitoring and related financial stability analysis. (¶55)	NT	BaFin/ Bundesbank
Take steps to strengthen the solvency framework for insurers. (¶56)	I	BaFin /MoF
Clearstream and Financial Market Infrastructure		
Improve the independence of the internal control functions at the Executive Board level. (¶58)	NT	CBF/BaFin
Broaden Clearstream's explicit identification criteria for clients of direct participants by including system-level thresholds. (¶59)	NT/MT	CBF/BaFin
Crisis Management and Financial Safety Nets		
Ensure robust planning for financial distress of IPSs, including planning for recovery and resolution at a consolidated level, promoting review of EU legislation if necessary. (¶63)	NT	BaFin/MoF
Establish a single mandatory DGS as a public body, with access to a robust backstop liquidity line. (¶62)	NT	MoF

[1] I = Immediate (within one year); NT = Near Term (within 1 to 3 years); MT=Medium Term (within 3 to 5 years).

BACKGROUND

A. Context and Macrofinancial Developments

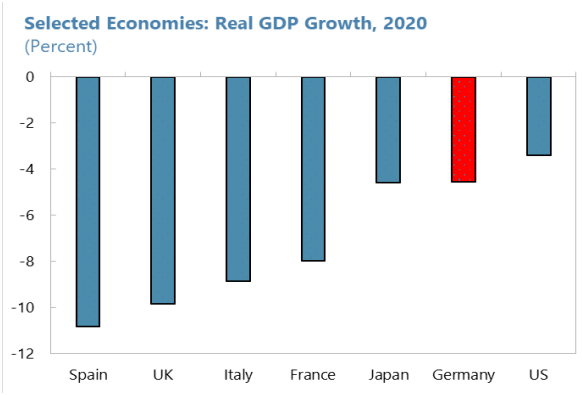
9. Germany entered COVID-19 with favorable economic conditions, strong public and private sector balance sheets, and large financial buffers (Figure 24). Public debt had fallen to 59 percent of GDP in 2019. Non-financial corporates' (NFCs) indebtedness was lower than peers, and household debt gradually declined through 2019. The financial sector held large solvency and liquidity buffers, and corporates' aggregate liquidity and other financial ratios (e.g., interest coverage and equity ratios) were considerably higher compared to earlier recessions (2001, 2008). The new three-party federal government coalition has a comprehensive financial sector reform agenda, with climate change and digitalization at its core. The government's program also references other financial sector reforms—including the completion of the Banking Union (through a reinsurance model for European deposit insurance), the deepening of the Capital Markets Union, the strengthening of insurance sector's Solvency II framework, and the introduction of income-based instruments to the macroprudential toolkit and further support to the Financial Stability Committee.

10. The fallout from the war in Ukraine is expected to delay the economic recovery. Germany's economy contracted by 4.6 percent in 2020 due to the pandemic, even though it performed better than other peers, thanks to massive fiscal and ECB monetary policy stimuli (Figure 1, Table 4). The economy started to rebound in 2021 and, before the war in Ukraine, growth was expected to pick up further as supply disruptions were gradually dissipating, private consumption was rebounding, and production was catching up with historically high unfilled orders. The gross impact of the war in Ukraine is estimated at about 2.5 percent of GDP in 2022 (with about 0.5 percent to be offset by fiscal relief measures) for Germany, resulting in a projected GDP growth at about 1.5 percent. Inflation is projected to spike above 7 percent, due mostly to ongoing supply constraints in manufacturing (both energy and other intermediate inputs) and passthrough from energy inflation. To support the recovery, the authorities further extended some key COVID-19-related fiscal measures to June 2022 (Figure 2),[2] introduced measures to help households and firms cope with higher energy costs, and stepped-up efforts to secure energy supplies.

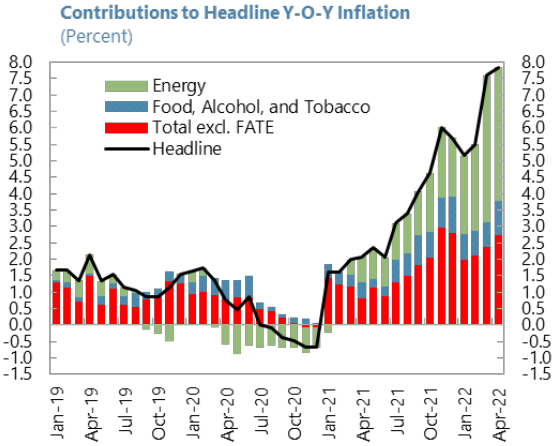
[2] Germany deployed two fiscal packages in 2020, and fiscal policy remained expansionary in 2021. Key COVID-19-related measures were extended first to May and then to June 2022. These measures comprised ramped-up public health spending, grants to firms, subsidies for the extended short-time work benefits ("Kurzarbeit") scheme (extended up to June 2022), transfers to subnational governments, and additional public investment.

Figure 1. Economic Developments

GDP contracted by 4.6 percent in 2020, less than in most other European peers, thanks to massive fiscal support.



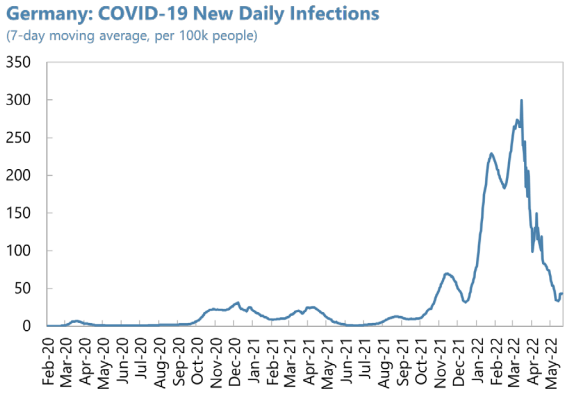
Inflationary pressures reflect recovering demand amid supply constraints and rising energy costs.



Sources: Eurostat, Haver Analytics, IMF staff calculations.

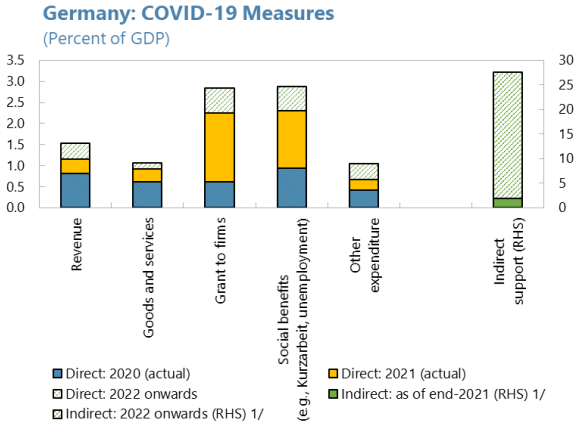
Figure 2. The Pandemic in Germany and Government Support

COVID-19 infections declined recently after a strong surge.



Sources: Haver Analytics; Oxford University; and IMF staff calculations.

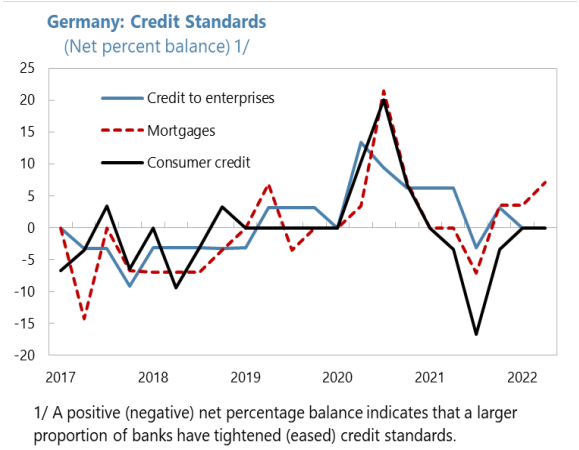
Government support has been unprecedented in size.



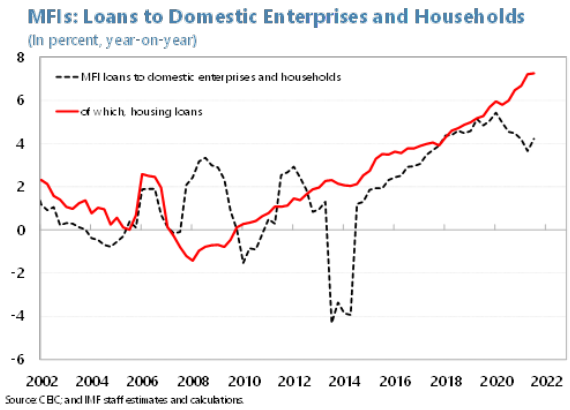
1/ In percent of 2020 GDP.

11. Credit growth and easy liquidity conditions supported the recovery in 2021, but financial conditions started to tighten recently. In 2020, most banks tightened lending standards, but interest and lending rates remained low reflecting accommodative monetary policy (Figure 3). Bank credit to private NFCs rose 5.3 percent in real terms year-on-year (y-o-y) in 2021, supported by an increase in deposits. Over half of the increase was driven by savings and cooperative banks and a significant share of the credit went to housing mortgages (7.3 percent growth y-o-y in September 2021). In 2022, financial conditions started to tighten, with 10-year Bund yields rising 100 basis points, longer-maturity loans and deposits rates increasing (with some lag), and new mortgage and nonfinancial corporates' loans also rising by 0.3-0.6 percentage points since end-December 2021.

Figure 3. Credit Standards and Growth

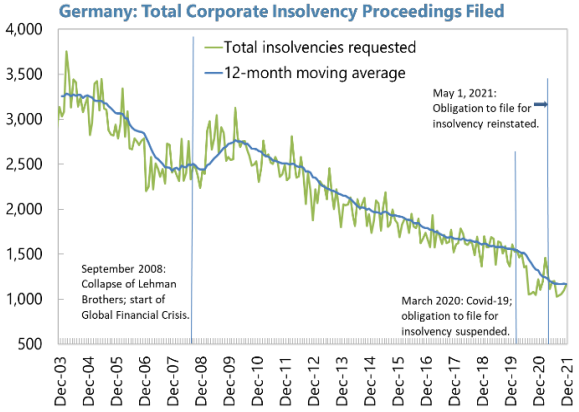


1/ A positive (negative) net percentage balance indicates that a larger proportion of banks have tightened (eased) credit standards.

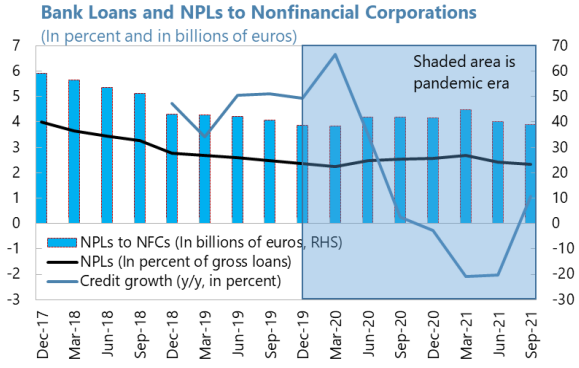


Source: Deutsche Bundesbank, Bank Lending Survey

Figure 4. Non-Financial Corporates' Insolvency Filings and NPLs



Source: Destatis.



Source: Deutsche Bundesbank.

12. Amid the pandemic, corporates' increased indebtedness was matched by higher precautionary cash holdings, and the NFC sector's nonperforming loans (NPLs) reverted to pre-pandemic lows (Figure 4). By end-2020, debt at risk—the total debt of listed firms with an interest coverage ratio (ICR)[3] below one as a percentage of the total debt of all listed firms—rose to 16 percent (up from 4 percent at the end-2019).[4] However, cushioned by the impact of the authorities' measures, corporate insolvencies fell for the 12th year in a row in 2021 to the lowest level since the adoption of the 1999 Insolvency Act, despite the May 2021 full reinstatement of the obligation to file insolvencies after its 14-month full or partial suspension. During the pandemic, extensive small and medium enterprises (SMEs) support programs helped avert a wave of

[3] Earnings before interest and taxes (EBIT) divided by interest expenses.

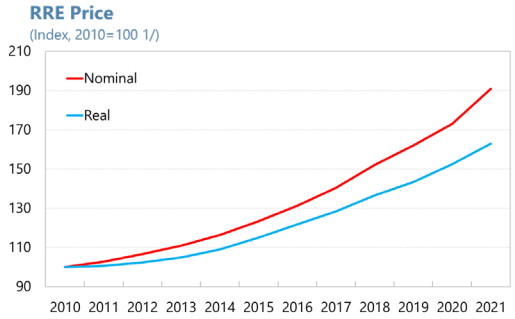
[4] The Bundesbank's analysis suggests that zombification (unviable firms lacking the capacity to generate positive profits net of debt service (ICR<1) for several years) remained broadly stable at about 6 percent of all NFCs over the past decade.

bankruptcies. Over time, assistance shifted from loans to grants.[5] Other measures included easier access to short-time work under the Kurzarbeit program and the reimbursement of social security contributions to employers.

13. The pandemic resulted in divergent dynamics in residential (RRE) and commercial real estate (CRE) markets (Figures 5, 29). CRE prices declined during COVID-19, by 0.8 percent in 2021, albeit with significant heterogeneity among different property types. In contrast, overall RRE prices continued to grow in 2021, by 10.3 percent overall and 8.2 percent in the largest seven cities.[6]

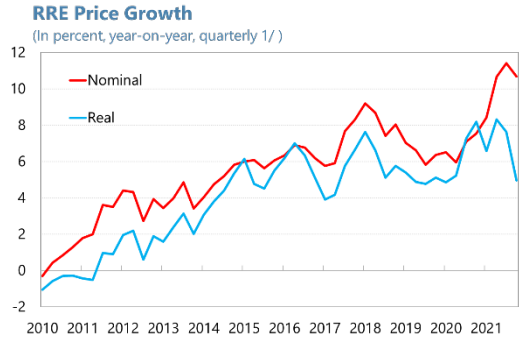
Figure 5. Residential and Commercial Real Estate Price Dynamics

House prices increased by 91 percent in nominal terms and 63 percent in real terms between 2010-21.



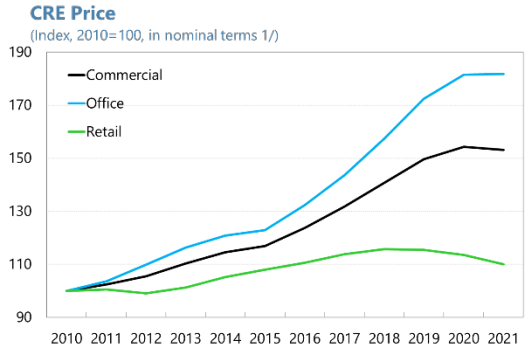
Source: vdpResearch; CEIC; and IMF staff estimates and calculations.
1/ vdpResearch annual estimates of nominal residential prices. Real prices obtained by deflating nominal prices by the CPI.

RRE price growth reached 10.7 percent (5 percent) y/y in 2021Q4 in nominal (real) terms.



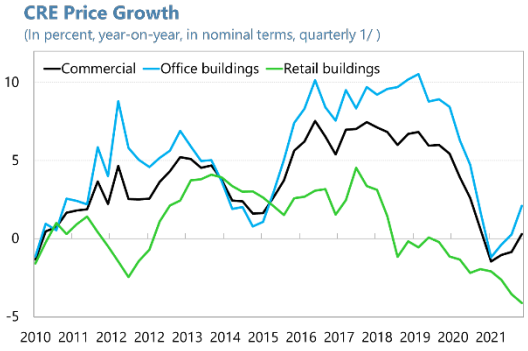
Source: vdpResearch; CEIC; and IMF staff estimates and calculations.
1/ vdpResearch quarterly estimates of nominal residential prices. Real prices obtained by deflating nominal prices by the CPI.

While overall CRE prices increased between 2010-21, there is significant heterogeneity within the sector.



Source: vdpResearch; and IMF staff estimates and calculations.
1/ vdpResearch annual estimates of nominal commercial, office, and retail property prices.

Retail property prices continued its decline in 2021, largely on account of competition from online retailers, further exacerbated by the COVID-19 pandemic.



Source: vdpResearch; and IMF staff estimates and calculations.
1/ vdpResearch quarterly estimates of nominal commercial, office, and retail properties.

14. Germany's competitive edge hinges on furthering the digital transformation. Germany is the leading country in continental Europe for fintech, hosting some of the largest neobanks and

[5] Large firms' access to grants was subject to strict conditions, including viability. Small firms' access to grants was less stringent, e.g., no part in insolvency proceedings.

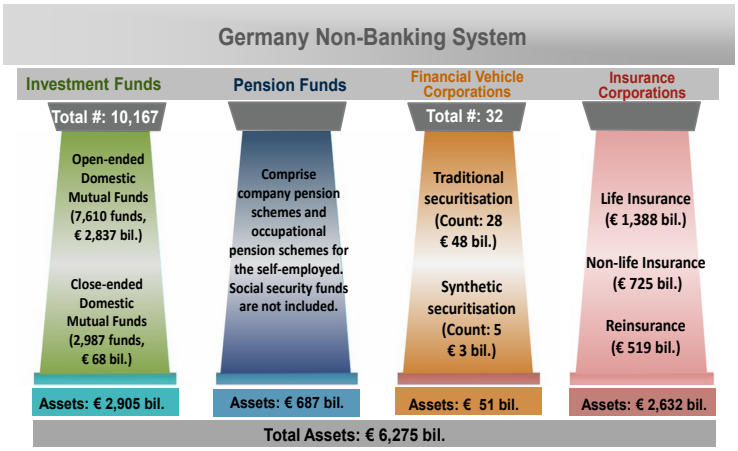
[6] Estimates based on vdpResearch data for RRE and CRE price statistics.

related service providers.[7] Incumbents also increased efforts to digitalize their business processes and improve front-end consumer interfaces in response to the increasing competition and customers' expectations. COVID-19 highlighted the urgency of digital transformation. The authorities have taken several measures to increase digitalization, recognizing its critical role in the structural transformation of the economy (IMF 2021).

B. Financial Sector Landscape

15. Germany's three-pillar bank-centric financial sector is large and well developed, albeit complex (Figures 6, 26). The banking system, with assets equivalent to over 260 percent of GDP at end-2021, accounts for about 60 percent of the financial sector. In December 2021, commercial and saving banks and credit cooperatives held over two-thirds of banking system assets.[8] The German banking sector can be described by three pillars: Pillar 1, commercial banks; Pillar 2, public banks, including Landesbanken (regional banks) and Sparkassen (savings banks); and Pillar 3, cooperative banks. The second and third pillars account for a large majority of German LSIs. LSIs and SIs are not fully independent but benefit from IPSs, which offer financial support to their members. Most private banks are also members of a voluntary top-up DGS which may provide financial support. At the Euro Area (EA) level, Germany accounts for a fourth and 55 percent of EA bank and LSI assets, respectively. In 2021, Germany had one global systemically important bank, Deutsche Bank.

16. Germany's non-banking financial sector (investment funds and insurance companies mostly) represents about 40 percent of the financial sector. At end-2020, there were about 1,000 insurance companies, of which 388 were supervised by BaFin.[9] The Federal State (Bundesland) authorities supervise the remaining approximately 600 insurers. The German insurance market shows low concentration by European standards and is diverse by size and type of insurer, including both large internationally active insurers and about 127 mutual companies. Non-



Source: Deutsche Bundesbank; Latest data available (2021Q3 and end-2021).

[7] Although the authorities are piloting data collection approaches to fintech, comprehensive official statistics need to be developed further. Fintech activities appear to be growing quickly but compared to the overall financial system their size is still relatively small. For example, one of the largest neobanks had a balance sheet of less than EUR 4.5 billion as of end-2020. Crypto assets and licensed crypto-asset custodians had about EUR 3 billion under custody at the beginning of 2022.

[8] As of end-2021 Germany was home to 1,446 banks, of which 21 were SIs (11 commercial banks, 7 public banks, and 3 cooperative banks).

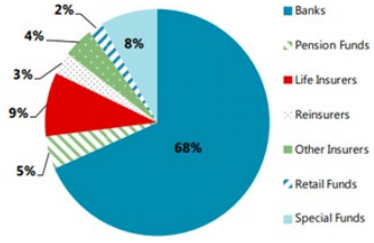
[9] 81 are life insurers, 248 are non-life insurers, 28 are reinsurers, and 31 are burial funds

banking activities such as asset management are expanding; Brexit prompted a re-allocation of several financial services, including investment banking operations, to group entities (banks and non-banks) in Germany.[10]

Figure 6. Financial Sector Overall Structure, 2016 and 2021

The overall banking sector's share in the financial sector has been declining in recent years, while special funds have been expanding.

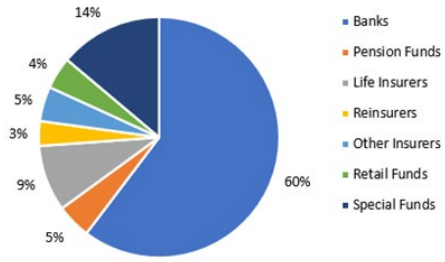
End 2016



Source: Bundesbank

*Measured by Total Assets. Does not sum to 100% due to rounding.

End 2021

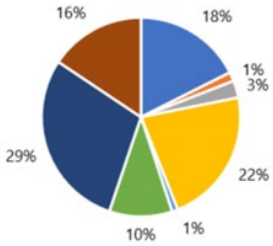


2021 Q3 percentages.
Note: ESA 2010 sectors S121, S125, S126 and S127 are not included.

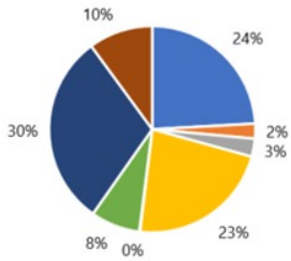
Less Significant Institutions Structure, 2016 and 2020

Less significant banking institutions' assets have been steadily growing (by 17 percent since 2016).

End 2016



End 2020



Source: Bundesbank and IMF Staff Calculation

17. Banks' capital buffers strengthened since the last FSAP, while provisioning for NPLs remains low (Tables 2, 5, Figure 27). Consistent with their different business models, different types of banks show heterogeneity in their soundness indicators. Bank NPLs are low and have declined

[10] The number of active insurers supervised by BaFin includes information received from undertakings supervised by the Federal States. About 600 undertakings, most of them small regional mutual associations, are supervised by individual supervisory authorities of the federal States, compared to about 700 at the end of 2016.

since the last FSAP, but provisioning coverage remains low, at about 35 percent. The unwinding of support may uncover pockets of vulnerabilities. The net foreign position in foreign exchange (FX) to capital increased to 4.4 percent in 2021 from 3.4 percent in 2020, after recording 4 percent in 2016.

18. Germany's financial system is interconnected domestically and internationally, and a relatively small number of banks account for a large share of interconnections (Figure 7 a, b). The interbank market appears to be segmented among SIs, and among LSIs. Also, a small number of banks are very interconnected and account for a very large share of interbank volumes. Significant intersectoral linkages exist, especially from monetary financial institutions (MFIs) to households and among MFIs and non-bank financial institutions. SIs, savings banks, and credit cooperatives' lending accounts for over 90 percent of the total exposure of the domestic banking sector (the 21 SIs account for close to half of the total exposures). The major lending source for investment funds are from insurers and pension funds. Household deposits account for the bulk of banks' liabilities, whereas non-financial corporates are largely funded by banks. Insurance companies and pension funds have reduced their positions with banks and slightly increased their exposures to investment funds. German banks' total foreign exposure (as percent of total assets) is moderate compared to peer countries. German banks are predominantly exposed to the U.K, France, and North America. German banks' exposures are higher against U.S. NBFIs and U.K. banks relative to peers. On the other hand, U.K. banks have comparably larger claims on German banks than peer countries. More than half of the bank claims of France, Netherlands, and Italy on Germany relate to Germany's non-bank private sector

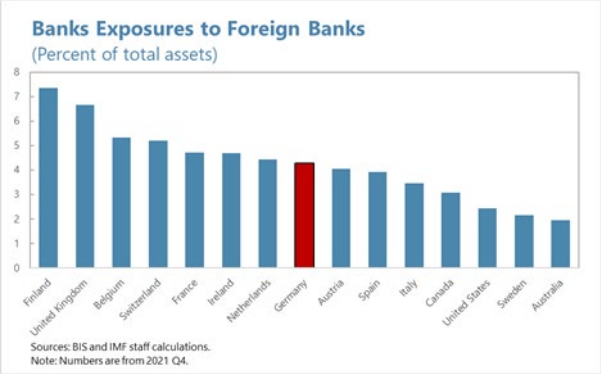


Table 2. Germany: Banking Sector Soundness Indicators (December 2021, in percent)

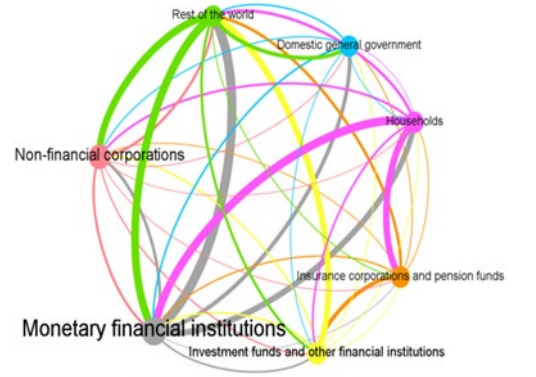
	Solvency and Liquidity				Profitability				Asset Quality		
	Tier 1 Capital Ratio to RWA	Total Capital Ratio (CAR) to RWA	Liquid assets to total assets	Liquid assets to short term liabilities	ROE	ROA	Interest margin to gross income	Noninterest expenses to gross income	NPL to gross loans	NPL net of provisions to capital	Provisions to NPLs
Commercial Banks	17.4	20.1	39.5	160.9	4.4	0.4	34.9	71.4	1.8	8.3	37.9
Saving Banks											
Landesbanken	15.9	20.0	24.3	152.6	3.8	0.3	39.4	62.3	0.9	6.1	37.4
Saving Banks	15.7	16.7	12.6	174.4	3.1	0.5	54.9	63.0	1.2	6.0	33.7
Cooperative Banks											
Regional institutions of credit cooperatives	19.5	21.1	27.9	171.3	7.4	0.6	21.1	56.1	1.0	6.2	43.4
Other cooperative banks	15.0	16.5	11.0	166.8	3.7	0.5	61.9	59.4	1.4	7.0	29.5
Real estate and mortgage banks	20.1	25.0	9.0	222.3	4.4	0.1	76.8	69.8	0.9	12.4	26.0
All banks	16.8	18.8	26.1	170.9	3.9	0.4	40.7	65.6	1.4	7.0	35.4

Source: Bundesbank and FSAP team

Note: Interest margin to gross income is the share of net interest received in gross income. It is based on a secondary statistical evaluation of banks' profit and loss accounts

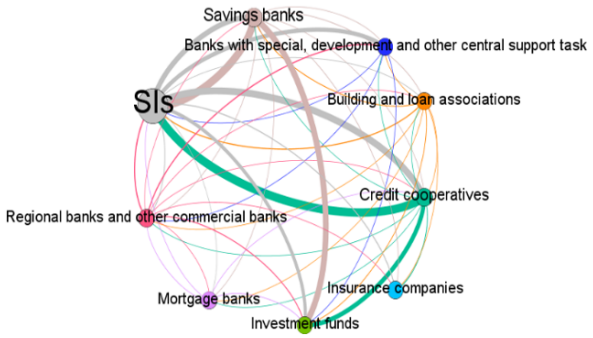
Figure 7a. Domestic Exposures of Financial Institutions

Foreign market intersectoral linkages are significant …



Note: data is from Bundesbank "Direct financial linkages between the sectors in Germany" 2021 Q3 table, reported as a percentage of GDP.

… as well as linkages among MFIs and non-bank financial institutions.



Note: FSAP team estimation is based on Bundesbank 2021Q3 total debt data reported in million euro, and applying equal weight for chart purpose.

Sources: Bundesbank and IMF Staff Calculations.

Note: Node size proportionally represents transaction within a sector; edge width proportionally reflects financial linkages between sectors; edges have the same color as the node for which the edge represents an exposure. Claims of insurance companies and investment funds to bank nodes are not included.

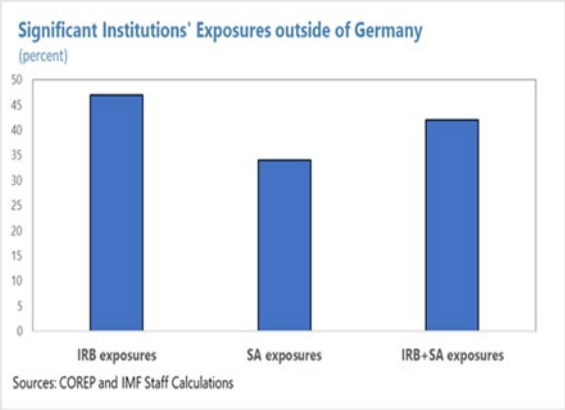
Matrix of Contagion Losses by Type of Banks.

		Recipient of the shock						
Source of the shock	(In percent of total losses)	Credit cooperative	Savings bank	Landesbanken	Regional banks and other commercial bank	Building and loan association	Mortgage bank	Banks with special, development and other central support task
	Credit cooperative	44.69	0.31	0.29	0.37	0.09	0.06	0.00
	Landesbanken	2.05	21.31	1.53	1.63	1.09	0.11	0.00
	Savings bank	0.07	0.95	15.17	0.09	0.70	0.00	0.00
	Regional banks and other commercial bank	1.68	1.40	1.56	0.98	0.24	0.17	0.00
	Mortgage bank	1.24	0.82	0.19	0.21	0.15	0.00	0.00
	Building and loan association	0.07	0.31	0.29	0.04	0.01	0.00	0.00
	Banks with special, development and other central support task	0.01	0.02	0.07	0.02	0.00	0.00	0.01

Note: Credit cooperatives include central institutions, specialized institutions, and local cooperative banks of the association of cooperative banks in Germany.

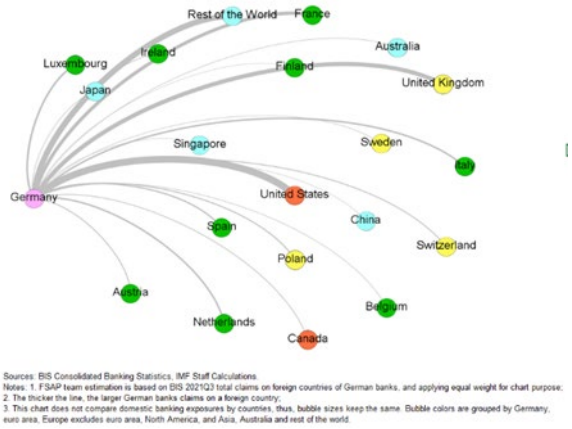
Figure 7b. Cross-Border Exposures of Financial Institutions

Banks have significant exposures outside of Germany.

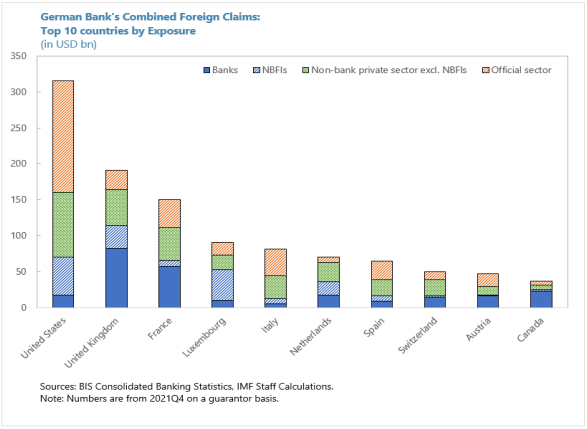


Note: IRB=Internal Ratings-Based; SA=Standardized

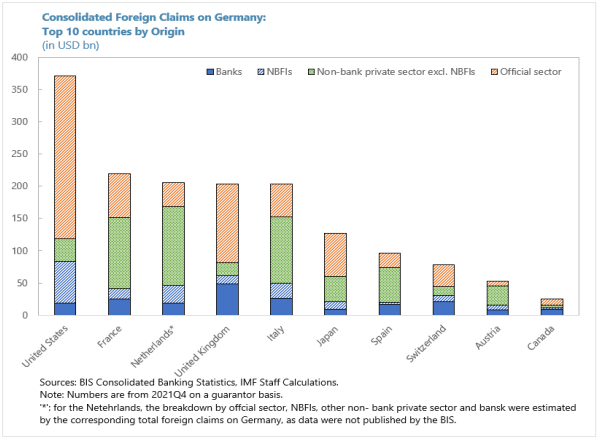
German banks' exposures abroad are predominantly against Europe and North America, and to a lesser extent, Asia.



German banks' exposures are larger against U.S. NBFIs and U.K. banks relative to peer countries.



Half of France, Netherlands, and Italy's claims on Germany are on the German non-bank private sector.



SYSTEMIC RISK ASSESSMENT

A. Macro-Financial Vulnerabilities and Systemic Risk

Bank Profitability

19. Low bank profitability remains a persistent source of vulnerability (Figure 8). German banks have generally lower returns on total assets, risk-weighted assets, and equity (ROE) than the EU averages (Figure 28).[11] Cyclical and structural factors include low-interest rates affecting retail banks, constraints on fee and commission income generation amid customer risk aversion and limited customer experience with fee-based products, preference for savings rather than asset management products, strong bank competition, substantial staff base, and dense branch networks. Aggregate figures, however, mask significant heterogeneity among different bank types. Savings banks and cooperatives, sheltered from competition with a regional and household/SMEs focus, have performed better than private banks immersed in lengthy restructurings to address global financial crisis legacies, although the ROE of savings and commercial banks seems to have converged in 2021. Rising interest rates may also squeeze banks' interest margins over the short-to-near term due to the growing duration mismatch between assets (mortgages) and liabilities (customer deposits).[12] Cooperatives and savings banks are likely to be more affected than commercial banks, given that commercial banks more commonly employ interest rate swaps to hedge against interest rate risks. Rising interest rates may also cool off housing demand and lead to a price correction in RRE. Savings and cooperative banks are also exposed to this risk, given the large share of housing loans in their asset portfolio, with real estate typically serving as collateral. Reportedly conservative collateral valuations are a mitigating factor of the risk. Other risks to profitability include low economic growth, underestimation of credit risk, competitive pressures from fintech and non-banks, slow IT innovation, and cyber risks.

Real Estate

20. Strong RRE price growth suggests price misalignments, which is higher in large cities. Standard indicators of overvaluation, e.g., the price-to-rent and price-to-income ratios as of end-2021 suggest a 21 percent and 37 percent deviation from long-run averages, respectively.[13] Also, an econometric model employed by the FSAP at the country-level that takes account of real interest rates suggests RRE overvaluation of 10-15 percent as of 2021Q3, while a city-level panel data points to larger overvaluation estimates at end-2020.[14] Bundesbank's estimates, based on the latest data

[11] While in risk-adjusted terms, German SIs perform better, their profitability remains below many of their European peers.

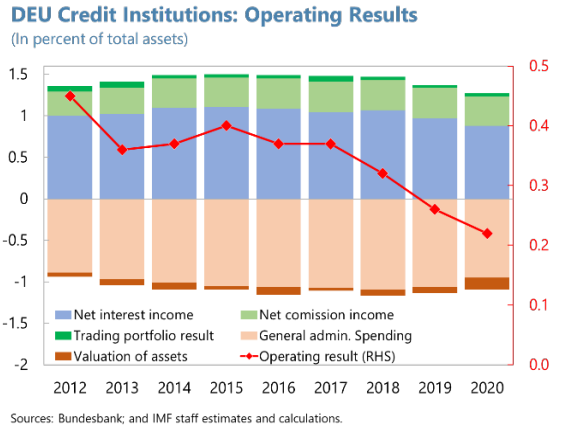
[12] Future profitability will also depend on the steepness of the yield curve and the speed of repricing of bank assets and liabilities.

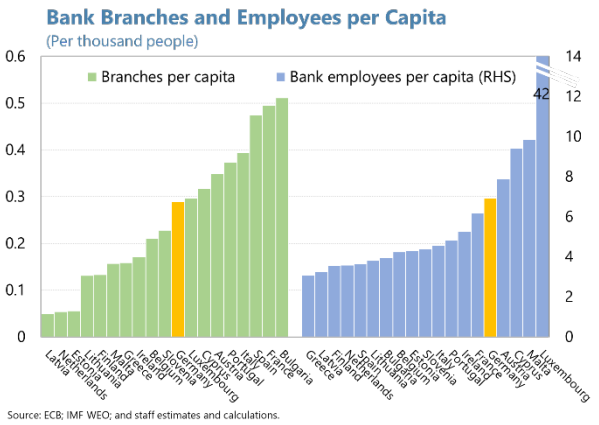
[13] Price-to-rent ratios, however, need to be read cautiously in Germany due to rent controls.

[14] City-level panel data is based on 127 cities. House price overvaluation at end-2020 was estimated at about 20-35 percent for Berlin, Hamburg, Stuttgart, Frankfurt, Cologne, and Dusseldorf, and at about 50 percent for Munich. These estimates may be somewhat overestimated due to the use of regional- and country-level data when city-level series were not available.

and several methodologies, suggest an overall overvaluation in RRE prices of 20-35 percent, with overvaluation in cities in the range of 15-40 percent in 2021.

Figure 8. Banks' Business Model



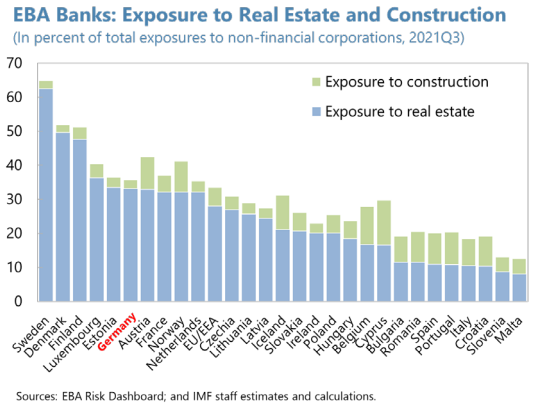


21. Large CRE exposures and RRE price overvaluations suggest potential pockets of vulnerabilities in banks' exposures to real estate (Figures 9, 30). In 2021Q3, outstanding bank loans for house purchases were 46 percent of GDP and about half of total loans to domestic enterprises and households. Housing loan growth in 2021Q3 was the highest in two decades. Banks' exposures to CRE sectors (construction, housing corporations, and other real estate activities) was much smaller. Lending to CRE sectors, which peaked in 2019, remained strong in 2021Q3 although slowed marginally. The Bundesbank's Bank Lending Survey (BBLS) did not indicate relaxation of lending standards at end-2021. However, the risks could be underestimated due to a lack of comprehensive borrower-based information (e.g., loan-to-value (LTV), debt-service-to-income (DSTI)). Immediate risks to the CRE sector may stem from sub-sectors (e.g., non-food retail and potentially hotel businesses), particularly with COVID-19 outlook uncertainty and rising interest rates in conjunction with higher inflationary pressures.

22. Tail risks in real estate have increased since the onset of the pandemic, particularly in CRE. The FSAP's property price-at-risk assessment pointed to increased tail risks in RRE and CRE in 2021Q3 compared to end-2019. Under the estimated conditional distributions, as of 2021Q3, the probability of a negative real price growth one year ahead increased to 2.2 and 66 percent (from 0.7 and 24 percent at end-2019) for RRE and CRE, respectively. Results also indicate a 5 percent chance that RRE and CRE prices could fall by 14 and 30 percent, respectively, under severe adverse scenarios in real cumulative terms over the medium-term (Figure 10). The use of price-at-risk model for CRE and RRE prices to supplement the Bundesbank's toolkit to assess RE risks would help serve as an additional early warning indicator to help inform policy decisions.

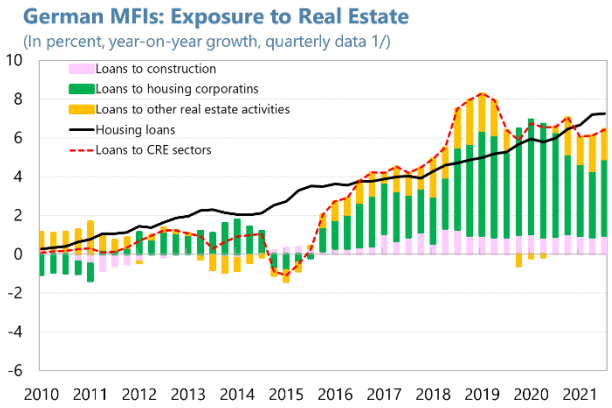
Figure 9. MFIs' Exposure to Real Estate and Construction

Exposure to real estate and construction of German banks (covered by the European Banking Authority) was among the highest in the EU in 2021Q3.



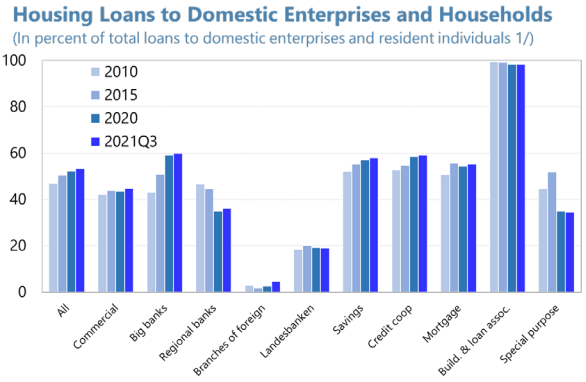
Sources: EBA Risk Dashboard; and IMF staff estimates and calculations.

Housing loans continue to grow at record levels, reaching 7.3 percent in 2021Q3. Meanwhile, loans to CRE sectors decelerated marginally to 6.4 percent year-on-year from the peak of 8.3 percent in early 2019.



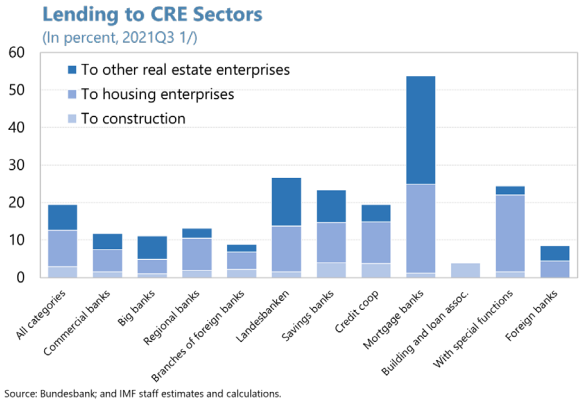
Source: Bundesbank; and IMF staff estimates and calculations.
1/ CRE sectors proxied by construction, housing enterprises, and other real estate enterprises.

As of 2021Q3, German MFIs' housing loans were 53 percent of loans to domestic enterprises and households (18 percent of assets), …



Source: Bundesbank; and IMF staff estimates and calculations.
1/ Defined as housing loans to domestic enterprises and resident individuals in percent of total loans to domestic enterprises and resident individuals.

… and lending to CRE sector constituted about 19 percent of loans to domestic enterprises and households (6.4 percent of assets).



Source: Bundesbank; and IMF staff estimates and calculations.

Note: MFIs (Monetary Financial Institutions) comprise resident credit institutions as defined in Community law, money market funds and others.

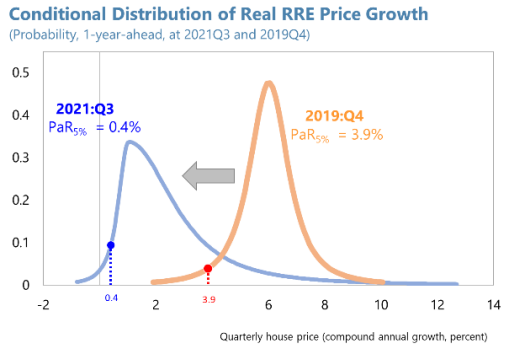
1/Lending to CRE is proxied by lending to construction, housing corporations, and other real estate activities.

23. Further closing data gaps including on lending standards are needed to monitor existing and evolving risks. In 2023, under the Financial Stability Data Collection Regulation (FinStabDEV), the Bundesbank will begin collecting data on housing loans to private households from all commercial lenders , including on LTV ratios and information on the amortization period and borrowers' ability to service debt. A time series of lending standards to assess evolution over time should be helpful in informing policy decisions. Buoyant developments in the RRE market call for further data gaps closures to help identify and mitigate tail risk events. Data on transaction

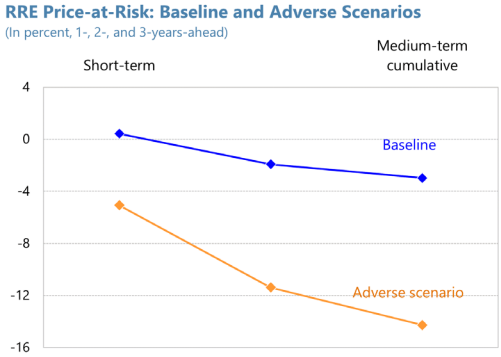
prices in the residential real estate markets need improvement, particularly at the regional level, to help improve data quality of the official RRE price indices.[15]

Figure 10. Residential and Commercial Property Price-at-Risk 1/

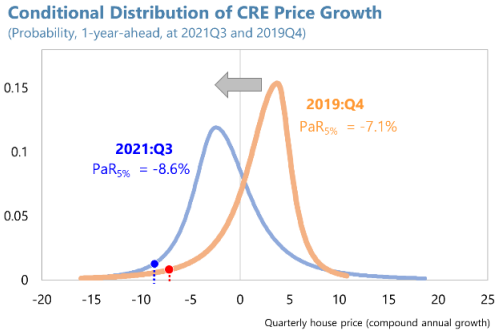
Residential property PaR analysis points to increased tail risks in 2021Q3 compared to pre-pandemic at end-2019.



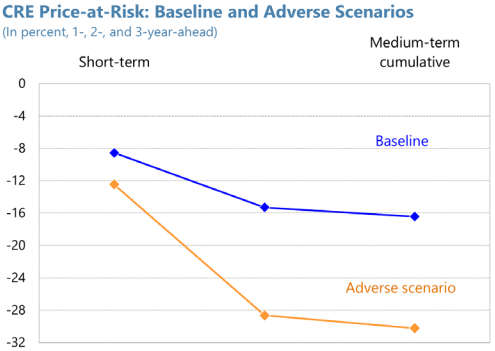
Under an adverse scenario, RRE prices could fall by some 14 percent (in cumulative terms) over 3 years.



Commercial property PaR models also suggest increased tail risks in 2021Q3 compared to pre-pandemic at end-2019.



Under an adverse scenario, CRE prices could fall by 30 percent (in cumulative terms) over 3 years.



Source: IMF staff estimates and calculations.

1/ RRE = residential real estate, CRE = commercial real estate, PaR = price-at-risk. Panel 1 shows the conditional one-year-ahead probability distributions of RRE price growth based on a parametric, t-skew density, fitted over quantile regression estimates in the period 2021:Q3 (blue line) and 2019:Q4 (orange line). Real house price volatility and worsening macro-financial conditions during COVID-19 largely account for the leftward shift in the distributions between 2019:Q4 and 2021:Q3. Figures are annualized growth rates. Panel 2 shows the point estimates of predicted RRE PaR as of 2021:Q3 in the short-term (one-year-ahead) and the medium-term (two- and three-years-ahead) projections at the 5th percentile (at compounded growth rates). Two- and three-year-ahead estimates show compounded figures. The counterfactual ("adverse scenario") scenario is calibrated as a simultaneous 2 standard deviations shock to leverage (change in household debt-to-GDP, interest payments-to-disposable income), affordability measure (house price-to-gdp per capita ratio (misalignment)), and financial conditions index. Panel 3 shows the conditional one-year-ahead probability distributions of CRE price growth based on a parametric, t-skew density, fitted over quantile regression estimates in the period 2021:Q3 (blue line) and 2019:Q4 (orange line). Figures are annualized growth rates. Panel 4 shows the point estimates of predicted CRE PaR for 2021:Q3 in the short-term (one-year-ahead) and the medium-term (two- and three-years-ahead) projections at the 5th percentile (at compounded growth rates). Two- and three-year-ahead estimates show compounded figures. The counterfactual ("adverse scenario") is calibrated as a simultaneous 2 standard deviations shock to employment.

[15] For calculation of regional real estate price indices, the Federal Statistical Office relies on transaction data from committees of surveyors for property values, which is currently provided in an incomplete form and with a time delay. Such limitations complicate calculations of official real estate price statistics, particularly for rural areas, resulting in making these estimates highly susceptible to revisions and reducing their usefulness for analytical purposes. For details, see Bundesbank's Monthly Report (October 2020) at https://www.bundesbank.de/resource/blob/850664/348e18cfaaf65a8b59fb3cfc8727e4ef/mL/2020-10-protracted-data.pdf

Macro-Financial Risks

24. The FSAP assessed the following key macro-financial risks in the adverse scenario, which combines several shocks (RAM: Table 6): an escalation of the war that could be associated with a Russian gas shut off, higher commodity prices, a global resurgence of COVID-19 with extended supply chain disruptions and de-anchoring of inflation expectations in the U.S. and advanced Europe, leading to rising core yields and risk premia.

- *De-anchoring of inflation expectations in the U.S. and/or advanced European economies with the worsening of supply-demand imbalances, rising energy prices, and other risks related to the conflict in Ukraine, and higher nominal wage growth*, leading to rising core yields and risk premia.

- *Global resurgence of COVID-19 with extended supply chain disruptions* could require costly containment efforts if protracted in time, causing greater scarring to the economic fabric and financial sector's balance sheets, adding pressure on capital buffers and margins, and triggering credit tightening, an increase of zombie corporates, a wave of bankruptcies and higher NPLs.

25. The above-noted risks were reflected in the adverse scenario used in the stress testing exercise. The baseline scenario already includes elevated inflation from rising oil and gas prices due to the war-in-Ukraine. In the adverse scenario, COVID-19- and war-related constraints on the supply of manufactured parts and raw materials, including gas and oil, lead to higher commodity price hikes, higher-than-expected inflation, and a real GDP decline, including significant damage to the large manufacturing sector in Germany. Unexpected monetary tightening in the U.S. and the euro area and repositioning by market participants lead to tightening of financial conditions, a rise in risk premia, and assets market selloffs. Higher rates and supply constraints cause loss of confidence, a drop in demand, and recessionary pressures in Germany and lead to an increase in corporate and household NPLs. Moreover, the shift in market sentiment and lower investor confidence against some high-debt EA countries could raise sovereign yields, have knock-on effects on the broader financial sector, and affect German banks' and other financial institutions' holdings in these countries.

Bank Solvency Stress Testing

26. The FSAP banking solvency stress tests covered about 83 percent of the banking system's assets and included banks of different sizes and business models. The FSAP conducted two separate stress tests using the same macroeconomic scenario and risk parameters—one for the SIs drawing on ECB supervisory data, and the other for LSIs analysis using Bundesbank supervisory data.[16] The FSAP assessed banks' resilience to (i) credit risk related to non-financial corporates, households, and sovereigns; (ii) interest rate and other market risks, particularly foreign exchange

[16] SIs ST coverage include only institutions that have adopted the IFRS9 accounting framework.

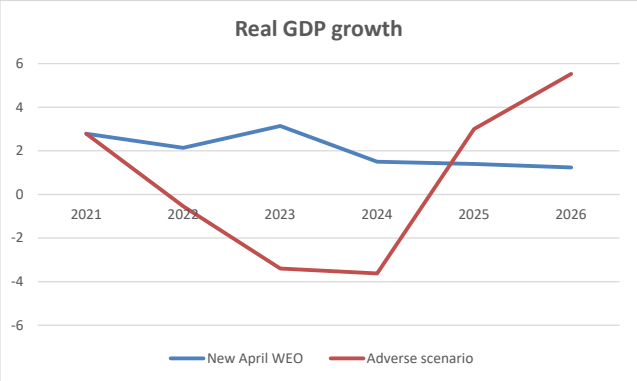
and sovereign risks, equity prices, and real estate prices; (iii) other income channels subject to modeling constraints and data availability.[17]

27. The FSAP assessed the banking system's resilience to shocks against the World Economic Outlook's (WEO) baseline scenario and a RAM-based adverse scenario (Appendix IA, STeM). The adverse scenario includes shocks noted above that result in a V-shape trough of 13.4 percent decline in real GDP relative to the baseline by 2024 (3 standard deviations from the baseline over two years, Figure 11).[18,19] The adverse scenario assumes that the output gap closes in 2025 and involves stagflation and monetary tightening followed by monetary policy loosening associated with a drop in demand (Figures 12, 31). House and stock prices decline by 23 percent and 29 percent, respectively, by 2024. Unemployment increases by 6.6 percentage points above the baseline and remains 0.8 percentage points above the baseline at the end of the projection horizon.

Figure 11. Macroeconomic Scenarios

The realization of global and local adverse shocks entails a sharp decline in real GDP growth in 2022 and recovery by 2025.

	WEO	Adverse scenario
2021	2.8	2.8
2022	2.1	-0.5
2023	3.1	-3.4
2024	1.5	-3.6
2025	1.4	3.0
2026	1.2	5.5



Note: The WEO figures corresponded to March WEO projections and differ from the latest updates presented in Table 4.

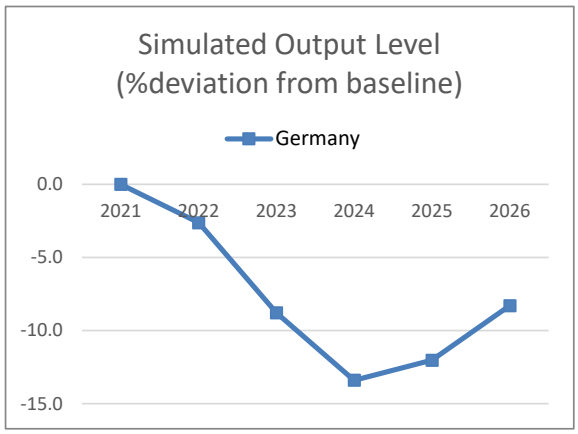
[17] Due to different supervisory reporting for SIs and LSIs, interest rate risks could only be tested for SIs.

[18] The cumulative real GDP growth decline is 7.4 percent between 2022 and 2024. This is a much larger decline than that witnessed during the GFC, during which real GDP growth was -5.7 percent in 2009, but with a sharp rebound of 4.2 percent and 3.9 percent in 2010 and 2011, respectively.

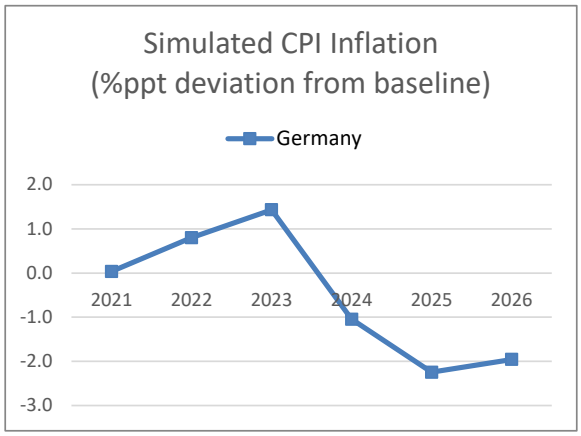
[19] The scenario is more severe than the EBA 2021 stress test scenarios and is qualitatively different from the EU-wide 2021 exercises, particularly regarding the path implied by the monetary policy reaction.

Figure 12. Global Macrofinancial Model Simulations

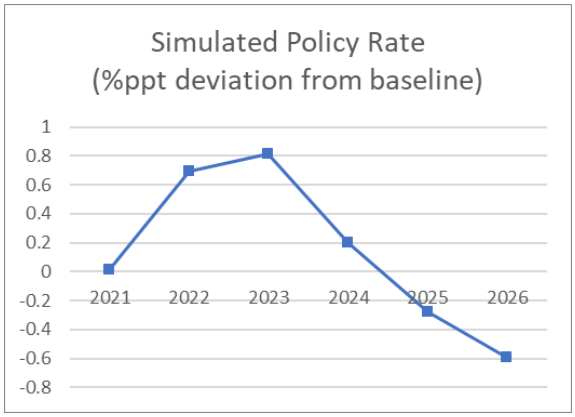
Real GDP falls to 13.4 percent below the baseline by 2024…



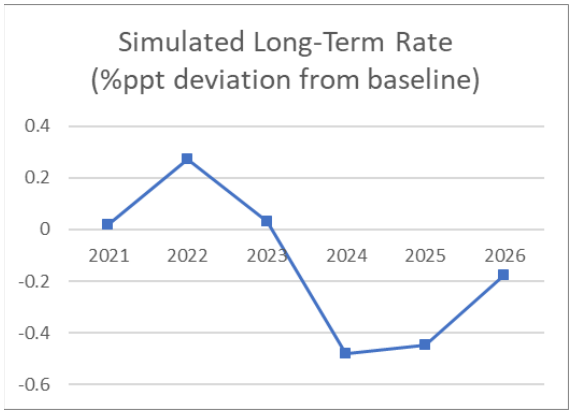
… inflation rises 1.4 percent above the baseline in 2023 and then falls in negative territory …



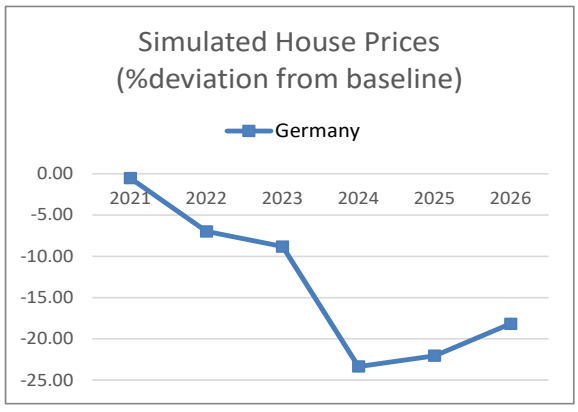
… as a result the ECB tigthens monetary policy in the near term, and loosens it in outer years …



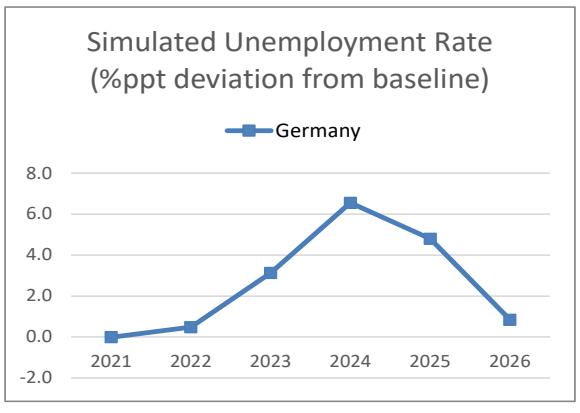
… long-term rates rise in Germany, but by less than short-term rates, resulting initially in a flattening of the yield curve.



A global housing bust results in a decline in residential real estate prices of about 23 percent by 2024.



Unemployment rises 6 percentage points above baseline by 2024.



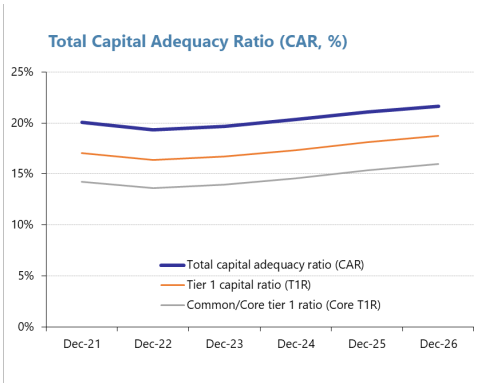
28. German SIs and LSIs are resilient to shocks under the baseline and adverse scenarios, thanks to the initial high capital buffers and low initial credit risk (Figures 13,14). Under the baseline scenario, SIs' aggregate capitalization remains high, driven by net income and a decline of credit risk despite some moderate near-term losses caused by the interest rate increase (which leads to interest rate and repricing risks). Under the adverse scenario, the aggregate common tier equity (CET1) capital ratio of SIs depletes by 5.2 percentage points by 2023 from 14 percent and increases in subsequent years. Because of strong funding shocks and a sharp recession, higher risk weighted assets (RWAs), interest rate, market, and to a lesser extent credit risks drive the decline in capital ratios. [20] Three banks fall below the hurdle rate in 2022-23, but capitalization remains above the minimum CET1 ratio and the aggregate capital shortfall remains small at 0.3 percent of GDP.[21] The stress tests for LSIs show that, thanks to high overall capitalization, aggregate capital remains high under the adverse scenario. Overall, 8-9 very small banks (accounting for up to 1.6 percent of total LSIs assets) fall below the hurdle rate under the baseline scenario, and about 20 banks (accounting for about 3 percent of total LSI assets) fall below the hurdle rate under the adverse scenario.

[20] The analysis is performed under the conservative assumption that shocks to policy rates are fully passed through to funding costs of banks, and the speed of pass-through is consistent with the supervisory data reporting in the "Interest Rate in the Banking Book" template of the ECB. The FSAP net interest income satellite model implies that pass-through from deposit rates to lending rates is smaller than one. These assumptions result in very conservative estimates of the IRRBB.

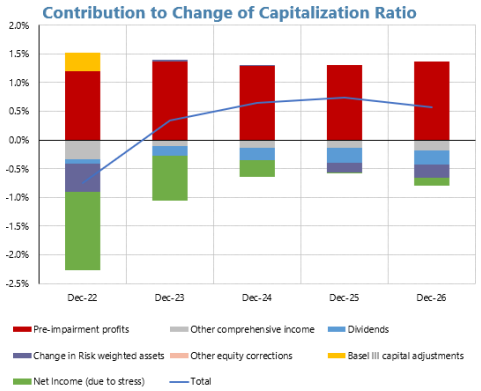
[21] It would remain above the hurdle rate if the CCyB was not included.

Figure 13. Solvency Stress Tests for SIs

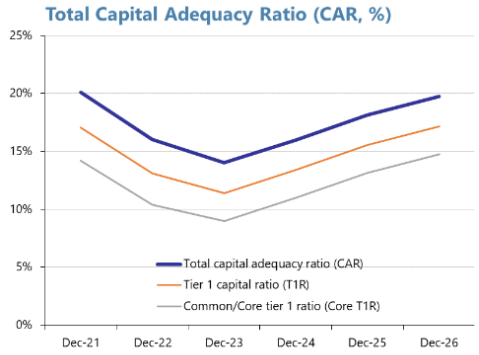
Capitalization continues to grow under the baseline….



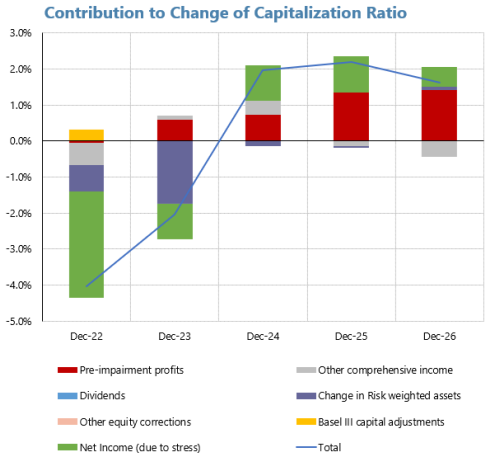
… as net profit continues to grow.



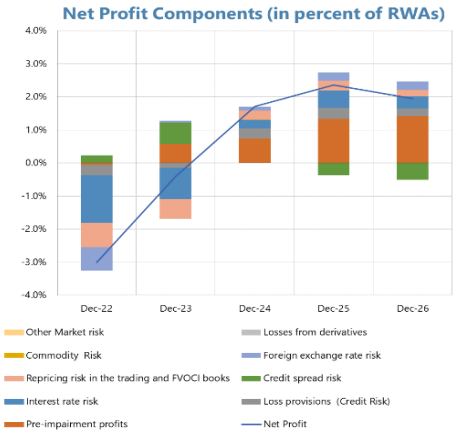
Under the adverse scenario, capital depletion reaches 5.2 percent of RWAs by 2023.



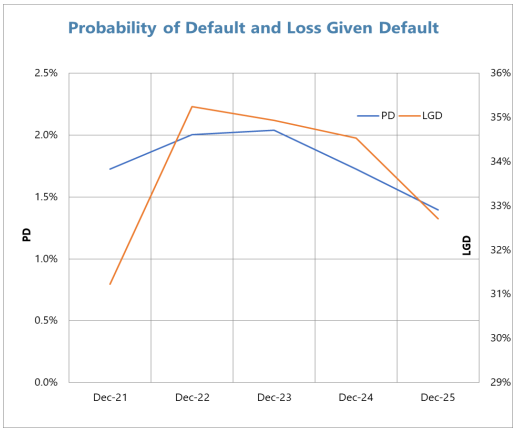
Stress depletes net income and risk weights increase ….



… as funding shocks combined with the recession cause interest rate risk in the banking book and market risk losses as well as credit risk.



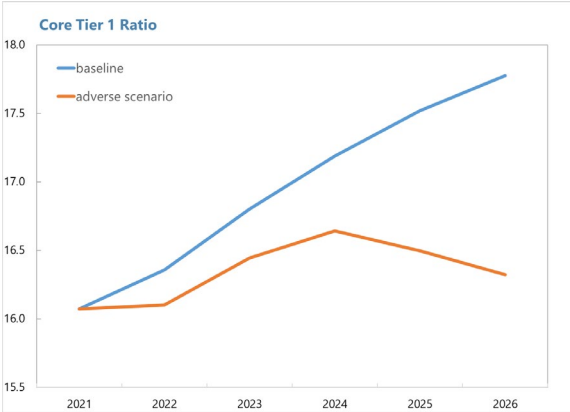
Credit risk reflects both higher PDs and LGDs.



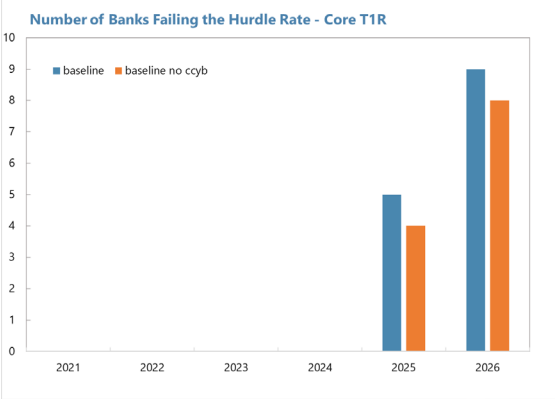
Note: Net income (due to stress) is defined as the residual component of the net income that results from the stress test exercise (e.g., credit risk and interest rate risk.

Figure 14. Solvency Stress Tests for LSIs

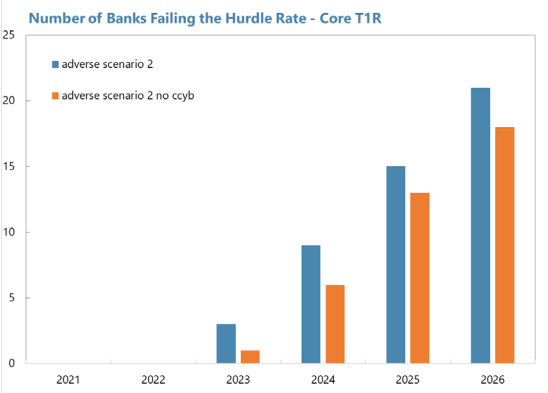
Aggregate capitalization grows under the baseline but stagnates under the adverse scenario.



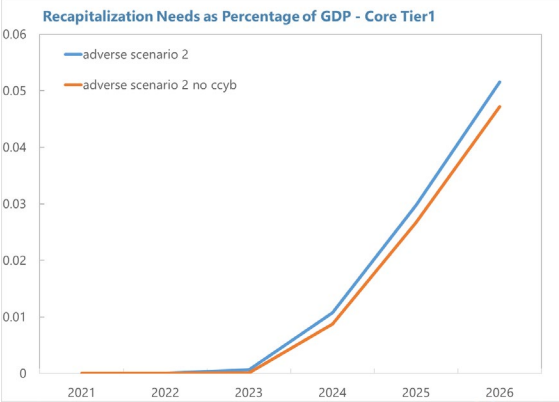
CET 1 of 8-9 small banks accounting for about 1.6 percent of total LSI assets fall below the hurdle rate under the baseline.



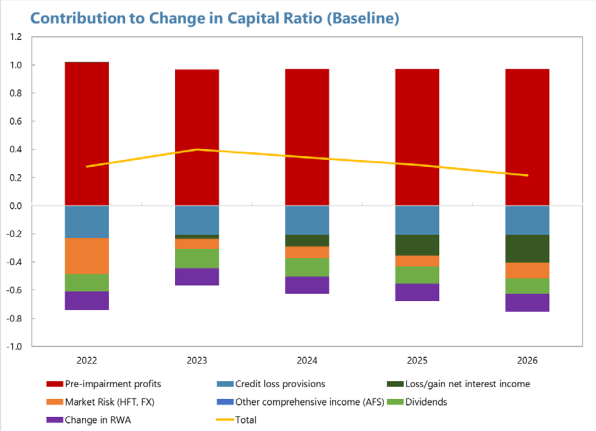
CET1 ratio of up to 20 banks accounting for 3 percent of total LSI assets fall under the hurdle ratel in the adverse scenario.



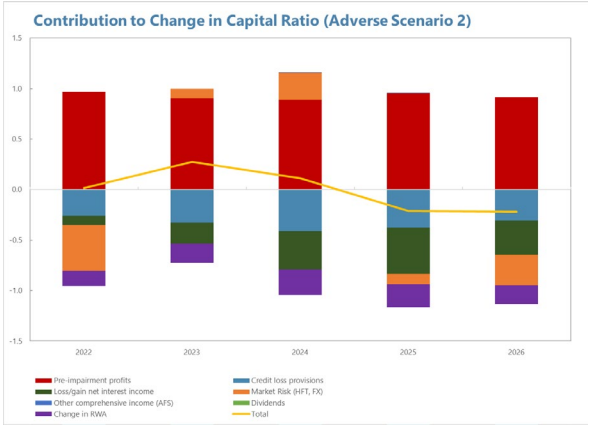
Recapitalization needs are small.



Under the baseline capital continues to accumulate internally despite some market risk and credit risk.



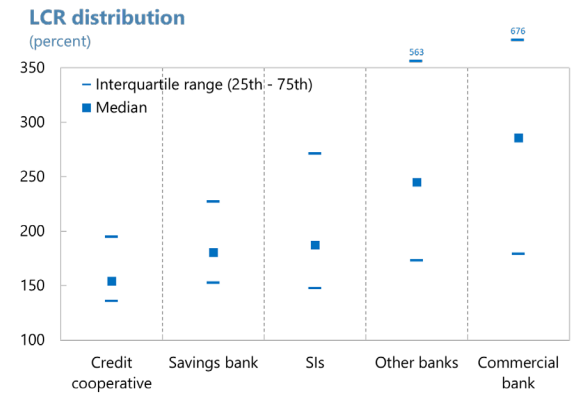
In the adverse scenario, NII declines while credit risk and market risk increase, resulting in negative net income in outer years.

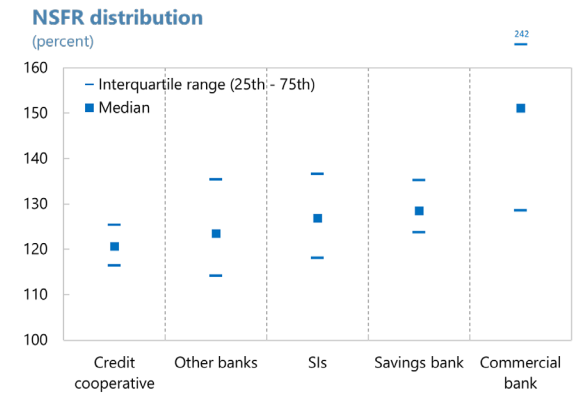


Bank Liquidity Stress Testing

29. The banking system has significantly increased liquidity buffers since the 2016 FSAP (Figure 25). The weighted average liquidity coverage ratio (LCR) stands at about 160 percent, and the vast majority of banks have liquidity well in excess of the regulatory minimum of 100 percent and in excess of the NSFR of 100 percent (Figure 15). Other indicators (e.g., deposit-to-loan ratio and the ratio of liquid assets to total assets) also suggest ample liquidity in the system as a whole. Counter-balancing capacity (CBC) is robust and tilted to the highest quality assets, especially for SIs.

Figure 15. LCR and NSFR





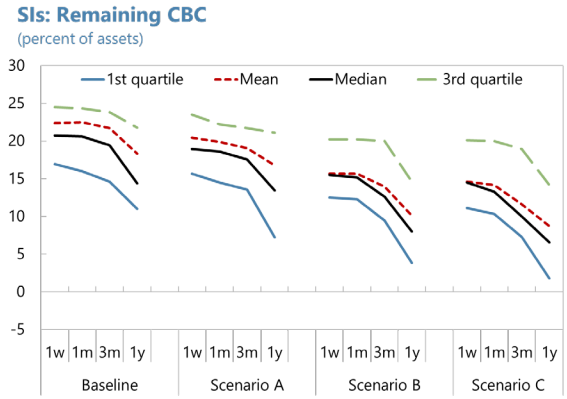
Sources: Bundesbank, ECB and IMF staff calculations

30. The FSAP stress tests confirm that the banking system appears to be resilient to liquidity shocks, especially at the conventional liquidity stress test horizon (Figure 16). Less than 5 percent of banks in the sample would become illiquid within a 1-month horizon, and about 15 percent (all small LSIs) at the 3-month horizon. Shortfalls at these horizons, at less than 0.1 percent and 0.5 percent, respectively, of the LSI sample's assets would be manageable. Even at the 1-year horizon, shortfalls under the severe adverse scenario would be comparatively small, and the IPS schemes (whose support is not considered in the tests) could provide a second line of defense in such cases. In the LSI sample, only cooperatives and savings banks would account for additional shortfalls in the 3-month to 1-year horizons in the most adverse stress scenarios.

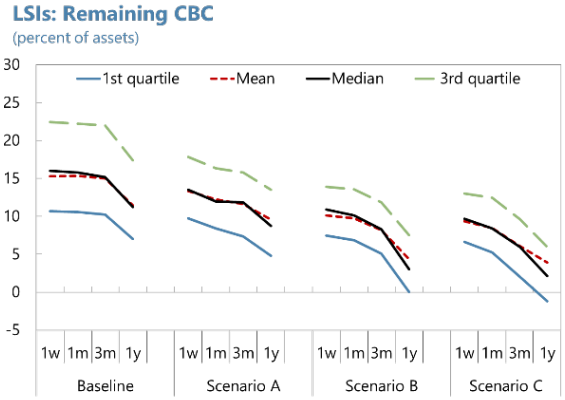
31. Under a severe adverse scenario, selected banks' U.S. dollar exposures could pose a risk, which emphasizes the importance of existing swap lines among central banks (Figure 17). Only a few banks rely on the capacity to convert euro-denominated assets into U.S. dollars rapidly and at a low cost, a reliance that is reasonable in the highly liquid and efficient euro-dollar currency market. In the unlikely event of a disruption of access to U.S. dollar liquidity, a few banks with inadequate U.S. dollar liquidity buffers could face challenges under stressed conditions even within a few days. While U.S. dollar liquidity risk is relevant only for a limited number of banks, continued close monitoring of larger LSIs with significant foreign exchange exposures is warranted and take action as needed.

Figure 16. Cash Flow Analysis Results

Results for SIs suggest they can preserve robust counterbalancing capacity (CBC) even under severe stress at 3-month horizon.



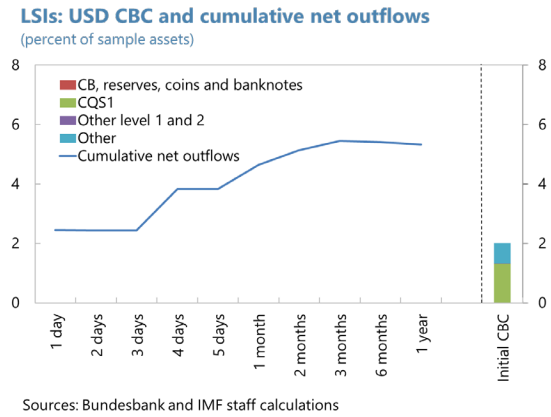
Majority of LSIs are resilient to liquidity shocks, up to a 3-month horizon.



Sources: Bundesbank and IMF staff calculations

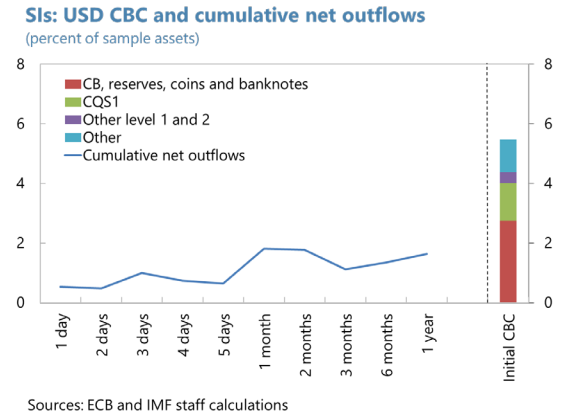
Figure 17 Cash Flow Analysis Results, FX

While relevant for only few banks, thin FX liquidity buffers among LSIs highlight the importance of maintaining swap lines among central banks.



Sources: Bundesbank and IMF staff calculations

In aggregate, SIs hold sufficient USD buffers to cover contractual cumulative USD outflows.



Sources: ECB and IMF staff calculations

Note: FX = foreign currency; CBC = counter-balancing capacity; CB = Central Bank; CQS = Credit Quality Step; LSIs = Less Significant Institutions; SIs = significant Institutions.

Interconnectedness Analysis and Contagion

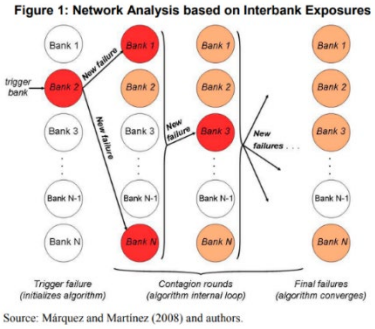
32. The FSAP bank contagion analysis indicated that interbank contagion risks flow from SIs to LSIs and from LSIs as a group to SIs. The simulations assume that all banks fail one at a time and characterize the cascade of defaults in the interbank market due to credit and funding shocks. The contagion index measures the sum of losses in percent of the capital of all banks or groups of banks resulting from all or a subset of the 1317 simulations; the amplification index is the ratio of

second and further rounds of losses to the losses incurred during the first round of contagion.[22] Contagion risks are much less among LSIs and SIs (Figure 18)**.** The results suggest the interbank market may be segmented among SIs and LSIs implying that failure of a SI (respectively LSI) generates limited direct contagion risks to other SIs (respectively other LSIs). The interbank market is concentrated, with a few large banks accounting for a significant share of the interbank lending volumes. As a result, a small number of banks account for most of the contagion losses. The analysis also found that while losses from the first round tend to dominate, as the severity of shocks increases the second and other rounds account for a higher share of the total losses, especially for simulations where a small bank is the trigger bank. Both SIs and LSIs are impacted by contagion losses as a share of their capital. Under the FSAP model's hypothetical assumptions, credit cooperatives, savings banks, Landesbanken, and commercial banks are significantly exposed to contagion risks in the interbank market; the FSAP does not assess the likelihood that these risks would materialize.

[22] The analysis conducted used recent models of cascades of bank defaults developed in the context of recent FSAPs (e.g., the 2017 Luxembourg FSAP), based on the paper by Covi, G., Gorpe, Z.M., and C. Kok, 2021, "CoMap: Mapping Contagion in the Euro Area Banking Sector", Journal of Financial Stability.

Figure 18. Bank Contagion Analysis [1/]

The bank contagion model simulates cascades of default and estimates resulting losses.



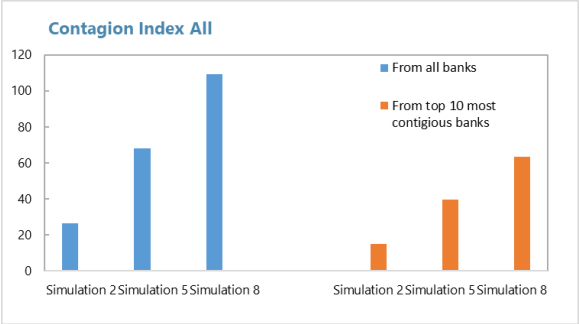
Source: Márquez and Martínez (2008) and authors.

Most contagion losses occur from SIs to LSIs, but as a group LSIs also cause significant losses to SIs.

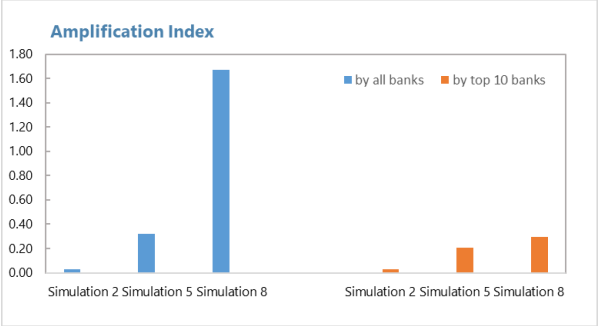
contagion losses by type of trigger bank/recipient bank

	Recipient of the shock		
	(in percent of total losses)	Less Significant Institutions	Significant Institutions
Source of the shock	Significant Institutions	50.91	9.66
	Less Significant Institutions	3.37	36.06

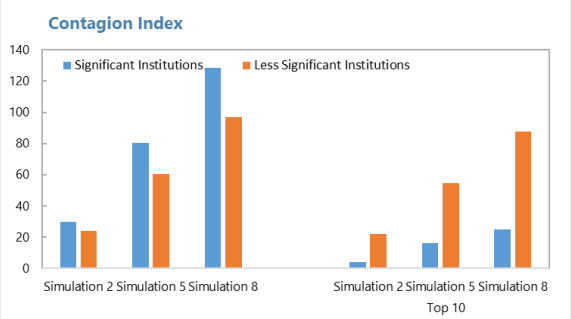
A small number of banks account for most of the contagion losses….



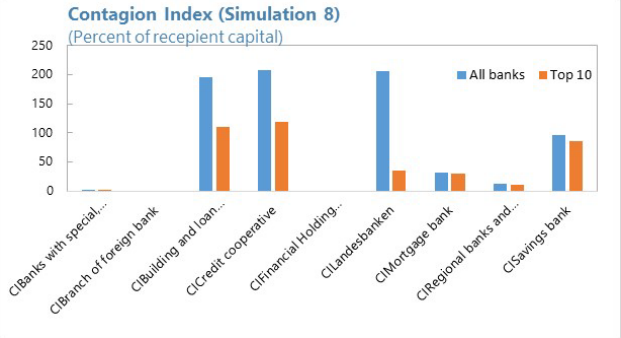
…as severity of the shocks increase, 2nd round and other rounds account for increase share of total losses.



Both SIs and LSIs are impacted by contagion losses as a share of their own capital.



Credit cooperatives, savings banks, Landesbanken and other banks potentially bear significant losses as a share of their capital.



Sources: Bundesbank and IMF staff calculations

1/ Simulations 2, 5 and 8 respectively assume a 20 percent, 50 percent and 80 percent loss given default and haircuts on marketable securities in the contagion risk simulation.

33. The FSAP makes several recommendations to address pockets of vulnerabilities in the banking system. Stress test results showed that the overall banking system appears fairly resilient to severe shocks. At the same time, the high degree of uncertainty around the scenarios and the future recovery paths along with the uncertainties around the war-in-Ukraine warrant caution and some policy strengthening to ensure continued robustness of the financial system. The FSAP recommends that the authorities: (i) continue to closely monitor banks' prudential ratios, particularly

large SI commercial banks, and establish microprudential buffers (Pillar 2 guidance) for less capitalized banks as needed; and (ii) strengthen LSIs interest rate risk monitoring, including by gathering data on the remaining maturity of retail deposits, wholesale funding, and interest-bearing assets to perform top-down interest rate stress tests. The FSAP also recommends that data sharing between the Bundesbank and the ECB is strengthened and that risk monitoring and the analysis of domestic and cross-border interconnectedness continue to be strengthened, with a focus on key domestic interbank market institutions and other markets where exposures are located, as needed.

Corporate Sector

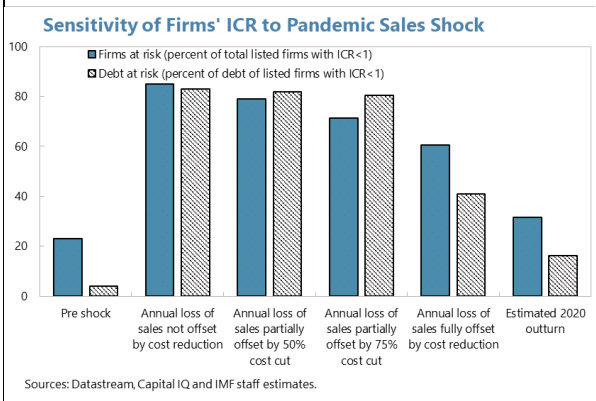
34. The pandemic caused a significant drop in enterprise sales and would have increased corporate debt at risk had it not been for timely measures to cushion the impact (text table). The sensitivity analysis suggests that, in the absence of support measures and even if listed firms had been able to offset the decline in sales by cutting production costs, the share of firms at risk would still have increased from 23 percent pre-pandemic to 60 percent, with debt-at-risk surging from 4 percent to 41 percent (Figure 19). Similarly, 38 percent of firms (up from 26 percent pre-pandemic) would have been unable to maintain positive cash balances in the absence of new borrowing and more than 5 percent of firms could have ended up with equity below zero, from none in the pre-pandemic period.

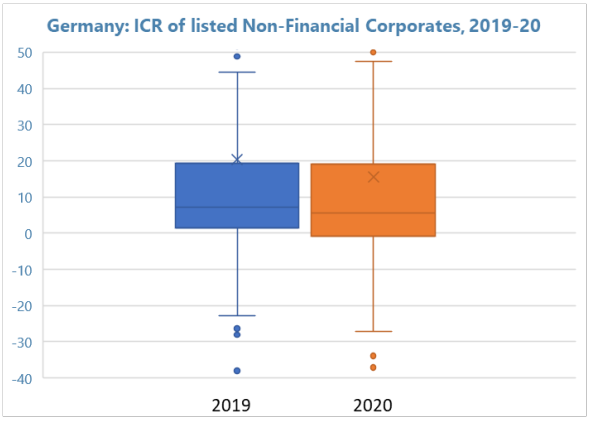
Shock to listed companies' sales: Mid-2020 prediction & estimated outturn

Sector (# of listed firms in sample)	Share in 2019 total sales (percent)	Predicted shock to 2020 sales 1/ (percent)	Actual change in 2020 sales (percent)
Agriculture (2)	0.1	-3	15
Air transport (2)	2.2	-53	-62
Amusement and Recreation (6)	0.1	-55	-61
Business services (46)	2.5	-7	4
Communication (3)	7.1	-2	8
Construction	1.6	-19	-12
Electricity, gas, water supply (8)	7.8	-22	4
Hotels & restaurants (1)	0.0	-45	14
Manufacturing (145)	60.2	-19	-10
Mining excluding oil (3)	0.2	-13	-38
Other private services (7)	0.3	-11	-36
Social, health, education services (5)	3.0	-4	2
Transportation excl. air transport (6)	5.2	-21	-8
Wholesale & retail trade (19)	9.8	-11	-9
Total (263 listed companies)	100	-17	-8

Source: Datastream, Capital IQ and IMF Staff estimates
1/ Difference between analysts' January 2020 and une 2020 sales forecasts for individual firms for 2020.

Figure 19. Corporate Sector Vulnerabilities—Sensitivity Analysis

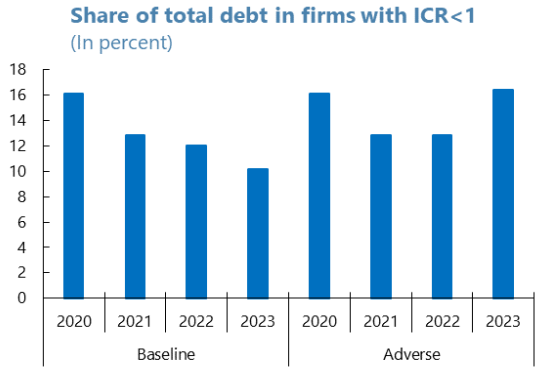




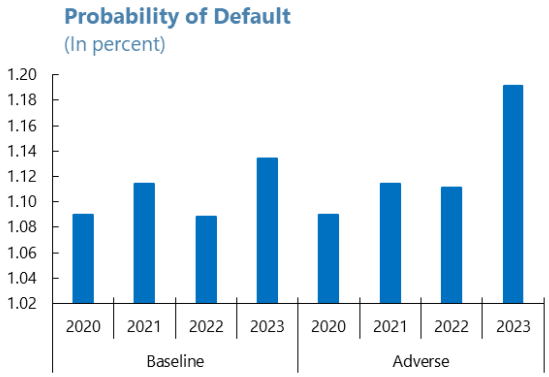
35. Analysis of listed NFCs indicate a moderate increase of debt-at-risk under the adverse scenario.[23] Under the solvency stress test's adverse scenario, based on end-2020 firm-level data, debt-at-risk would increase by six percentage points to 16 percent of total debt of listed NFCs (equivalent to about 2 percent of assets of banks in Germany), and the probability of default would increase by six basis points to 1.19 percent by 2023.[24] Reflecting the central role of economic growth in the profitability and viability of companies in the regression models, the share of debt in firms with an ICR<1 starts to rise in 2023 under the adverse scenario (Figure 20).

Figure 20. Corporate Sector and Dynamic Scenario-Based Regression Analysis

Debt-at-risk falls steadily in the baseline but increases in 2023 compares to previous years in the adverse scenario.



The contraction of economic activity in 2023 in the adverse scenario is associated with a rise in the probability of default.



Sources: Bundesbank and IMF staff calculations

[23] The adverse scenario analysis for the corporate sectors covers only 2022-23. Growth in 2020-21 is identical under the baseline and the adverse scenarios.

[24] The analysis used Tressel and Ding (2021). For Germany, the sample NFCs account for 54.1 percent of total debt.

Climate Transition Risks

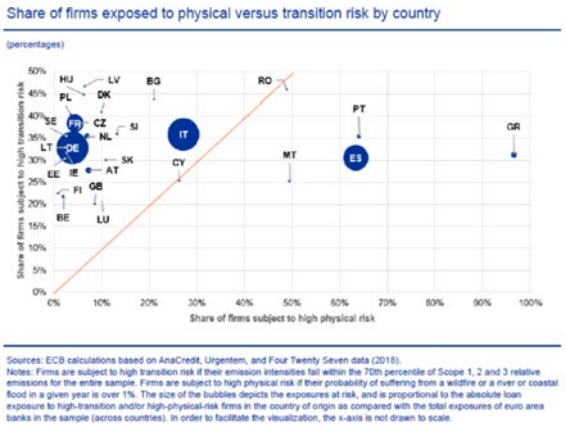
36. Germany's ambitious emissions reduction targets can have a non-negligible impact on the macroeconomy, which can have implications on the financial sector. In assessing the impact of Germany's emissions targets on GDP and sectoral gross value-added, the FSAP analysis used a global computational general equilibrium (CGE) model (known as the "IMF-ENV" model) with 25 regions and 37 sectors. The simulations assume (i) other countries will meet their nationally determined contributions (NDCs), and (ii) carbon tax (or carbon pricing) is the instrument used to mitigate CO2 emissions. With these assumptions, the model suggests that reaching the 2030 emissions target would imply carbon pricing of USD320 per ton by 2030 and would adversely affect GDP.[25] The GDP impact in the simulations hinges on how carbon taxes are used (Figure 21)**.**

- If used to lower the wage tax, GDP is estimated to decline by one percent by 2030 compared to the business-as-usual (BAU) scenario, which assumes no changes in climate policy and does not account for the impact of temperature increases.
- If used to provide a lump-sum rebate, GDP would decline by 1.6 percent because of the increase in workers' wealth (and fall in labor supply).
- If used to pay off government debt, GDP would decline the next five years led by the decline in household consumption (driven by higher energy prices) but would recover with improved budget balances and their positive effect on national saving and investment.

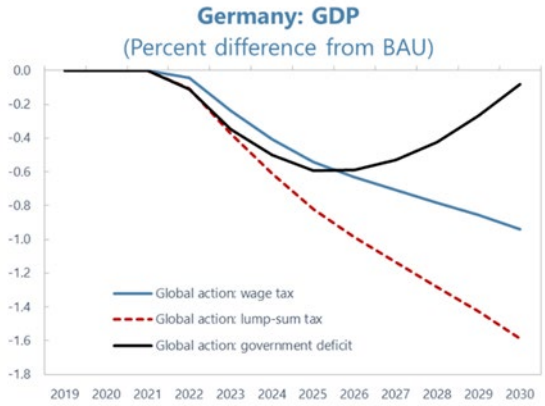
The relatively benign impact on GDP masks sector heterogeneities. Sectors that emit large CO2 (e.g., coal, oil, gas power generation, the chemical and mining industries) are most affected while renewables (e.g., solar and wind) are to gain in value added.

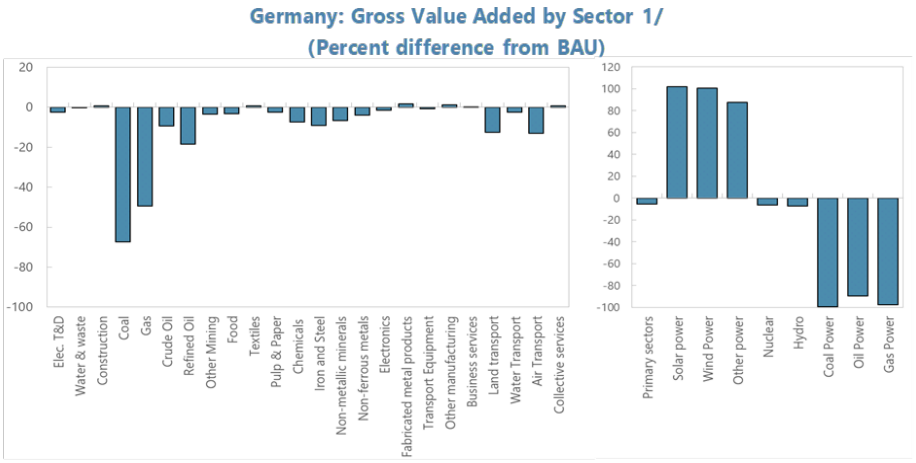
[25] The findings are comparable to the work by Schober et al. (2022) and Bundesbank (2021). In reality, non-pricing measures—such as regulations, innovations, and investment—could help Germany achieve the emissions targets with a somewhat lower carbon price, but the quantitative impact of such alternative policies is uncertain.

Figure 21. Simulation of Macroeconomic Impact of Germany's Mitigation Policy



Sources: ECB calculations based on AnaCredit, Urgentem, and Four Twenty Seven data (2018).
Notes: Firms are subject to high transition risk if their emission intensities fall within the 70th percentile of Scope 1, 2 and 3 relative emissions for the entire sample. Firms are subject to high physical risk if their probability of suffering from a wildfire or a river or coastal flood in a given year is over 1%. The size of the bubbles depicts the exposures at risk, and is proportional to the absolute loan exposure to high-transition and/or high-physical-risk firms in the country of origin as compared with the total exposures of euro area banks in the sample (across countries). In order to facilitate the visualization, the x-axis is not drawn to scale.





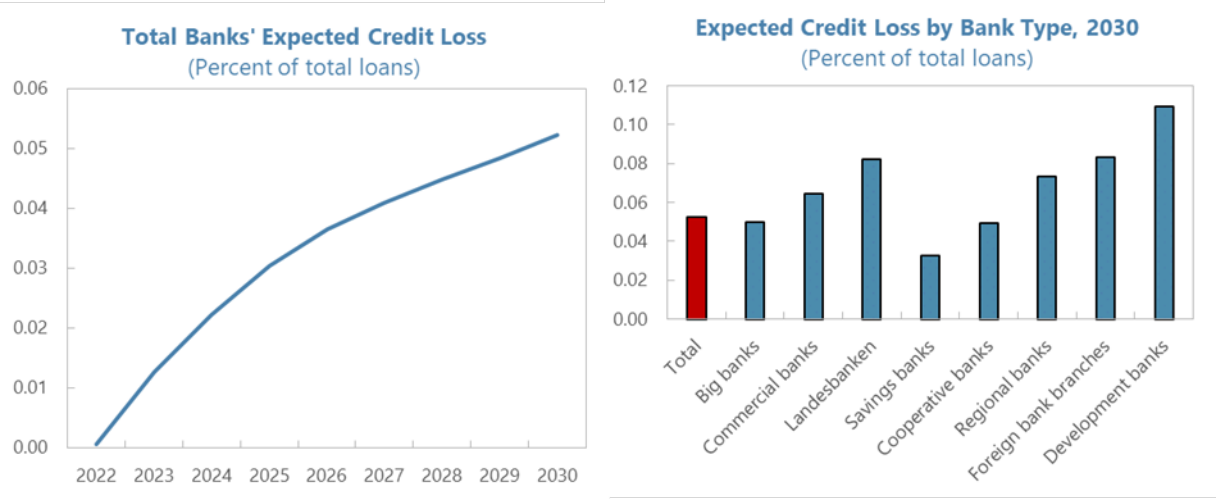
1/ Based on the scenario where carbon tax revenue is used to lower wage tax.

37. The FSAP estimates indicate that expected losses to banks under the mitigation policy will rise slightly over time, but would still remain small at around 0.05 percent of total loans by 2030. [26] Expected losses, while small, differ across bank types. Landesbanken and development banks are the most affected groups due mainly to their large exposure to the power and transport sectors (Figure 22). Savings banks and cooperative banks are the least affected groups due to their larger exposure to less carbon intensive sectors (e.g., real estate, construction).[27]

[26] The analysis does not consider costs associated with labor force reallocation from brown to green industries but carbon pricing as the only policy instrument. Estimates, as a result, could be under-estimating the effects.

[27] A few key modeling limitations may lead to some underestimation of the economic impact. First, the model assumes no friction in the labor market. In reality, however, it takes cost and time to relocate workers from the brown industry to the green industry, and the economic impact could be larger, especially during the transition period. Second, carbon pricing is the policy instrument used to achieve the emissions targets. However, in reality, other less policies—such as regulations—play an important role and could lead to a larger adverse impact on GDP. Third, behavioral parameters are assumed to be identical between the short- and long-run.

Figure 22. German Banks' Expected Credit Losses Under Climate Mitigation



Note: The probability of default (PD) for each sector i used the coefficients estimated by the Bundesbank ($\mathrm{PD}_{\mathrm{it}} = 0.664 * \mathrm{PD}_{\mathrm{it-1}} - 0.0509 * \Delta\mathrm{VA}_{\mathrm{it}} - 0.0267 * \Delta\mathrm{VA}_{\mathrm{it-1}} - 0.0433 * \Delta\mathrm{EQP}_{\mathrm{it}}$ ΔVA_{it} and ΔEQP_{it} refer to the rates of change in scenario; see Bundesbank 2022). The expected loss of m-number of bank groups, consisting of n-number of sectors, is then calculated by aggregating changes in the probability of defaults for sectors multiplied by the loss-given default weighted by bank exposure to these sectors. The analysis used data on LGD by sector as of 2021Q3 provided by the Bundesbank.

38. The authorities need to build on the progress made by banks in enhancing their analysis, management, and disclosure of climate risks. According to the survey by BaFin in 2021 and a similar survey by the ECB in 2021, very few banks have conducted stress testing sustainability risks, although many banks are preparing for stress testing, and none of the institutions are close to fully aligning their practices with the supervisory expectations.[28] The disclosure of climate risks appears to be also somewhat limited. The FSAP underscores the importance for the authorities to work with the financial sector to expand its analytical capacity for assessing climate risks, enhance the resilience against unexpected future risks, and promote the disclosure of climate risks. The ECB is already conducting stress testing on SIs; the FSAP recommends BaFin to expand its stress test work to cover LSIs.

Insurance Sector

39. The effect of prolonged low-interest rates on the profitability and solvency of insurers, particularly those having portfolios of long-term policies with significant interest guarantees, has partly driven a search for yield. It has also led to the realization of gains on fixed-income securities to fund the expense of building up the Additional Provision to the Premium Reserve (Zinszusatzreserve – ZZR) to meet the guarantees. The pandemic has also increased the risk of credit downgrades. EIOPA's January 2022 Risk Dashboard (RD) ranked macro risks as the highest category of risk currently facing the European insurance sector.

[28] The ECB did not disclose country-level results, but the German authorities confirmed that German banks were assessed to be around the average.

40. These risks are particularly acute for life insurers—exposed to the risks of offering significant guarantees on long-term policies. Guarantees on some policies are as high as four percent, and the term of policies can be very long; the weighted average years to maturity of German life insurers' liabilities at the end of 2020 was 26.3 years. Furthermore, life insurers have been required since 2011 to build additional reserves under GAAP to reflect the potential cost of the guarantees in the low-interest rate environment. Together with prolonged low-interest rates, these guarantees are affecting the financial soundness of life insurers. Higher interest rates should ultimately enable insurers to generate more interest income to cover their guarantees, and the ZZR reserves set aside (for the policies whose guaranteed rate is below the reference rate) released. However, higher market interest rates might also reduce or eliminate the unrealized gains, making it more difficult for insurers to fund the expense of building up the ZZR. The 2021 EIOPA insurance stress test assessed the industry's resilience to a prolonged COVID-19 scenario in a "lower for longer" interest rate environment from a solvency and a liquidity perspective. The exercise confirmed that the main vulnerabilities stem from market shocks but that insurers would be able to cope. The application of the Solvency II's transitional provisions and management actions would enable an adequate solvency position to be maintained. The exercise did not show liquidity to be a significant vulnerability; the results for German participants appear to be consistent with the overall results, and results reported by insurers in their ORSAs and liquidity stress tests insurers performed at the request of BaFin.

B. Macroprudential Framework and Policy

Macroprudential Framework

41. Germany's institutional framework is strong and operates effectively. The institutional arrangements in Germany are closely aligned with Fund guidance and broadly ensure the willingness and ability to act (IMF, 2014).[29] A macroprudential mandate is assigned to the Financial Stability Committee (FSC), a collegiate, high-level body comprised of voting members from the MoF, Bundesbank, and BaFin. The FSC chair (the State Secretary of the MOF) seeks consensus, striking an appropriate balance between the need to avoid delays and ensure different views are considered. BaFin ensures the ability to act as the National Designated Authority (NDA) for tools specified by European legislation (CRD/CRR) and is responsible for domestic macroprudential measures (e.g., residential real estate lending limits). The Bundesbank can exert considerable influence on the Committee's proceedings by proposing resolutions for FSC action, and retains a veto on amendments to them and on their publication.

42. The FSC's overall macroprudential instrument strategy should link macroprudential risks and mitigation measures. The FSC publishes, and periodically revises, its macroprudential strategy, which is good practice. However, the strategy should better articulate the link between the high-level principles governing the conduct of policy and the operational level of instrument setting. At the same time, an appropriate balance should be maintained between the provision of

[29] "Staff guidance note on macroprudential policy", IMF, Dec. 2014

information guiding market participants and the need to react flexibly should new circumstances dictate. The FSC should also publish post-meeting records, providing timely and relevant information on the Committee's activities, as in some other OECD jurisdictions, to promote the transparency and predictability of decision making.

Macroprudential Policy

43. The increases in the CCyB and the SSyRB for residential real estate exposures were appropriate, well-timed, and well-coordinated across the responsible agencies. The CCyB has been set to levels broadly consistent with the authorities' buffer guide. Similar to 2019, the focus of concern is on potential build-up of vulnerability in the residential real estate sector. There is also evidence of compressed spreads in corporate debt markets, and some tilting in the composition of bank exposures towards riskier corporate borrowers. Weak profit margins limit banks' ability to generate capital organically in the event of macroeconomic stress. The authorities should continue to use the flexibility afforded by the discretionary component of the CCyB framework to ensure the buffer is set to a level from which it can be materially reduced in the event of stress.

44. Additional macroprudential action to counter evolving vulnerabilities will be required. Accelerating growth in mortgage lending and house prices, coupled with evidence of over-valuations, make action on borrower-based measures (BBMs) increasingly urgent. This action would help bolster the resilience of borrowers' balance sheets, complementing the actions taken to improve lenders' resilience described above. Whereas BBMs have been activated in many OECD peers (Table 3), and have been recommended for activation in Germany by the ESRB (ESRB, 2022), legal concerns and ongoing data gaps appear to have fed into a reluctance to activate an LTV limit. Moreover, the legislative processes that is needed to implement past recommendations in full to augment borrower-based macroprudential tools and to close data gaps in residential real estate have proceeded exceptionally slowly. The FSAP recommends that:

- Legislated powers over as-yet unused borrower-based instruments in the Banking Act (Kreditwesengesetz) and related laws should be enhanced, and additional income-based tools introduced as soon as practical. In particular, provision should be made to allow existing borrower-based instruments, as well as similar additional instruments that may be introduced, to be activated prior to a material deterioration in lending standards.[30]
- Guidance on residential real estate lending standards should be strengthened, especially in respect of the practice of lending against real estate transaction costs. The effectiveness of current guidance on lending standards risks is being limited by its lack of specificity, and the difficulties supervisors face in reviewing lending practices absent consistent reporting.
- Legally-binding borrower-based limits should be activated as soon as practical unless a material change of direction in real estate and credit markets is observed.

[30] We note the ESRB's recommendation that the legal framework for borrower-based instruments "adapt" with the same aim in mind (ESRB/2021/10). We further note the IMF's 2018 recommendation to give consideration to "early activation" of LTV caps.

- The FSC should initiate the development of a communication strategy in support of the activation of borrower-based measures to help promote their acceptability.[31]

Table 3. Germany: Household Sector Macroprudential Tools, Selected OECD Countries

Measures	Germany	Australia	Canada	Finland	France	Israel	Italy	Japan	Korea	New Zealand	Switzerland	United Kingdom	United States
Borrower-based													
Cap on LTV			✓	✓		✓			✓	✓			
Cap on LTI					✓				✓				
Cap on DSR			✓		✓	✓			✓				
Amortization limit			✓		✓	✓			✓				
Restrict unsec. loans									✓		✓		
Other		✓	✓			✓						✓	
Lender-based													
Household sector capital requirement	*	✓	✓			✓	✓	✓		✓	✓		
Limit high LTV										✓			
Limit high LTI												✓	
Limit high DSR					✓								
Other limits					✓								
Fiscal measures			✓		✓					✓			
Memo: 5-year growth in household credit (%)	21	20	25	22	29	32	9	12	42	37	14	16	20

Note: ✓ denotes an active measure; * denotes an announced measure.
Source: IMF Macroprudential Policy Survey and country authorities. BIS *Total Credit to Households*, domestic currency (2016-2021Q3)

C. Microprudential Oversight

Banking Sector

45. The FSAP conducted a focused review of the regulation and supervision of Germany's LSIs.[32] As member of the EA, German banks' regulation and supervision take places within the ECB's Single Supervisory Mechanism (SSM). BaFin and the Bundesbank are responsible for the supervision of LSIs. The ECB exercises oversight over the functioning of the system.

46. The authorities made good progress on the implementation of the recommendations of the 2016 Basel Core Principles (BCP) assessment. The authorities fully rolled out the ECB/SSM

[31] A measure not accepted by key stakeholders may be challenged in Court, face intensified efforts at circumvention, and ultimately lead to reputational damage to the macroprudential authority and impair its ability to act.

[32] The review reflects the regulatory and supervisory frameworks as per October 19, 2021.

approach to the Supervisory Review and Evaluation Program (SREP) to all LSIs in 2020 and made enhancements to liquidity and operational risks. However, there is scope for further strengthening institutional arrangements, the legal framework and approach to corporate governance, and some aspects of the supervisory framework and approach.

47. In response to the Wirecard fraud, the MoF initiated a reorganization program including several legal and structural reforms impacting BaFin. These reforms are aimed at strengthening BaFin's ability to supervise complex credit institutions, undertake forensic audits, strengthen financial accounting oversight, the use of whistleblower information, consumer protection, and further digitalization of business processes. The (internal) powers of BaFin's President were strengthened vis-a-vis the strategic direction, budget proposal, organization structure and the ability to give directions to BaFin's Executive Directors. These reforms will enable BaFin to make earlier use of corrective and sanctioning powers and increase its effectiveness in dealing with lingering deficiencies of problem banks.

48. Streamlining the current reporting to the MoF into a more systematic approach with the responsibility elevated to the office/secretariat of BaFin's president will strengthen BaFin's operational independence. As observed in the 2016 assessment and the file review of the current assessment, the communication between BaFin and the MoF appears to go beyond the necessary oversight and financial stability responsibilities of the MoF.

49. Going forward, a joint BaFin and Bundesbank strategic agenda is critical to avoid duplicative or disjointed efforts to ensure that an effective banking supervision program is in place. This complementing strategic agenda should recognize the need for joint projects (including working towards shared data, systems, and tools) to ensure a fully cooperative partnership on the BaFin reform program.

50. Further enhancements are needed to align banks' corporate governance framework with international best practices. The role of the supervisory board needs to be further strengthened in its oversight of the internal control functions (direct reporting lines of internal audit, compliance, and risk management) to ensure that critical checks and balances are in place to oversee and govern executive management activities. The current construct still leaves room for management boards to dominate essential control functions. The modernization of the corporate governance framework will require legal amendments.

51. The extent of reliance on external auditors and the ability of the authorities to conduct in-depth file reviews of auditors' assessments should be reassessed. It is essential that supervisors be well placed to not only challenge the work of the external auditor but also to perform deep dives on the various risk areas when needed.

52. Supervisors, external auditors, and the industry would benefit from further guidance to complement Germany's principles-based risk management guidelines (MaRisk) to clearly communicate supervisory expectations. Given the extensive nature of the EU regulations, EBA Guidelines (including Germany's partial or non-compliance stance), as well as international

standards, additional guidance for the industry, the external auditors, and supervisory staff is needed as MaRisk do not necessarily clearly outline supervisory expectations specific for banks in all areas.

53. Certain aspects of the overall supervisory framework (e.g., supervisory engagement and frequency of on-site inspections) need to be further strengthened. The German supervisory framework has been developed along the lines of the ECB LSI SREP methodology. Based on the SREP score and the impact, the Germany authorities determine both the minimum level of engagement (MEL) and the minimum frequency for the on-site inspection of LSIs. The MEL, which will be strengthened beginning with the 2022 supervisory cycle, currently does not include a minimum of engagement with the management function or internal control functions, even for the lowest risk assessment score. Further, the frequency of on-site inspections should be reassessed, given the need to ensure adequate coverage of both the riskiest LSIs and the highest impact LSIs. BaFin/Bundesbank will therefore need to reassess the adequacy of risk resources to ensure satisfactory coverage of on-site inspections, ability to undertake deep-dive reviews and ensure critical risk expertise.

54. The authorities have taken a competition and technology neutral approach (e.g., same activity, same risk, same regulation) to the regulation of fintech. This means for example that neobanks and online securities trading platforms have to comply with the same regulations as incumbent institutions and that crypto assets service providers need to be licensed according to the financial services they provide. While continuous monitoring is needed, the existing regulatory perimeter seems adequate, and the authorities are proactively monitoring and acting against unlicensed service providers. In the absence of a competition or market development mandate and regulatory experimentation clauses, BaFin has not setup a sandbox. Instead BaFin established in 2017 an "innovation hub" for market monitoring, internal coordination of regulatory and supervisory initiatives (hub and spoke model), and market outreach.

55. Fintech data collection, forward-looking and dynamic market monitoring, and financial stability analysis need further development. Bundesbank's Statistics Directorate has run a pilot project to collect data on fintech. The first results of the pilot indicate that the size of the fintech sector across different financial sectors is still relatively small. However, given the rapid growth, a more structural approach to data collection, financial stability analysis, and a more dynamic forward-looking market monitoring are important while going forward to match the quickly developing monitoring needs.

Insurance Sector

56. There are no major shortcomings in the observance of Insurance Core Principles. **Nevertheless, there is scope for improvement in the following four areas:**

- BaFin and the MoF need to reduce the real and perceived risks to BaFin's operational independence, as recommended in the previous FSAP.

- The authorities should strengthen and simplify the solvency framework through measures such as considering the impact of more extreme interest-increase scenarios on the funding of the Zinszusatzreserve, strengthening liquidity risk management reporting and stress testing requirements, and streamlining internal model approval and reporting requirements.

- BaFin should reassess the minimum and actual frequency of on-site inspections to ensure that they are sufficiently frequent to support robust identification and assessment of risks. Potential cost charges of an inspection to a particular insurer should not be a barrier to greater frequency of inspections. BaFin should also enhance its management reporting to facilitate systematic tracking and reporting of the timeliness of off-site and on-site supervisory activities and provide more comprehensive feedback to insurers on its supervisory findings, assessments, and concerns.

- To strengthen the resolution regime, particularly to facilitate the orderly exit or resolution of a failing large insurer or group, BaFin has extended the requirement for recovery plans to a total of 15 insurance groups in Germany (over 80 percent market coverage required by the EIOPA Opinion on the 2020 review of Solvency II). BaFin also continues to have resolution planning in place for the former globally systemically important insurers (G-SII) group. However, in addition, BaFin should have its powers strengthened and, for example, be able to require contingency plans and resolution plans. Such expansion should provide the tools required to exercise the resolution of an internationally active insurance group (as set out by the international association of insurance supervisors).

Financial Market Infrastructures

57. Clearstream Banking AG Frankfurt (CBF) is a Central Securities Depository (CSD) that provides the post-trade infrastructure for the German securities markets. It settles transactions for all German securities and futures markets and securities traded on various global trading platforms. It also acts as a custodian for securities accepted in Germany and issued by German and international issuers in the form of collective or individual certificates or registration rights. As of end-2020, the market value of outstanding securities held by CBF in collective safe custody was EUR 8.6 billion, and it served 286 participants, of which 110 were foreign. In addition to its function as a CSD and as a Securities Settlement System (SSS) operator, CBF is a licensed credit institution under the German Banking Act and authorized to provide banking-type ancillary services under the Central Securities Depositories Regulation (CSDR) of the EU. BaFin supervises CBF as the designated National Competent Authority (NCA), and the Bundesbank oversees its SSS operations. CBF's banking services are supervised jointly by the Bundesbank and BaFin.

58. The FSAP assessment found CBF to be in observance of 20 of the 21 relevant principles of the PFMI and in broad observance of 1, albeit with room for improvement on certain critical areas. CBF was found to be of high market repute with a solid legal basis and a comprehensive approach to risk management. It has clear and transparent rules on all relevant processes, including for access to services and ensuring final settlement. In addition, CBF has a comprehensive default management framework, which is regularly tested. Discussions with market

participants clearly indicated that CBF is a trusted infrastructure providing critical services for German securities markets and beyond. There is, however, room for improvement, particularly with respect to governance. The internal control functions of risk management, internal audit, and compliance are the responsibility of a single Executive Board (EB) member—the Chief Executive Officer—who is also responsible for global operations. The CEO is, therefore, concurrently the Chief Operating Officer and Chief Risk Officer, with there being no separation for the second and third lines of defense at the level of the EB. In addition, the Chair of the Risk Committee is the CRO of CBF's ultimate parent, Deutsche Börse, and is therefore not independent. Finally, the performance of the Supervisory Board (SB) is not subject to periodic independent assessment. The FSAP recommends that CBF separate the responsibilities for internal audit from risk management and compliance at the level of the EB. In addition, CBF should appoint an independent member as Chair of the Risk Committee, as well as conduct periodic, independent reviews of the performance of its SB.

59. While CBF generally has a comprehensive and robust framework for identifying, monitoring, and mitigating a wide range of material risks, there are steps that can be taken to enhance risk management. For example, CBF relies on direct participant disclosures to gain information on its indirect participants. However, CBF could strengthen the criteria and thresholds it has in place which trigger such disclosures—e.g., by including system-level thresholds—, and work toward implementing direct monitoring of the risks posed to the infrastructure by the clients of its direct participants. In addition, despite its sophisticated collateral management system and processes, CBF could further mitigate credit risk by implementing ex-ante monitoring of collateral concentration limit breaches.

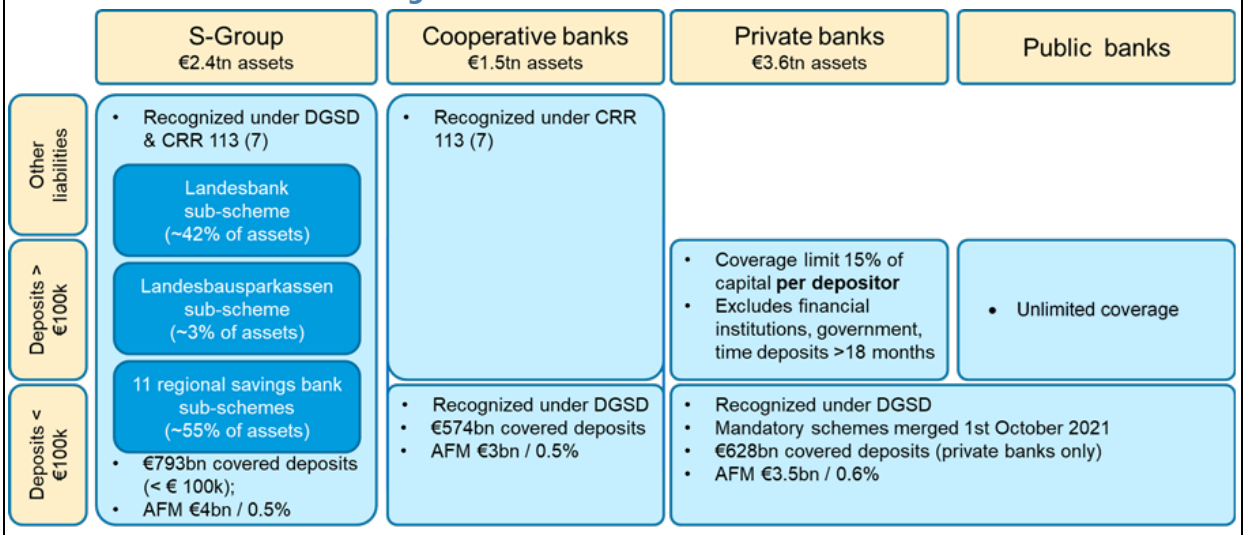
D. Crisis Management and Safety Nets

60. Resolution powers are broadly in line with FSB Key Attributes and peers' good practice, resolution planning is well advanced for larger banks, but some gaps remain. Comprehensive internal resolution manuals have been developed and tested, and the authorities have led extensive work on bail-in execution domestically and in the Banking Union. However, recovery and resolution planning for LSIs, especially members of IPSs, has made less progress. Reviews of recent crisis cases (the failures of Wirecard and Greensill and the recapitalization of NordLB) have identified instances of slow decision-making—highlighting the complex nature of Germany's bank crisis management arrangements. These cases resulted in high intervention costs, even for small and medium-sized institutions.

61. The most distinctive feature of German bank crisis management is the highly unique, complex, and broad depositor and institutional protection system (Figure 23). Almost all banks are members of a voluntary DGS or IPS, which offer levels of protection for depositors (and, for the IPSs, other creditors) well above European and international peers. The multiplicity of schemes and high level of protection means the cost of each failed bank is typically high for the scheme it is a member of. But the schemes' target financial resources are, in some cases, only equal to the EU minimum. For all DGSs and IPSs, access to backstop liquidity (for example, to meet payout costs in

the short term) is limited to uncommitted or ad-hoc borrowing arrangements with members or private sector financial institutions.[33] Planned reforms will strengthen governance and create an ex-ante fund of 0.5 percent of RWAs for the S-Group IPS, and reduce coverage at the private sector voluntary fund, but will not change the structure or lack of backstop funding. Although the DGSs and IPSs are expected to play an active and central role in managing most cases of financial distress, the large number of schemes and their non-public authority status also limit their participation in Germany's arrangements for coordinating crisis management, due to potential conflicts of interest and confidentiality of policy discussions.

Figure 23. German DGS and IPSs [1/ 2/]



1/ Sources: DGS/IPS annual reports; responses to FSAP questionnaire. S-Group refers to the Sparkasse Finance Group, the IPS operated by the DSGV.
2/ AFM: available financial means, reported as €bn and as a percentage of covered deposits

62. The authorities and the depositor and institutional protection schemes themselves have initiated reforms of these schemes, which seek to address weaknesses identified following recent cases. The FSAP welcomes the proposed changes but recommends pushing these reforms further, simplifying the structure of depositor protection by moving to a single mandatory scheme fulfilling the EU Deposit Guarantee Schemes Directive at arm's length from the industry and with a robust public sector liquidity backstop. In the meantime, the authorities should further their analysis of the implications for the structure of the financial system of maintaining very high levels of depositor and creditor protection, and review the suitability of the current legal framework for IPSs and the voluntary DGS.

63. Resolution plans for IPS members should better align with more severe contagion scenarios, which the FSAP interconnectedness analysis underscores. In most circumstances, failing IPS members will be supported by the IPS. However, the FSAP interconnectedness analysis

[33] See International Association of Deposit Insurers "Core Principles for Effective Deposit Insurance Systems", Core Principle 9, in particular Essential Criterion 4 which notes that market borrowing is not considered sufficient back-up funding.

highlights contagion risks within the cooperative and savings bank IPSs. Recovery and resolution planning should prepare adequately for scenarios in which simultaneous weakness of multiple IPS members, or the IPS itself, may need to be addressed. BaFin should ensure the newly submitted IPS recovery plans meet suitably high standards for recovery planning. For resolution plans, German authorities should develop a roadmap to ensure adequate coverage of such scenarios in resolution planning for IPS members, promoting the review of EU legislation, if necessary.

64. As recognized in BaFin's reorganization plan, the more proactive use of BaFin's early intervention powers for weak banks would help prevent banks' value destruction. The regular use of blanket liability moratoria should also be reduced, to ensure depositors covered by the DGS in failing banks have prompt access to funds.

E. Financial Integrity

65. FATF's last report (2010) indicated that AML/CFT measures in Germany were generally sound but implementation needed strengthening in some areas.[34] For the financial sector, these areas included improving suspicious transaction reporting and strengthening BaFin's AML/CFT supervision.

66. Germany has taken many initiatives to strengthen AML/CFT measures in the financial system. BaFin has increased its AML/CFT supervisory resources, intensified its risk understanding, created units focused on high-risk banks, substantially increased its onsite AML/CFT inspection activity, and makes use of AML/CFT supervisory colleges within the EU. Germany introduced a Transparency Register in 2017 to provide better access to beneficial ownership information of companies and trusts which is due to be fully operational by the end of 2022. A public-private partnership to strengthen AML/CFT cooperation was launched in 2019. Germany comprehensively assessed its ML/TF risks in 2019 (including for virtual assets) and regulates and supervises virtual asset service providers for AML/CFT. Despite these initiatives, German banks have been involved in some high-profile ML cases in recent years.

67. The authorities should continue to strengthen AML/CFT efforts and supervision. This includes using more remedial actions and sanctions to encourage better compliance (including better reporting of suspicious transactions). They should also continue to increase coverage and accuracy of beneficial ownership information and to improve effectiveness in those parts of the AML/CFT system where the legal and institutional framework has recently changed. Germany AML/CFT framework will be assessed under the current FATF methodology, which focuses on effectiveness, in June 2022.

[34] See Mutual Evaluation of Germany: 3rd Follow-up Report from June 2014, available at: http://www.fatf-gafi.org/media/fatf/documents/reports/mer/FUR-Germany-2014.pdf. The last full FATF assessment was conducted in 2010.

AUTHORITIES' VIEWS

68. The German authorities greatly valued the FSAP engagement and the cooperative spirit in which the discussions were held during the challenging period of the pandemic. They also broadly agreed with the FSAP assessment and meaningful recommendations.

69. The German authorities appreciated the recommendations regarding the macroprudential framework and policy. They broadly shared the FSAP's risk assessment and stressed the appropriateness of the policy package announced by BaFin in January 2022. They noted that the implementation of most other recommendations related to real estate risks is either planned or already underway (e.g., closing data gaps and adding income-based instruments to the toolkit). The recommendation regarding communication is a useful input in the context of the FSC's broader communication strategy.

70. The authorities appreciated the FSAP analysis on the profitability of the banking sector. They stressed that German institutions' profitability still tends to be below the EU average, reflecting most banks' rather conservative, low-risk business models in a historically low interest rate environment. Looking ahead, negative external factors like the war-in-Ukraine could further weigh on profits. The authorities have undertaken a wide range of initiatives to assess risks related to the external factors and their impact on the banking sector's profitability.

71. The authorities appreciated the IMF's efforts to carry out the solvency stress test, where the results for most risk categories are in line with their expectations. The authorities noted that the IMF's conservative assumptions, particularly on the full pass through of policy rates to funding cost of large banks, render an impact on banks' NII that is significantly larger than they would deem realistic. Also, the mitigating effects of hedging seem to be addressed only partly. In total, there are large differences in NII between the FSAP's calculations and the results from the EBA EU-wide stress tests. The authorities were also of the view that the FSAP stress test results showing that the overall banking system is resilient should not be viewed with complacency in view of the economic transformation in the world. It is not clear how the financial systems will adapt to these changes, and in this context, the authorities welcomed the FSAP recommendations to continue to monitor the sensitivity of banks' balance sheets to evolving risks and to strengthen capital buffers as needed to be able to mitigate risks. The authorities also highly appreciated the FSAP's interconnectedness and contagion analysis. Regarding the banking system, they pointed out the importance of defining the relevant banking groups according to their specific risk profile. This issue is particularly relevant for the savings and cooperative banking sectors and their central institutions. They will continue to carefully monitor risks, with a focus on highly connected market players and relevant markets, and further improve their analytical toolkit for assessing contagion risks.

72. The recommendation to strengthen LSIs' interest rate risk monitoring, including by gathering data, relies on several factors. The European regular reporting for LSIs does not envisage the same reporting as for large banks (SIs); however, BaFin and the Bundesbank are carrying out a close monitoring of LSIs' interest rate risks. All German banks are obliged to report

their interest rate risk coefficient quarterly, which relates the economic value loss on interest rate sensitive assets and liabilities resulting from a hypothetical abrupt rise or fall of the yield curve by 200 bp and six additional yield curve scenarios. In addition, the biennial LSI stress test gives in-depth insights into the interest rate risk of LSIs. Moreover, there is progress in extending the reporting standards: From May 2022, all banks besides small and non-complex institutions have to follow the EBA ITS market disclosure, which includes an earning-based metric of interest rate risk. The more comprehensive reporting, which is expected to include data on retail deposits, wholesale funding, and interest-bearing assets, is still under discussion in the EBA working groups.

73. The German authorities also appreciated the IMF's liquidity stress analysis and shared the IMF's view that the German banking system, in general, appears resilient to liquidity stress. They emphasised that they were well aware of liquidity risks related to U.S. dollar exposures of some LSIs, which are already well reflected in the ongoing supervision process. In their view, no further efforts regarding U.S. dollar supervision are justified and necessary.

74. On financial safety nets, the authorities considered that maintaining the existing multiple deposit guarantee schemes appropriately reflects the three-pillar structure of the German banking system and that ongoing reforms will adequately ensure their continuing effectiveness, including their funding capacity. They felt that maintaining this structure would not pose an obstacle to ongoing European discussions on a single European deposit insurance scheme.

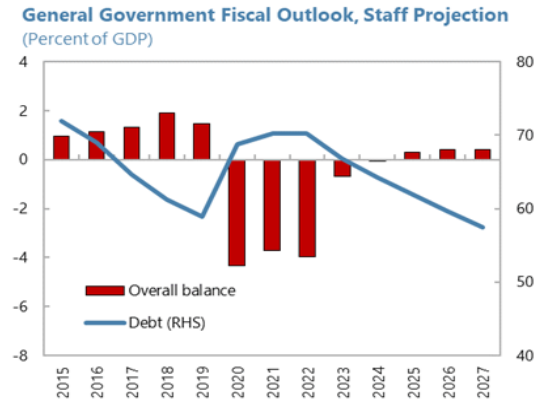
75. The authorities appreciated the FSAP analysis and recommendations on LSI regulation and supervision, as well as on fintech and digitalisation. They welcomed the recommendations to improve the robustness and resilience of the financial system, and were encouraged to continue efforts as part of a well-established ongoing process to align the supervisory framework with the latest international standards taking into account national specificities. The implementation of some recommendations is already under way and scheduled, while others are under careful analysis.

76. The authorities welcomed the FSAP's climate-related transition risk analysis, the results of which were consistent with the Bundesbank's own analysis, despite using different methodologies. They agreed with the FSAP's assessment that BaFin and the Bundesbank need to continue their existing initiatives (such as the survey on the implementation of BaFin's Guidance Notice) with a view to supporting German banks in enhancing their risk management processes concerning sustainability risks.

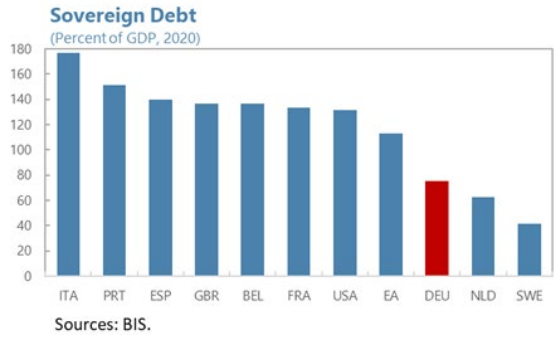
77. The German authorities thank the IMF assessment team for their valuable work and detailed study on the observance of the CPMI-IOSCO Principles for Financial Market Infrastructures regarding CBF.

Figure 24. Pre-Pandemic Buffers

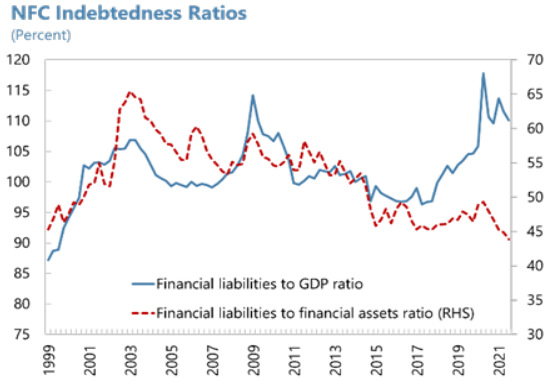
With eight consecutive years of fiscal surpluses, public debt fell below 60 percent of GDP by the end-2019…



…and remained low relative to peers

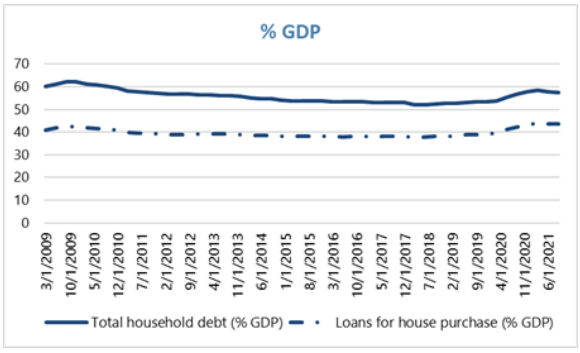


The non-financial corporate sector indebtedness increased with the weakening of global trade after years of consolidation and low debt-at-risk level.

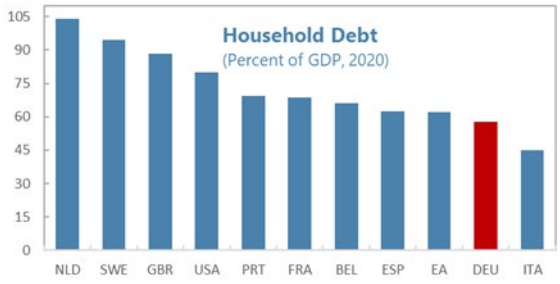


Pre-pandemic, nonfinancial corporate sector debt was lower than in peers, at 62.5 percent of GDP.

Household indebtedness remained low and stable over the past decade.



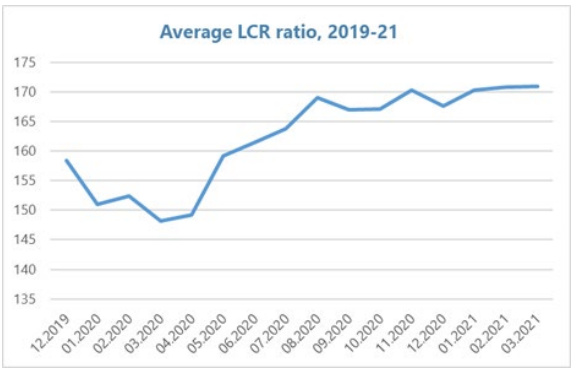
Household indebtedness was 53 percent of GDP at the beginning of the COVID-19 crisis. and remained at sustainable levels.



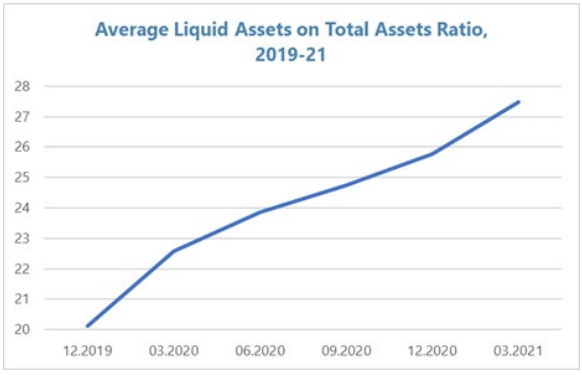
Sources: BIS.
Notes: Include loans to household and NPISHs.

Figure 25. Recent Developments in Banking Sector Liquidity

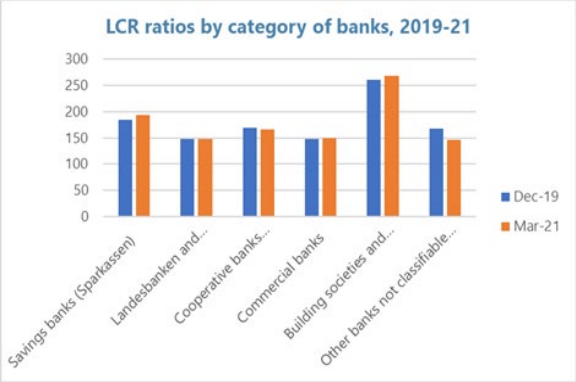
After some initial strains, liquidity has held well during the pandemic ….



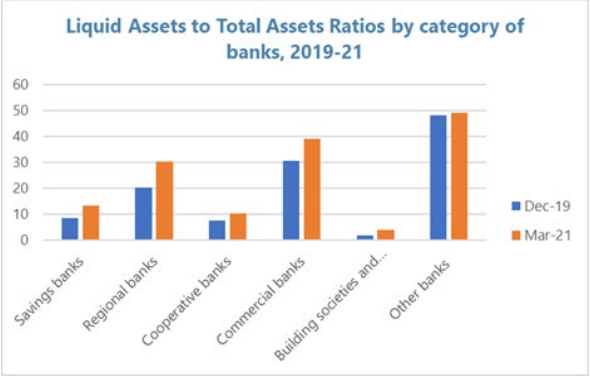
… and some liquidity indicators have improved



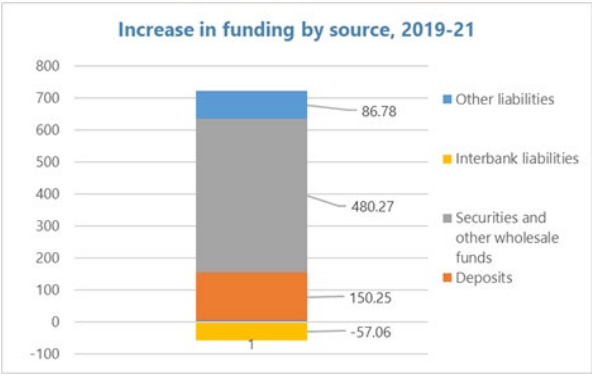
There is heterogeneity across categories of banks, reflecting their different business models.



Savings and cooperative banks hold smaller liquidity buffers because they rely on claims on regional and national category institutions and support from their network.



Banking sector assets have increased by 12 percent; about one-half of the new assets are held by commercial banks.



The increase was largely funded from wholesale sources, but there has been also a significant increase in deposits.

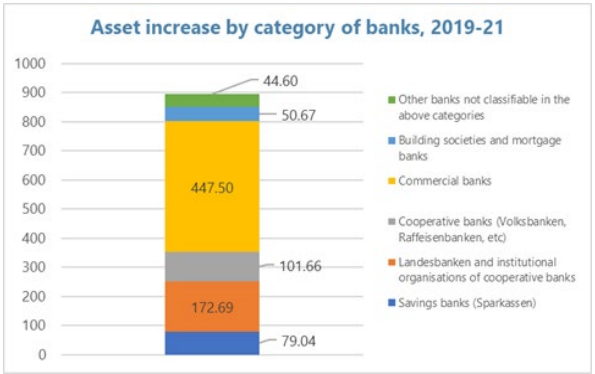
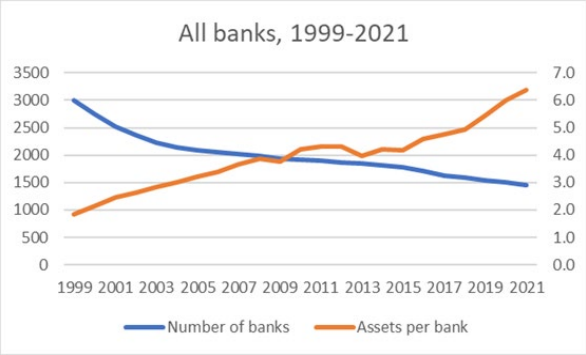
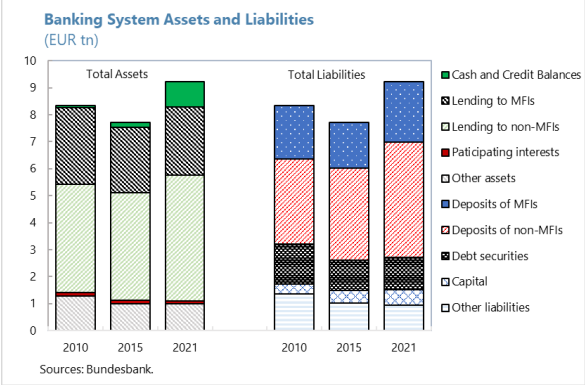


Figure 26. Financial System Structure

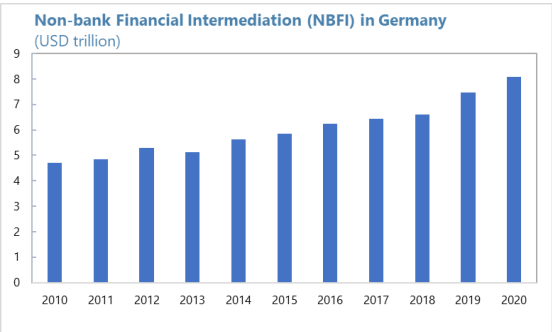
The financial sector continues to be bank-dominated, with ongoing consolidation in the segment…



… and a conservative business model…



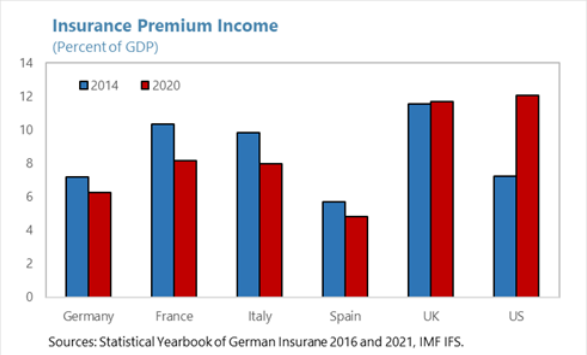
and NBFIs continued expanding…



Sources: Financial Stability Board.

… also, as a share of GDP.

Insurance premia grew in line with GDP.



Market capitalization is low amongst peers.

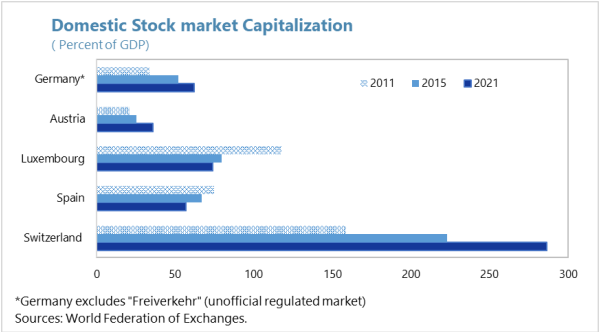
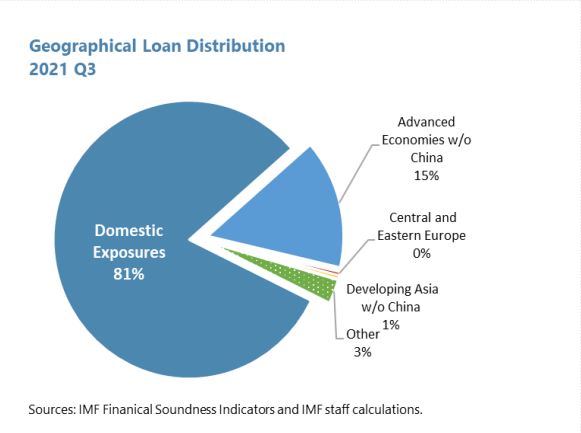


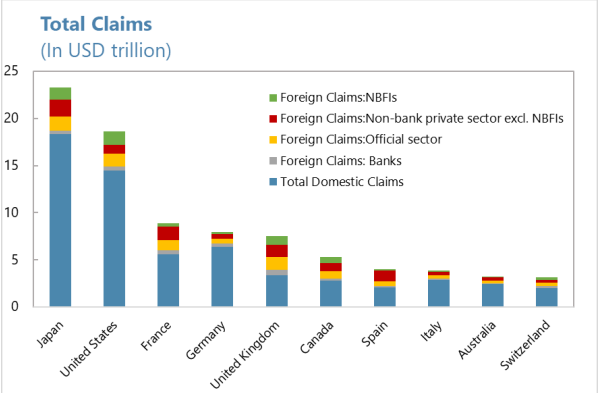
Figure 27. Banking Sector

The banking system is domestically oriented …



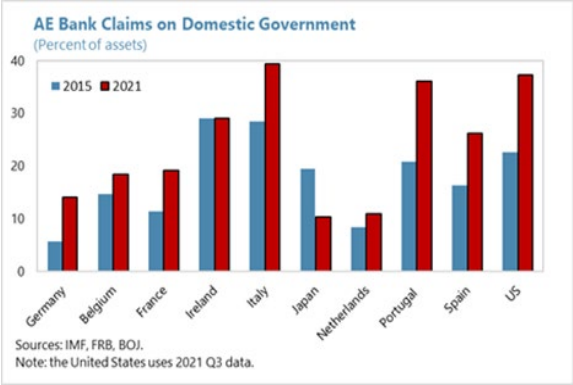
Sources: IMF Finanical Soundness Indicators and IMF staff calculations.

… with total domestic claims larger than peers.



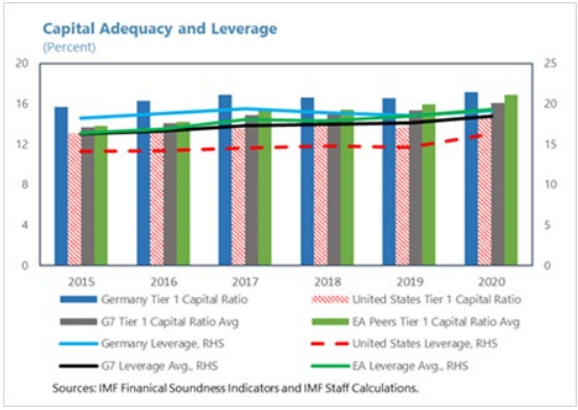
Sources: Sources: BIS and IMF staff calculations.
Note: Numbers are from 2021 Q4.

And a share of exposure to the sovereign that has increased, albeit less than other peers.



Sources: IMF, FRB, BOJ.
Note: the United States uses 2021 Q3 data.

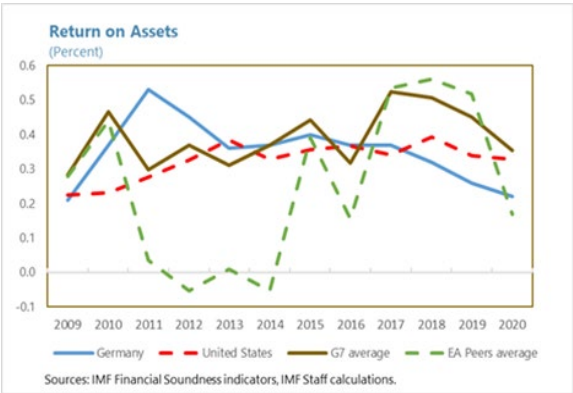
Bank leverage is masked by strong capital ratio.



Sources: IMF Finanical Soundness Indicators and IMF Staff Calculations.

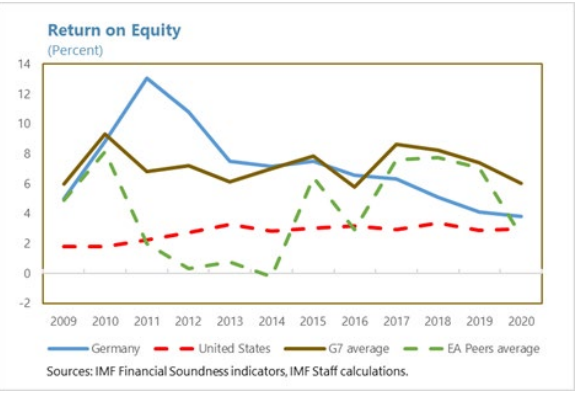
*Leverage is defined as Total Regulatory Capital over Total Assets.

Return on assets is low compared to non-EU average…



Sources: IMF Financial Soundness indicators, IMF Staff calculations.

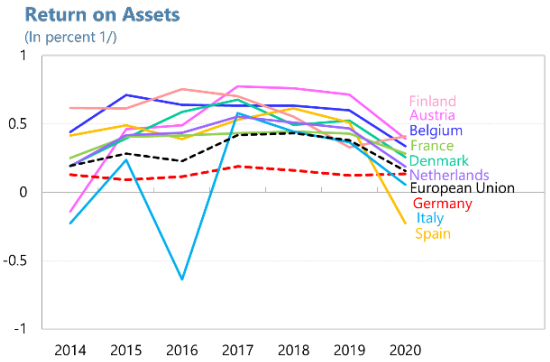
…and weak equity returns signal vulnerabilities.



Sources: IMF Financial Soundness indicators, IMF Staff calculations.

Figure 28. Bank Profitability

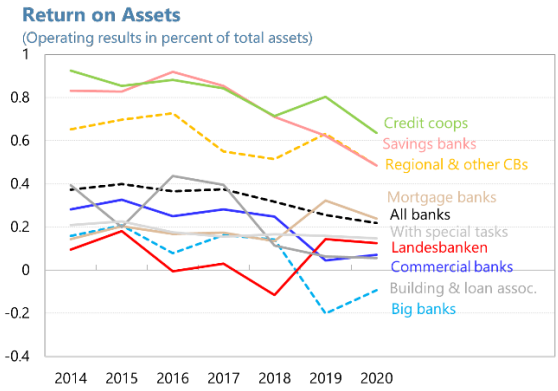
Return of German banks' profitability has remained low relative to total and risk-weighted assets…



Source: ECB; and IMF staff estimates and calculations.
1/ Based on consolidated bank data for domestic banking groups and standalone banks.

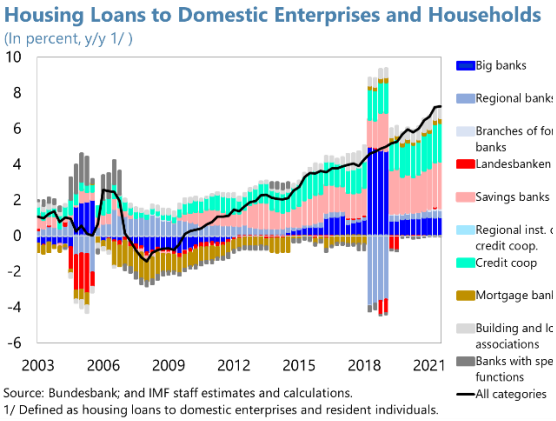
Note: Profitability of big banks declined in 2019 partly on account of a one-off strategic restructuring at one big bank.

… albeit with significant heterogeneity among institutions, with savings banks and credit cooperatives reporting higher profitability.



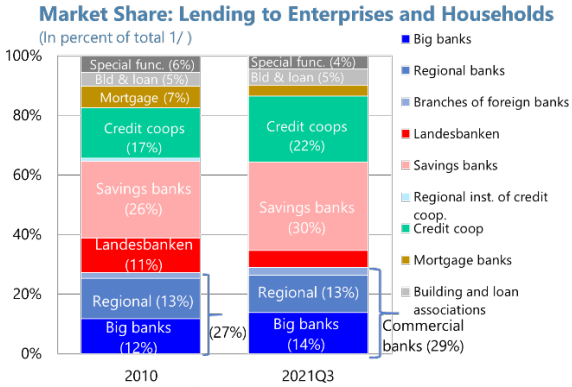
Source: Bundesbank; and IMF staff estimates and calculations.

Higher loan volumes, particularly housing loans, helped offset savings and cooperative banks' declining interest income brought on by low interest rates…



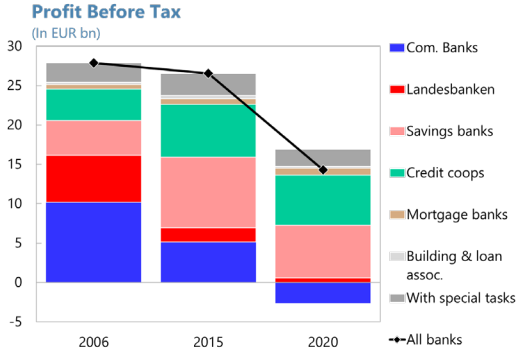
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Defined as housing loans to domestic enterprises and resident individuals.

… resulting in higher market share of savings and cooperative banks in lending to households and NFCs (particularly SMEs).



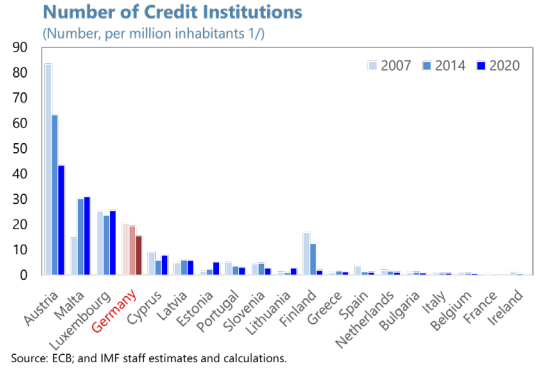
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Defined as lending to domestic enterprises and resident individuals.

Since the GFC, the share of profits generated by savings and cooperatives jointly increased from 30 percent in 2006 to over 90 percent of the industry profits in 2020.



Source: Bundesbank; and IMF staff estimates and calculations.

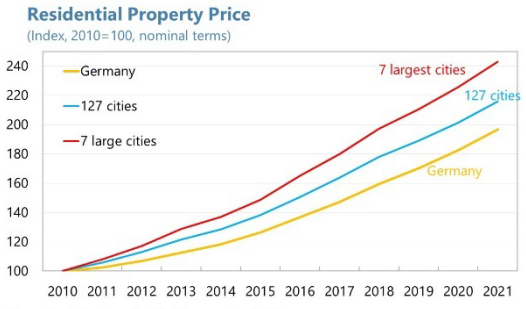
Despite significant consolidation, competition remains strong, limiting banks' willingness to rely on fees and negative interest rates to slow revenue decline and boost ability to absorb shocks through profits.



Source: ECB; and IMF staff estimates and calculations.
1/ Based on consolidated bank data for domestic banking groups and standalone banks.

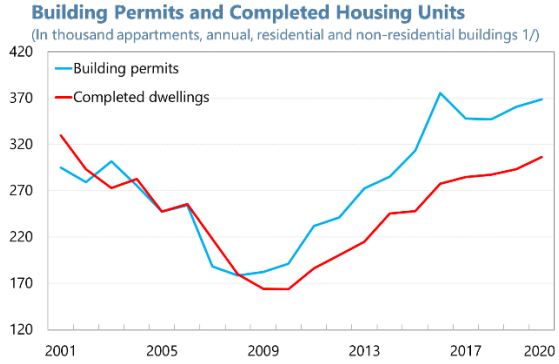
Figure 29. Real Estate Markets Developments

Overall RRE prices increased by about 82 percent during 2010-20 in nominal terms. During 2010-21, house prices rose by 116 percent in 127 towns and cities and 143 percent in the largest 7 cities.



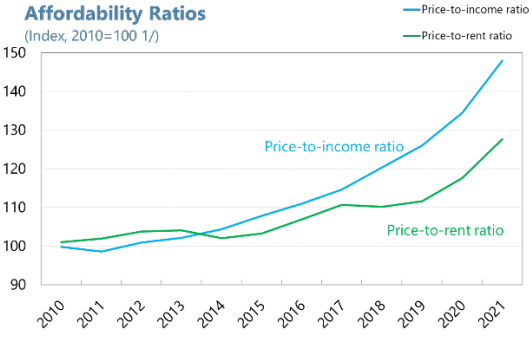
Source: Bundesbank; and staff estimates and calculations.
1/ Transaction-weighted. Bundesbank calculations based on price data provided by Bulwiengesa AG. The largest 7 cities include Berlin, Dusseldorf, Frankfurt am Main, Hamburg, Cologne, Munich and Stuttgart.

Rising housing demand, coupled with supply bottlenecks, has led to a surge in housing backlog.



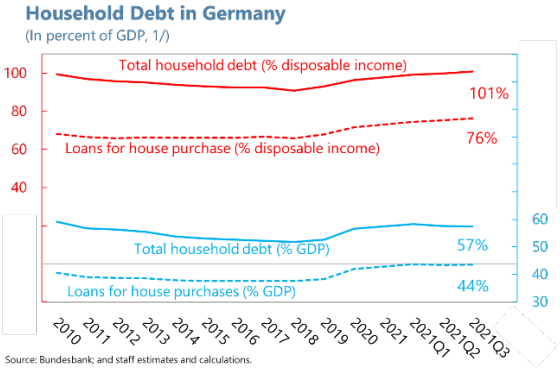
Source: Bundesbank; and staff estimates and calculations.
1/ Includes construction work on existing buildings.

Housing has become increasingly less affordable, as income has not kept up with the rising RRE prices.



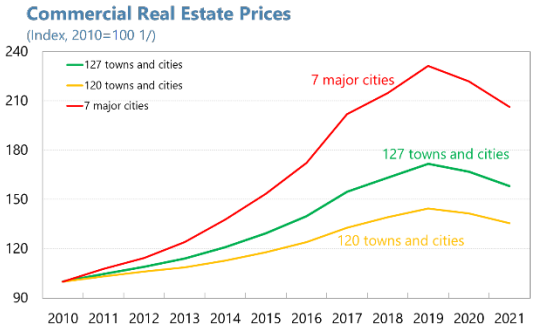
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Bundesbank calculations based on data provided by the Association of German Pfandbrief Banks (vdp). Price-to-income ratio based on nominal disposal income per household. Price-to-rent ratio based on prices and rents of appartments.

At 57 percent of GDP (101 percent of disposable income), household indebtedness has not skyrocketed.



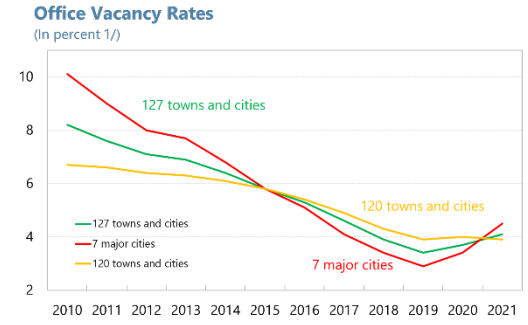
Source: Bundesbank; and staff estimates and calculations.
1/ Based on Bundesbank's financial accounts (unconsolidated), using ESA 2010. Includes loans to private households and private non-profit institutions, annual average.

Major cities also registered the largest CRE price increase since 2010, and the largest decline since the start of the COVID-19 pandemic.



Source: Bundesbank; and staff estimates and calculations.
1/ Bundesbank calculations. Includes office and retail (core properties). 7 major cities include Berlin, Cologne, Dusseldorf, Frankfurt am Main, Hamburg, Munich and Stuttgart.

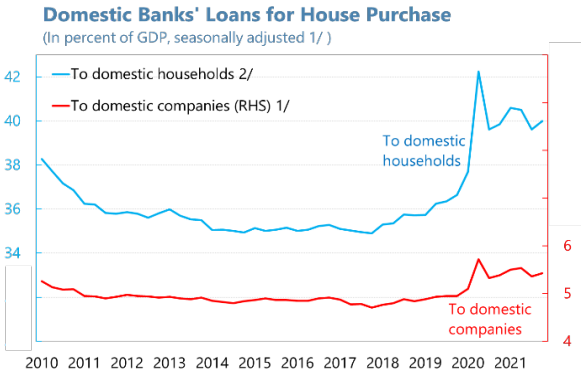
Office vacancy rates also increased marginally since the start of the COVID-19 pandemic in the major cities.



Source: Bundesbank; and staff estimates and calculations.
1/ Bundesbank calculations. 7 major cities include Berlin, Cologne, Düsseldorf, Frankfurt am Main, Hamburg, Munich and Stuttgart.

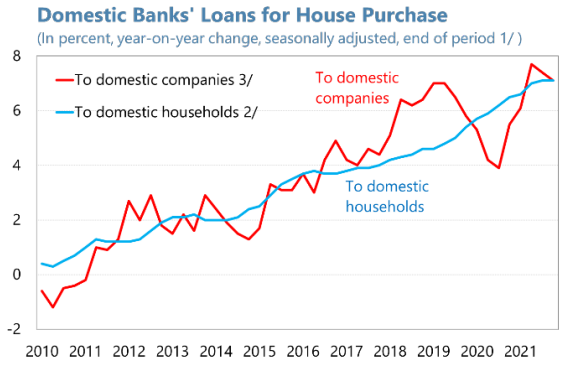
Figure 30. Banks' Exposure to Real Estate Markets

Domestic banks' loans for house purchase constituted about 45.4 percent of GDP at end-2021.



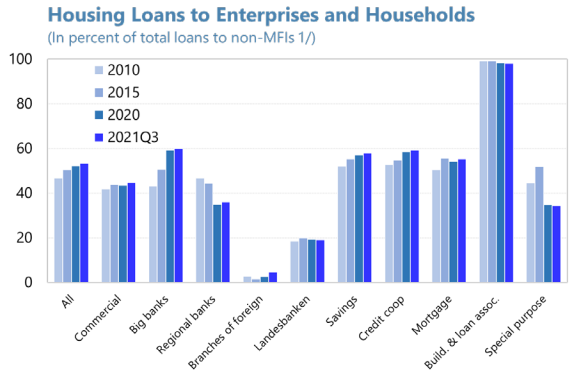
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Excluding self-employed persons and sole traders. 2/ Including self-employed persons and sole traders.

Despite some deceleration in loans to NFCs in 2020, bank loans for house purchase continued growing at record levels.



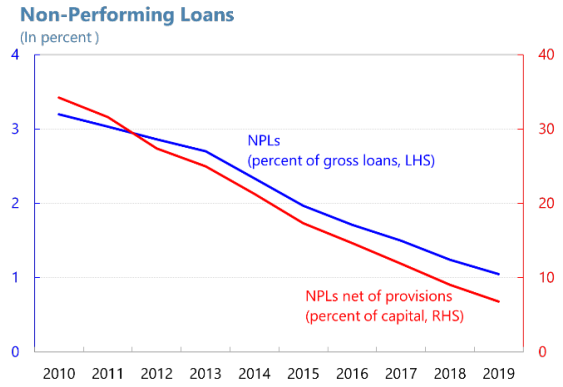
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Data adjusted for statistical changes. 2/ Including self-employed persons and sole traders. 3/ Excluding self-employed persons and sole traders.

Housing loans as a share of total loans to non-MFIs vary greatly by type of banks…



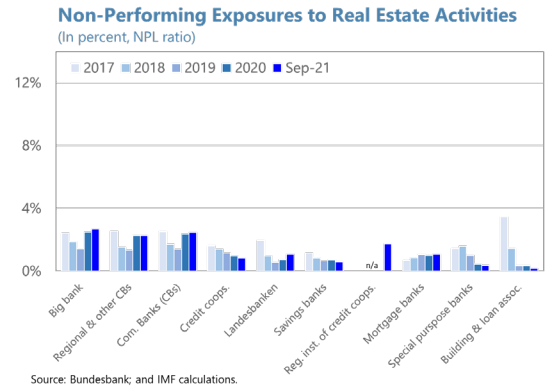
Source: Bundesbank; and IMF staff estimates and calculations.
1/ Defined as housing loans to enterprises and households in percent of total loans to enterprises and households.

… but overall NPLs were low in 2019.



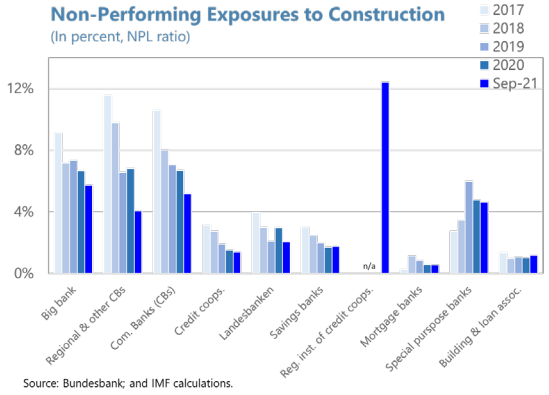
Source: IMF, FSI, and staff estimates and calculations.

Aggregate data, however, may be hiding pockets of vulnerabilities, …



Source: Bundesbank; and IMF calculations.

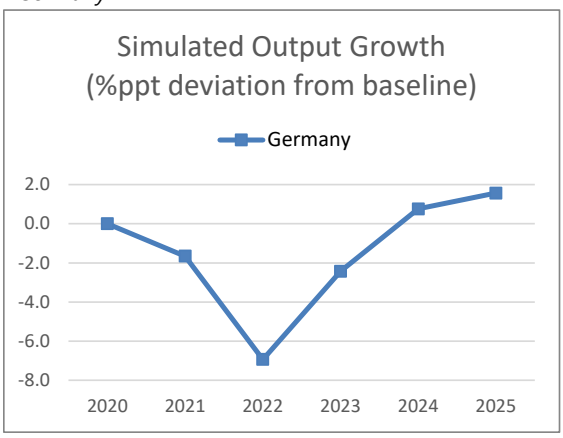
… as some types of banks may be experiencing elevated levels of NPLs in the construction sector.



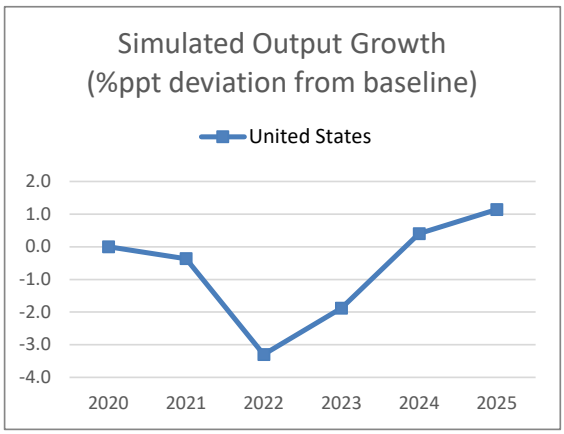
Source: Bundesbank; and IMF calculations.

Figure 31. Simulated Output Growth Shocks in Key Countries in the GFM Adverse Scenario

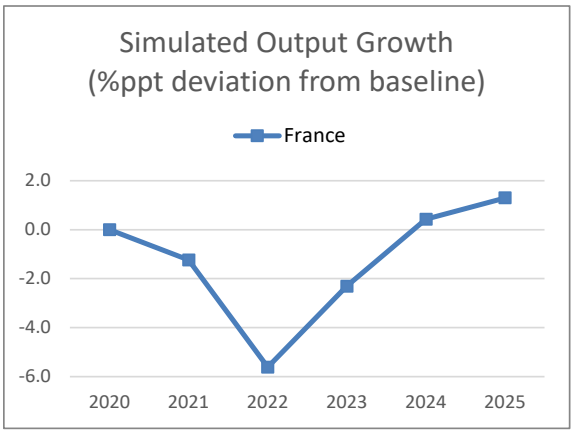
Germany



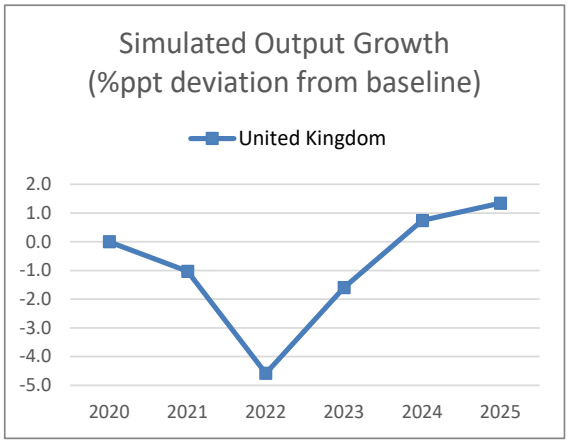
United States



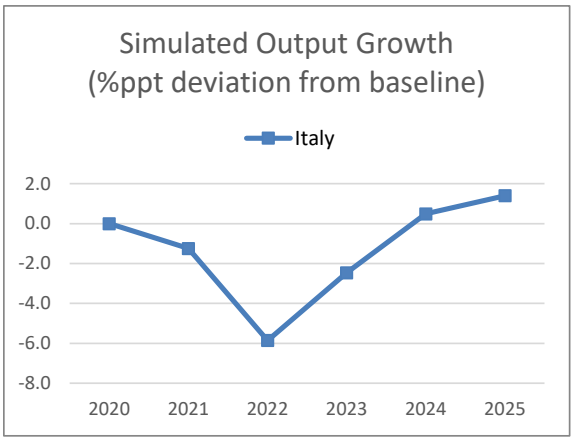
France



United Kingdom



Italy



Spain

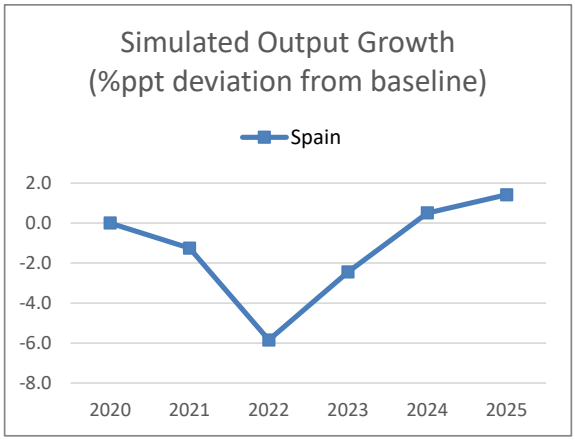


Table 4. Germany: Selected Economic Indicators (2021-23)

	2021	2022 Proj.	2023 Proj.	January 2022 WEO 2022 Proj.	January 2022 WEO 2023 Proj.
Output			(unadjusted)		
Real GDP growth (%)	2.9	1.9	2.3	3.8	2.5
Total domestic demand growth (%)	2.3	2.6	2.0	4.1	3.1
Output gap (% of potential GDP)	-1.9	-1.1	-0.6	-0.5	-0.1
			(working-day adjusted -- not published)		
Real GDP growth (%)	2.9	2.0	2.5	3.9	2.7
Total domestic demand growth (%)	2.3	2.7	2.1	4.1	3.3
Employment					
Unemployment rate (%, ILO)	3.6	3.1	3.0	3.2	3.2
Employment growth (%)	-0.7	1.7	0.2	1.2	0.7
Prices					
Inflation (%, headline)	3.2	7.3	3.9	3.4	2.0
Inflation (%, core)	2.3	4.0	3.6	2.3	1.8
General government finances					
Fiscal balance (% of GDP)	-3.7	-2.9	-1.5	-2.8	-0.7
Revenue (% of GDP)	47.9	47.1	46.9	46.3	46.7
Expenditure (% of GDP)	51.6	50.1	48.5	49.1	47.4
Public debt (% of GDP)	70.2	70.2	67.1	69.8	67.3
Money and credit					
Broad money (M3) (end of year, % change) 1/	5.6				
Credit to private sector (% change)	5.4				
10-year government bond yield (%)	-0.3				
Balance of payments					
Current account balance (% of GDP)	7.4	6.0	7.1	6.7	7.2
Trade balance (% of GDP)	5.4	4.3	5.5	5.4	6.0
Exports of goods (% of GDP)	38.3	38.3	38.6	38.3	38.1
Volume (% change)	10.0	2.9	6.4	6.2	4.7
Imports of goods (% of GDP)	32.9	33.9	32.9	32.6	31.9
Volume (% change)	8.0	2.1	5.2	5.7	4.7
FDI balance (% of GDP)	2.9	1.6	1.5	1.0	0.6
Reserves minus gold (billions of US$)	99.2				
External Debt (% of GDP)	171.8				
Exchange rate					
REER (% change)	0.9				
NEER (% change)	0.8				
Real effective rate (2005=100) 2/	97.6				
Nominal effective rate (2005=100) 3/	104.7				

Sources: Deutsche Bundesbank, Eurostat, Federal Statistical Office, Haver Analytics, and IMF staff calculations.
1/ Reflects Germany's contribution to M3 of the euro area.
2/ Real effective exchange rate, CPI based, all countries.
3/ Nominal effective exchange rate, all countries.

Table 5. Germany: Financial Soundness Indicators (2008-2021)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Capital Adequacy														
Regulatory capital to risk-weighted assets	13.6	14.8	16.1	16.4	17.9	19.2	18.0	18.3	18.8	19.4	18.9	18.6	19.2	18.8
Regulatory Tier I capital to risk-weighted assets	9.5	10.8	11.8	12.1	14.2	15.6	15.4	15.7	16.3	16.9	16.6	16.5	17.2	16.8
Capital to assets	4.5	4.8	4.3	4.4	4.7	5.5	5.6	5.9	6.0	6.3	6.5	6.3	5.9	5.9
Credit Risk														
NPLs net of provisions to capital	25.3	36.9	34.2	31.6	27.4	23.8	21.3	17.4	14.7	11.9	9.1	6.8		5.4
NPLs to gross loans	2.9	3.3	3.2	3	2.9	2.7	2.3	2.0	1.7	1.5	1.2	1.1		1.5
FX loans to total loans	12.2	11.5	11.5	11	10.5	10.0	11.5	11.4	11.2	9.8	9.7	9.4	7.6	8.1
Spread between reference loan and deposit rates[1]	273	342	343		324	326	319	301	280	260	242	225	208	193.0
Sectoral Distribution of Total Loans														
Loan to households	24.4	26.3	26.2	26.2	26.8	28.5	28.7							
Loans to non-financial corporations	14.5	14.8	14.6	14.6	14.9	15.6	15.2	15.2	14.9	15.1	15.7	16.1	15.4	15.1
Geographic Distribution of Total Loans														
Germany	71.2	72.9	74.9	75.7	76.8	76.8	74.6	80.6	81.0	82.5	82.0	81.7	83.2	82.7
Profitability														
Return on average assets (after-tax)	-0.3	-0.1	0.2	0.3	0.2	0.2	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.3
Return on average equity (after-tax)	-8.1	-2	3.7	6.5	5.6	3.5	7.2	7.5	6.6	6.3	5.1	4.1	3.8	2.8
Interest margin to gross income	84.6	72.5	73.2	72.9	71.5	71.9	74.4	75.0	71.2	69.6	72.3	69.5	67.3	
Noninterest expenses to gross income	73.4	65.1	63.7	63.9	64.2	69.1	69.5	70.4	69.3	71.9	73.1	76.0	72.3	
Trading income to gross income	0	0	4.5	3.7	5.5	4.9	27.6	26.7	25.6	29.4	27.4	28.4	29.6	
Personnel expenses to noninterest expenses	53.4	54.7	52.7	52	52.9	51.9	51.5	51.1	50.3	50.4	50.2	49.3	50.8	
Liquidity														
Liquid assets to total short-term liabilities	120.3	144.1	137	137.9	144.2	140.5	145.5	146.5	146.6	151.3	151.7	161.3	169.6	170.9
Customer deposits to total (non-interbank) loans	77.7	76.5	73.6	73.6	75.7	84.5	86.9	85.0	82.1	80.6	81.8	82.1	82.2	81.1
FX Risk														
Net open positions in FX to capital	6.6	5.3	4.4	4.5	3.9	3.8	4.0	4.62	4	3.67	3.19	3.72	3.4	4.4

Source: Deutsche Bundesbank.

[1] Spread in basis points.

Table 6. Germany: Risk Assessment Matrix (RAM)

Source of Risks	Likelihood	Impact
I. **Russia's invasion of Ukraine leads to escalation of sanctions and other disruptions.** Sanctions on Russia are broadened to include oil and gas 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, lead to even higher commodity prices, refugee migration, tighter financial conditions, and other adverse spillovers, which particularly affect LICs and commodity-importing EMs.	H	H
II. **Outbreaks of lethal and highly contagious COVID-19 variants**. Rapidly increasing hospitalizations and deaths due to low vaccine protection or vaccine-resistant variants, force more social distancing and/or new lockdowns. This results in extended supply chain disruptions and a reassessment of growth prospects triggering capital outflows, financial tightening, currency depreciations, and debt distress in some EMDEs. Delays in vaccination in Germany and trade partners or protracted eradication of COVID-19 will affect the resumption of activities, continue impacting non-financial corporates' balance sheets as well as banks. Costly containment efforts will also affect the sovereign balance sheet and reduce the policy space with prolonged support, hamper confidence and exacerbate stretched asset valuations, fueling financial vulnerabilities. The longer the crisis, the greater the scarring to the economic fabric and financial sector balance sheets, adding pressure on bank capital adequacy, and triggering credit tightening and an increase of zombie corporates and a wave of bankruptcies.	M	M/H
III. **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 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. A fast recovery in demand (supported by excess private savings and stimulus policies), combined with COVID-19-related supply constraints, leads to sustained above-target inflation readings and a de-anchoring of expectations. The Fed reacts by signaling a need to tighten earlier than expected. The resulting repositioning by market participants leads to a front-loaded tightening of financial conditions and higher risk premia lead to currency depreciations, asset market selloffs, bankruptcies, sovereign defaults, and knock-on effects (e.g., higher commodity prices and possible contagion across EMDEs).	M	M
IV. **Geopolitical tensions and de-globalization.** 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. Associated supply chain disruptions and commodity price shocks give rise to inflationary pressures.	H	H

A. Banking Sector Solvency Test		
Domain		**Framework**
1. Institutional perimeter	Institutions included	16 SIs under IFRS9 accounting and 1293 LSIs. Five SIs which do not report under IFRS9, that represent 10.5 percent of total assets of all German SIs. These are excluded from the stress test exercise.
	Market share	[80] percent of banking system assets. Total assets for SIs (16 banks using IFRS) is €7,603.186 billion. Total assets for LSIs (1295 banks) is €3,200 billion.
	Data source and baseline date	• Sources: Supervisory data provided by the ECB for the SIs and by the Bundesbank for the LSIs. For both SIs and LSIs: FINREP, COREP files. For SIs only: STE files, in particular Interest Risk in the Banking Book files; and EBA (2021) stress tests submissions. • Other data sources: public sources (EBA Transparency Exercises), commercial databases (Fitch, Moody's KMV, Bloomberg, Haver Analytics), IMF Global Assumptions (GAS) and IMF WEO. • Effective date: Q4 of 2021 for SIs and Q3 of 2021 for LSIs. • Scope of Consolidation: consolidated.
2. Channels of risk propagation	Methodology	• Credit risk parameter (PD, LGD, EAD) projections generated by geographical breakdown (5 jurisdictions) and product (6 asset classes: retail unsecured, retail secured, corporates, credit institutions, other financial institutions, and central banks and central governments). Loan growth paths consistent with static balance sheet for SIs and LSIs.

A. Banking Sector Solvency Test		
Domain		**Framework**
		• SIs' credit risk modeling relied on IFRS9 modeling and transition matrices; LSI credit risk modeling relied on traditional approaches, given their reliance on domestic GAAP accounting standards. The SIs analysis used as starting points the PDs and LGDs reported by banks in the COREP templates and considered the geographical exposures (i.e., Germany, the U.S., the U.K., France, Italy, and Spain) for each. The LSIs analysis used the PDs and LGDs published by the EBA in the risk dashboard for the German banking system to benchmark the starting point. Nonfinancial corporates' credit risk elasticity parameters (PDs and LGDs) were derived from an empirical model of default rates and loss rates using supervisory data (German Credit Registry) and with 2021 as the benchmarked starting point. Households' default rate elasticities were constructed from a micro-macro model and households' defaults simulations based on the ECB Household Finance and Consumption Survey under the full recourse mortgages assumption (i.e., households' default only if they become unemployed and fully deplete their financial savings).
	Satellite models for macrofinancial linkages	• Credit risk for non-financial corporates: (1) panel regressions of default rates and of loss rates at the sectoral level with macro-financial determinants; (2) sector-by-sector regressions of default rates and of loss rates with macro-financial determinants; sectoral LGDs derived from default rates and loss rates. Data source: German credit registry and Bundesbank. • Household default risk modeled based on a micro-macro structural model using micro household survey data (Household Finance and Consumption Survey) based on Gross, M., Tressel, T., Ding, X., and Terenau, E., 2022, "What Drives Mortgage Default Risk in Europe and the U.S.?", IMF Working Paper No. 2022/065.

A. Banking Sector Solvency Test		
Domain		**Framework**
		• Interest rates and Net Interest Income: Estimates from an empirical regression model covering the period 2006-2019 and using individual bank data from commercial databases. The NII model linked NII to the spread between the short-term rate and the long-term yield on government securities, implying a pass-through from bank funding costs to lending rates smaller than one. The analysis assumed very conservatively a 100 percent pass-through from policy rates/short-term market rates to funding costs of banks.[1] The stress test also assumed static balance sheet. The adverse scenario included a 10 percent loss in fee and commission income in 2022-23. The stress test included funding shocks and interest risk analysis for the SI banks, drawing on the contractual and notional maturities of interest-bearing assets, retail deposits, wholesale deposits and borrowing data reported in the supervisory template IRRBB by each bank as of 2021:Q2. The STE template on which we rely for the repricing structure of assets and liabilities includes derivative hedges for interest rate risk, both as assets and liabilities.[2] For LSI, the maturity structure was proxied from aggregate data on the loans' contractual maturity and of retail and wholesale deposits and it was assumed that interest bearing assets and liabilities had the same maturity structure. • Net Fees and Commission income and other income/expenses: constant share of assets, except for SI adverse scenario where a 10 percent loss in assumed in 2022 and aligned with static asset growth from 2023 onwards.

[1] While the actual pass-through may have been lower in the past decade in the low interest rate environment, we lack past data to assess what the pass-through would be under a combination of shocks resulting in high inflation and a sharp recession as in our adverse scenario. For this reason, we opt for a conservative assumption.

[2] The IRRBB does not include options and thus, potential effects of embedded options under the considered scenarios could not be resolved in the calculations. As a result of this effect, the ST could be overestimating the interest rate risk in the adverse scenario. However, this overestimation would likely be partially offset due to the potential increases in the cost of hedging under the adverse market conditions in assumed in the stress test. The FSAP analysis did not factor in these potential increases in hedging costs, instead it assumed that they remain constant as a share of assets as in the starting point of 2021 net income.

A. Banking Sector Solvency Test		
Domain		**Framework**
		• Sovereign credit risk and market risk: Merton model combined with baseline and adverse scenario projections of the short-term interest rate and the long-term yield on securities. It considered a shock to sovereign exposures to Italy and Spain (and exposures to Russia) and an additional shock of 25 percent to real estate valuations. • For SIs only: Evolution of IFRS9 transition matrices based on beta-linked models from Gross, Laliotis, Leika, and Lukyantsau (2020).
	Stress test horizon	• 5 years (2022-2026).
3. Tail shocks	Scenario analysis	• Baseline from the revised Spring WEO. • An adverse scenario with severity benchmarked based on a 3 standard deviation shock to real GDP growth relative to baseline over 2022-2023 and closing of output gap at the end of the simulation horizon Macro-financial simulations realized based on MCM GFM macro-financial DSGE model by Vitek, 2018, "The Global Macrofinancial Model", IMF WP 18/81. • Macro-financial scenarios for exposures to U.S., U.K., France, Italy, and Spain for the 16 SIs. • The adverse scenario is characterized by a V-shape path for real GDP growth, tightening of global financial conditions, uncertainty about the economic environment and renewed COVID-19 infections, lockdown measures, and global supply chain disruptions, and rise of commodity prices, a de-anchoring of inflation expectations and a trade-off for monetary policy between unemployment and inflation, as described in the RAM.
	Sensitivity analysis	• Sensitivity analysis considers shocks to exposures to Russia.

A. Banking Sector Solvency Test		
Domain		**Framework**
4. Risks and buffers	Risks/factors assessed	• Credit risk (corporates, households and real estate, sovereigns of high debt countries). • Interest rate risk in the banking book. • Market risk (interest rate, spreads).
	Behavioral adjustments	• Static balance sheet assumption for LSIs and for SIs. • Cures no/with write-offs and new credit production endogenously consistent with credit growth assumption. • Portfolio composition unchanged over time.
5. Regulatory and market- based standards and parameters	Calibration of risk parameters	• TTC and Initial PiT PDs and LGDs obtained from supervisory files for SIs, or estimated at the asset class level from the EBA risk-dashboard 2021:Q3 for LSIs. • Dynamic from model estimated PDs in line with the scenario considered (WEO baseline, adverse scenarios).
	Regulatory/ accounting and market-based standards	• Regulatory capital ratios for IRB and STA portfolios, and IFSR9 or national GAAP accounting standards.
6. Reporting format for results	Output presentation	• Aggregate results and contributions to evolution of capital ratios.

B. Liquidity Banking Sector Stress Testing Matrix (STeM)		
Domain		**Framework**
		Top-down by FSAP team
1. Institutional perimeter	Institutions included	• 17 SIs, and 40 randomly selected German LSIs of four different groups: commercial, savings, cooperative, and building societies and mortgage banks. The composition of the LSI sample was chosen to balance the need to include a sufficient number of banks of each group and to reflect, within this constraint, the different number of entities belonging to each group and quintile of the banking sector's asset distribution. • Excludes branches of non-German banks.
	Market share	• 17 SIs (out of 21), account for about [45] percent of banking sector assets • 40 LSI (out of >1300 LSIs), randomly chosen to be representative of bank type and size distribution. The sample accounts for about 3 percent of LSIs (in terms of banks and assets).
	Data and baseline date	• ECB/SSM and Bundesbank: Liquidity Coverage Ratio and the Net Stable Funding Ratio and Cash flow table from the COREP data repository • Data as of September 2021 for LSIs and December 2021 for SIs • Scope of financial consolidation: consolidated at national bank level.
2. Channels of risk propagation	Methodology	• The cash-flow stress test analyzes the net cash balance, accounting for available unencumbered assets, contractual cash inflows and outflows, and behavioral flows. • For the cash-flow analysis, relevant second-round effects could be considered, including margin calls for existing collateral positions, non-emergency liquidity provision by the central bank, additional asset haircuts due to fire sales, additional repo haircuts due to limited collateral supply, and wholesale funding market freezes because of banks' solvency and liquidity concerns.

B. Liquidity Banking Sector Stress Testing Matrix (STeM)		
Domain		**Framework**
		Top-down by FSAP team
		• The cash-flow stress test analyzes the net cash balance, accounting for available unencumbered assets, contractual cash inflows and outflows, and behavioral flows. • For the cash-flow analysis, relevant second-round effects could be considered, including margin calls for existing collateral positions, non-emergency liquidity provision by the central bank, additional asset haircuts due to fire sales, additional repo haircuts due to limited collateral supply, and wholesale funding market freezes because of banks' solvency and liquidity concerns. • The test was repeated for US dollar liquidity for the relevant reporting banks. • The analysis is complemented with LCR and NSFR statistics.
	Stress test horizon	• For the cash-flow analysis, the horizon of stress events varies by scenario and can extend up to a period of 1 year).
3. Tail shocks	Scenario analysis	• Baseline and three scenarios are considered, with varying intensity of adverse liquidity conditions and reflecting different liquidity risks (funding and market liquidity). The three stress scenarios were formulated in terms of roll-on/roll-off rates and haircuts to CBC and were designed to capture risks from: ○ (a) a new wave of COVID-19 cases, characterized by net outflows of retail deposits of households drawing down their savings (peaking up at the one-month horizon) and increased use of credit lines. ○ (b) a significant increase in risk aversion, with higher haircuts on counterbalancing capacity assets due to financial market stress and some outflows of wholesale funds; outflows related to rating downgrades and some deposit outflows peaking at the 2-month horizon.

B. Liquidity Banking Sector Stress Testing Matrix (STeM)		
Domain		**Framework**
		Top-down by FSAP team
		• (c) combined significant increase in risk aversion with higher and more sustained inflation with correspondingly stronger outflows of nonoperational deposits peaking in a one year-horizon and stronger haircuts but weaker outflows from downgrades.
	Sensitivity analysis	• A range of alternative scenarios was applied to the entire set of LSIs.
4. Risks and buffers	Risks/factors assessed (how each element is derived, assumptions)	• Funding liquidity risk is reflected in funding and asset roll-off rates, the latter providing cash inflows related to non-renewal of maturing assets. • Market liquidity risk is reflected in asset haircuts, which could be influenced by market movements, potential fire sales and collateral supply considerations.
	Behavioral adjustments	• Liquidity from the central bank's emergency lending assistance (ELA) is not considered. • The cash-flow analysis may consider some behavioral assumptions about a counterparty's ability or willingness to transact based on banks' solvency and liquidity conditions.
5. Regulatory and market-based standards and parameters	Calibration of risk parameters	• The cash-flow analysis may incorporate relevant second-round effects. • Stress funding run-off rates, asset roll-over rates, and asset haircuts are calibrated based on empirical evidence and relevant international experiences.
	Regulatory/accounting and market-based standards	• LCR per Basel III; the hurdle at 100 percent (at the aggregate currency level). • Net cash balance for the cash-flow analysis; to pass, a non-negative net cash balance is required, where the balance reflects net funding outflows and counterbalancing capacity. • NSFR per Basel III; limit of 100 percent applied.

B. Liquidity Banking Sector Stress Testing Matrix (STeM)		
Domain		**Framework**
		Top-down by FSAP team
6. Reporting format for results	Output presentation	• Changes in the system-wide liquidity position, including important drivers for cash outflows, cash inflows and counterbalancing capacity. • Distribution of banks' liquidity positions. • Number of institutions with LCR/NSFR below 100 percent and/or negative net cash balance • Amount of liquidity shortfalls (scaled)
7. Infrastructure		• Infrastructure developed by IMF staff with FINREP/COREP data input.

Appendix II. Implementation of 2016 FSAP Recommendations—Staff's Assessment[1]

Recommendations	Time Frame 1/	Status: 04-2022
Financial stability policy framework		
Establish a core set of readily-available, consistent data for banks and non-banks to strengthen financial stability and macroprudential policy analysis.	Medium term	Implementation in progress. Bundesbank is integrating selected granular supervisory and statistical data of banks, insurance companies, and investment funds to build a "house of microdata (HoM)," which will be used for financial stability and macroprudential policy analysis along with other information sources. Bundesbank is in the process of integrating bank supervisory microdata according to the common reporting framework (COREP).
Develop the legal basis for real estate-related macroprudential tools.	Short term	Implementation in progress. On March 30, 2017, the Bundestag passed legislation that implements part of the FSC's recommendation of June 2015 and entered into force on June 10, 2017. The law introduced new instruments for residential real estate loans (does not cover non-residential CRE loans), allowing for capping LTV ratios and setting amortization requirements for financial stability purposes. The requirements are meant to apply to all financial institutions if activated. The law omits complementary DTI and DSTI ratio instruments, which had also been recommended by the FSC in 2015 and does not address important data requirements for the effective operation of the real estate-related macroprudential instruments. The ongoing one-off bank survey on real estate lending and corporate credit underwriting standards is expected to provide valuable information on possible financial risks in specific segments of real estate markets.
Banking oversight		
Implement measures to strengthen the oversight role of the banks' supervisory board.	Short term	Partially implemented. While the authorities made some progress in improving the oversight role of the Board (e.g., providing the Board the power to directly obtain information from audit and risk control functions) the corporate governance framework for banks deviates on important elements from international best practices (e.g., no decision-making responsibilities regarding strategic direction, risk appetite, strategy and related policies and no requirements for independent Board members).

[1] Includes only recommendations to German authorities.

Provide guidance on risk management and other supervisory requirements, e.g. regarding loan portfolio management, concentration and related party risk, and operational risk.	Short term	Implementation in progress. In several areas additional guidance has been issued. However, given the extensive nature of the EBA Guidelines, as well as other international standards, further guidance for the industry, the external auditor and supervisory staff may be needed due to: a) the external auditor's MaRisk compliance reports have been found to be varying in quality (this was highlighted by the German authorities and they have undertaken a joint working group to do additional research into how to deal with this); b) the MaRisk's principle based nature does not necessarily clearly outline BaFin's supervisory expectations in certain risk areas linking to the EBA Guidelines (e.g. the need to track/aggregate related party transactions, expansion of the operational risk points, etc.); and c) to be able to rely on the work of the external auditor, supervisors should also be given tools to effectively challenge the work of the external auditor.
Increase granularity and coverage of bank supervisory data	Short term	Implementation in progress. Although the German authorities have made substantial progress since the 2016 FSAP in collecting liquidity risk data, data availability regarding certain aspects of credit risk, related party transactions, and market risk can be further enhanced. Although the necessary information should be available during on-site inspections, it is not easily available or accessible per institution for periodic offsite analysis purposes or across the sector as a whole. Regarding data on retail real estate, BBk issued an ordinance on the implementation of data collections to collect semi-aggregate data (distributions) regarding lending for the acquisition of real estate, including information on: the number and amount of these loans granted; whether covered by debt insurance; loan to value ratios; debt servicing ratios; debt to income; and some internal risk indicators.
Strengthen rules and supervisory processes for acquisitions and exposures to related parties	Medium term	Acquisitions: Not implemented. BaFin has indicated that the German Federal Parliament is of the view that acquisitions in other entities are part of a business decision of an institution and that an ex-ante review and (dis)approval by the supervisory authority does not seem to be necessary for major acquisitions outside the EU. Further, no European provisions currently require such ex-ante procedures to exist. Consequently, no changes in German laws, regulations or guidelines concerning major acquisitions have been made. However, in cases where the acquisition triggers a qualifying holding procedure in a Member State, the national competent authority would have to consult BaFin. Exposures to related parties: Partially implemented. Since the 2016 FSAP the authorities adequately expanded the definition of a related party transactions in the KWG. While there is a limited framework that requires financial institutions to establish appropriate procedures to manage and monitor related party

		transactions, there are no specific requirements to set internal limits, aggregate and regularly report exposures to the supervisory board or for regulatory reporting of these exposures. On an ECB/SSM level, the 2018 Euro FSAP also noted material deficiencies with regard to the frameworks for major acquisitions and transactions with related parties.
Streamline and simplify the SSM decision making processes (to be taken at the EU level)	Medium term	Not in scope of the assessment. A review of the timeliness of SSM decision making was not in scope as the current assessment (this could be reviewed as part of the next Euro Area FSAP).
Insurance oversight		
Prepare a communication strategy ahead of the publication of Solvency II indicators	Short term	Implemented. Implemented. BaFin conducted bilateral discussions with life insurance (LI) companies ahead of the publication date of May 21, 2017. BaFin and the Bundesbank are continuously informing the public of analyses on Solvency II indicators.
Extend the application of G-SII toolkit on a risk-based basis to other large groups, including recovery and resolution planning, enhanced supervision and regular stress tests	Medium term	Implemented. BaFin has extended the requirement for recovery plans to two other groups headquartered in Germany, beyond the country's single G-SII. The supervisory teams responsible for the respective groups are in the process of defining the elements of the plans and will review them once they are finalized. BaFin does currently not intend to further extend this requirement to other groups. Germany also participates in the EIOPA stress testing exercises. In 2016, 20 life insurers covering three quarters of the market participated. The fourth EU-wide stress test exercise in 2018 included 5 large German insurance groups. Furthermore, insurers are required to perform additional stress tests on their own as part of their risk and solvency analysis (according to the Insurance Supervision Act, section 27). Those results are also part of the narrative reporting to BaFin.
Communicate supervisory expectations based on the ORSA (Own Risk Solvency Assessment) review more systematically; use Solvency II framework to impose capital add-ons	Medium term	Implemented. BaFin gives feedback to insurance firms based on the ORSA review, especially when those do not seem to hold sufficient own funds over and above the SCR to comply with capital requirements on a continuous basis. BaFin has also been encouraging insurers to improve the quality of ORSA reports, especially in the areas that BaFin identified as weak in the 2017 assessment (e.g., depth of information; assessment of overall solvency needs, continuous compliance with the regulatory

		capital requirements and technical provisions, and risk profile's deviation from the SCR assumptions; quality of stress tests). At the IAIS level, BaFin is participating in ongoing discussions as to the framework for addressing systemic risk in the insurance sector. Capital add-ons are not a first resort measure, but the supervisor is ready to set capital add-ons on a case-by-case basis when preconditions are found to be in place under Solvency II. BaFin is currently developing internal guidance on capital add-ons to facilitate the assessment of the conditions for their imposition and ensure a uniform approach in a manner consistent with the legal requirements under Solvency II.
Require action plans for companies facing difficulties in meeting Solvency II requirements, including stress testing to ensure that they would be met even after a plausible shock	Medium term	Implemented. BaFin monitors companies' progress towards compliance with solvency capital requirements without Solvency II transition measures and assesses the plausibility and appropriateness of the companies' plans on a yearly basis. BaFin is also thoroughly reviewing internal models, including by developing a new stochastic approach (BSM— Branchen simulations model) that better accounts for embedded options and guarantees of typical life insurance products.
Asset management oversight		
Intensify frequency of on-site inspections and enhance risk classification methodology	Short term	Implemented. BaFin revised the risk classification methodology for supervised asset managers and has been applying improved impact criteria since 2018. BaFin also increased the frequency of on-site inspections from 80 in 2014 to 102 in 2016, 116 in 2017, 99 in 2018, 110 in 2019 and 118 in 2020.
Introduce stronger rules on reporting of pricing errors and investor compensation rules	Short term	BaFin published its "Mindestanforderungen an das Risikomanagement von Kapitalverwaltungsgesellschaften" (KAMaRisk) in January 2017, which is a circular on the minimum requirements for the risk management of investment managers, among other things.
Crisis management and resolution		
Develop a formal systemic crisis coordination mechanism including German authorities, SRB and ECB	Short term	The SRB updated its Cooperation Framework between the SRB and NRAs. It was approved on 17 December 2018. Also, the SRB developed a Crisis Governance Handbook, which contains defined interfaces to NRAs and the ECB.

		The German NRA has developed and already implemented a crisis governance document including defined crisis phases, interfaces to other authorities/stakeholders, relevant committees, and responsibilities within the NRA. The work on the overall German National Crisis Handbook was extended in 2020 to consider lessons learned from the National Crisis Simulation Exercise in 2020 and to include recent legal developments (e.g., BRRD 2 & national implementation act). However, German authorities have not yet tested this handbook in a real systemic crisis. For this reason, it may be advisable to seek more financial stability expertise.
Ensure plans for adequate funding to support the orderly resolution of banks and discretionary ELA post-resolution	Short term	The SRF, (in the future including the common backstop provided by the ESM, once it has been signed, ratified, and entered into force) may provide liquidity in resolution. In 2021, the SRB published its operational guidance on liquidity and funding in resolution for banks. The topic is under further consideration in the EU, especially in the context of the review of the crisis management framework for which an EU Commission proposal is expected for Q3 2022.
Remedy operational challenges to resolution actions; ensure authorities retain control during the resolution process; and test contingency plans in a system-wide crisis exercise	Short term	The SRB and NRAs have already conducted and will continue to conduct crisis simulation exercises to test procedures implemented with the authorities and to identify potential challenges to resolution actions. “Lessons learned” are being shared amongst RAs. The German NRA has developed and executed a national crisis simulation exercise for an LSI in 2020 including the following actions: Formal activation of crisis mode and decision-making process Valuation 2 (mandate, operational steps, and simulated data request Calculation of bail-in and analyses of affected creditors Drafting of resolution order and accompanying decision documents (resolution decision) Entire communication with the Ministry of Finance including approval of resolution order Notifications in accordance with Art. 81 (3) of the BRRD (FOLTF) Press release and FAQs

		Publication of resolution order and press release on website Another national crisis simulation exercise will most likely be executed by the German NRA in the course of 2022.
Review efficiency of SRM decision making (to be taken at the EU level)	Medium term	A review of the SRMR is within the scope of responsibility of the European Commission and has been initiated (Crisis Management and Deposit Insurance Framework "CMDI" Review). It will be conducted together with the co-legislators at EU level (Council and Parliament).
Financial Market Infrastructure – Eurex Clearing		
Strengthen the liquidity stress tests and upgrade the secondary site with staffing arrangement	Short term	Eurex Clearing conducts a broad range of stress tests on a daily basis in addition to the cover-2 stress tests required by law (additional stress test scenarios: late funding, idiosyncratic, market disruption, market disruption paired with the idiosyncratic scenario, inverse scenario).
AML/CFT		
Increase the effectiveness of the AML/CFT supervisory framework over cross-border banks	Short term	Implementation in progress. Since the 2016 FSAP, BaFin's AML Department has hired 32 new staff for the two new divisions established for AML/CFT banking supervision, which focus on banks with higher risk and need for intense supervision (i.e., major banks with cross-border operations). The additional staff conducts AML/CFT audits (rather than external auditors). BaFin has also set up in five case an inhouse "special representative" in a major bank to conduct audit functions and ongoing AML/CFT monitoring of this bank. BaFin has also intensified its risk understanding including to identify correspondent banking as high-risk. The AML/CFT legal framework was revised in June 2017, in line with the 4th EU Money Laundering Directive, with efforts underway to transpose the 5th EU Money Laundering Directive.
1/ Short term is one year, while medium term is 2-3 years.		
Germany, Financial Sector Assessment Program, Financial System Stability Assessment, IMF Country Report No. 16/189, June 2016.		