



# KINGDOM OF THE NETHERLANDS— THE NETHERLANDS

## FINANCIAL SYSTEM STABILITY ASSESSMENT

March 20, 2024

### KEY ISSUES

**Context:** The Financial Sector Assessment Program (FSAP) took place against slowing economic growth amid tighter financial conditions, elevated housing prices, large and interconnected nonbanks with major pension reforms underway, and increased securities market trading after Brexit. The Netherlands also faces climate challenges related to sea-level rise and more frequent extreme rainfall, as well as the need to bring down nitrogen depositions, which currently exceed critical values, threatening biodiversity loss.

**Findings:** The systemic risk analysis focused on housing, non-banks, and climate, and found that financial institutions are broadly resilient to the adverse macrofinancial scenarios considered in this assessment, though the risks for corporates and some households remain elevated. The climate physical risk analysis suggests that banks and insurers are largely resilient to a wide range of flood events. The authorities are leading the efforts to embed climate risk into financial sector oversight; their supervisory approach is generally sound. Some gaps since the last FSAP remain, especially in the macroprudential policy framework.

**Policy advice:** The main recommendations centered on:

- *Macroprudential policies.* Gradually reduce the limit on the loan-to-value ratio and continue efforts to incentivize borrowers to lower exposures to interest-only mortgages and phase out mortgage interest deductibility.
- *Supervision and regulation.* Ensure that supervisory approaches and tools are fit for purpose in a rapidly changing market environment, and supervisory authorities have sufficient budgetary autonomy, delegated powers, and intervention tools to address risks promptly and efficiently.
- *Climate risk oversight.* Pursue full-fledged climate supervision, backed by stronger data, scenario analysis, stress testing, and disclosure.
- *Crisis management and resolution.* Ensure operational readiness for resolution and develop and regularly test a national financial crisis management plan.

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This report is based on the assessment work under the FSAP conducted during June and November 2023. The findings were discussed with the authorities in November 2023 and February 2024 (the Article IV Consultation).

- The FSAP team was led by Naomi Nakaguchi Griffin and included Piyabha Kongsamut (deputy), Romain Bouis, Max-Sebastian Dovi, Nikoletta Kleftouri, Caterina Lepore, Junghwan Mok, David Rozumek, Wei Sun (all MCM), Adrian Wardzynski (LEG), as well as Timo Broszeit and Jennifer Long (external experts). Other MCM support was provided by Zoltan Jakab and Javier Uruñuela (modeling), Knarik Ayvazyan (financial cycle estimation), Hannah Sheldon and Mohamad Nassar (research), and Vanessa Guerrero and David Ramirez (editorial).
- The team met with the Ministry of Finance (MoF), De Nederlandsche Bank (DNB), Dutch Authority for Financial Markets (AFM), Ministry of Agriculture, Nature and Food Quality, Ministry of Infrastructure and Water Management (MoIWM), Ministry of Social Affairs and Employment (MoSA), European Central Bank (ECB), European Insurance and Occupational Pensions Authority (EIOPA), and representatives from industry associations, climate-related institutions, financial integrity-related institutions, the financial sector, and the auditing, accounting, actuarial, and legal professions.
- 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.
- The Netherlands is deemed by the Fund to have a systemically important financial sector according to SM/21/52 (4/16/2021), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement. The previous FSAP took place in 2017.

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## Glossary

AFM	Dutch Authority for Financial Markets
AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
BTL	Buy to Let
BTWwft	Bureau Toezicht in Tax and Customs Administration supervising institutions under the Money Laundering and Terrorist Financing (Prevention) Act (Wwft)
CCyB	Countercyclical Capital Buffer
CET1	Common Equity Tier 1
CIS	Collective Investment Scheme
CRE	Commercial Real Estate
DB	Defined Benefit
DC	Defined Contribution
DGF	Deposit Guarantee Fund
DNB	De Nederlandsche Bank
DSTI	Debt Service To Income
EA	Euro Area
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
ELA	Emergency Liquidity Assistance
EU	European Union
EuroCCP	European Central Counterparty
FATF	Financial Action Task Force
FDI	Foreign Direct Investment
FEC	Financial Expertise Centre
FIU	Financial Intelligence Unit
FMI	Financial Market Infrastructures
FSAP	Financial Sector Assessment Program
FSC	Financial Stability Committee
FX	Foreign Exchange
GDP	Gross Domestic Product
G-SIB	Global Systemically Important Bank
ICR	Interest Coverage Ratio
IO	Interest Only
IT	Information Technology
LCR	Liquidity Coverage Ratio
LIWO	The National Water and Floods Information System
LLD	Loan-Level Data
LSI	Less Significant Institution
LTV	Loan To Value
MFI	Monetary Financial Institution
MID	Mortgage Interest Deductibility

MMF	Money Market Fund
MoF	Ministry of Finance
MoIWM	Ministry of Infrastructure and Water Management
MoSA	Ministry of Social Affairs and Employment
NBFI	Non-Bank Financial Institution
NFC	Non-financial Corporation
NIBUD	National Institute for Family Finance Information
NPL	Nonperforming Loan
NRA	National Risk Assessment
NSFR	Net Stable Funding Ratio
OCR	Overall Capital Requirement
OFI	Other Financial Institution
P&C	Property & Casualty (insurance)
RAM	Risk Assessment Matrix
RIVM	National Institute for Public Health and the Environment
ROW	Rest of the World
RRE	Residential Real Estate
RWA	Risk-Weighted Assets
SB	Supervisory Board
SCR	Solvency Capital Requirement
SI	Significant Institution
SRB	Single Resolution Board
SREP	Supervisory Review and Evaluation Process
SSM	Single Supervisory Mechanism
TRIM	Targeted Review of Internal Models
UFR	Ultimate Forward Rate
VA	Volatility Adjustment
WEO	World Economic Outlook

## EXECUTIVE SUMMARY

**The Netherlands FSAP focused on three cross-cutting themes—housing, non-banks, and climate risks—while carrying out a comprehensive review of financial sector oversight.** The FSAP reviewed the resilience of the Dutch financial system against a set of conjunctural and structural challenges to the economy: the *conjunctural challenges* included slowing economic growth amid tighter financial conditions, elevated housing prices, large and interconnected nonbanks with major pension reforms underway, and the shift in securities markets trading from London to Amsterdam since Brexit, which raised Amsterdam to systemic importance for the euro area (EA); and the *structural challenges* focused on climate issues, including climate physical risks associated with roughly a quarter of the country being below sea level, and nature-related transition risks from an uncertain policy path to bring down nitrogen depositions to contain biodiversity loss and comply with European Union (EU) Directives.

**The systemic risk analysis found that financial institutions are generally resilient to the adverse macrofinancial scenarios considered in the FSAP, though the risks for corporates and some households remain elevated.** Stress tests results revealed the following:

- *Banks.* Significant Institutions (SIs) as a group appear resilient to severe macrofinancial shocks, but some might see capital buffers erode with earnings weakening over time under adverse conditions. Less Significant Institutions' (LSIs) corporate borrowers could experience rising default probabilities under severe global macrofinancial conditions, even surpassing levels during the global financial crisis. Liquidity buffers appear generally sufficient, though close monitoring in case of severe runoffs in foreign currencies would be useful. Bank solvency stress could potentially spread to other financial institutions via fire sales, and LSIs defaults could generate system-wide losses.
- *Non-bank Financial Institutions (NBFIs).* The solvency of the Dutch insurance sector, particularly the property & casualty (P&C) and health insurers, appears broadly resilient to the adverse scenario, while vulnerabilities exist for some life insurers. Liquidity risks from margin calls for insurers appear largely contained. As for pension funds, funding ratios improve further with higher interest rates under the adverse scenario. Pension funds appear resilient to liquidity risks from margin calls even when access to the repo market is restricted, though close monitoring of market conditions remains crucial.
- *Corporates and households.* The boom in housing prices has raised vulnerabilities for many borrowers, and downside risks to commercial real estate (CRE) increased after the pandemic. In an adverse scenario that includes a sharp correction in housing prices, the youngest and lowest income household borrowers are the most significantly impacted. The adverse scenario also results in a marked increase in the share of non-financial corporations (NFCs) facing debt repayment difficulties or higher borrowing needs.

**The climate physical risk analysis suggests that banks and insurers are largely resilient to a wide range of flood events, though data limitations constrained some analysis.** The banking

sector exhibits resilience to flood events, reflecting the Netherlands' strong existing water management system, which is expected to further improve. The analysis, however, was constrained by the lack of access to loan-level data. The insurance sector, which does not underwrite primary flood risks, is resilient to the flood events considered; net claims of a non-primary regional flood event—after reinsurance—are limited. While the climate transition risk analysis was complicated by an uncertain policy path, the FSAP's analysis found that some banks face high risks from loans to financially vulnerable firms in high nitrogen-emitting sectors, though overall, the banks' exposure to high nitrogen-emitting sectors declined in recent years.

**The FSAP's recommendations aim to support the authorities' ongoing efforts to strengthen financial sector oversight (Table 1).** Key areas of focus include:

- *Macroprudential policies.* The authorities have appropriately strengthened macroprudential buffers, but further adjustments to borrower-based measures are warranted. The calibration of borrower-based measures should be focused on minimizing financial stability risks (which can enhance consumer protection), with access to homeownership being addressed by other policies. The authorities should gradually reduce the limit on loan-to-value (LTV) ratio and continue their efforts to incentivize borrowers to lower exposures to interest-only (IO) mortgages and phase out mortgage interest deductibility (MID). A clear legal basis for access to granular data for risk monitoring and analysis should be ensured.
- *Supervision and regulation.* The authorities have made good progress since the last FSAP, and their approach has been thoughtful and risk sensitive. The FSAP's key recommendations include: adapting supervisory approaches to a rapidly changing market environment; equipping supervisory authorities with necessary resources, access to technologies, analytical tools, and granular data; reviewing the legislative framework to ensure that the supervisory authorities have sufficient budgetary autonomy, delegated powers, and intervention tools to address risks promptly and efficiently; further clarifying in law the requirement of independent board members of supervised institutions; monitoring and proactively managing potential risks of the pension system transition; and ensuring trading venue and equity market resilience.
- *Climate risk oversight.* The authorities have been leaders in supervision and quantitative analysis of climate risks. The FSAP recommends to further integrate climate risk into supervision, backed by stronger data, scenario analysis, stress testing and disclosure, and using an interagency body to discuss policy implications of climate-related issues and coordinate national policy actions that have implications on financial stability. As the transition policy becomes clearer, the authorities should assess the impact of such policies on the financial sector.
- *Financial integrity.* Recognizing good progress already made, the FSAP recommends carrying out a more comprehensive analysis of risks relating to the misuse of legal entities and conduit structures and enhancing the availability and accuracy of beneficial ownership information.
- *Crisis management and resolution framework.* The authorities should focus on further ensuring operational readiness by completing resolution handbooks; identifying and operationalizing national sources for the provision of liquidity in resolution; and developing and regularly testing a national financial crisis management plan.



**Table 1. The Netherlands: Key FSAP Recommendations**

<b>Table 1. The Netherlands: Key FSAP Recommendations</b>				
<b>Recommendation</b>		<b>Addressee</b>	<b>Timing*</b>	<b>Priority**</b>
<b>Cross-Cutting</b>				
1	Establish an interagency body – or facilitate this in an existing platform – to regularly discuss policy implications of climate-related issues, broaden cooperation including data sharing, and coordinate policy actions with implications for financial stability (¶146).	MoF, AFM and other relevant ministries	ST	H
2	Adapt supervisory approaches to a rapidly changing market environment and strive for consistent supervisory outcomes across sectors through timely deployment of technologies and analytical tools (¶155, 66).	DNB, AFM	ST/MT	H
3	Review legislative framework to ensure the supervisory authorities have sufficient budgetary autonomy, delegated powers, and intervention tools to address risks promptly and efficiently (¶153, 54, 72).	MoF, AFM, DNB	ST	H
4	Ensure that authorities have a clear legal basis to access granular transaction/loan-level data on a regular basis for risk monitoring and analysis, including residential and commercial real estate loans (¶148, 59).	MoF, DNB, AFM	I	H
5	Further clarify the requirement of independent supervisory board members in law (¶156, 61, 65, 72).	MoF, MoSA	MT	H
<b>Systemic Risk Analysis</b>				
6	Tap alternative datasets to complete the ongoing efforts to develop market risk analysis (¶123).	DNB	ST	M
7	Develop system-wide stress testing methodologies to assess the contagion effects across banks and NBFIs (¶132).	DNB	MT	M
8	Closely monitor pension funds' repo transactions, amend supervisory reporting where necessary, and perform liquidity stress tests which incorporate a drying-up of repo markets (¶131).	DNB	I	M
<b>Climate Risk Oversight and Analysis</b>				
9	Establish a medium-term plan to develop LSI/insurance climate risk supervision to incorporate climate-related risk perspective across activities of the supervisory process, including bridging data gaps. (¶144, 45)	DNB	ST	H
10	Conduct physical risk analysis using forward-looking medium and long-term flood scenarios accounting for the impact of climate change (e.g., those aligned with the Intergovernmental Panel on Climate Change's Sixth Assessment Report) (¶138).	DNB, MoIWM	ST	M
11	Develop an approach to assess the impact of policies to reduce nitrogen depositions on the financial sector once the transition path and its implications on the economy become clearer (¶139).	DNB	ST	H
12	Deepen collaboration among DNB supervisors and DNB stress testers to inform supervisors of climate stress testing insights and vice versa (¶145).	DNB	ST	H
<b>Macroprudential Framework and Policies</b>				
13	Elevate the Financial Stability Committee (FSC) to a permanent advisory body and vest it with semi-hard powers, or vest DNB with hard powers over the calibration of the borrower-based tools. (¶147).	MoF, DNB	ST	H
14	Gradually reduce the maximum limit of the LTV ratio to 90 percent by one percentage point per year (¶150).	MoF, DNB, FSC	ST	H
15	Keep monitoring and addressing fragilities from IO mortgages, including by increasing incentives for borrowers to lower their exposure to these mortgages (¶117).	AFM, DNB, NIBUD, MoF	I	M
16	Gradually remove the mortgage interest deductibility (¶151).	MoF	ST	H

**Table 1. The Netherlands: Key FSAP Recommendations (Concluded)**

<b>Regulation and Supervision of Banks, Insurers, and Pension Funds</b>				
17	Introduce a requirement for all mortgage credit providers and their mortgage clients to periodically update information on the clients' financial situation (¶60).	DNB, AFM, MoF	MT	H
18	Expand the number of on-site inspections for insurers in the lowest impact class, as a backstop to the risk-based approach (¶63).	DNB	ST	H
19	Closely monitor and proactively manage potential risks of the pension system transition for the authorities related to resources and legal risks (¶67).	MoSA, DNB, AFM	C	H
<b>Securities Market Regulation and Supervision</b>				
20	Continue risk-based use of thematic and firm-specific supervisory tools to ensure that key trading venues have robust arrangements in place to prevent and manage operational outages including where the market is unable to open or close (¶69, 70).	AFM	I	H
21	Continue to monitor liquidity mismatch in real estate and corporate bond funds, including risks arising from fund credit lines, and availability/use of appropriate liquidity management tools (¶73).	AFM, DNB	ST	M
<b>Financial Integrity</b>				
22	Produce a comprehensive risk assessment on the cross-border financial crime risks and misuse of legal vehicles, covering the risks stemming from conduit companies and foreign entities with complex legal structures and sufficient links to the Netherlands (¶74).	MoF, FIU, FEC	ST	H
23	Ensure completeness of the beneficial ownership registries, including resolving the legacy issues with pre-existing legal persons and liaising closely with the tax authorities concerning legal arrangements such as foreign trusts (¶74).	MoF, Chamber of Commerce	ST	M
24	Ensure that the intensity, depth, and scope of the risk-based AML/CFT supervision is informed by the lessons learnt from the remediation cases of the three largest banks, and that the risk-based procedures are aligned with the main risks, including tax risks to financial integrity relevant primarily in the context of the large number of conduit structures, and continue taking action to tackle the issue of illegal trust offices and underground banking (¶74).	DNB	I	H
<b>Financial Safety Nets and Crisis Management</b>				
25	Operationalize the preferred and fallback resolution strategies for SIs and LSIs, by finalizing the authorities' relevant handbooks, sharing more non-confidential detail on DNB's resolution plans with LSIs and regularly testing DNB's resolution capabilities (¶75, 78, 79).	DNB, MoF, AFM, Deposit Guarantee Fund (DGF)	I	H
26	Identify and operationalize national sources for the provision of liquidity in resolution, such as by relying on the existing Emergency Liquidity Assistance (ELA) framework and setting up and testing cross-border cooperation arrangements (¶76).	DNB	I	H
27	Develop and regularly test a comprehensive financial crisis management plan that sets out authorities' roles and responsibilities and establishes an inter-authority decision-making body (¶81).	DNB, DGF	I	H
* Timing: C = Continuous; I = Immediate (within one year); ST = Short Term (within 1-3 years); MT = Medium Term (within 3-5 years).				
** Priority: H = High; M = Medium; L = Low.				

## BACKGROUND

### A. Context and Macrofinancial Developments

**1. The Dutch economy was resilient through a succession of global shocks, but growth slowed in 2023 while core inflation remained elevated.** GDP growth held up well to effects of the war in Ukraine, following the post-pandemic recovery, but turned negative in mid-2023 with external demand and consumption growth waning (Table 2). Inflation has fallen from double digit levels as energy price shocks subsided, with headline inflation approaching target. However, elevated core inflation has persisted amid a still-tight labor market.

**2. The financial cycle has turned, with lending growth stalling as financial conditions tightened** (Figure 1). The ECB's monetary policy tightening has contributed to a reduction in bank lending growth. Meanwhile, DNB has increased the Countercyclical Capital Buffer (CCyB) to 2 percent (effective May 2024), a level it considers neutral.

**3. The housing market cooled on tighter financial conditions but seems to be recovering.** House prices almost doubled between 2013 and 2022, peaking in July 2022. They subsequently fell by 6 percent through mid-2023, before recovering lately. Mortgage rates have risen, and home sales have been stable recently. DNB imposed a macroprudential floor on risk weights on Dutch mortgages in 2022.

**4. Households' debt burden has been declining since 2010, with deleveraging accelerating since 2022 on the back of strong nominal disposable income growth** (Figure 2). This decline partly reflects: (i) higher voluntary debt repayments thanks to a decline in IO loans and to the tax exemption for gifts used for housing, and (ii) strong nominal income growth. Notwithstanding, house price valuations and household debt are high relative to peers.

**5. NFCs' debt has fallen relative to GDP, but their ability to repay may be challenged if tight financial conditions persist** (Figure 3). Bankruptcies have increased and are approaching pre-pandemic levels. The debt-to-surplus ratio is also relatively high compared to peers, and a significant share of NFCs have interest coverage ratios (ICR) below one, suggesting a need to boost profitability.

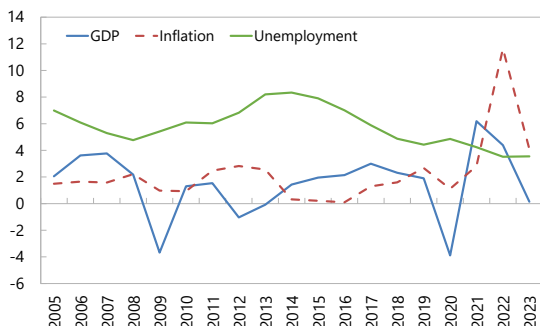
**6. Political uncertainty has affected economic and climate-related policies.** Negotiations toward a new coalition government continue, leaving the policy direction on climate and nature-related risks unclear, especially on the nitrogen deposition levels, which greatly exceed those set out in EU Directives and present threats to soil and water quality.

**Figure 1. The Netherlands: Macrofinancial Developments**

Growth has slowed, while inflation has come down and unemployment remains low.

**Real GDP, Prices, and Unemployment Rate**

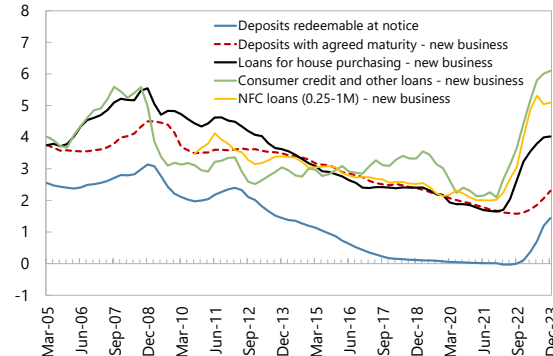
(percent change y-y, percent unemployment)



Lending rates have responded to policy rates hikes, even as deposit rates have lagged.

**Interest Rates**

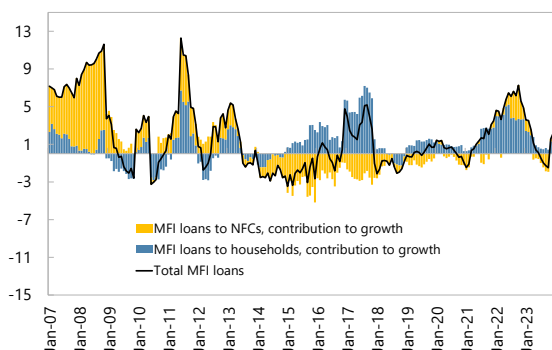
(percent)



Loan growth has reversed itself, and financial conditions are easing somewhat after 1½ years of tightening.

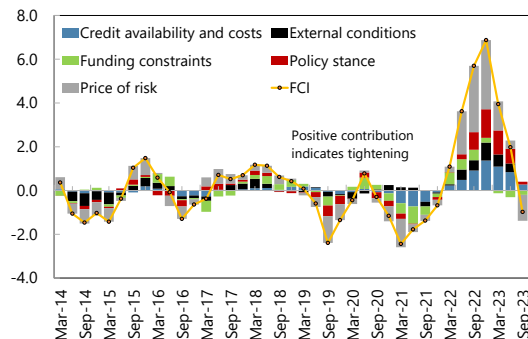
**Lending by Monetary Financial Institutions (MFIs)**

(percent change y-y)



**Changes in Financial Conditions Index 1**

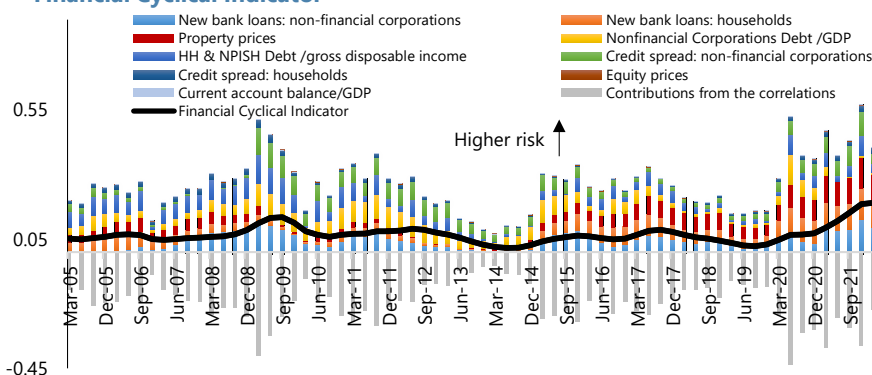
(percent contribution to quarter-over-quarter first difference)



Note: 2023Q2 and 2023Q3 are forecasts.

The financial cycle has turned from its peak in early 2022; the recent decline in this indicator can be attributed to a drop in property prices, a reduction in new loans to both households and corporations, a decrease in household debt, and an increase in the interest rate spread for corporate loans.

**Financial Cyclical Indicator 2**



Sources: IMF, Haver analytics, CBS, DNB, ECB, and IMF staff calculations.

1/ See Borraccia et al (2023), "Financial Conditions in Europe: Dynamics, Drivers, and Macroeconomic Implications."

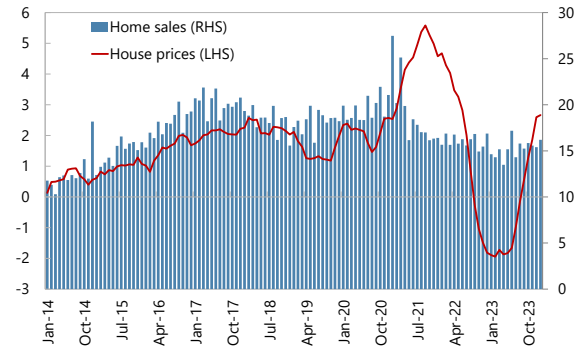
2/ The Indicator warns of a potential materialization of risks six quarters ahead. Ranging between 0 and 1, it covers demand and supply factors characterizing the cyclical swings in financial risk (see 2023 Iceland FSSA, Box 1).

**Figure 2. The Netherlands: Housing Market and Household Debt**

House price growth has been recovering recently, with home sales stable.

**House Price Momentum and Home Sales**

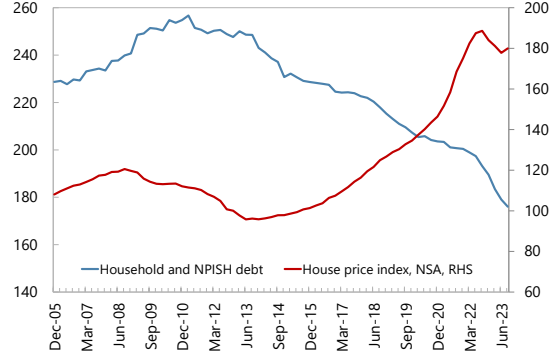
(LHS: percent, 3m-over-3m growth rate; RHS: thousands)



Household debt has declined after a peak in 2010 despite a concurrent house price boom.

**House Prices and Household Debt**

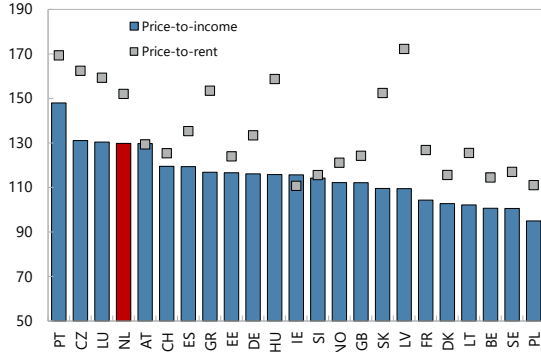
(percent of gross disposable income, RHS: index 2015=100)



Dutch housing prices are quite elevated compared to peers, and households have high debt relative to disposable income ...

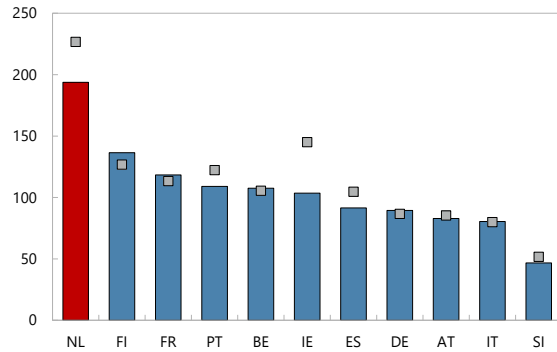
**Housing Valuations, June 2023**

(ratios)



**Household Debt to Gross Disposable Income**

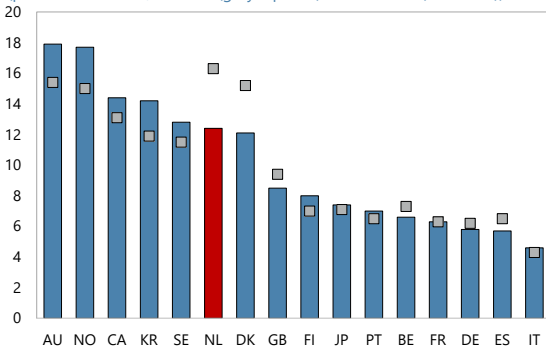
(percent, 2017 (grey squares) and 2022 (blue bars))



... though debt service ratios have come down since 2017, and households have large holdings of pension assets.

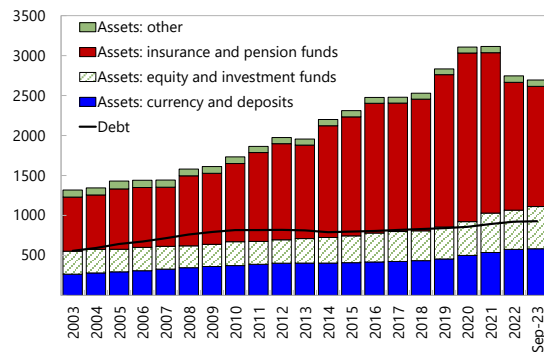
**Household Debt Service Ratio**

(percent of income, 2017Q4 (grey squares) and 2023Q2 (blue bars))



**Household Debt and Financial Assets**

(billions of euro)



Sources: BIS, CBS (Statistics Netherlands), European Banking Authority (EBA), ECB, Eurostat, IFS, OECD, and IMF staff calculations.

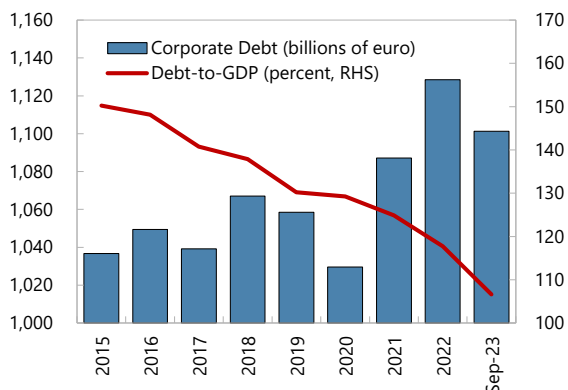
NPISH: Non-profit Institutions Serving Households

**Figure 3. The Netherlands: Nonfinancial Corporate Sector**

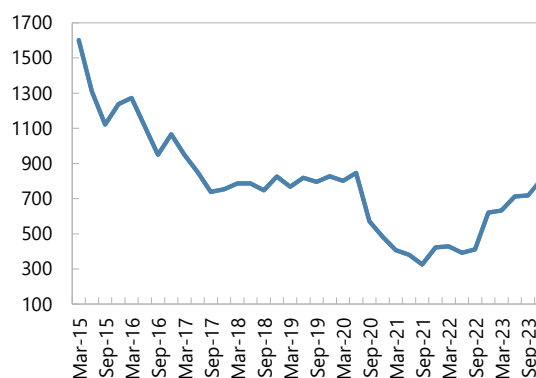
*NFC debt levels fell in the wake of the pandemic and rebounded quickly. They declined relative to GDP.*

*Firm bankruptcies have increased and are approaching pre-pandemic levels.*

**Non-Financial Corporate Debt**



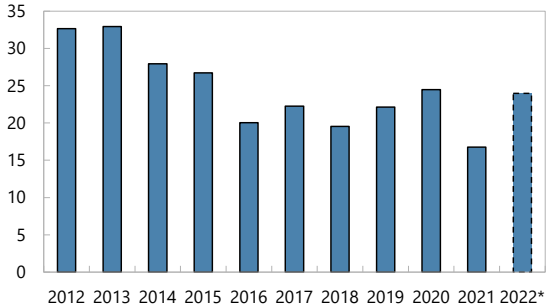
**Number of Firm Bankruptcies**



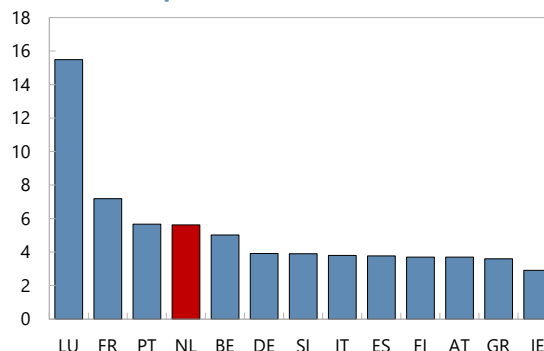
*The share of firms with low interest payment coverage remains high...*

*...with debt-to-surplus ratios higher than some EU peers.*

**Share of Firms with Interest Coverage Ratio < 1 (percent)**



**Debt-to-Surplus Ratio, 2022**



\*The number of observations drops in 2022 due to reporting lags.

Sources: CBS, OECD, Orbis, IMF staff calculations. The Orbis set of firms in panel 3 covers 72 percent of total NFC assets.

**B. Financial Sector Landscape**

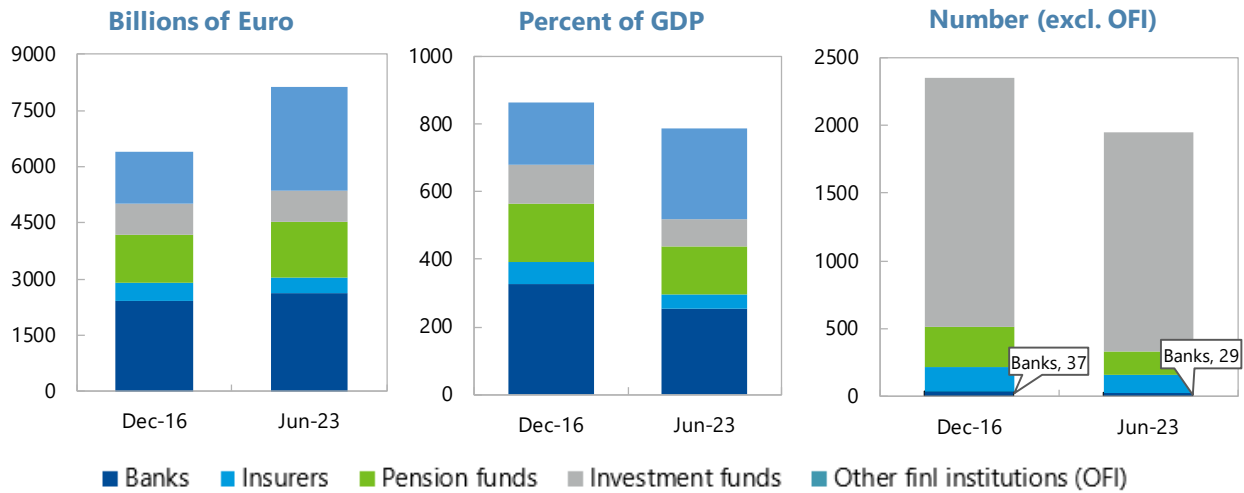
**7. The financial sector’s size relative to GDP has shrunk somewhat since the last FSAP, though it remains large.** Total system assets are almost eight times GDP, with banks accounting for one third of the system as of 2023Q2 (Figure 4). The four largest banks (including one Global-Systemically Important Bank, G-SIB) account for 84 percent of the banking system. Some consolidation has taken place, with five banks partly government owned.

**8. Dutch LSIs are small and have diverse business models.** The 23 LSIs represent about 8 percent of total banking assets. Financial conglomerates and universal banks conduct loan business domestically and in neighboring countries. Some corporates and emerging market banks are subsidiaries of foreign banks and serve international clients. Most of the custodian and specialized banks focus on payment, securities, and fee-based business.

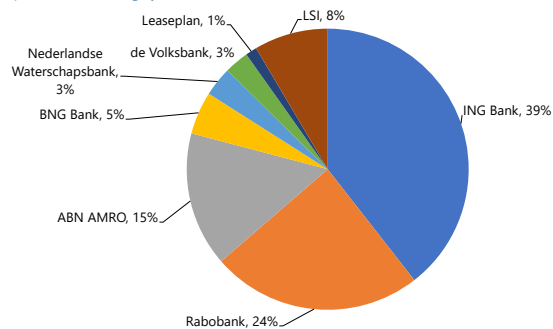
**Figure 4. The Netherlands: Financial Sector Structure**

	Dec-16				Dec-19				Jun-23			
	Number	Assets (billions of euro)	(percent of financial system)	(percent of GDP)	Number	Assets (billions of euro)	(percent of financial system)	(percent of GDP)	Number	Assets (billions of euro)	(percent of financial system)	(percent of GDP)
<b>Banks</b>	37	2,421	37.9	341.8	34	2,397	33.6	294.8	29	2,608	32.1	252.5
Globally systemic institutions	1	845	13.2	119.3	1	892	12.5	109.7	1	1,029	12.7	99.6
Significant institutions (non-GSIBs)	5	1,364	21.4	192.5	5	1,275	17.9	156.8	5	1,357	16.7	131.4
Less Significant institutions	31	212	3.3	30.0	28	230	3.2	28.3	23	221	2.7	21.4
Memo: Branches of foreign banks (excluded from above)	41	112	1.8	15.8	44	89	1.2	11.0	42	134	1.6	12.9
<b>Insurers</b>	181	486	7.6	68.7	150	515	7.2	63.3	134	445	5.5	43.1
Life and funeral insurers	40	411	6.4	58.1	29	440	6.2	54.2	20	369	4.5	35.7
Non-life insurers	132	69	1.1	9.8	113	69	1.0	8.5	107	72	0.9	7.0
Reinsurers	9	6	0.1	0.8	8	5	0.1	0.6	7	4	0.1	0.4
<b>Pension funds</b>	297	1,266	19.8	178.7	220	1,554	21.8	191.2	173	1,469	18.1	142.3
<b>Investment funds</b>	1832	849	13.3	119.8	1761	984	13.8	121.0	1616	838	10.3	81.1
<b>Other financial institutions (excl SPEs)*</b>	...	1,364	21.4	192.6	...	1,687	23.6	207.4	...	2,772	34.1	268.4
<b>Total Financial System (excl branches)</b>	2347	6,386	100	902	2165	7,137	100	878	2015	8,133	100	787
Memo: Financial System (incl branches)	2388	6,498	102	917	2209	7,226	101	889	1994	8,266	102	800

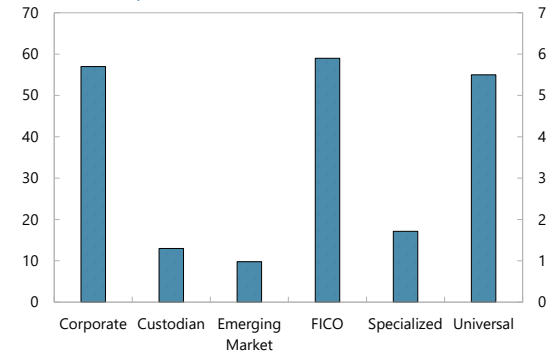
\*June 2023 figure for "Other financial institutions (excluding Special Purpose Entities)" is for end 2022.



**Banking System Concentration**  
(percent of banking system assets, June 2023)



**Bank Assets of Different Types of LSIs, 2022**  
(billions of euro, percent of GDP (RHS))



Sources: DNB, Haver, and IMF staff calculations.

FICO: Financial conglomerate.

**9. Nonbanks, particularly pension funds, are sizable.** Occupational pension funds are among the largest globally, at 142 percent of GDP. Leverage is considerably lower than among UK peers. A pension reform was adopted by Parliament in 2023, moving the system from defined benefit (DB) toward a defined contribution (DC) system, due for completion by 2028. The insurance sector, particularly life insurance, has been undergoing consolidation, but remains sizeable (43 percent of GDP). Investment funds are also large, though higher interest rates have reduced asset valuations to 81 percent of GDP. FSAP coverage of investment funds is focused on liquidity risks for those investing in real estate (¶172).

**10. Other financial institutions (OFIs) have grown significantly, reflecting responses to Brexit and financial innovation.** The OFI sector is diverse and surpasses banks in size, at 268 percent of GDP. Several large trading platforms have established themselves in the Netherlands since Brexit, increasing Dutch platforms' share of European trading (including UK) to over 30 percent from 5-10 percent pre-Brexit, with daily turnover volumes of EU-listed shares exceeding those in London. Amsterdam now hosts significant fixed income trading venues, including repo trading venues. Some are of EU-wide significance because of their scale and lack of easy substitutability.

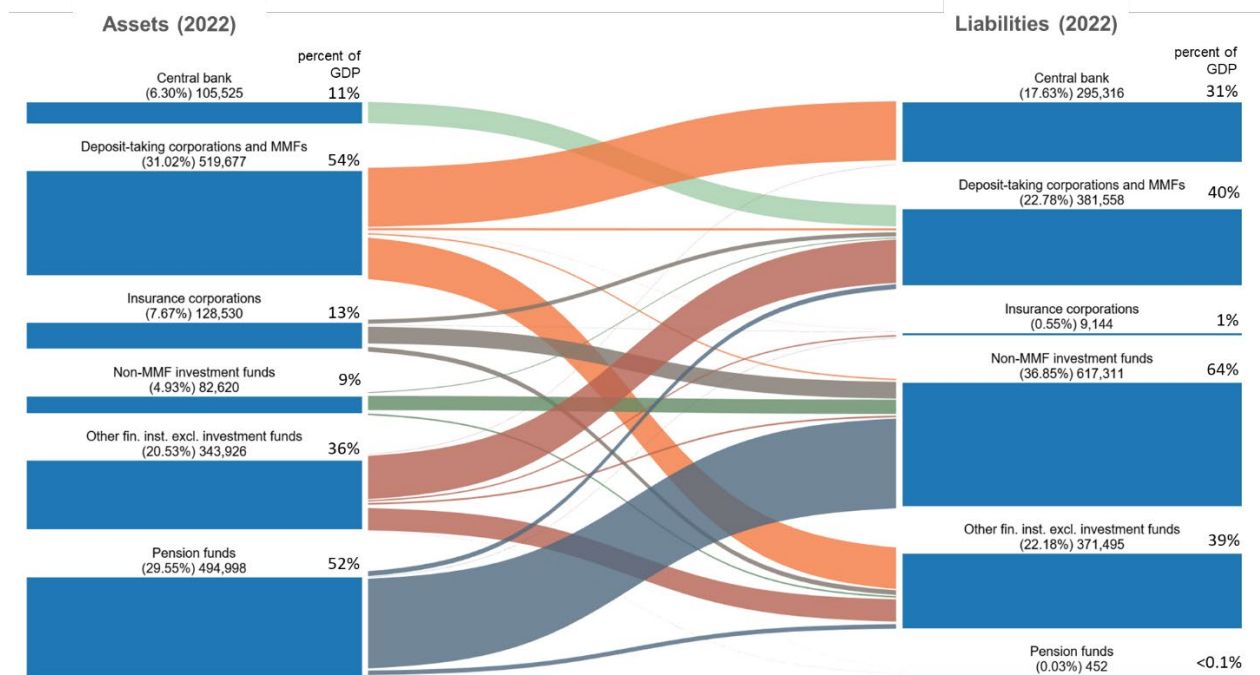
**11. The Dutch financial system is deeply interconnected domestically and with the rest of the world (ROW).** Domestic financial sector interlinkages feature large financial flows from the pension fund sector to investment funds (Figure 5). Financial flows from abroad (ROW) to OFIs are the largest, partly reflecting flow-through conduit companies. Banks are active internationally, with their largest counterparties in advanced economies (Figures 6, 7).



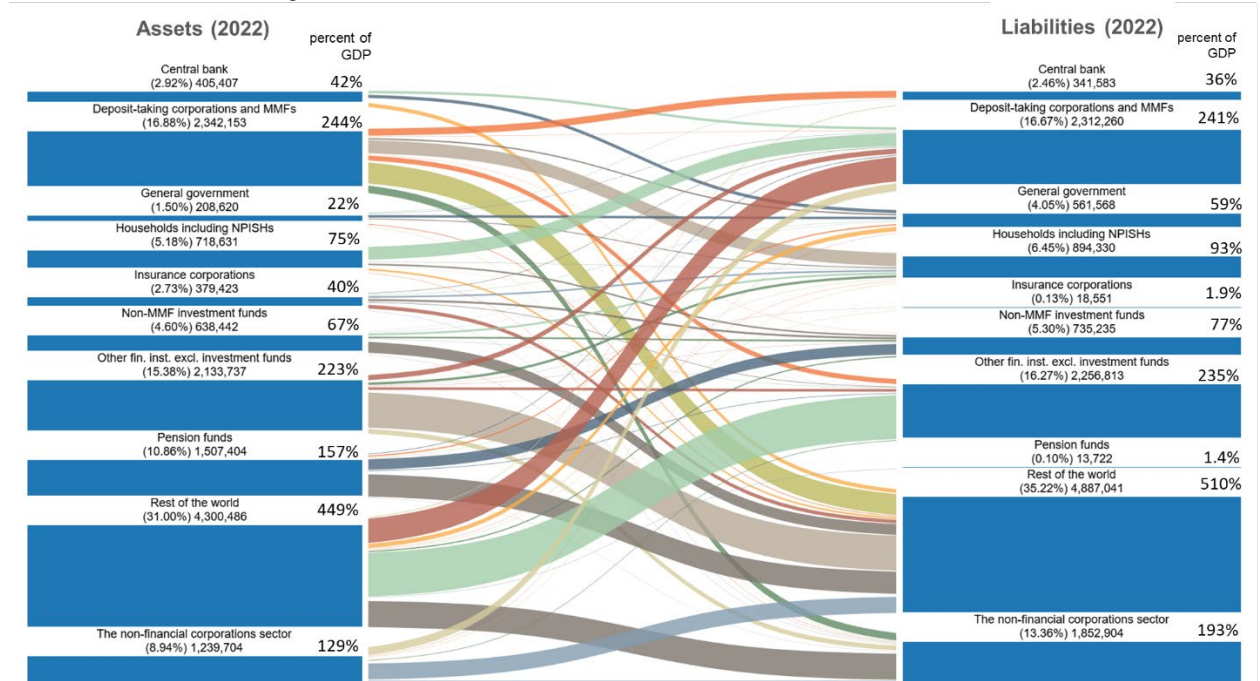
**Figure 5. The Netherlands: Interconnectedness**

(Percent of respective total, billions of euros, and percent of GDP)

Interconnections within the domestic financial system reflect pension funds' holdings of assets in investment funds, deposit-taking corporations' claims on the central bank, and offsetting positions with OFIs.



Economic sectors show high interconnectedness with the financial system and large interconnections with ROW, especially deposit taking corporations and other financial institutions (including conduit companies), though these are largely offsetting claims. Pension funds hold significant assets abroad.

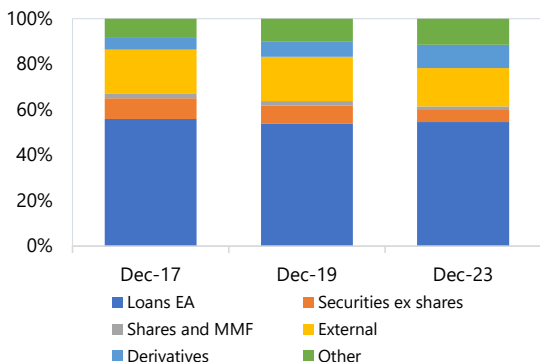


Source: CBS and IMF staff calculations. Non-consolidated who-to-whom financial accounts.

**Figure 6. The Netherlands: Monetary and Financial Institutions (MFI)**

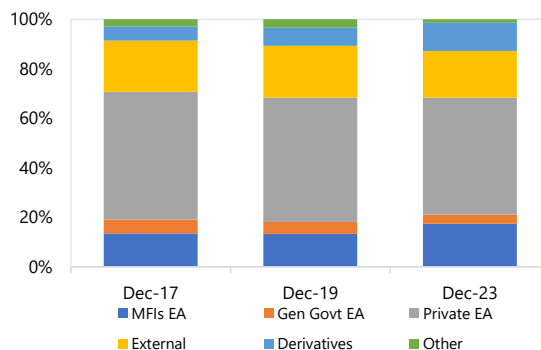
Loans to EA form the largest part of MFI balance sheets ...

**MFI Assets by Instrument**



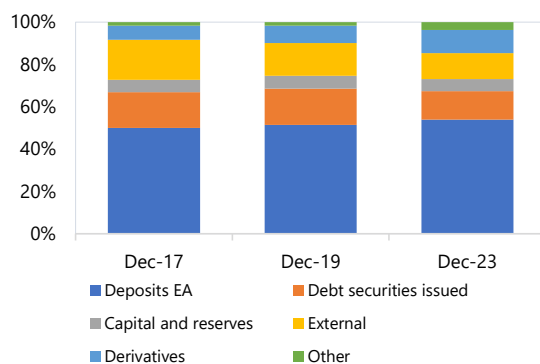
... while claims on private EA residents have declined.

**MFI Assets by Sector**



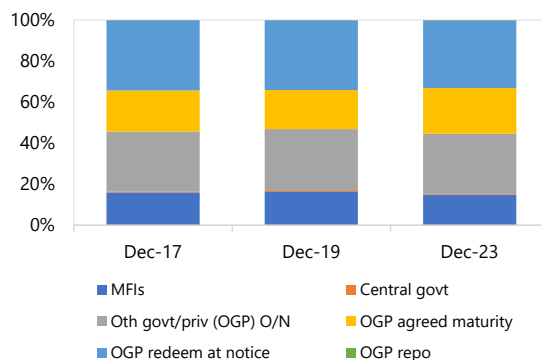
Debt issuance and funding from outside the EA fell, while derivative positions increased.

**MFI Liabilities**



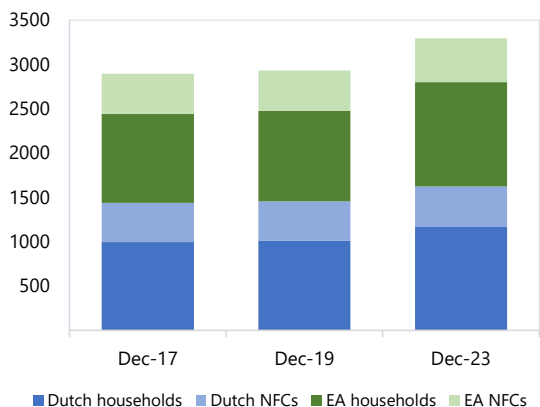
The composition of deposits of EA residents is broadly unchanged.

**MFI Deposits of EA residents**



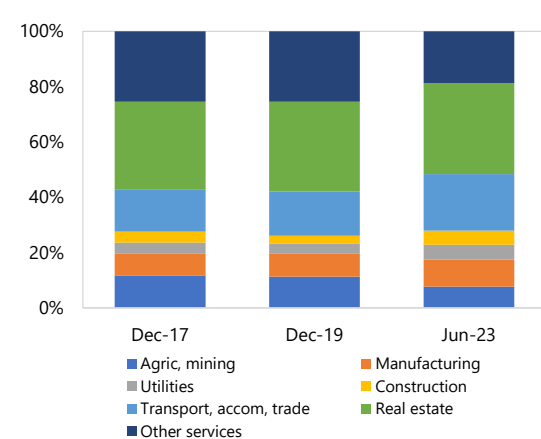
Loans to EA residents outside the Netherlands have risen.

**MFI Loans to the Netherlands and EA (billions of euro)**



The largest share of loans to Dutch NFCs go to the real estate sector, representing mostly loans to housing associations, which build and manage social housing in the Netherlands.

**MFIs Loans to Dutch NFCs**



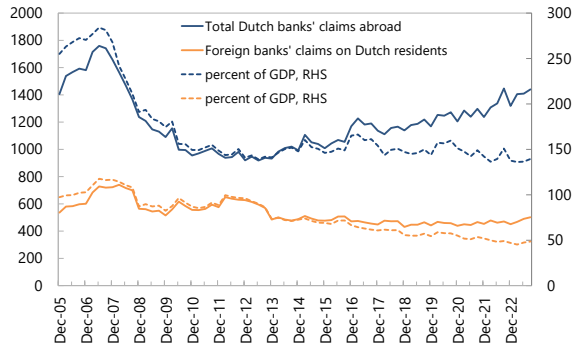
Sources: Haver, DNB.

**Figure 7. The Netherlands: Cross-Border Claims**

Dutch banks hold higher claims abroad than foreign banks' claims on residents of the Netherlands, while assets invested in foreign investment funds are held in countries with large investment fund sectors.

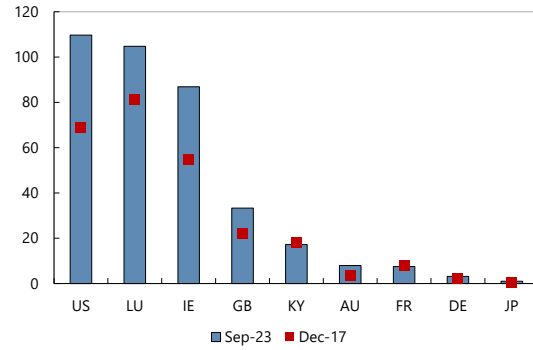
**Dutch Banks' Claims Abroad vs Foreign Banks' Claims on Netherlands**

(billions of Euro and percent of GDP, consolidated data, guarantor basis)



**Dutch Invested Assets in Foreign Investment Funds**

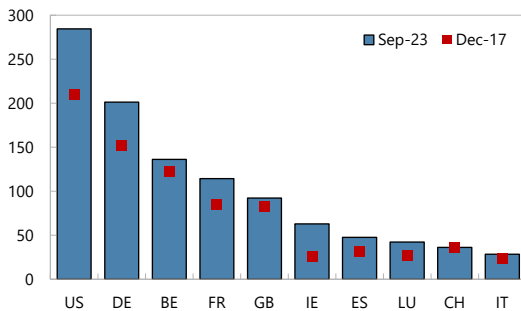
(billions of euro)



Most of the top ten largest counterparties for cross-border claims in either direction are the same countries.

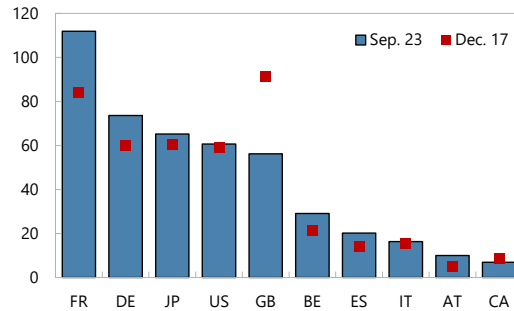
**Cross-Border Claims of Dutch Banks**

(billions of euro, consolidated, ultimate debtor)



**Cross-Border Bank Claims of Dutch Residents**

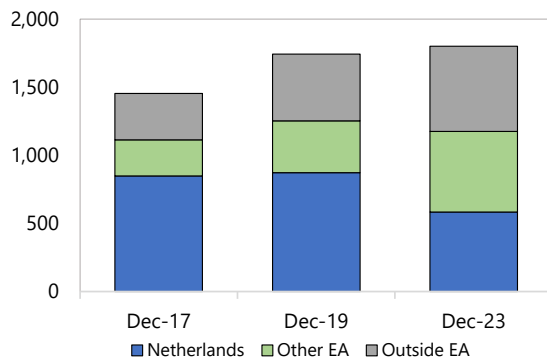
(billions of euro, consolidated, guarantor basis)



Pension funds have diversified geographically, while insurers have retrenched from external markets.

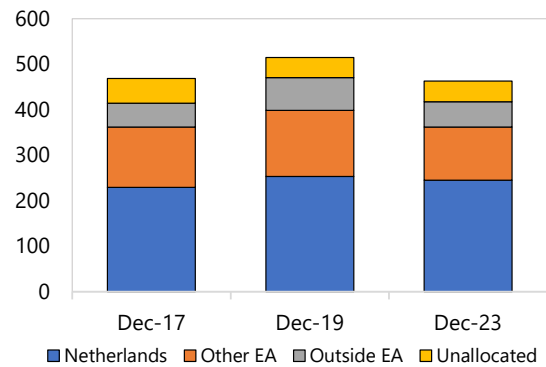
**Pension Fund Assets, by Location**

(billions of euro)



**Insurers Assets, by Location**

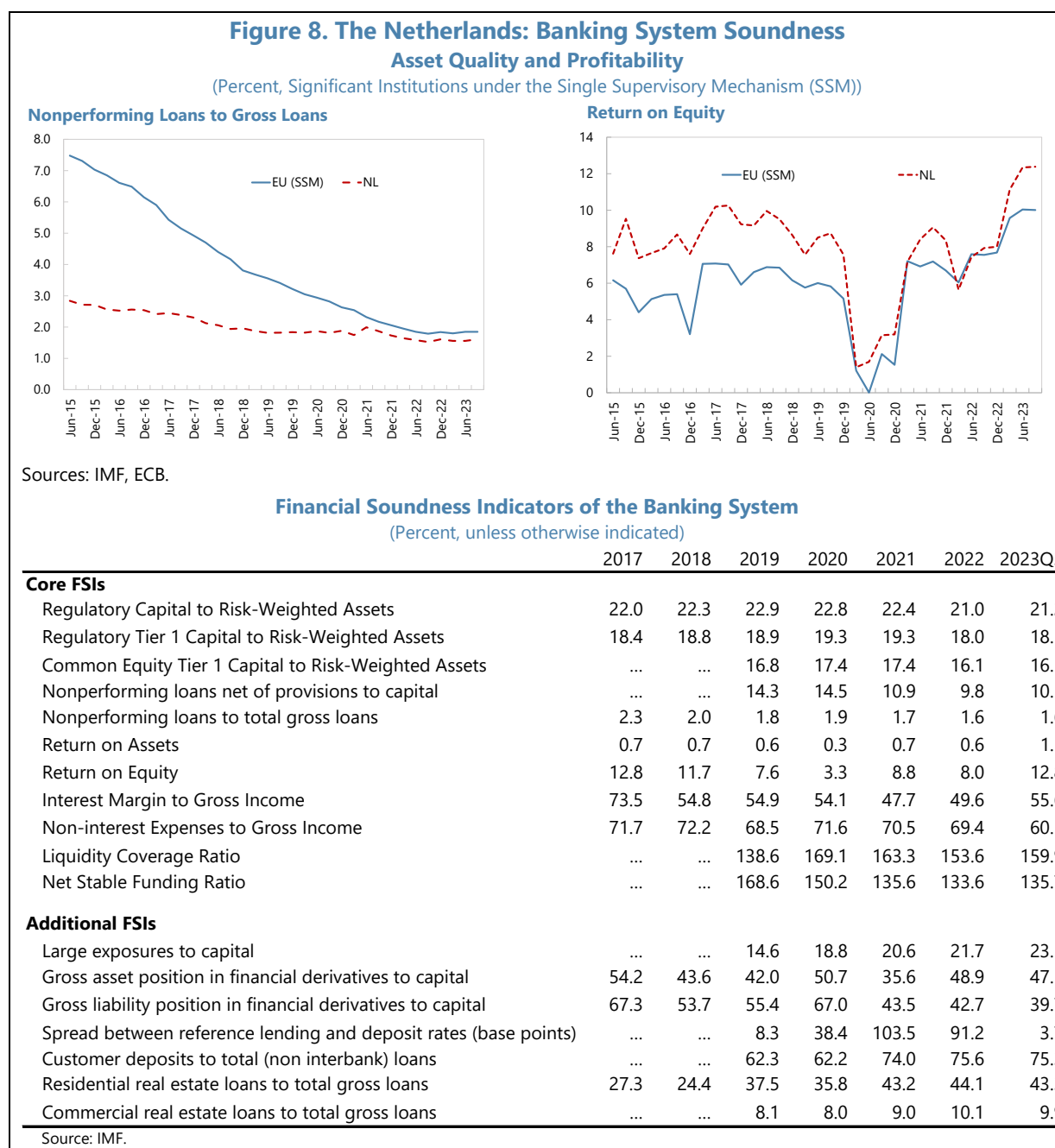
(billions of euro)



Sources: BIS, DNB, Haver, IMF staff calculations.

## C. Financial Sector Developments

**12. The banking system has remained stable through a succession of shocks.** Bank capitalization has improved since 2017, with the Common Equity Tier 1 (CET1) ratio at 16.5 percent in 2023Q3 (Figure 8). The systemwide nonperforming loans ratio (NPLs) stayed low and liquidity levels appear adequate compared to peers (Figure 9). Profitability in 2023 was boosted by a slower increase in deposit rates compared to lending rates.

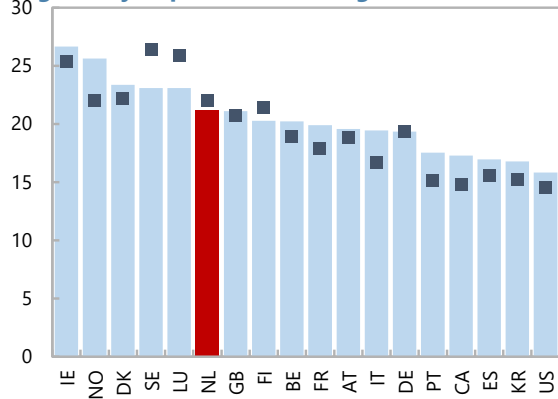


**Figure 9. The Netherlands: Financial Soundness Indicators of Selected Banking Systems**

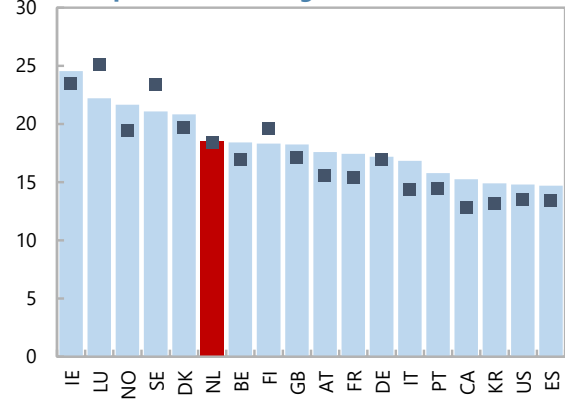
(Percent, September 2023 or latest available as bars, and end 2017 as squares)

*Capital ratios in Dutch banks are in the mid-to-high range relative to peers*

**Regulatory Capital to Risk-weighted Assets**

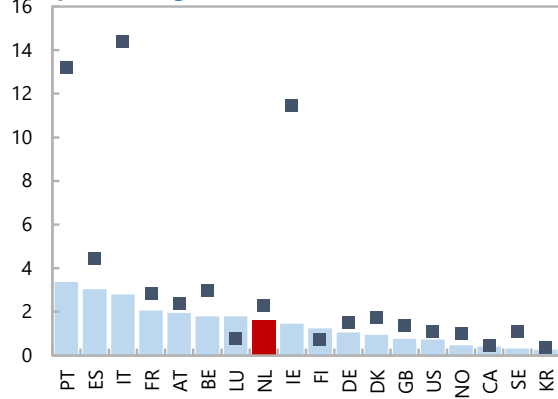


**Tier 1 Capital to Risk-weighted Assets**

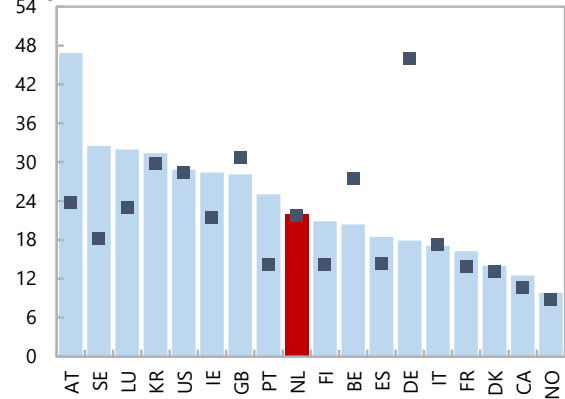


*Asset quality and liquidity are in comfortable ranges ....*

**Nonperforming Loans to Total Gross Loans**

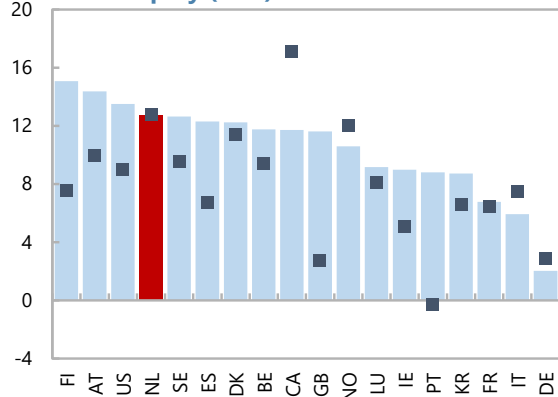


**Liquid Assets to Total Assets**

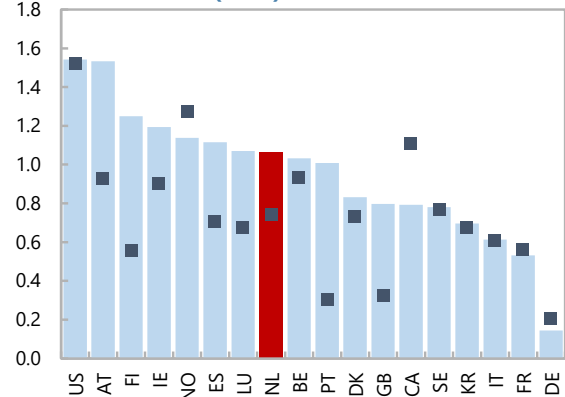


*... while profitability is also in the mid-to-high range relative to peers.*

**Return on Equity (ROE)**



**Return on Assets (ROA)**



Source: IMF.

**13. System-wide liquidity conditions have been mostly stable but subject to occasional turbulence.** Dutch banks rely mostly on customer deposits for funding (Figure 10). The authorities saw a bigger impact on liquidity conditions during the March 2020 turbulence than the October 2022 turmoil from margin calls on UK pension funds pursuing a liability-driven investment strategy.

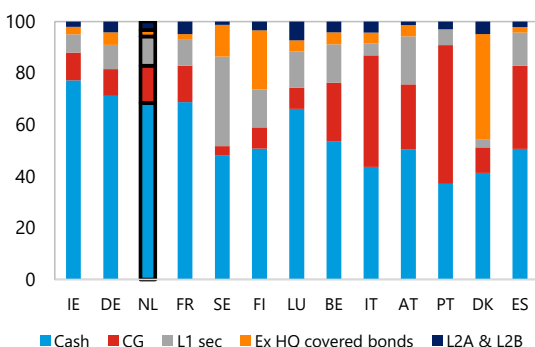
**14. LSIs have performed stably over time but could be vulnerable to macrofinancial shocks.** Their diverse business models are reflected in a wider dispersion in capital, asset quality, liquidity, and profitability metrics than for SIs (Figure 11, Table 3). LSIs with large lending portfolios could be more susceptible to credit risk, while those holding large securities portfolios could be substantially affected by market downturns. Banks that rely significantly on foreign or wholesale funding could be subject to liquidity strains from funding market shocks.

**Figure 10. The Netherlands: Significant Institutions, Liquid Assets, Sovereign Exposure, and Funding, September 2023**

*Dutch SIs hold a high (weighted) share of cash. Sovereign securities account for around 10 percent of financial assets.*

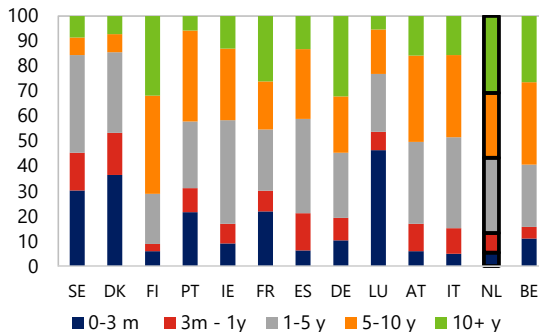
**Volume and Composition of Liquid Assets<sup>1</sup>**

(after weighting, percent of total liquid assets)



**Sovereign Exposure**

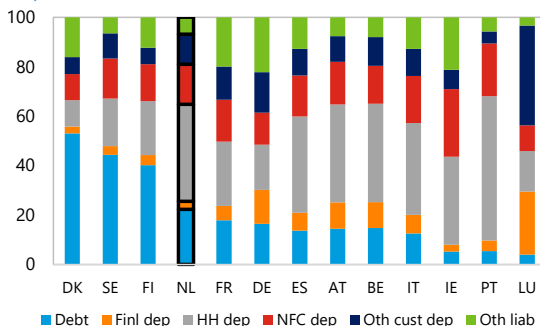
(gross carrying amount by maturity, percent of total exposure)



*Household deposits account for the largest share of liabilities, as also reflected in Available Stable Funding.*

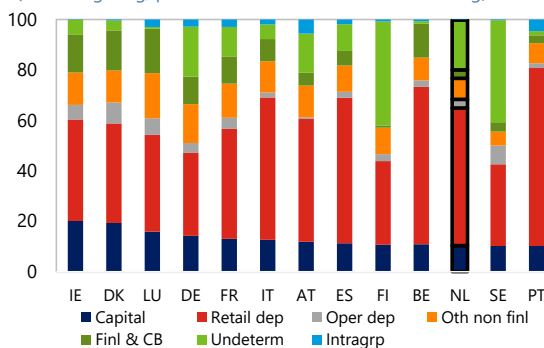
**Composition of Liabilities**

(percent of total liabilities)



**Composition of Available Stable Funding**

(after weighting, percent of total available stable funding)

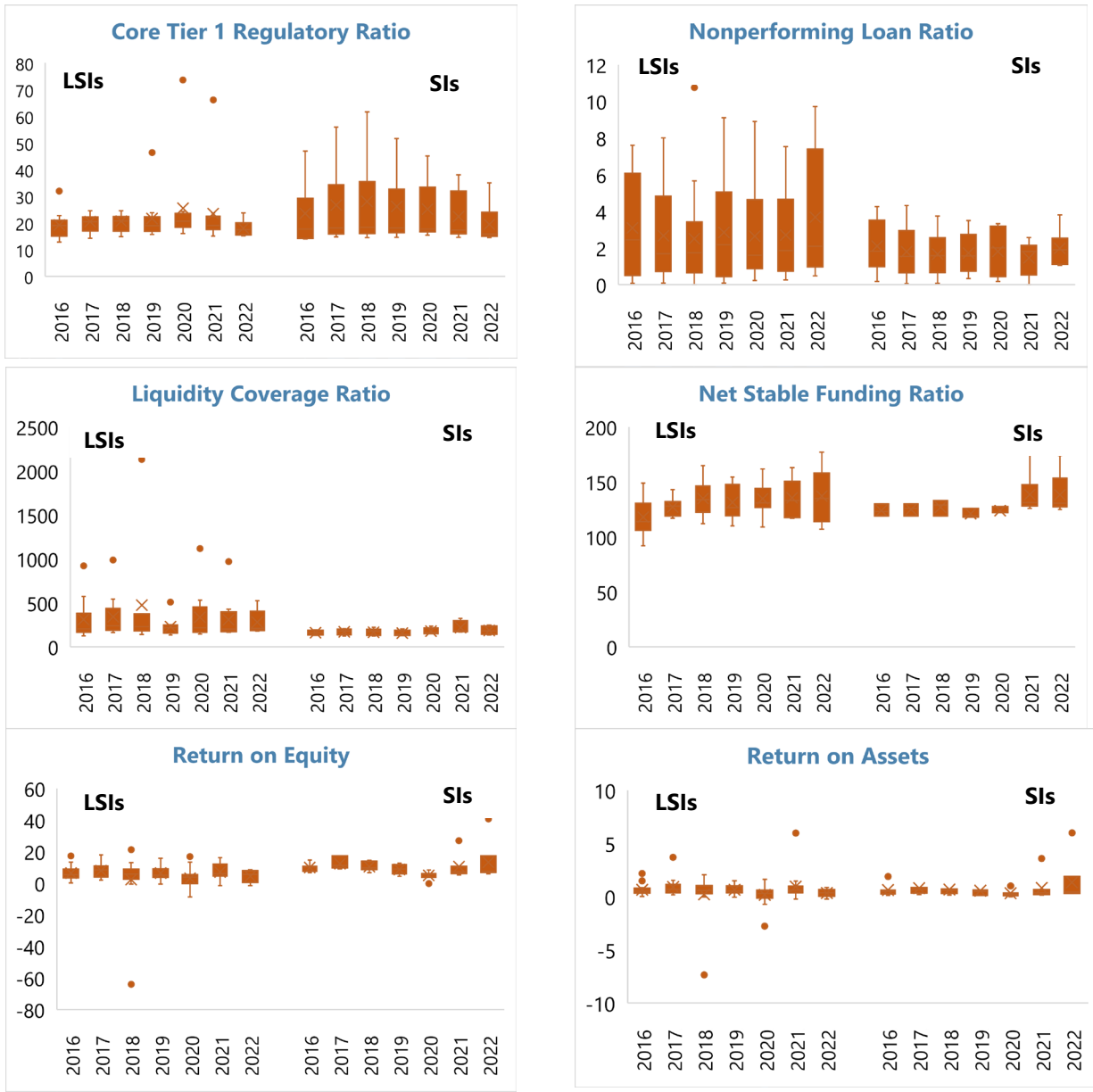


<sup>1</sup>Legend shows liquid assets by descending quality, from cash (highest quality), central government securities (CG), Level 1 securities (L1 sec), and Level 2 securities (L2A & L2B, lower quality), subject to limits on their inclusion in the Liquidity Coverage Ratio (LCR), and to which haircuts are applied. Weights used are intended to reflect the reduction in the value of the liquid assets after applying the appropriate haircuts.

Source: EBA.

**Figure 11. The Netherlands: SI and LSI Financial Soundness Indicators**  
(Percent)

*LSIs' financial soundness indicators exhibit wider dispersion than SIs'.*



Source: Fitch.

**15. Higher interest rates have improved occupational pension funds' funding ratios, and insurers solvency ratios have been stable** (Figure 12). Since 2021, rising interest rates have eased pressures on pension funds' funding ratios as liability values declined. The DC regime improves long-term sustainability, shifting investment risks to pension fund members and beneficiaries.

**16. Banks' exposures to real estate are high relative to peers and exposures of NBFIs have increased** (Figure 13). Mortgages, mostly fixed-rate and a substantial portion IO, constitute around 30 percent of the system's assets. Insurers are also active in mortgage lending, with mortgages accounting for 15 percent of their assets. Banks' commercial real estate loans make up 7 percent of assets, while investments in CRE account for 7 percent and 8 percent of the balance sheets of pension funds and insurers, respectively.

**17. The house price boom has raised vulnerabilities for the most recent borrowers.** Higher house prices have led to a decrease in average LTV ratios, though they also increased the proportion of households borrowing at their debt service-to-income (DSTI) limits, leading to an increase in debt-to-income ratios of new mortgages, especially among younger borrowers (Figure 13). The stock of IO mortgages has declined but remains high. A large volume of IO mortgages will mature between 2034 and 2039, though the authorities' analysis finds no systemic threat.

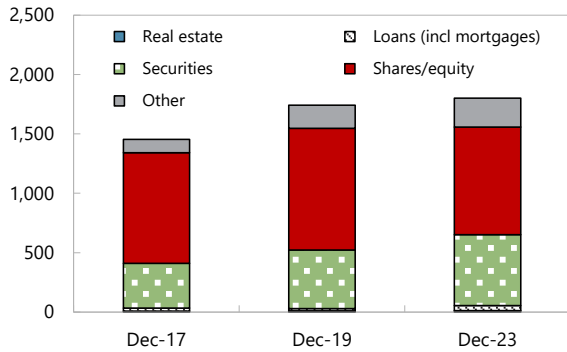
**18. Downside risks to CRE prices remain heightened.** CRE prices doubled between 2015Q1 and 2022Q2, with significant declines thereafter, and price growth seesawed (Figure 14). The consistently high valuation of CRE pre-pandemic exposed the sector to adverse shocks, including higher interest rates. A CRE price-at-risk analysis estimates the distribution of future CRE price growth at different points in time. During the pandemic, the distributions shifted leftward. While these leftward shifts have reversed somewhat as price declines have moderated, the 2023Q1 distribution indicates that downside risks remain elevated.



**Figure 12. The Netherlands: Pension Funds, Insurers, and Investment Funds**

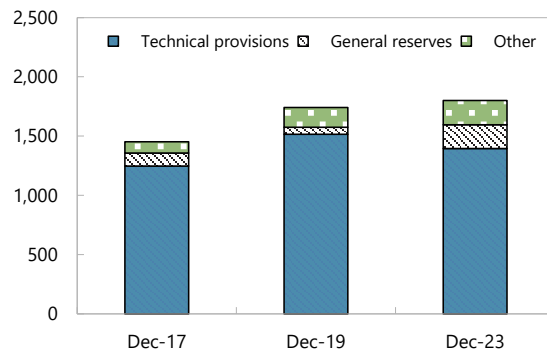
Pension funds' total assets at end 2023 are somewhat higher than those at end 2019 ...

**Assets of Pension Funds**  
(billions of euro)



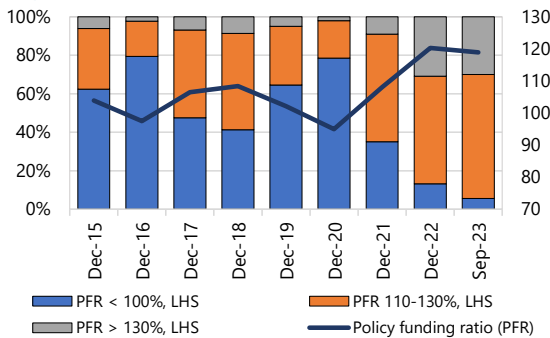
... while their general reserves have increased, translating into higher funding ratios ...

**Liabilities of Pension Funds**  
(billions of euro)



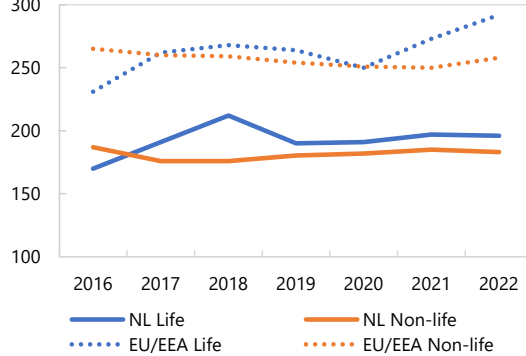
... leaving only a very small number of pension funds with a funding ratio below 100 percent.

**Pension Funds' Policy Funding Ratios**  
(percent)



Insurers' Solvency Capital Requirement (SCR) has been stable, but lower than the average for peers in the region.

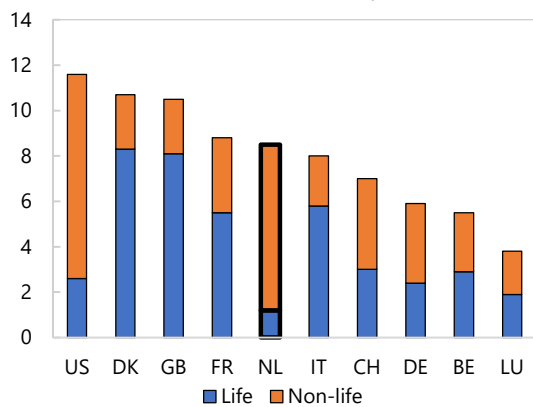
**Insurers' SCR Coverage Ratios**  
(percent)



Non-life insurance reflects mainly health insurance, which is all provided privately in the Netherlands.

**Insurance Penetration**

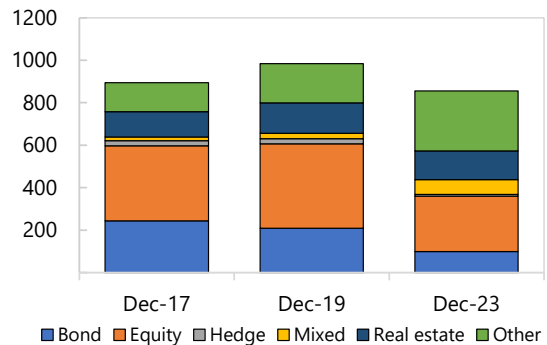
(Gross Premiums to GDP, 2022, percent)



"Other" investment funds have grown significantly; real estate funds account for 16 percent of total assets under management.

**Investment Funds, by Type**

(billions of euro)



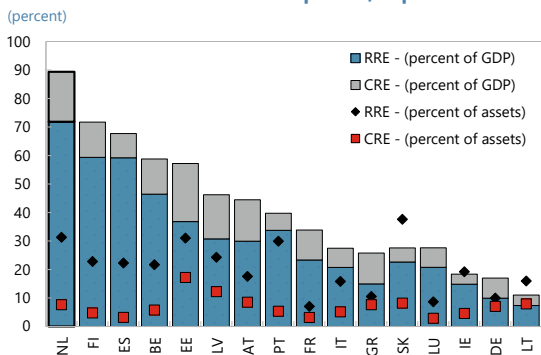
"Other" includes private equity funds, commodity funds, infrastructure funds, green ventures, and many others.

Source: DNB.

**Figure 13. Characteristics of Mortgages**

Dutch banks are highly exposed to real estate compared to peers.

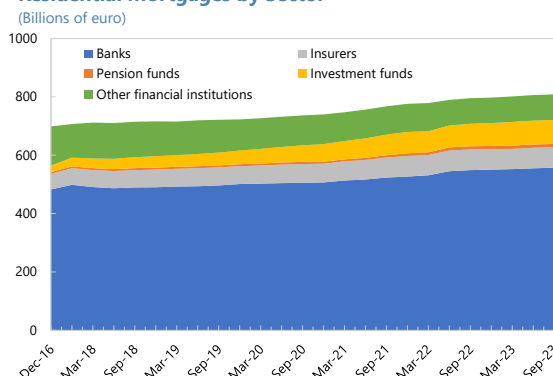
**Euro Area Banks: Real Estate Exposure, September 2023**



Note: CRE = Commercial Real Estate; RRE = Residential Real Estate.

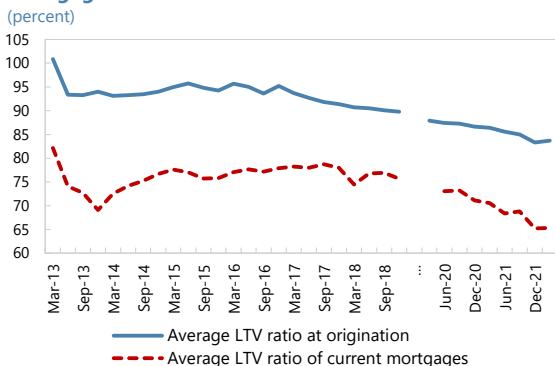
NBFIs also hold significant shares of the mortgage market.

**Residential Mortgages by Sector**



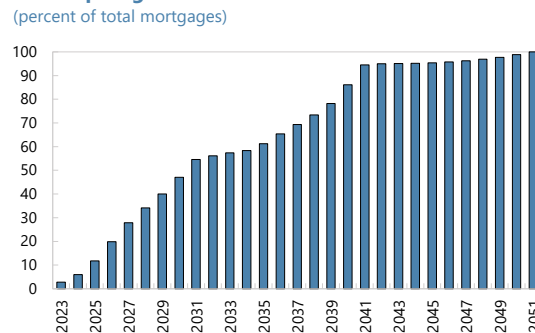
Average LTV ratios of mortgages have been falling ...

**Average LTV Ratios at Origination and of Current Mortgages**



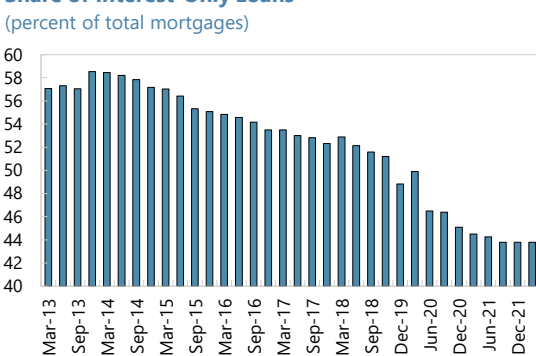
... and fixed rate mortgages are due to reset gradually.

**Cumulative Proportion of Mortgage Debt with Expiring Fixed-interest Period**



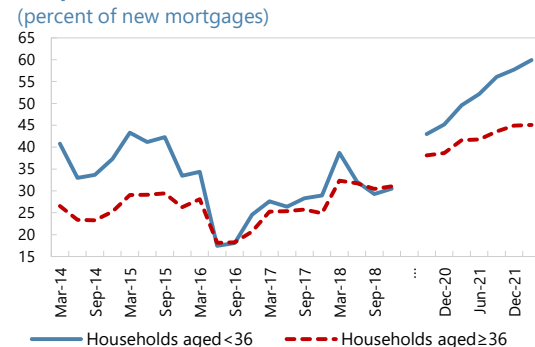
The share of IO mortgages remains quite high ...

**Share of Interest-Only Loans**



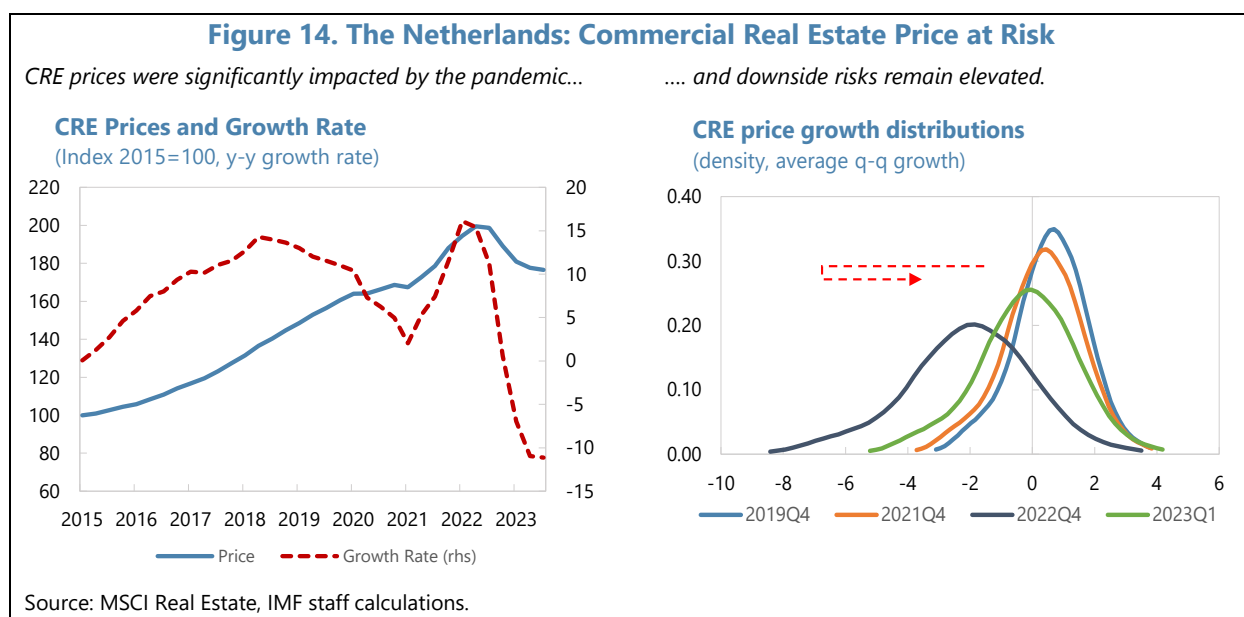
... and young new borrowers have had to stretch more.

**New Mortgages with a Debt-to-income Ratio over 450 percent**



Sources: EBA, DNB, IFS, and IMF staff calculations.

Note: In Panels 3 and 6, data for 2019Q1-2020Q2 are missing due to data quality issues in the transition from RRE to loan-level data.



## SYSTEMIC RISK ASSESSMENT

### A. Vulnerabilities and Risks

**19. The main risks stem from an abrupt slowdown in growth, combined with persistently high inflation that could lead to further tightening of financial conditions, including through higher interest rates, and a severe correction in the housing market.** Such a scenario could be accompanied by lower external demand and financial spillovers affecting liquidity and funding conditions (Risk Assessment Matrix (RAM), Appendix I). Climate risks are also prominent.

- **Housing.** Banks are vulnerable to higher interest rates combined with a severe house price correction, which could create macrofinancial feedback effects. House prices show signs of overvaluation, with vulnerable borrowers most affected by tightened financial conditions.<sup>1</sup> Despite mitigating factors—including a full legal recourse of mortgage lenders and a mortgage guarantee scheme—and low default rates, an increase in interest rates combined with a severe drop in house prices and higher unemployment could increase default rates and banks' loan losses. Even if direct effects on banks are limited, lower household wealth could negatively affect consumer spending and growth, with possible second-round effects on banks.
- **NBFIs.** Occupational pension funds and life insurers face market and liquidity risk, while P&C insurers face higher inflation risk. Higher interest rates have exposed vulnerabilities associated with margin calls on interest-rate derivatives. Together with the pension reform, pension funds may shift investment strategies, though likely gradually during the transition period. Higher

<sup>1</sup> The [European Systemic Risk Board's risk dashboard](#) finds some overvaluation of Dutch house prices, ranging from about 10 to over 20 percent as of 2023Q2.

inflation poses a risk for insurers, specifically in the health and non-life sectors. Claims inflation, related to higher building costs, wages and medical costs, strain insurers' profitability.

- **Climate and nature**

- *Banks, insurers, and pension funds are exposed to climate physical risks, especially from floods* (Figure 15). Insurance penetration is limited, with damages from major flooding primarily borne by those directly affected and potentially the government. These impacts could increase over time, as sea levels rise and extreme rainfall becomes more frequent.
- *Financial risks from the transition to a greener economy—including from the “nitrogen crisis”—could also be sizeable.* Nitrogen depositions currently exceed critical values and need to be reduced drastically by 2030. Measures would target specific sectors: agriculture, transport, and construction, with implications for banks. The measures have been vocally opposed by farmers, with policy direction uncertain amid ongoing coalition negotiations (¶6).

## B. Stress Tests

### 20. Staff performed a range of stress tests to assess the resilience of banks and NBFIs.

Bank stress tests assessed solvency and liquidity positions of the system against the main risks. The solvency analysis compared scenario-conditional capital ratios with minimum and buffer requirements (Appendix II). Additional analyses focused on corporate and emerging market LSI banks. The liquidity exercise assessed banks' resilience against prescribed cash outflows over various horizons and funding market dislocations. Additional sensitivity analyses integrated solvency and liquidity tests. For insurers and pension funds, staff conducted solvency stress tests and an analysis of liquidity risks from margin calls on interest rate swap portfolios. The contagion analysis estimated the additional losses to the wider financial system triggered by individual losses or failures, covering selected banks and NBFIs. The interconnectedness analysis examined banks' cross-border exposures.

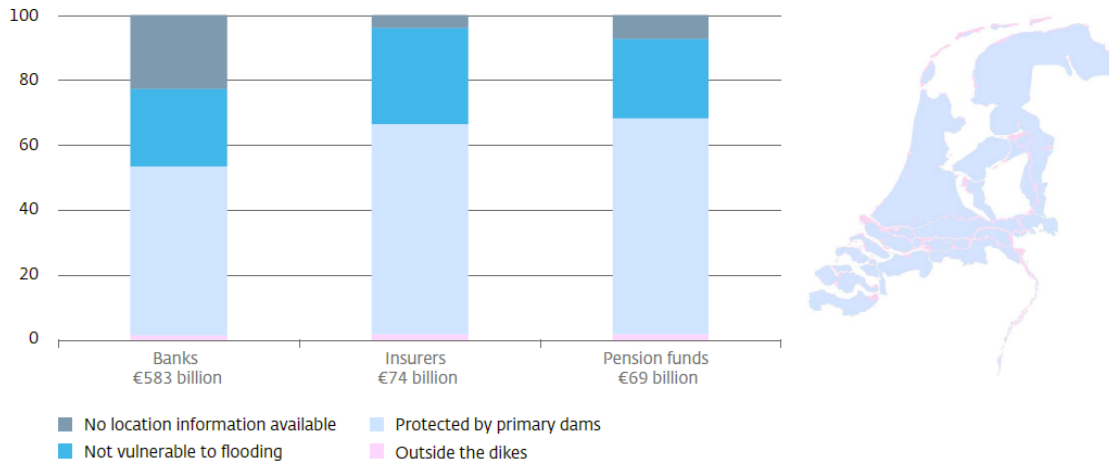
### Bank Solvency

21. **The bank solvency stress test covers six SIs, representing over 90 percent of banking sector assets.** The analysis includes a baseline macrofinancial scenario drawing on the April 2023 World Economic Outlook (WEO) and incorporates an adverse scenario reflecting both global and country-specific risks in the RAM (Figure 16). The adverse scenario features stagflation due to supply disruptions, higher energy prices, de-anchored inflation expectations, and further interest rate increases. The credit spread for NFCs increases, in line with general macroeconomic conditions. A large housing price correction is prescribed as a country-specific shock. The stress test assumes no policy reactions.

**Figure 15. The Netherlands: Climate Risks: Physical and Nitrogen-related Risks**

Most Dutch financial institutions' domestic real estate exposures are in areas vulnerable to flooding, giving rise to physical risks.

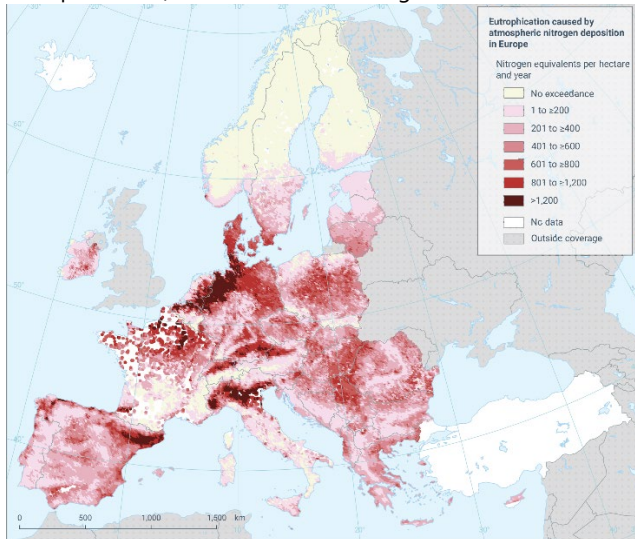
**Flood Risk and Dutch Real Estate**  
(percent)



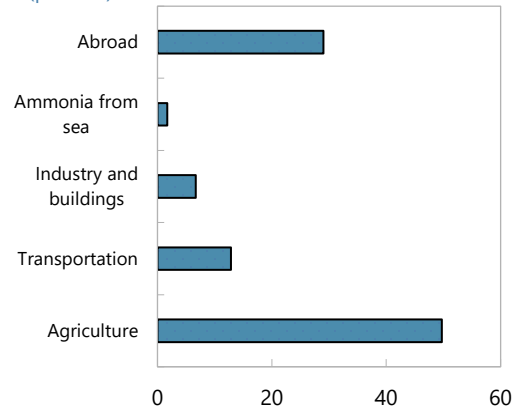
Note: The chart reports the percentage of domestic real estate exposures of banks, insurers, and pension funds by location. Locations that can be affected by flooding include areas which are not protected by flood defense systems (outside the dikes) and locations in areas protected by primary dams.

Source: DNB. Financial Stability Report (2021).

Risks could arise from exposures to sectors responsible for nitrogen deposition, given current levels of exceedance in the Netherlands. When critical values of nitrogen deposition are exceeded, an ecosystem is considered at risk of eutrophication (a chain reaction, starting with an overabundance of algae and plants in bodies of water).



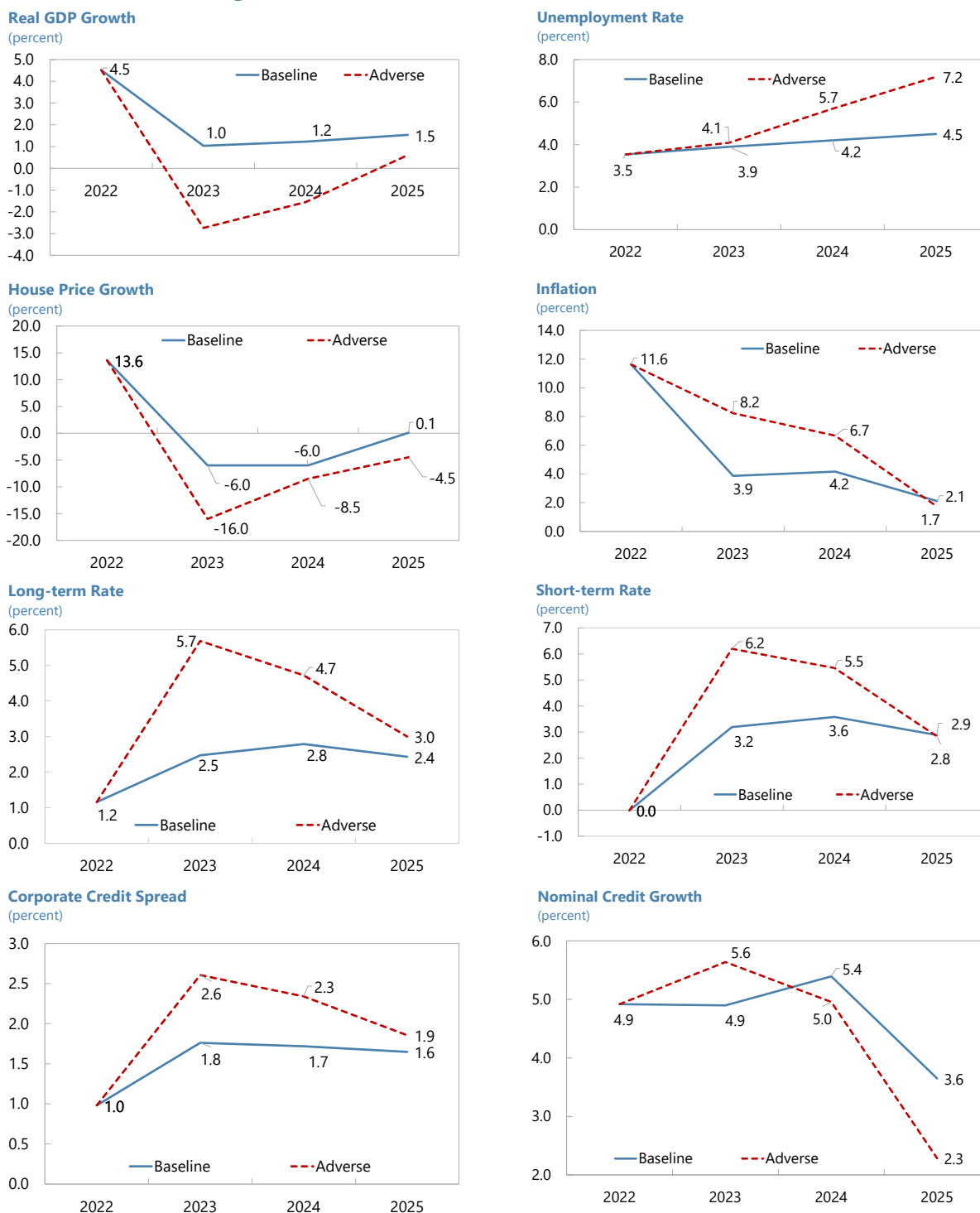
**Share of Nitrogen Deposition by Source**  
(percent)



Reference data © EuroGeographics, © FAO (R/N), © TurkStat Source: European Commission - Eurostat/GISCO

Sources: DNB, European Environment Agency, RIVM (National Institute for Public Health and the Environment)

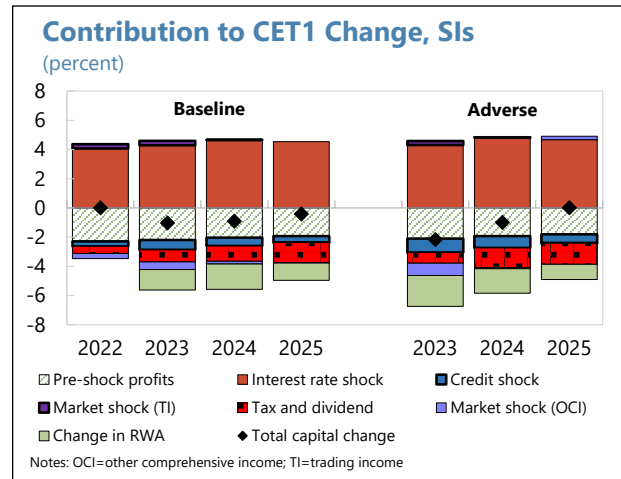
**Figure 16. The Netherlands: Macroeconomic Scenarios**



Source: IMF staff estimates.

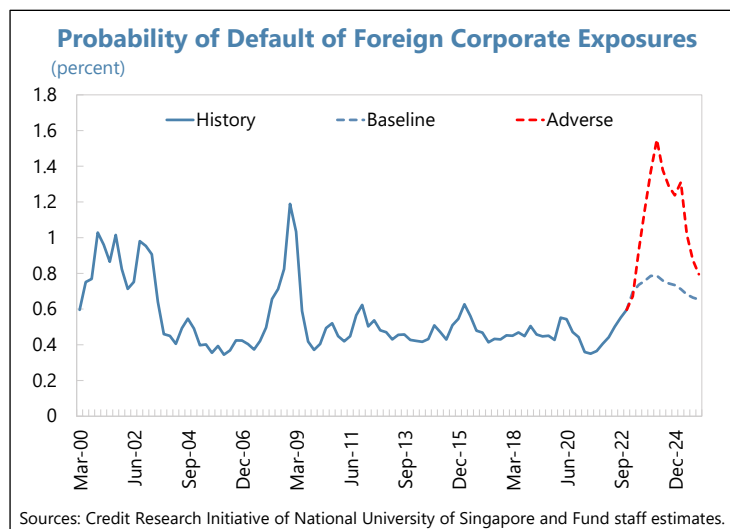
**22. The SIs as a group appear resilient to severe macrofinancial shocks, but some might see their capital buffers erode since earnings weaken over time in the adverse scenario (Figure 17).** Rising interest rates support net interest income, which is offset by higher credit

impairment and house price declines affecting risk-weighted assets. Market shocks do not significantly impact the system, but raise concerning results for some banks, which could be due to data reporting issues.<sup>2</sup> Aside from these cases, all banks meet the minimum capital requirements comprising Pillar 1 requirement plus Pillar 2 add-ons. However, one bank would need additional resources to stay above the overall capital requirement (OCR), taking into account the CCyB increase in 2024, as total comprehensive income weakens in the adverse scenario.



**23. LSIs’ corporate borrowers could experience rising default probabilities under severe global macrofinancial conditions.**

The analysis is aimed at nine banks, which have about 65 percent of their corporate exposures outside the EA. Staff stress-tested the creditworthiness of these foreign corporate borrowers, and found a sharp increase in credit risk, even surpassing that during the global financial crisis. In particular, the default probabilities in advanced markets are more responsive to interest rate rises, while those in emerging markets are more sensitive to economic slowdowns and foreign exchange (FX) rate fluctuations.



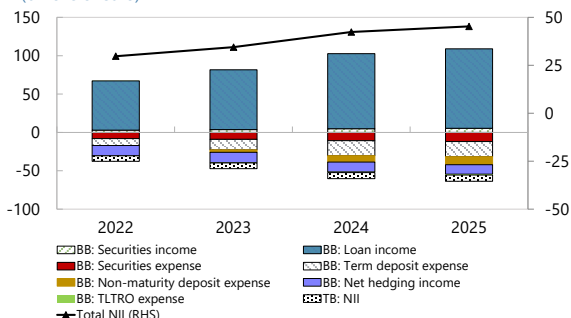
<sup>2</sup> Reported data for some policy banks was missing or showed extreme values.

**Figure 17. The Netherlands: Solvency Stress Test Results for SIs**

*Interest income grows with higher interest rates...*

**Baseline: Net Interest Income (NII)**

(billions of euro)

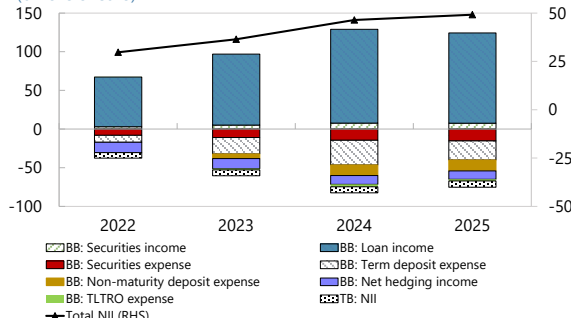


TLTRO: Targeted long-term refinancing operations; BB: Banking Book; TB: Trading Book

*...which is partially offset by higher expense on deposits.*

**Adverse: Net Interest Income**

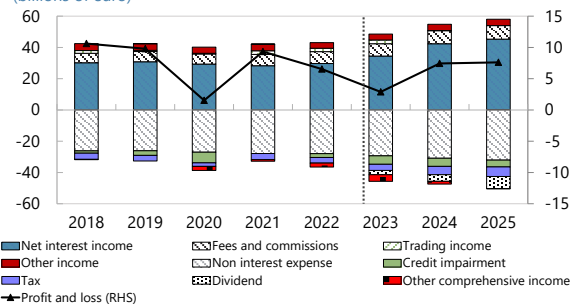
(billions of euro)



*Credit impairment increases as the economy slows down; wage growth does not keep up with inflation...*

**Baseline: Income Statement**

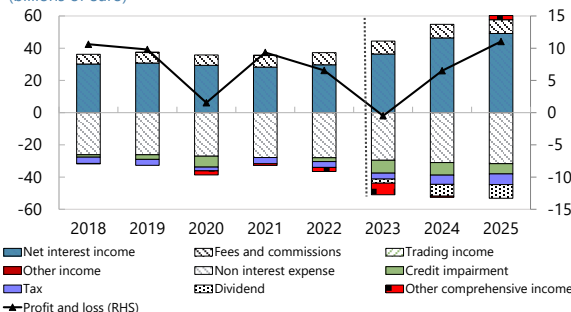
(billions of euro)



*...and house prices decline.*

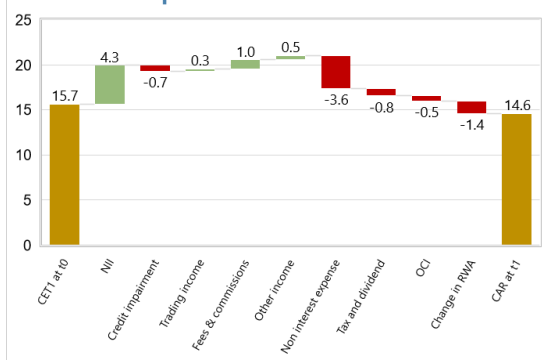
**Adverse: Income Statement, SIs**

(billions of euro)



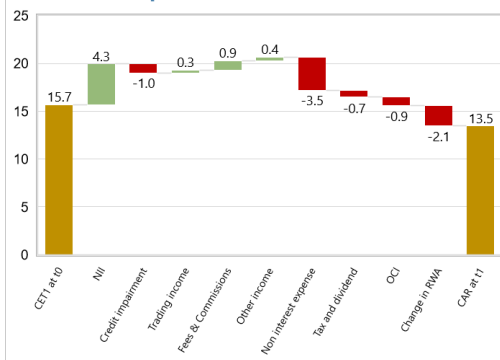
*Higher credit impairment and risk weighted assets (RWA) contribute to weakening capital positions...*

**Baseline: Capital Evolution from 2022 to 2023**



*...more so in the adverse scenario in 2023 when economic growth declines the most. Total losses due to market risk are generally low.*

**Adverse: Capital Evolution from 2022 to 2023**



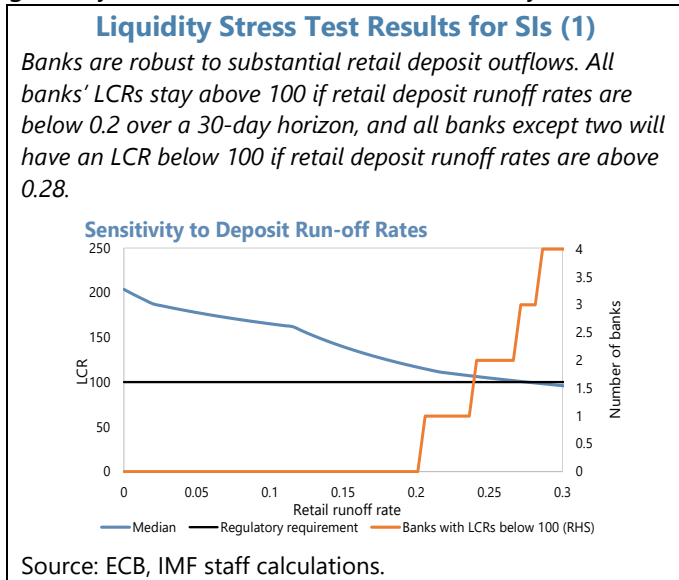
Sources: DNB and IMF staff calculations.



**Liquidity**

**24. Banks’ all-currency LCRs and Net Stable Funding Ratios (NSFRs) are strong.** All banks have regulatory LCRs and NSFRs above the regulatory minimum of 100. These ratios stay above 100 for a wide range of severe but plausible scenarios. Furthermore, banks appear resilient to substantial retail deposit outflows, with all banks having LCRs above the regulatory minimum of 100 if retail deposit runoff rates are below 0.2.

**25. The cash-flow analysis confirms the strong liquidity positions of banks but reveals potential funding gaps when the stress extends beyond three months.** Banks stay liquid in both the baseline and the severe scenario up to a horizon of three months. In the severe scenario, one bank becomes illiquid at a horizon of three months or more, and two banks become illiquid at a horizon of nine months or more (chart below).



**26. The LCR and cashflow analyses reveal potential vulnerabilities to USD funding pressures.** Some banks have USD LCRs below 100. In the cash-flow analysis, some banks would need to liquidate parts of their non-USD counterbalancing capacity to meet USD funding gaps at short horizons. This suggests a need to closely monitor their capacity to handle sudden and severe USD runoffs.

**Liquidity Stress Test Results for SIs (2)**

*Two banks are unable to close their funding gaps in the severe scenario, and several banks face funding pressure in USD in both the baseline and the severe scenario. The baseline scenario is calibrated to match the scenario described by the regulatory LCR. The adverse scenario features more severe run-off rates and drops in asset valuations. Calibration details are found in the Annex of the Technical Note on Systemic Risk Analysis.*

**Number of illiquid banks across scenarios**

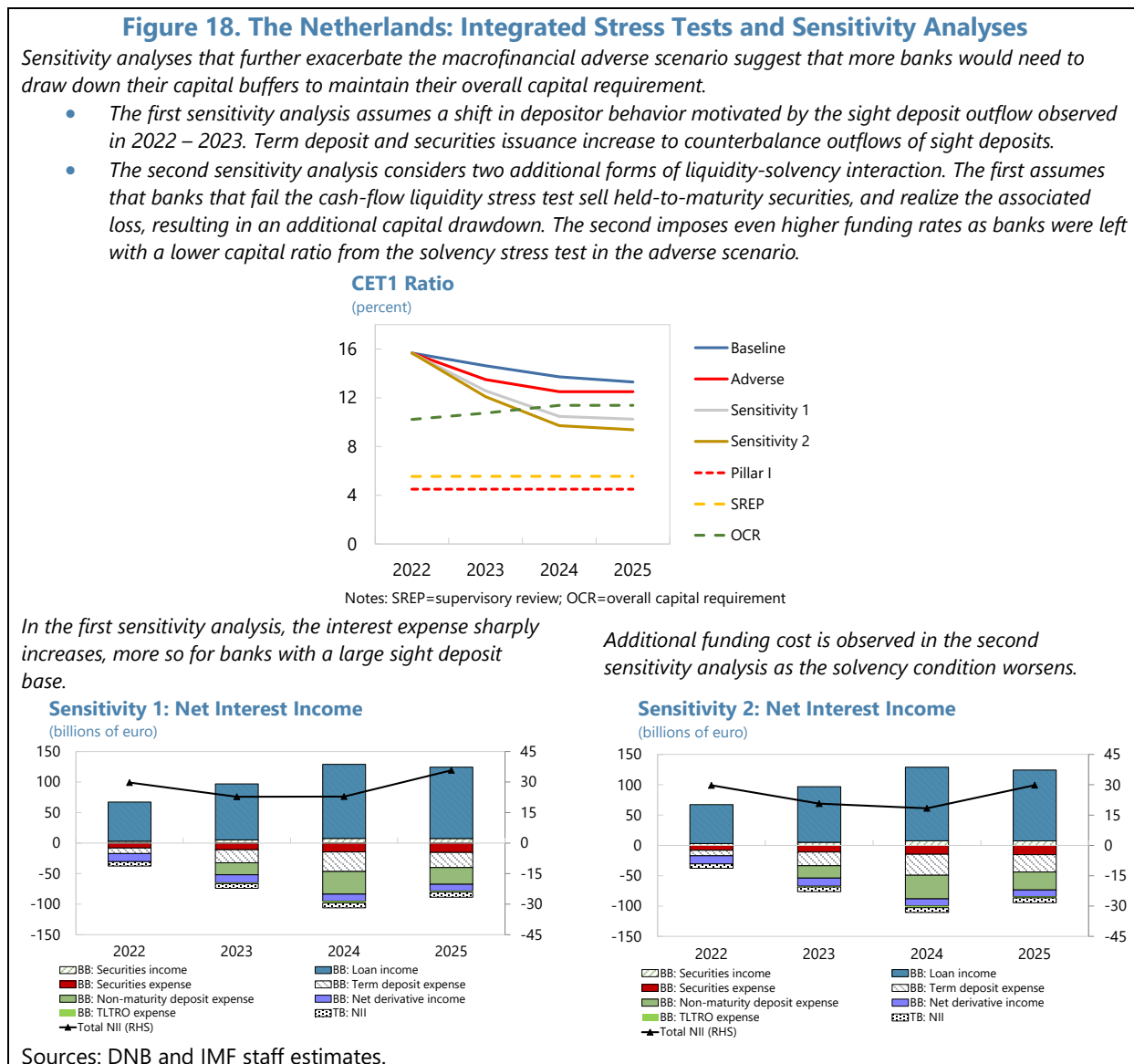
Scenario	Bucket 1	Bucket 2	Bucket 3	Bucket 4	Bucket 5	Bucket 6	Bucket 7	Bucket 8	Bucket 9	Bucket 10	Bucket 11	Bucket 12	Bucket 13	Bucket 14	Bucket 15	Bucket 16	Bucket 17	Bucket 18
Baseline all currencies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline euro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline US dollar	0	0	1	1	2	2	2	2	2	2	2	1	2	2	3	4	4	4
Severe all currencies	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2
Severe euro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe US dollar	0	0	2	2	3	3	3	3	2	2	3	3	4	5	5	5	5	5

Source: ECB, IMF staff calculations.

Notes: Bucket 1: overnight. Bucket 2: greater than overnight up to 2 days. Bucket 3: Greater than 2 days up to 3 days. Bucket 4: Greater than 3 days up to 4 days. Bucket 5: Greater than 4 days up to 5 days. Bucket 6: Greater than 5 days up to 6 days. Bucket 7: Greater than 6 days up to 7 days. Bucket 8: Greater than 7 days up to 2 weeks. Bucket 9: Greater than 2 weeks up to 3 weeks. Bucket 10: Greater than 3 weeks up to 30 days. Bucket 11: Greater than 30 days up to 5 weeks. Bucket 12: Greater than 5 weeks up to 2 months. Bucket 13: Greater than 2 months up to 3 months. Bucket 14: Greater than 3 months up to 4 months. Bucket 15: Greater than 4 months up to 5 months. Bucket 16: Greater than 5 months up to 6 months. Bucket 17: Greater than 6 months up to 9 months. Bucket 18: Greater than 9 months up to 12 months.

## Integrated Solvency and Liquidity Tests, and Sensitivity Analysis

**27. Integrated tests and sensitivity analyses found that more banks would begin to draw down capital buffers.** The team conducted two sensitivity analyses to integrate the liquidity and solvency considerations (Figure 18). Banks’ capital positions from the adverse scenario were exposed to additional funding shocks in 2023 from (i) shifts in depositor behavior and (ii) higher funding needs and costs. These additional losses require more banks to start drawing down their capital buffers, and in more significant amounts.

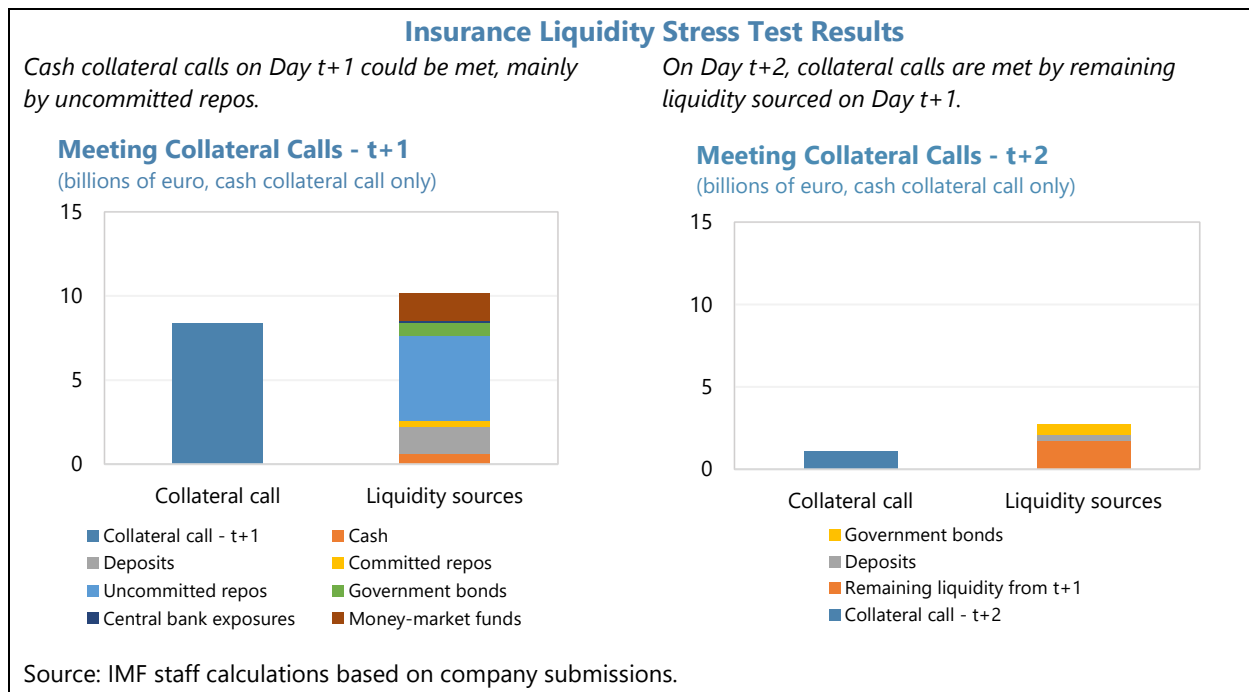


## Insurance Risk Analysis

**28. The solvency stress test evidenced a broad resilience of the Dutch insurance sector, particularly for P&C and health insurers, while vulnerabilities exist for some life insurers.**

A top-down stress test was conducted for 16 insurers, covering more than 80 percent of the sector’s assets (Appendix III). The scenario is aligned with the banking sector’s adverse scenario. Interest rate effects on assets and liabilities are almost balanced, hence other asset-side shocks cause a significant decline in own funds (Figure 19), with a few life insurers falling slightly below solvency requirements. The exercise did not incorporate management actions; insurers would have various options, e.g., changing hedging policies, de-risking their balance sheet, or capital support from the group parent.

**29. Life insurers are broadly resilient to liquidity shocks despite large interest rate swap positions.** The FSAP tested the vulnerability of five large life insurers in a scenario where interest rates increase by 100 basis points (at t=0), resulting in variation margin calls. While the overall impact is sizable and 94 percent of the margin calls would need to be met in cash, the sampled entities apply heterogenous strategies and draw on a variety of sources for their liquidity and would still have sufficient remaining liquidity after t+1 to meet calls in t+2.



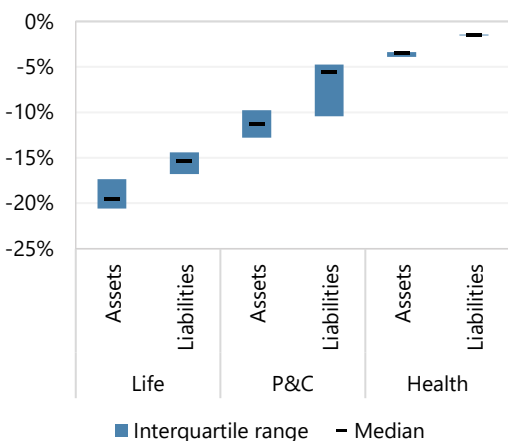
**Figure 19. The Netherlands: Insurance Solvency Stress Test Results**

Asset values across all sectors decline by more than the respective liability values, but are most pronounced in the life insurance sector with longer durations on both sides of the balance sheet. Health insurers are very insensitive to market and credit risk shocks.

The life sector is impacted heterogeneously, while P&C insurers remain largely resilient. The aggregate capital shortfall for two life insurers falling below the regulatory threshold of 100 percent amounts to €2.9 billion, equivalent to about 0.3 percent of GDP.

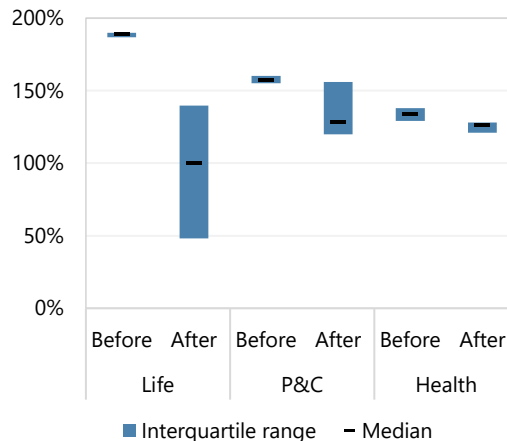
**Change in Value of Assets and Liabilities**

(percent)



**SCR Coverage Ratios**

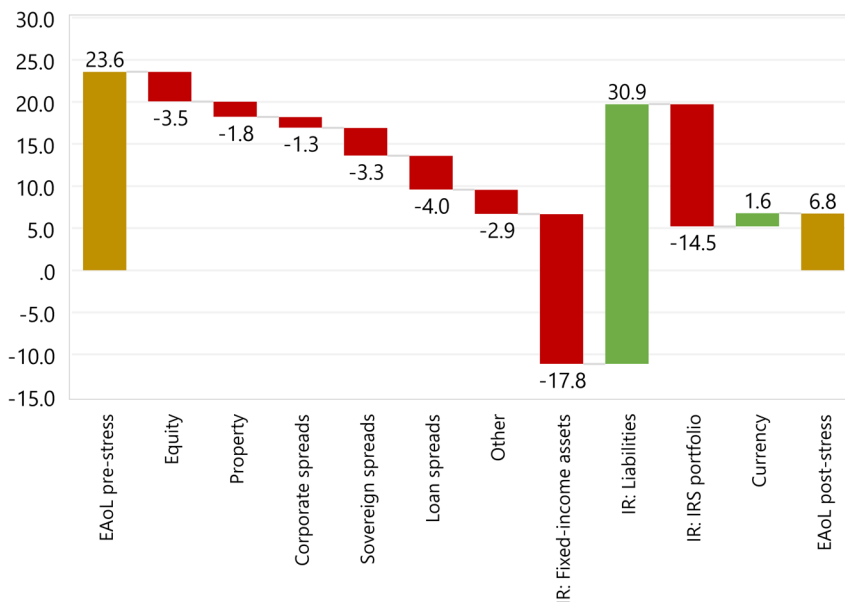
(percent)



In the life sector, interest rate effects are almost balanced, but come on top of other asset-side risks.

**Contribution of Individual Shocks: Life Insurance**

(billions of euro)



Notes: "EAoL" denotes excess of assets over liabilities.  
Source: IMF staff calculations based on DNB data.

## Pension Fund Risk Analysis

**30. Pension funds are benefiting from further rising interest rates, after considerable improvements in their funding ratios over the last two years (Figure 20).** The ten largest pension funds were covered by a top-down analysis, covering 70 percent of the market in assets, and the adverse scenario followed the one used in the insurance sector (Appendix IV). Higher interest rates lower the value of pension fund liabilities by 27 percent on average, which compensates for the decline in asset values. As a result, funding ratios improve for most pension funds in the sample—for some, the improvements are even greater than 10 percentage points, especially for those funds with a larger duration gap between assets and liabilities.

**31. Bottom-up analysis conducted by DNB and the AFM shows the resilience of pension funds to liquidity risks from margin calls, even when restricting access to the repo market.**

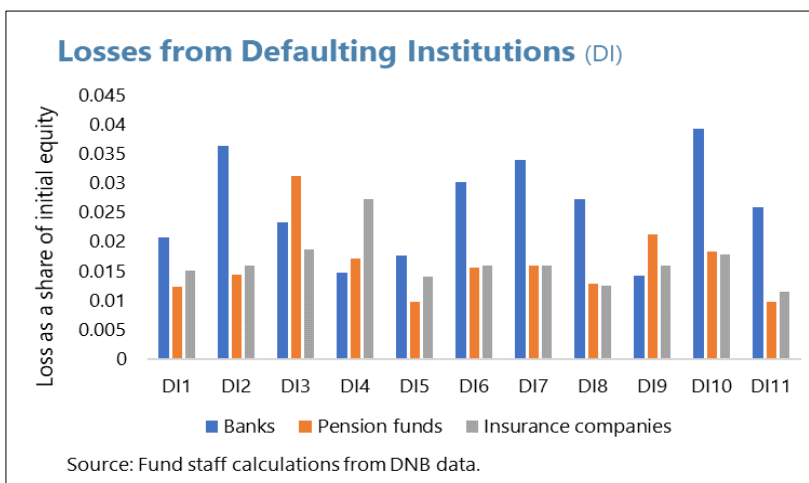
While the shock used for this analysis is lower than in the insurance risk analysis, the additional inclusion of an FX shock as well as limiting access to repo markets added extra prudence. In the scenario, the five largest pension funds had to meet a collateral call-in cash of €18.4 billion. Repo markets remain important sources of liquidity especially for the largest pension funds, so close monitoring of market conditions and liquidity risk management practices remains crucial. For smaller pension funds which do not fall under the clearing obligations, many still make use of bilateral swap transactions which allow for settlement in kind, thereby lowering liquidity risks.

## Contagion and Interconnectedness

**32. The FSAP's analysis suggests that fire sales could be an important channel of contagion across institutions and sectors, and that contagion can be caused by the default of relatively small institutions.** A fire-sale institution-level systemic stress test was conducted to assess the contagion effects of balance-sheet shocks in banks, insurers, and pension funds. The team assumed that institutions target a constant leverage ratio by selling marketable securities, and that the price of a security decreases as the quantity sold of that security increases. Deleveraging by an institution through the sale of a marketable security would cause balance-sheet losses in other institutions, with greater contagion if securities holdings are sufficiently similar across institutions. Two separate balance-sheet shocks were considered: bank solvency stress-test induced solvency losses, and individual-institution defaults.

- Losses from the bank solvency stress-test exercise lead to additional losses ranging from 1 to 9 percent of initial equity across institutions, affecting banks first and spreading to other sectors in later rounds.

- Individual-institution defaults can cause significant losses, but no institution's default leads to defaults of other institutions. Banks experience higher losses relative to initial equity than insurers and pension funds. The securities-issuing institutions causing the five largest losses are not SIs.
- The vulnerability of Dutch financial institutions to contagion across sectors highlights the need to develop further methodologies to account for additional cross-sectoral contagion channels, such as bilateral loan exposures.



### 33. Dutch banks appear broadly resilient to spillovers from cross-border exposures.

Network-based analysis that uses as input BIS consolidated (cross-border) banking statistics seeks to demonstrate the linkages between the Dutch banking system and ROW by simulating how a failure of a banking system may spread through credit and funding shocks. Applying the [Espinosa-Sole \(2010\)](#) methodology, the simulations suggest that the failure of the Dutch banking system does not cause partner countries' banking systems to fail, and that the Dutch banking system is susceptible to U.S. and German banking system failures only under very severe assumptions.

## Corporate and Household Sectors

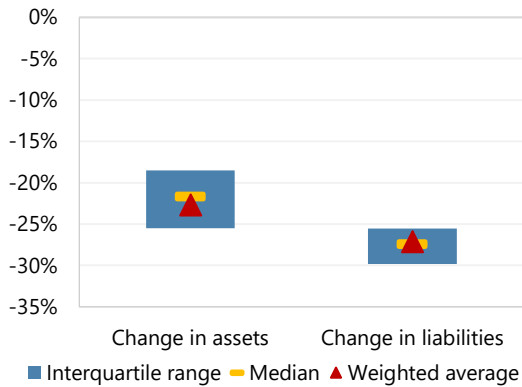
### 34. An application of the adverse scenario used in the bank solvency stress test to the corporate and household sectors identified vulnerable groups (Figure 21).

- For NFCs, the analysis focused on ICR and cash balances, based on publicly available data. The stressed environment resulted in a marked increase in the proportion of firms facing debt repayment difficulties (ICR < 1) or borrowing needs (negative cash balance). These results are primarily driven by the sharp contraction in GDP growth and a substantial increase in firms' debt burden.
- For households, the youngest and lowest-income borrowers are the most significantly impacted. The proportion of high-risk borrowers, defined as borrowers whose DSTI ratio is above 90 percent of the National Institute for Family Finance Information (NIBUD) DSTI limit, at the aggregate level increases from 6.6 percent in the baseline scenario to 8.2 percent in the adverse scenario. These numbers mask significant heterogeneity across households; lower-income and younger households are most impacted in the adverse scenario.

**Figure 20. The Netherlands: Pension Fund Risk Analysis**

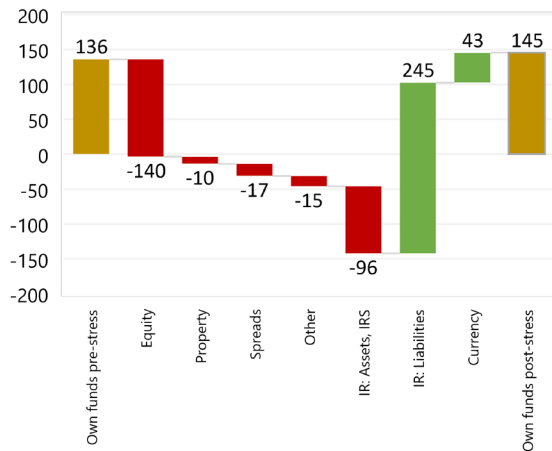
Asset values decline by 23 percent (€235 billion for the sample), overcompensated by a decline in liabilities by €245 billion.

**Change in the Value of Assets and Liabilities**  
(percent)



The effect of the interest rate shock on liability values compensates for almost all asset-side shock effects, especially those on stocks and fixed-income assets.

**Contribution of Individual Shocks**  
(billions of euro)

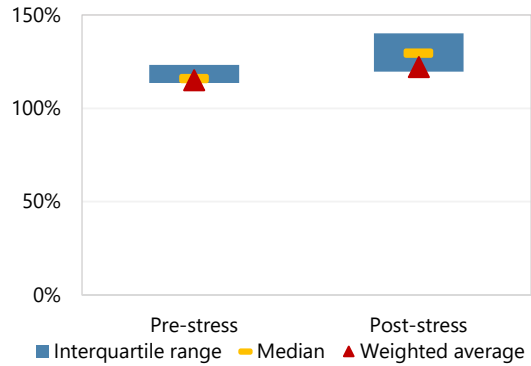


IRS: Interest Rate Swap

Source: IMF staff calculations based on DNB data.

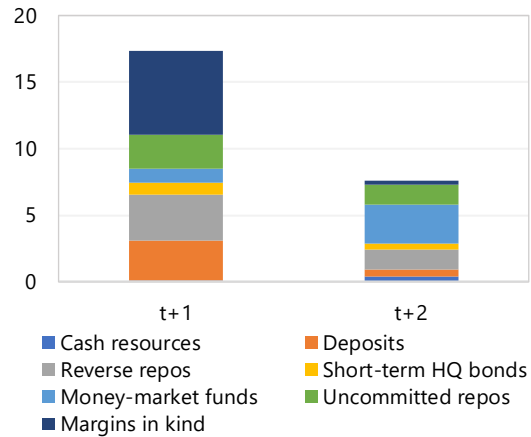
The average funding ratio increases from 115 to 122 percent, with more outliers towards the upper end of the dispersion.

**Funding Ratios**  
(percent)



Collateral calls of €25 billion could be met by tapping different sources, even when assuming limited repo market access.

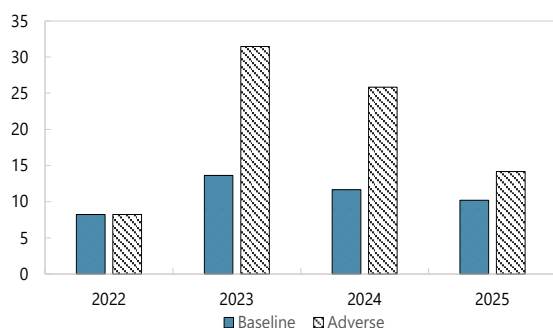
**Sources of Liquidity**  
(billions of euro)



**Figure 21. The Netherlands: Vulnerabilities of Corporate and Household Sectors**

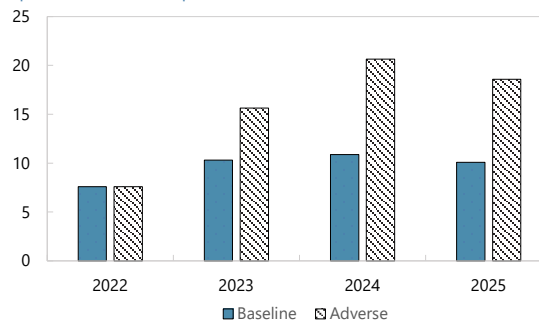
**Firms Facing Debt Servicing Problems (ICR < 1)**

(percent of total sample of firms)



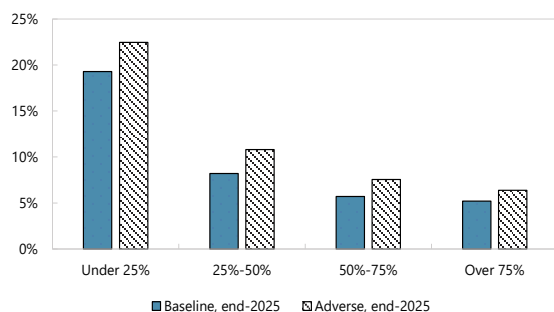
**Firms with Borrowing Needs (Cash < 0)**

(percent of total sample of firms)



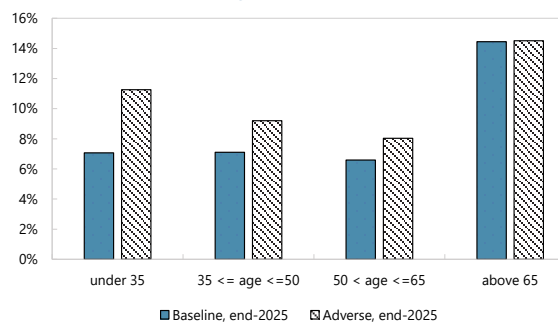
**Households with a DSTI > 0.9 DSTI Limit, by Income Quartile**

(percent of borrowers in each group)



**Households with a DSTI > 0.9 DSTI Limit, by Age**

(percent of borrowers in each group)



For setting the maximum allowed DSTI limits each year, the MoF uses input from NIBUD. NIBUD takes a microprudential perspective primarily based on the available income for individual households. DSTI limits are increasing with income levels and with interest rates paid. The household stress test analysis defined borrowers at risk as those whose DSTI ratio increases above 90 percent of this specific DSTI limit defined by NIBUD. In 2023, the DSTI limit ranged from 19 percent for those earning gross income of €26,000 or less per year to 30 percent at €106,000 or more, at an interest rate between 4 and 4.5 percent.<sup>1</sup>

Sources: Orbis, DNB’s Real Estate Vulnerability Assessment Model based on 2022Q1 loan-level database, and Fund staff calculations.

<sup>1</sup>See the Technical Note on Macprudential Policy Framework.



## CLIMATE RISK ASSESSMENT AND OVERSIGHT

### A. Climate Risk Analysis

**35. Dutch financial institutions are exposed to climate physical risks from floods, due to their substantial domestic real estate exposures located in areas vulnerable to flooding.** Of the total €700 billion exposure to real estate in 2020, 52 percent, 66 percent, and 65 percent of bank, insurer, and pension fund assets, respectively, are located in areas vulnerable to flooding. While most of these areas are protected by flood defenses, in the event of dike failure, a large portion of the real estate could be damaged.

#### Banks

**36. To assess physical risks, bank stress tests were conducted against flood events under scenarios encompassing diverse regions, climate conditions, and flood protection reinforcement plans with different return periods.** The building blocks (flood scenarios, damage estimates) were carefully designed in collaboration with Dutch climate experts, to leverage the granular geographical data on flood water depth and the authorities' methodology for damage estimation. Flood scenarios focused on flood-prone areas, based on different threats (sea, rivers, lakes), and susceptibility to the largest damage due to higher population and economic activity. Due to the lack of access to loan-level data (LLD), the analysis takes a macro approach, using nation-wide damage rates as input to the IMF's Global Macro-financial Model for generating corresponding macro scenarios. Finally, like the bank solvency stress tests, the analysis estimates bank credit losses from floods over the next three-year horizon. The scope of the transition risk analysis is limited to an examination of banks' exposure to nitrogen-emitting sectors, due to data constraints and the lack of clarity on the transition path.

**37. The banking sector is resilient to flood events, with no banks expected to fall below capital requirements under all flood scenarios considered** (Figure 22). The local nature of floods limits the overall damage to physical capital (e.g., buildings, infrastructure) compared to the country's total capital stock. However, in the most extreme scenario, a severe flood can still cause a nonnegligible bank capital ratio reduction in the first year. While the sector remains resilient, the aggregate result masks heterogeneity across banks and institution-level vulnerabilities. Furthermore, the macro-level approach potentially underestimates damage to collateral at the localized and firm levels. Floods along the Rhine and Meuse River area in Germany and Belgium have minimal spillovers to Dutch banks despite their exposure to those countries, though acquiring more granular flood and collateral data from those countries could help.

**38. Although the impact of floods on the banking sector is limited, climate change can intensify the losses from floods, putting downward pressure on capital ratios.** A comparative analysis of current and future climate conditions and different failure probabilities suggests that the Dutch government's current reinforcement plan, which encompasses measures to strengthen dikes and enhance flood warning systems, could help mitigate some of the anticipated losses from

climate change. Flood scenarios designed with detailed flood maps under future climate conditions would provide a more accurate assessment of both climate change impact and adaptation.

**39. The banking sector could face transition risks through the credit channel, especially if loans are extended to financially vulnerable firms in high nitrogen-emitting sectors.**

Constrained to aggregate level analysis, staff estimated bank exposures to nitrogen-emitting sectors at the highest level of sectoral classification. Banks' exposure to domestic high nitrogen-emitting sectors is estimated at €34 billion (6.5 percent of total loans and 1.5 percent of total assets). The observed decline in nitrogen emission intensity is likely attributable to policy interventions and economic agents' efforts to reduce nitrogen. Firms in high nitrogen-emitting sectors often exhibit higher leverage and financial constraints than those in other sectors, making them more susceptible to nitrogen reduction policies. However, the broad sectoral classifications do not capture variations in the level of firms' emissions *within* a sector. For banks to mitigate potential losses, analysis of granular data and clarity on the policy path to reducing nitrogen depositions are essential.

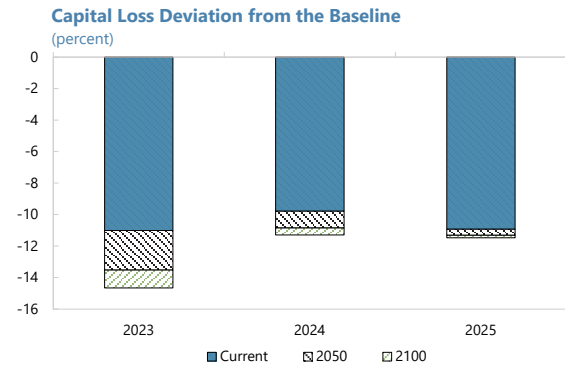
### Insurers

**40. The insurance sector is exposed to weather-related disaster risks—some of which are expected to become more frequent and/or severe with climate change.** Flood risks in the Netherlands are differentiated: while primary flood defenses are not insured by private insurers, non-primary defenses, especially along rivers, and of regional water systems, are insurable. Dutch primary insurers retain limited exposure to events with lower occurrence probabilities and are covered by reinsurance. Besides floods, hailstorms are also relevant and are expected to occur more often but are difficult to model given their very local nature.

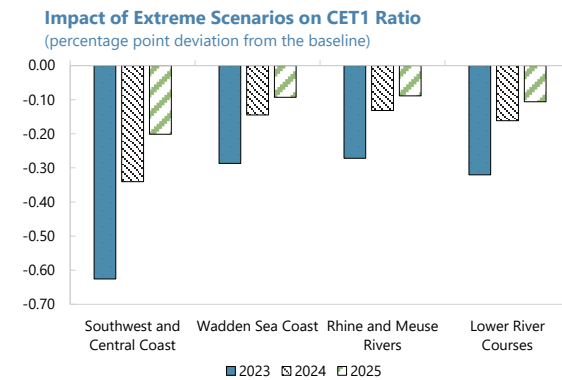
**41. The net claims effect—after reinsurance—of a non-primary regional flood event on Dutch insurers is limited** (Figure 23). The impact of historic and hypothetical flood events was tested for five large P&C insurers. While the impact on the median insurer is low, their modeling approaches vary markedly, including on the likelihood of such a hypothetical event. The FSAP recommends intensification of discussions with P&C insurers on their flood risk modeling approaches and relating insights to planned dashboards and climate risk supervision.

**Figure 22. The Netherlands: Bank Climate Risk Analysis**

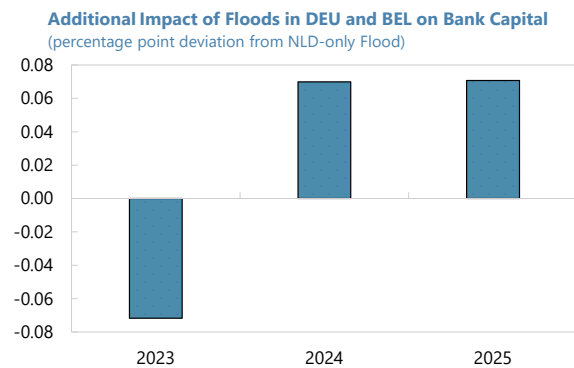
Floods generate additional capital losses in banks compared to the baseline scenario, and losses increase under future climate conditions.



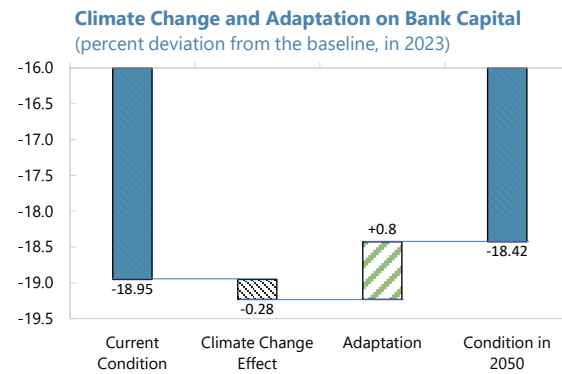
Under the most extreme scenarios, the bank capital ratio drops by 0.3 – 0.6 percentage points in the first year but remains above the capital requirement.



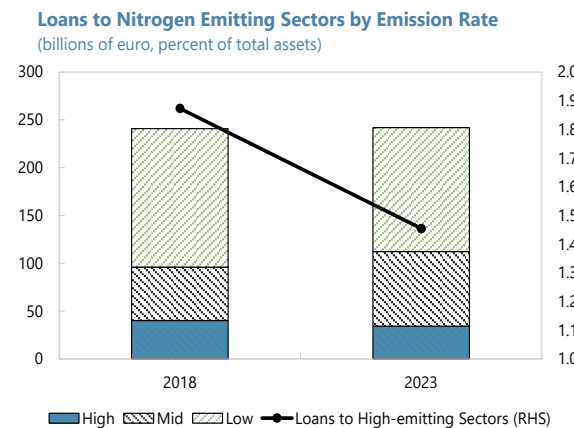
Additional impacts of floods in Germany and Belgium are not large enough to transmit additional credit risks to Dutch banks.



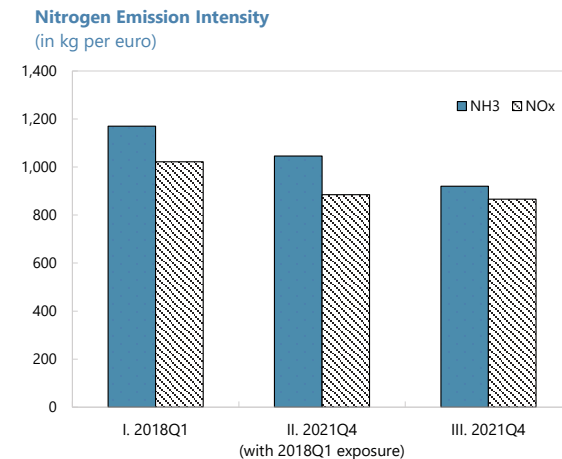
While climate change has negative impacts on bank capital, the government's current reinforcement plan can absorb the capital losses from climate change.



Bank loan exposure to high nitrogen emitting sectors has decreased.



The nitrogen reduction has been driven by both policy impacts and the shift of banks portfolio toward less nitrogen-emitting sectors.



Sources: DNB, ECB, HKV, LIWO, RIVM, Emissieregistratie, CBS, and IMF staff calculations.

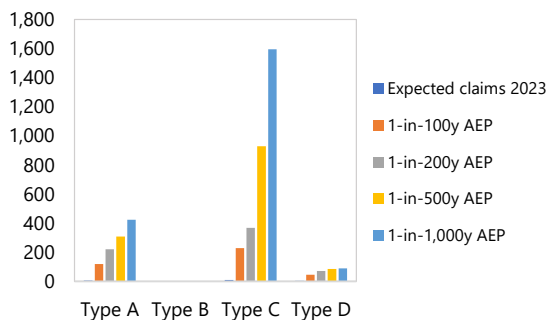
**Figure 23. The Netherlands: Insurance Climate Physical Risk Analysis**

Non-primary flood coverage ('Type C') would cause the highest losses, which increase substantially for lower occurrence probabilities ...

... but the use of reinsurance limits the net claims for the Dutch primary insurers significantly.

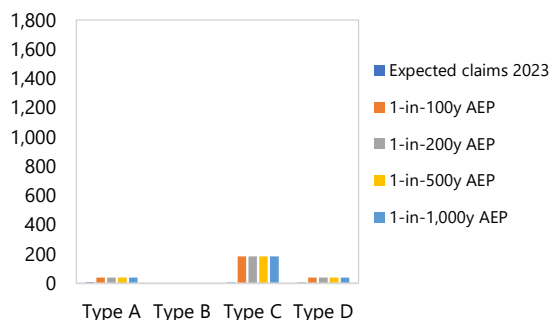
**Expected Gross Claims**

(millions of euro)



**Expected Net Claims**

(millions of euro)

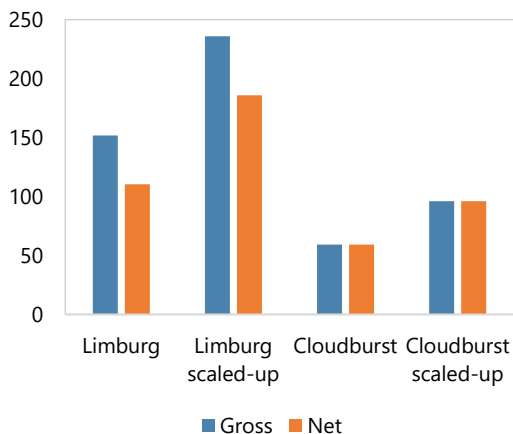


A repetition of the 2021 Limburg flood with 25 percent higher maximum precipitation would cause net claims of around €190m for insurers in the sample ...

... resulting in a rather minor reduction of the SCR ratio of less than 5 percentage points for the median insurer.

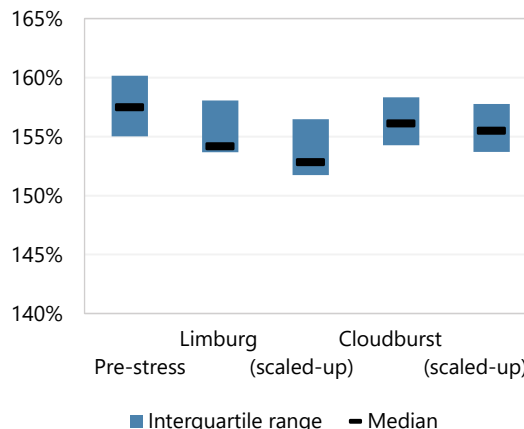
**Gross and Net Claims**

(millions of euro)



**SCR Coverage Ratios**

(percent)



Notes: 'Type A' floods refer to inundation outside dike areas; 'Type B' is a breakthrough of primary flood defenses; 'Type C' is a breakthrough of non-primary flood defenses; and 'Type D' describes inundation from regional water system.

The 'scaled-up' events refer to the Limburg flood of July 2021 and the cloudburst of July 28, 2014, respectively, in each case assuming a maximum precipitation 25 percent higher than historically observed.

AEP: Aggregate Exceedance Probability.

Sources: IMF staff calculations based on company submissions.

## B. Climate Risk Oversight<sup>3</sup>

**42. DNB has laid down strong foundations of LSI climate risk supervision to allow incorporation of the climate risk perspective across the supervisory process.** Since 2021, DNB has reviewed annually banks' approaches to materiality assessments and topics related to the ECB Guide's expectations. [The ECB Guide on climate-related and environmental risks](#) represents a strong framework which can be proportionately applied to LSIs, if safeguards of consistency are transparently defined.

**43. Similarly, DNB has set out its expectations for insurers, providing a robust basis for climate risk supervision.** The first pilot self-assessment on climate risk was launched in Spring 2023, covering strategy and business model, governance, risk management, disclosure, and investments. Insurance supervisors can already build on some insights from reviews of insurers' Own Risk and Solvency Assessments which must reflect on climate risks, and on-site inspections focused on climate risks have been initiated. In addition, a dashboard for the carbon intensity of insurers has been developed. Still, climate risk supervision for insurers is at an early stage and would benefit from further improvements; for example, future self-assessment rounds should request background documentation to challenge insurers' own views.

**44. DNB now needs to systematically pursue the vision of rolling out full-fledged supervision.** Periodically conducted self-assessments so far have had only limited connection with the supervisory process, necessitating further steps. A medium-term plan is needed to incorporate climate-related risk perspectives across the activities of the supervisory process, which would include concrete milestones and outline resource demands. The plan would center around milestones including: (i) elaborating additional areas for the annual review to cover; (ii) sequentially incorporating the climate perspective into regular supervisory analyses; (iii) developing quantitative dashboards (e.g., physical risk for insurers; closing data gaps); (iv) enhancing the onsite examination program by the climate-related risk dimension; (v) reflecting supervisory findings in individual risk assessments; and (vi) incorporating climate risk supervision across the supervisory process. These steps might require additional human resources and investments in analytical tools for DNB.

**45. Quantitative frameworks warrant further attention by Dutch supervisors and financial institutions alike, including ensuring high-quality data.** Available quantitative approaches, including scenario analysis, need to be further intertwined through supervisory tools and approaches, with knowledge transfers across DNB's functional departments and extending to the industry, while allowing for constructive feedback. This calls for a deeper collaboration among DNB supervisors and DNB climate risk stress testers to gain from each other's insights, as is the practice in other risk areas. Gaps in available climate data sets should be mapped and initiatives to strengthen datasets explored, recognizing their criticality for risk management, disclosure by financial institutions, and supervisory analysis. Financial institutions should also be requested to collect their clients' climate data. Finally, first disclosures should be evaluated, lessons learned

<sup>3</sup> The review was guided by [Basel Committee on Banking Supervision's June 2022 Principles](#) for banks, and the [IAIS' Application Paper on the Supervision of Climate-related Risks](#) for insurers.

discussed with financial institutions and auditors, with the urgency of improvements to the climate information architecture underscored, subject to the standard confidentiality protections.

**46. Climate-related risks imply pressures on financial stability, with cross-cutting impacts and feedback loops, requiring coordinated policy actions across a wide spectrum of authorities.** Financial stability issues and related policies are discussed by authorities with relevant mandates: DNB, the AFM and the MoF. Climate risks' unique nature necessitates deeper understanding of their drivers, impacts, and associated feedback loops. For instance, climate-related measures taken to address nitrogen deposition, or sea level rise, could affect various industries (e.g., agriculture, construction, transport), with financial stability implications. To execute their mandates to safeguard financial stability, supervisory authorities need to consider scenarios capturing cross-cutting, complex, and far-reaching system dynamics going beyond traditional channels, which may need to involve a broader set of experts. To establish preconditions for informed and holistic policy making, additional actors need to be involved.<sup>4</sup> To this end, an interagency body which regularly discusses policy implications of climate-related issues, facilitates the exchange of data, and coordinates policy actions with implications for financial stability, while maintaining the independence of involved supervisory authorities, is warranted. The body's composition should reflect the need to influence the policies of the institutions involved, i.e., it should include both senior managements and experts.

## FINANCIAL SECTOR OVERSIGHT

### A. Macroprudential Framework and Policy

**47. The current institutional arrangement is broadly in line with IMF guidance for effective macroprudential policy, though issues surrounding the calibration of the borrower-based tools remain to be addressed.** The FSC's legal status has been strengthened by establishing it in primary legislation, and the institutional settings of the AFM and DNB for macroprudential policymaking contain a clear mandate and well-defined objectives (Appendix V). With respect to the calibration of the borrower-based tools, DNB, the AFM, and the MoF work together to ensure the domestic financial system's stability. In practice, the MoF has refrained from reducing the LTV ratio limit below 100 percent, considering that any systemic risk mitigation derived from a lower LTV limit was not proportional to the possible loss of access to the Dutch housing market by first-time buyers. The FSAP recommends the authorities to either elevate the FSC to a permanent advisory body and vesting it with semi-hard powers or transfer hard powers over the calibration of borrower-based tools (LTV and DSTI limits) from the MoF to DNB, which has a clearer mandate over financial stability. Such hard powers should incorporate guardrails (such as conducting cost-benefit analyses) to ensure that they are used in a proportionate way.

**48. Systemic risk analysis has been strengthened by closing previously identified data gaps; however, new challenges constraining access to LLD have arisen.** DNB has closed data

<sup>4</sup> These could include government bodies responsible for 'economic affairs and climate policy', 'infrastructure and water management', and 'agriculture, nature and food quality'.

gaps for CRE and NFCs. However, DNB faces new challenges to collect granular information on loans collateralized by residential real estate (RRE); such data collection has been put on hold since mid-2022, due to issues surrounding legal powers and privacy concerns. The lack of continued access to granular data severely hampers systemic risk analysis, as well as supervision (¶159). Efforts to resolve this issue while addressing privacy concerns appear to be progressing, but the process may involve legal amendments and will take time.

**49. DNB has been actively and appropriately using macroprudential tools to improve the resilience of the banking system.** The authorities have set the capital conservation buffer at 2.5 percent and the leverage ratio at 3 percent (with a surcharge for the GSIB). The CCyB framework was revised during the pandemic, with the current setting at a positive neutral rate of 2 percent. The floor for the risk weighting of Dutch residential mortgage loans was introduced in response to the decline in the risk weights applied by banks using internal risk models due to the house price boom.

**50. The LTV limit was tightened but remains too high.** The LTV limit was set at 106 percent in 2012 and was reduced gradually to 100 percent by 2018. In 2015, the FSC recommended to continue tightening the limit gradually after 2018 to reach 90 percent, but this was not implemented. At 100 percent, the LTV limit is ineffective in containing the procyclical effect of greater borrowing capacities during a booming market, nor does it provide borrower protection in case of a price correction. On the other hand, the authorities have been actively and carefully calibrating the DSTI limits to address vulnerabilities from the financial and economic cycles. Staff recommend gradually reducing the LTV limit to 90 percent.

**51. The MoF has progressively reduced MID, but the tax treatment of owner-occupied housing remains favorable.** The maximum rate of the MID has been gradually reduced, from 52 percent in 2013 to 36.93 percent in 2023. Nevertheless, the current rate remains too high, and the tax treatment of owner-occupied housing remains favorable compared to other forms of investment. The MoF should therefore gradually remove the MID.

**52. The MoF introduced a differentiation of the transfer tax which could become part of the macroprudential toolkit, if carefully calibrated.** To improve the position of owner-occupiers relative to that of buy-to-let (BTL) investors, a tax rate of 10.4 percent has been introduced on real estate acquisition not used as a principal residence from 2023. The FSAP analysis finds that transactions by BTL investors have contributed to higher house price growth at the regional level. BTL investors could also raise the instability of the housing market and fuel house price fluctuations, for example, by leaving the market for higher returns on other investments if interest rates rise. The transfer tax differentiation could be integrated into the macroprudential toolkit, should BTL investors' activity reach systemic levels, but needs to be carefully calibrated so as not to unduly deter investment in rental housing. In this context, housing affordability concerns call for increases in supply, including through greater efficiency and speed in permitting and investment support for the building process.

## B. Regulation and Supervision

### Cross-cutting Issues

**53. The budgetary process relies on close cooperation between supervisory authorities and ministries and contains limited legally defined safeguards for supervision to secure its budgetary independence.** The current practice of budgeting is framed by multi-year limits anchored by mid-term objectives and strategies which are regularly assessed against pre-defined key performance indicators. In practice, the annual budget process is a largely cooperative exercise where supervisory authorities communicate their proposals to ministries which are usually receptive if the proposals meet formal requirements. While the current practice has proved to be operational under normal circumstances, it does not provide sufficient safeguards in case of a disagreement, and it does not provide a sufficient shield against political interventions.

**54. While DNB and the AFM seem to be adequately resourced for their current tasks, they must ensure adequate resources for emerging agendas and their long-term competitiveness in the labor market.** DNB and the AFM derive their salary levels from the midpoint of the whole economy. While this practice can be relevant for some jobs, it may be a disadvantage in hiring experts with skill sets deemed essential for supervision. Since financial institutions are major competitors to supervisory agencies in the labor market, only the positions requiring the same level of expertise as financial sector supervisors should be selected to inform the salary levels.

**55. Going forward, supervision must adapt to a changing market landscape, the speed of adoption of new technologies, and the growing systemic importance of climate risk.**

Supervision should make progress in the following areas:

- *Enhancing reported/collected data sets* to advance possibilities of offsite supervision to run a thorough analysis.
- *Upgrading its analytical toolbox* to allow processing of large datasets across different sub-sectors and allow examiners to offload routine analytical work and focus on complex issues and/or root causes of identified issues.
- *Promoting a level playing field across sectors* by leveling supervisory outcomes. For example, RRE exposures across banks, insurers, investment funds, and other financial institutions pose a challenge for supervisors. While unifying microprudential frameworks across the bank and nonbank sectors is challenging, collecting comparable data, aligning analytical tools and approaches, and connecting information across sectors—as highlighted above—can help in achieving comparable supervisory outcomes.

**56. The authorities' strong practices in requiring independent supervisory board (SB) members could be further enhanced by clarifying this requirement in law.** (¶61, 65, 72).



## Banking

### **57. Since the 2017 FSAP, DNB has further developed already good practice in supervision of LSIs.**

First, DNB has unleashed the full potential of the SSM Supervisory Review Process by developing a thorough risk-by-risk approach, which helps in challenging banks' Internal Capital/Liquidity Adequacy Assessment Process used to set capital and liquidity requirements. Second, DNB has broadened the scope of LSI supervision to climate risk, and its supervision of governance, behavior, and culture is particularly noteworthy. DNB considers the bank Board's decision-making, leadership, and communication activities. It investigates whether these activities contribute to the bank's objectives and risk culture while considering group dynamics, behavioral patterns, and mindsets. Third, DNB has continued intensive supervision of mortgages.

**58. LSI supervision is effective in the Netherlands.** The supervisory approach is intrusive and transparent. It builds on well-developed supervisory tools which support strategically focused, ongoing supervisory dialogue with banks. The supervisory framework blends the robust SSM/EU framework with Dutch elements, enriching the spectrum of supervisory techniques and tools. DNB and the AFM cooperate very closely in complementing prudential and conduct supervision.

### **59. The efficiency of supervision could be further supported by restored access to regularly reported granular data (transaction or LLD).**

The COVID-19 experience demonstrates the advantages of regular analyses of granular data. Going forward, this practice could also help in developing tools mapping microprudential treatment of the same risk exposures across the system and designing measures to maintain a level playing field. Regular analyses of granular data would enhance efficiency and effectiveness of supervision (across sectors) while avoiding significant burdens on banks (financial institutions). Ensuring a clear legal basis that mandates supervisory authorities to collect necessary data is crucial.

### **60. The legal/regulatory framework also needs to enable the regular collection of high-quality primary data by credit providers, including the creditworthiness of borrowers and the value of collateral.**

The current voluntary nature of updating the data on creditworthiness poses a challenge to obtain accurate financial information from borrowers. An appropriate legal underpinning would strengthen credit providers' risk management practices and enhance consumer protection. Regarding collateral valuation, DNB has developed strong analytical tools and established a solid practice in this area. DNB could consider converting related supervisory expectations into regulatory requirements or guidance.

**61. DNB demonstrated the importance of independent SB members in banks.** According to law, the SB of a bank must be constituted and consist of at least three SB members. DNB supervision has established supervisory dialogue with bank SBs, leveraging their role to oversee the implementation of proper governance by Boards. The dialogue also facilitated conveying important messages and receiving feedback on strategic developments. The role of independent members was especially invaluable in crisis situations. While the current practice of appointing independent SB members is already quite well established, further legal clarification would ensure consistency across institutions and over time.

## Pensions and Insurance

**62. Significant changes have occurred in the pension fund and insurance sectors since the 2017 FSAP.** DNB oversaw the full implementation of Solvency II for insurance, and the AFM and DNB have also been gearing up to implement the ongoing major pension reforms through the transition period.

**63. Supervision of insurers and pension funds is effective in the Netherlands. DNB's prudential supervisory approach is risk-based, intrusive and transparent.** It builds on well-developed supervisory tools which support strategically focused, ongoing supervisory dialogue with insurers and pension funds. The FSAP encourages the authorities to maintain their robust approach, and to refine certain aspects of it. For example, the risk-based supervision methodology should be regularly reviewed, and further backstops added, including a few regular on-site inspections even for the smallest insurers.

**64. DNB is collaborating effectively with foreign supervisory authorities in insurance group supervision and on cross-border business.** For one Internationally Active Insurance Group, however, a gap still exists in setting up Crisis Management Groups which should not be delayed until the implementation of the Insurance Recovery and Resolution Directive. Together with EIOPA, DNB should explore ways to further strengthen supervision of cross-border insurance business, striving for greater supervisory convergence in the EU.

**65. The approach towards governance, behavior and culture frameworks is a particular strength, but could further benefit from more data-driven analysis, particularly from a conduct perspective.** The supervisory approach delivers concrete findings and recommendations that have been enforced and followed up. In this regard, as with banks, DNB has also leveraged the roles of institutions' SBs, including their independent members, to channel messages to insurers' and pension funds' management. Also, the AFM has upgraded its supervisory approach by better leveraging data and aiming for a more forward-looking perspective. A monitoring dashboard for the non-life sector has been developed, and the FSAP recommends expediting the work on a similar dashboard for life insurance.

**66. Going forward, supervision must reflect a changing risk environment, basing decisions on robust and high-quality data.** The vulnerabilities of some life insurers in an environment of rising interest rates as well as pension funds' dependence on repo markets call for close monitoring and further engagement with financial institutions. DNB and the AFM should further intensify their collaboration on data sharing. It is critical to have the ability to collect granular data necessary for supervision—including on conduct—and to apply advanced technologies connecting data from different sources for the analysis. A data quality assurance process should prioritize data items needed for systemic risk analysis.

**67. Regarding the pension transition, it will be essential to closely monitor and proactively manage potential risks for the authorities related to resources and legal risks.** DNB and the AFM have prepared intensely for the transition, and a monitoring framework has been set up by the

MoSA. Public communication by DNB and the AFM would need to be fully aligned during the transition phase, to reduce uncertainties and to minimize legal risk. Emphasizing the important role of pension funds' internal control functions will be key, as well as utilizing high-quality data by the social partners to make transition decisions.

## Securities Market

**68. The AFM's approach to and resources for authorization and supervision have adapted to deal with an enlarged and more diverse population of firms since the implementation of the Markets in Financial Instruments Directive II and Brexit.** Team resources have been bolstered and expertise built in fixed-income markets and their distinctive trading functionalities, and in how regulation applies in that context. Specialist expertise has been deployed effectively in the EU and internationally, in areas ranging from the trading venue perimeter to gas futures trading in the light of shocks to energy markets.

**69. Supervision of trading venues has been thoughtful and risk-sensitive, though the approach needs to evolve to keep pace with the market.** Trading venues established post-Brexit were initially 'mirror images' of their London operations, but Dutch and UK operations are starting to diverge, and some innovations may come directly to the Netherlands, requiring the Dutch authorities to be the first to determine a response in Europe. New entrants are arriving without the same track-record as regulated entities and with business models that combine risks and activities in ways that the EU regulatory framework was not designed to address. Accordingly, waiting for EU rules to determine a response will not be an option.

**70. Reinforced supervisory focus is needed on trading venue resilience and equity market closing auctions, informed by better and more timely data analytics.** Given the shift of trading to the Netherlands and the changed equity market microstructure (with increased on-venue trading), the AFM needs to work with counterpart European agencies to ensure that focused supervisory attention is placed on the ability of primary listing venues, such as Euronext, to demonstrate that they can recover promptly from outages including through the timely use of failovers. This includes access to appropriate data and analysis. This is important because trading on secondary venues in the EU is effectively halted by an outage on the main market. The AFM's internal governance and prioritization of data analytics will need to change to achieve this.

**71. A reset of supervisory strategy for trading venues is needed to deal with the increasing challenges ahead.** The AFM should capture and use the learning from the venues about new markets and business models to drive supervisory strategy, through an overall assessment of the effectiveness of corporate governance and risk management as well as inherent risk. Consideration should be given to the strength of intra-group outsourcing arrangements. In some cases, a greater emphasis on the ability to use more intrusive powers may be warranted. The authorities should consider the triggers that would make the use of such intrusive powers appropriate, the organizational capacity to do so, and explore closer relationships with relevant home supervisors.

**72. Legislative change is needed to ensure the AFM can respond effectively to emerging risks linked to trading venue supervision, and appropriately manage, alongside DNB, the associated financial stability and reputational risks to the Netherlands.** The EU-wide significance and international mobility of capital markets means that the Dutch authorities will be subject to increased international scrutiny of the effectiveness of supervisory arrangements. The AFM needs a broader range of supervisory tools—underpinned by a firm legal base—to respond to innovation proportionately but effectively. These include an autonomous ability to further specify binding requirements keeping pace with market developments, a clear basis for requiring the appointment of independent non-executive directors, and enhanced powers to deploy external specialist expertise and recoup the costs of doing so.

**73. The FSAP recommends continued focus on the extent of liquidity mismatch in Collective Investment Schemes (CIS) and availability of tools to manage it.** The authorities' analysis found that the liquidity mismatch in real estate funds is currently less than it would initially seem: (i) many are closed-ended rather than open-ended; (ii) invest in equities in the real-estate sector rather than directly in physical real estate, and/or (iii) have restrictive conditions about the size, frequency and notice periods for redemptions. In addition, investors are primarily pension funds, indicating less likelihood of a sudden pressure to redeem the assets, reducing the run risk. The authorities should continue to monitor risks in both real estate and corporate bond investments through CIS and continue their current focus on ensuring that appropriate liquidity management tools are available and used where necessary.

## Financial Integrity

**74. The FSAP builds on the recently completed Financial Action Task Force (FATF) 2022 Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT) Mutual Evaluation Report.** Key recommendations include:

- Improving national understanding on the misuse of legal vehicles and cross border financial flows risk resulting from proceeds of crimes in light of the Netherlands' exposure to complex international structures, conduit companies, and huge volumes of transnational flows.<sup>5</sup> The current National Risk Assessment (NRA) should be deepened, including through a more comprehensive analysis of risks relating to the misuse of legal entities and conduit structures, factoring in relevant information available to tax authorities. The authorities should further ensure that they share a common and sufficiently broad understanding of the concept of a conduit company, drawing on its functional characteristics, in order to adequately analyze the risks and design a meaningful policy action plan.
- Improving the completeness and accuracy of beneficial ownership information at the Commercial Register. A legacy issue allows pre-existing legal entities to continue operating and using their existing bank accounts despite a lack of updated beneficial ownership information.

<sup>5</sup> As of 2021, the Netherlands hosts an estimated 8,700 conduit companies, with a balance sheet total of €4.5 trillion (517 percent of GDP). The number of such entities could be underestimated due to reporting gaps.

The existing enforcement measures should be strengthened, including through potential de-registration where warranted. To ensure the accuracy of the information, the Commercial Register should cooperate more closely with the tax authorities and systematically approach the relevant obliged entities such as trust offices to ensure comprehensive coverage of legal arrangements, including foreign trusts.

- Continue the progress in strengthening the already elaborate risk-based supervisory practices of DNB, including by drawing lessons from the systemic deficiencies unveiled in the ongoing remediation cases of the three largest banks relating to customer due diligence, considering to elevate tax risks to a dedicated category of risk along with the existing five categories, and continuing to prioritize close cooperation between the DNB and BTWwft in the supervision of trust offices and domiciliation providers, along with tackling of the underground banking.

## FINANCIAL SAFETY NET AND CRISIS MANAGEMENT

**75. The Dutch authorities have made good progress since the previous FSAP; the authorities should now focus on ensuring the operational readiness of resolution plans.** DNB should complete its resolution handbooks for the application of both the preferred and fallback resolution strategies, whilst ensuring the overall coherence of these handbooks. Progress on DNB's handbooks is essential to also closing any corresponding gaps in banks' playbooks.

**76. Resolution readiness involves ensuring access to liquidity.** DNB and the MoF should identify and operationalize possible national sources for the provision of liquidity in resolution, e.g., by relying on the existing ELA framework. In the Banking Union, the Single Resolution Fund, together with the European Stability Mechanism backstop (once it is in place), can provide support in resolution up to approximately €146 billion, but access to that funding is not guaranteed ex ante (as it depends on decisions taken by the Single Resolution Board (SRB) and other requirements, such as mandatory bail-in and state aid rules) and recent international experiences have highlighted that an institution in resolution may require more significant liquidity support.

**77. Recent international experiences have also underscored the need for agility in recovery and resolution planning.** For example, banks may be non-systemic but turn systemic at the time of a failure. In this regard, the recovery and resolution plans of state-owned banks and financial market infrastructures (FMIs) with banking licenses present distinct challenges. Resolution of state-owned banks entails trade-offs between imposing losses on shareholders and creditors, with possible loss of confidence effects, incurring potentially larger fiscal costs if such loss allocation is not deemed credible. For those FMIs that hold a banking license, DNB should carefully assess the approach to the identification of critical functions, the availability of the resolution tools, and the treatment of banking versus non-banking services.

**78. DNB should systematically and holistically test its resolution capabilities.** DNB should develop a multi-year program that involves periodic internal and external—with other national authorities—testing and covers all types of institutions subject to the resolution regime. Testing

should become deeper and broader as cycles progress, e.g., starting from recovery and moving to resolution, testing end-to-end resolution capabilities, and using realistic underlying scenarios.

**79. More aspects of the resolution regime could be publicly disclosed.** DNB should continue to enhance the transparency of the Dutch resolution framework, by publicly disclosing its policy documents (beyond bail-in execution) as well as the non-confidential parts of LSIs' resolution plans. Dutch LSIs currently only receive a high-level summary of their resolution plans, which is counterintuitive to producing complete and practicable resolution playbooks.

**80. DNB should ensure repayment of covered depositors within seven working days of a bank's failure.** As evidenced in the Amsterdam Trade Bank failure, where it was not feasible to pay out certain covered depositors within 7 days, DNB should continue to work on further developing the payout system by providing alternative options for non-resident depositors, automating the handling of processes for complex cases, developing and testing home-host cooperation for branches, and monitoring and improving the Single Customer View files and systems.

**81. On financial crisis management, a national plan is needed.** As part of this plan, the crisis preparedness and management functions should be assigned to an inter-authority committee and regular intra- and inter-authority financial crisis simulation exercises should be conducted to test and enhance operational preparedness.

## AUTHORITIES' VIEWS

**82. The authorities welcomed most of the FSAP recommendations, while highlighting potential difficulties that might emerge in the implementation of others.** They appreciated the recognition of their leading supervisory practices, including on climate, and agreed that climate risk now needs to be further integrated into day-to-day supervision. The authorities also believe that nature risk is essential and further work is needed internationally to explore its financial stability consequences. Regarding macroprudential policy, they considered that the current institutional settings for the calibration of borrower-based tools were adequate, and highlighted the different objectives that are considered in the calibration—consumer protection and financial stability—while also taking into account access to homeownership. On the recommendation for greater AFM powers to address emerging issues relating to securities markets, the authorities appreciated the FSAP's recognition of the changed landscape post-Brexit and called for consideration on how best to balance authority vesting between the national and EU levels. For financial integrity, they are working to implement many of the recommendations, also following the recent FATF review. The authorities noted that a new NRA, to be published soon, may address issues raised by the FSAP, and hoped that some of the recommendations could be incorporated in the European Supra National Risk Assessment. On the financial safety net and crisis management framework, the authorities noted that the directly applicable Single Resolution Mechanism Regulation does not provide for the sharing of more non-confidential details on resolution plans with LSIs. They also underlined that it would be more appropriate to focus on the provision of liquidity after resolution.

**Table 2. The Netherlands: Selected Economic Indicators, 2019-29**

(percent change, unless otherwise indicated)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
					Est.	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.
<b>National Accounts</b>											
Real GDP	2.0	-3.9	6.2	4.3	0.1	0.6	1.3	1.9	1.9	1.8	1.6
Domestic demand	3.0	-4.2	4.6	3.7	0.8	1.2	1.7	2.0	1.9	1.9	1.8
Private consumption	0.9	-6.4	4.3	6.5	0.4	0.5	1.3	2.3	2.3	2.2	1.9
Public Consumption	2.8	1.6	5.0	1.6	3.1	2.8	2.0	1.6	1.5	1.6	1.5
Gross fixed investment (total)	6.2	-2.6	2.9	1.8	1.5	-1.1	1.5	1.8	1.8	1.8	1.8
Public	1.9	4.6	-1.1	-4.7	1.2	2.7	2.0	2.0	1.0	1.0	1.0
Private	7.0	-4.0	3.7	3.1	1.5	-1.9	1.4	1.8	2.0	2.0	2.0
Residential	3.4	-0.7	5.7	1.1	-1.4	-2.0	0.7	1.8	2.0	2.0	2.0
Business	8.5	-5.3	3.0	3.8	2.7	-1.8	1.7	1.8	1.9	1.9	1.9
Stocks (contribution to GDP growth)	0.4	-0.8	0.3	-0.2	-0.6	0.4	0.1	0.0	0.0	0.0	0.0
Exports goods and services	2.0	-4.3	8.1	4.5	-1.3	0.2	2.3	3.4	3.4	3.2	3.2
Imports goods and services	3.3	-4.7	6.4	3.8	-0.8	0.8	3.0	3.7	3.6	3.6	3.6
Domestic demand (contribution to GDP growth)	2.7	-3.8	4.1	3.3	0.7	1.1	1.5	1.8	1.7	1.7	1.6
External demand (contribution to GDP growth)	-0.8	-0.1	2.1	1.0	-0.6	-0.5	-0.2	0.1	0.2	0.0	0.0
Output gap	1.5	-4.2	-0.2	2.0	0.4	-0.4	-0.6	-0.2	0.1	0.0	0.0
Potential output growth	1.8	1.8	2.0	2.0	1.7	1.5	1.5	1.5	1.6	1.8	1.6
Gross investment (percent of GDP)	22.1	21.8	21.5	21.2	20.1	20.1	20.2	20.2	20.1	20.1	20.1
Gross national saving (percent of GDP) 1/	29.0	26.9	33.6	30.5	30.2	29.2	29.0	28.9	28.9	28.7	28.7
<b>Prices and Employment</b>											
Consumer price index (headline, period avg.)	2.7	1.1	2.8	11.6	4.1	2.7	2.1	2.0	2.0	2.0	2.0
Consumer price index (headline, eop.)	2.7	0.9	6.4	11.0	1.0	2.5	2.0	2.0	2.0	2.0	2.0
Consumer price index (core, period avg.)	2.2	2.1	1.6	5.5	7.3	3.3	2.6	2.0	2.0	2.0	2.0
Consumer price index (core, eop.)	2.3	2.0	2.4	8.5	3.8	3.1	2.0	2.0	2.0	2.0	2.0
GDP deflator	3.0	1.9	2.9	5.5	7.7	1.9	2.2	2.0	2.0	2.1	2.1
Employment	2.0	0.0	1.5	3.2	2.0	-0.1	-0.2	-0.3	-0.3	-0.3	-0.4
Unemployment rate (percent) 2/	4.4	4.9	4.2	3.5	3.6	3.9	4.2	4.5	4.7	4.8	5.0
<b>External</b>											
Current account balance (percent of GDP)	6.9	5.1	12.1	9.3	10.2	9.1	8.8	8.7	8.7	8.7	8.7
<b>Public Sector Accounts (Percent of GDP)</b>											
Revenue	43.9	44.1	43.8	43.4	43.0	43.0	43.2	43.3	43.4	43.3	43.4
Expenditure	42.1	47.8	46.1	43.5	44.1	45.0	45.3	45.9	46.2	46.6	46.7
General government balance	1.8	-3.7	-2.2	-0.1	-1.1	-2.0	-2.2	-2.7	-2.8	-3.3	-3.3
Structural balance (percent of potential GDP) 3/	0.6	2.1	1.5	0.6	-0.7	-1.7	-1.8	-2.5	-2.9	-3.3	-3.3
Cyclically-adjusted balance (percent of potential GDP)	0.6	-1.2	-2.1	-1.3	-1.4	-1.7	-1.8	-2.5	-2.9	-3.3	-3.3
General government debt	48.5	54.7	51.6	50.1	47.2	47.7	48.2	48.9	49.8	51.1	52.6

Sources: Dutch official publications, International Monetary Fund, International Financial Statistics, and IMF staff calculations.

1/ Value implied by investment and current account data.

2/ ILO definition.

3/ Structural balance excludes one-offs such as pandemic support and the price-cap measures.

**Table 3. The Netherlands: Financial Soundness Indicators for SIs and LSIs**

(percent)

		2018	2019	2020	2021	2022
Return on equity	SI	8.71	7.62	3.27	8.35	8.00
	LSI	4.63	9.08	1.97	8.24	5.80
Return on assets	SI	0.52	0.46	0.19	0.49	0.48
	LSI	0.54	0.93	0.22	0.92	0.63
Net interest margin	SI	1.44	1.42	1.28	1.23	1.34
	LSI	1.26	1.15	1.05	0.96	1.08
Cost-to-income ratio	SI	53.70	50.32	49.39	49.74	49.12
	LSI	53.57	49.51	58.03	48.38	52.41
CET1 to RWA	SI	16.45	16.48	17.03	16.97	15.68
	LSI	21.36	20.08	25.20	24.99	23.35
Leverage ratio	SI	4.61	4.88	5.23	6.54	5.80
	LSI	9.87	8.53	10.25	10.34	9.18
NPL ratio	SI	1.95	1.86	2.24	1.73	1.60
	LSI	1.88	1.63	2.29	1.98	1.80
RWA density	SI	30.46	31.19	28.68	29.76	33.23
	LSI	48.06	44.30	38.79	38.99	40.16
Loan to deposit ratio	SI	123.45	124.52	106.46	104.01	108.04
	LSI	104.27	102.76	97.46	94.09	95.04

Source: DNB.

SIs: Significant Institutions

LSI: Less Significant Institutions.



## Appendix I. Risk Assessment Matrix<sup>1</sup>

Source of Risks	Likelihood of Realization in Next 1-3 years	Expected Impact on Financial Stability if Threat is Realized
<b>Global Conjunctural Risks</b>		
<p><b>Abrupt global slowdown or recession.</b> Global and idiosyncratic risk factors cause a synchronized sharp growth slowdown, with recessions in some countries, adverse spillovers through trade and financial channels, and market fragmentation causing sudden stops in Emerging Markets and Developing Economies.</p> <p><b>Europe:</b> Intensifying fallout from the war in Ukraine, supply disruptions, tight financial conditions, and real estate market corrections exacerbate the downturn.</p>	<p style="text-align: center;"><b>Medium</b></p> <p style="text-align: center;"><b>Medium</b></p>	<p>A sharp drop in economic activity, as well as domestic and external demand. Energy dependence on Russia and <i>direct</i> trade and financial links with Russia and Ukraine are limited. However, <i>indirect</i> links and spillovers are important; depressed activity in key trading partners (e.g., Germany) would have spillover effects to the Netherlands and exacerbate credit risks.</p>
<p><b>Intensification of regional conflict(s).</b> Escalation or spread of the conflict in Gaza and Israel, Russia's war in Ukraine, and/or other regional conflicts or terrorism disrupt trade (e.g., energy, food, tourism, supply chains), remittances, foreign direct investment (FDI) and financial flows, payment systems, and increase refugee flows.</p>	<b>High</b>	
<p><b>Monetary policy miscalibration.</b> Amid high economic uncertainty, some major central banks may loosen their policy stance prematurely, causing abrupt adjustments in financial markets and potentially weakening the credibility of central banks.</p>	<b>Medium</b>	<p>Miscalibration may require a reversal, i.e., a resumption in policy tightening, possibly leading to demand cooling, house price declines and pressures on borrowers, given elevated private debt. This would exacerbate credit risks (see house price risk below). Tightened conditions could also reduce the value of marked-to-market securities.</p>
<p><b>Systemic financial instability.</b> High interest rates and risk premia and asset repricing amid economic slowdowns and policy uncertainty trigger market dislocations, with cross-border spillovers and an adverse macro-financial feedback loop affecting weak banks and NBFIs.</p>	<b>Medium</b>	<p>Sharp swings in asset prices and risk premia driven by global systemic instability could affect capital positions of institutions holding similar asset classes. Individual banks/NBFIs may fail as a result. Fire sales may ensue and worsen the downward price spiral even more.</p>
<b>Structural risks</b>		
<p><b>Deepening geo-economic fragmentation.</b> Broader conflicts, inward-oriented populist policies, and weakened international cooperation result in a less efficient configuration of trade and FDI, supply disruptions, protectionism, technological and payments systems fragmentation, rising input costs, financial instability, a fracturing of international monetary and financial systems, and lower growth.</p>	<b>High</b>	<p>The Netherlands is vulnerable to supply disruptions and weaker investor confidence, due to strong cross-border real and financial linkages and the presence of large multi-national corporations and financial institutions. Such disruptions could impact both bank asset quality and non-bank investment asset valuations.</p>

<sup>1</sup> The RAM shows events that could materially alter the baseline path. The relative likelihood is the staff's subjective assessment of the risks surrounding the baseline ("low" is meant to indicate a probability below 10 percent, "medium" a probability between 10 and 30 percent, and "high" a probability between 30 and 50 percent). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly. The conjunctural shocks and scenarios highlight risks that may materialize over a shorter horizon (between 12 to 18 months) given the current baseline. Structural risks are those that are likely to remain salient over a longer horizon.



## Appendix II. Stress Testing Approach for Banks

Domain	Stress Test Approach
<i>Bank Solvency Stress Test</i>	
Institutional perimeter	6 significant institutions—over 90 percent of the banking system.
Methodology and risk drivers	<ul style="list-style-type: none"> <li>• Scenario-conditional simulation of various drivers of profits and losses were assessed, including credit risk (through credit impairment), interest rate risk (through interest income and expense), and market risk (through mark-to-market revaluation of marketable securities);</li> <li>• Credit risk model linking macrofinancial shocks with default probabilities of loan portfolios by country of exposure;</li> <li>• Interest rate models linking risk free rates to lending and borrowing rates;</li> <li>• Marked to market valuation of banking and trading books linking sensitivity factors, or “delta”, with shocks to interest rate, spread, FX rate, equity, and commodity prices.</li> </ul>
Scenarios	<ul style="list-style-type: none"> <li>• Baseline scenario aligned with April 2023 IMF WEO;</li> <li>• Bespoke adverse scenarios based on RAM (Appendix I) addressing the most relevant risks confronting the Dutch financial system.</li> </ul>
Sensitivity analysis on alternative interest rate paths	Simulation exercise on bank capital through interest income and expense as interest rates follow different paths, assuming sight deposits move to term accounts and flow out of the banking system.
Sensitivity analysis on liquidation of Hold To Maturity securities	Estimation of losses when banks are forced to liquidate held-to-maturity securities to cover cash shortfalls as funding runs off under stress scenario.
<i>LSI Analysis</i>	
Credit risk analysis on foreign credit exposures of corporate and emerging market banks	Using publicly available default probabilities as proxy to stress test creditworthiness of foreign corporate exposures against macrofinancial scenarios of 40 economies.
<i>Bank Liquidity Stress Test</i>	
Institutional perimeter	6 significant institutions—over 90 percent of the banking system.
Methodology	<ul style="list-style-type: none"> <li>• Regulatory liquidity stress test. Evaluation of LCRs and NSFRs;</li> </ul>

Domain	Stress Test Approach
	<ul style="list-style-type: none"> <li>• Cash-flow-based liquidity stress test. Evaluates the ability of banks to withstand a sequence of liquidity shocks in different maturity buckets;</li> <li>• Sensitivity analysis. Exploration of the sensitivity of regulatory and cash-flow-based liquidity stress tests to model assumptions.</li> </ul>
<i>Interconnectedness and Contagion Analysis</i>	
Institutional perimeter	14 banks, 27 insurers, 47 pension funds, 3,590 different marketable securities making up more than 50 percent of total assets for the median institution.
Methodology	Institution-level contagion analysis based on a fire-sale channel: the selling of assets by institutions in distress affects other institutions' balance sheet through the price channel.
<i>Banking Sector Climate Risk Analysis</i>	
Institutional perimeter	The six Dutch banks designated as systemically important.
Methodology and risk drivers	<ul style="list-style-type: none"> <li>• Physical risk from floods mapped into economic damage;</li> <li>• Flood damages to impact banks' credit risk (domestic and international loans);</li> <li>• Macro approach mapping climate scenarios into macrofinancial scenarios. Standard stress testing methodologies to assess the implications of climate risks for the banking system's resiliency.</li> </ul>
Scenarios	<ul style="list-style-type: none"> <li>• Multiple flood scenarios designed with the consideration of various regions, different climate conditions under different return periods,</li> <li>• Extreme flood scenarios and floods in both unembanked and embanked area also considered</li> <li>• Macrofinancial scenarios including the impact of floods on Dutch economy and other neighboring countries (Belgium and Germany) to which the banking sector is exposed.</li> </ul>

## Appendix III. Stress Testing Approach for Insurers

<i>Insurers Solvency Stress Test</i>		
		<b>Top-down</b>
1. Institutional Perimeter	Number of institutions	5 life insurers 5 P&C insurers 6 health insurers
	Market Share	Life: 93 percent, based on balance sheet assets P&C: around 70 percent Health: around 70 percent
	Consolidation level	Unconsolidated
	Data	Statutory returns
	Reference Date	June 30, 2023
2. Channels of Risk propagation	Methodology	<ul style="list-style-type: none"> <li>Investment assets: market value changes of assets after price shocks;</li> <li>Liabilities: valuation change due to interest rate shock;</li> <li>Impact on available capital (net assets as the difference between stressed assets and liabilities);</li> <li>Recalculation of the solvency capital requirement.</li> </ul>
	Time horizon	Instantaneous shock
3. Scenario Analysis	Tail shocks	<p>Adverse scenario: aligned with the macrofinancial scenario, but with more granularity on market and interest rate risks, e.g.:</p> <ul style="list-style-type: none"> <li>Risk-free rate: full Solvency II term structure incl. extrapolation towards the ultimate forward rate, EUR +147 bps (1y) and +158 bps (10y); USD +5 bps (1y) and +203 bps (10y)</li> <li>Equity: -40.7 percent (The Netherlands), -42.4 percent (Euro Area), -42.1 percent (United States), -41.2 percent (other advanced economies)</li> </ul>
		<ul style="list-style-type: none"> <li>Property: -13.0 percent (domestic RRE), -15.0 percent (domestic CRE), -10.0 percent (foreign RRE), -12.0 percent (foreign CRE)</li> </ul>

<i>Insurers Solvency Stress Test</i>		
		<ul style="list-style-type: none"> <li>• Sovereign bond spreads: +55 bps (The Netherlands), +60 bps (Euro Area, United States)</li> <li>• Corporate bond spreads: ranging from +45 bps (AAA, non-financials) and +50 bps (AAA, financials) to 400 bps (CCC and lower)</li> <li>• Mortgage loan spreads: +45 bps</li> <li>• Currency: -10.7 percent depreciation of the EUR external value</li> </ul>
4. Sensitivity Analysis		<ul style="list-style-type: none"> <li>• Parallel decline of the EUR interest term structure: -100 bps</li> <li>• Appreciation of the EUR external value: +10 percent</li> <li>• Default of largest banking counterparty.</li> </ul>
5. Risk factors assessed		<ul style="list-style-type: none"> <li>• Market risks (equity, property);</li> <li>• Interest rate risks;</li> <li>• Credit risks (bond spreads, (mortgage) loan spreads, default of largest banking counterparty).</li> </ul>
6. Regulatory/accounting standards		Solvency II, National GAAP
7. Reporting Formats for results	Output presentation	<ul style="list-style-type: none"> <li>• Change in valuation of assets and liabilities</li> <li>• Solvency ratios;</li> <li>• Aggregated capital shortfall;</li> <li>• Dispersion across companies;</li> <li>• Contribution of individual shocks.</li> </ul>

<b>INSURERS: LIQUIDITY STRESS TEST</b>		
		<b>Bottom-up and Top-down</b>
1. Institutional perimeter	Number of institutions	5 life insurers
	Market share	Life: 93 percent, based on balance sheet assets
	Consolidation level	Unconsolidated
	Data	Company submissions and statutory returns
	Reference date	June 30, 2023
2. Channels of risk propagation	Methodology	Variation margin call on interest rate swap positions after a sudden increase in interest rate
	Time horizon	Two days
3. Scenario analysis	Tail shocks	Increase in short-term EUR interest rates by 100 bps
4. Risk factors assessed		Liquidity risks
5. Regulatory/accounting standards		Solvency II, National GAAP
6. Reporting formats for results	Output presentation	<ul style="list-style-type: none"> <li>• Amount of margin call (per day)</li> <li>• Share of margin calls which could be met in kind</li> <li>• Liquid assets</li> <li>• Sources of liquidity to meet margin calls</li> </ul>

## Appendix IV. Stress Testing Approach for Pension Funds

PENSION FUNDS: SOLVENCY STRESS TEST		
		Top-down
1. Institutional perimeter	Number of institutions	10 occupational pension funds (DB)
	Market share	70 percent of assets
	Data	Statutory returns
	Reference date	June 30, 2023
2. Channels of risk propagation	Methodology	<ul style="list-style-type: none"> <li>Investment assets: market value changes of assets after price shocks</li> <li>Liabilities: valuation change due to interest rate shock</li> <li>Impact on own funds (net assets as the difference between stressed assets and liabilities)</li> </ul>
	Time horizon	Instantaneous shock
3. Scenario analysis	Tail shocks	<p>Adverse scenario: aligned with the macrofinancial scenario, but with more granularity on market and interest rate risks, e.g.:</p> <ul style="list-style-type: none"> <li>Risk-free rate: full Solvency II term structure incl. extrapolation towards the ultimate forward rate, EUR +147 bps (1y) and +158 bps (10y); USD +5 bps (1y) and +203 bps (10y)</li> <li>Equity: -40.7 percent (The Netherlands), -42.4 percent (EA), -42.1 percent (U.S.), -41.2 percent (other advanced economies)</li> <li>Property: -13.0 percent (domestic RRE), -15.0 percent (domestic CRE), -10.0 percent (foreign RRE), -12.0 percent (foreign CRE)</li> <li>Sovereign bond spreads: +55 bps (The Netherlands), +60 bps (Euro Area, U.S.)</li> <li>Corporate bond spreads: ranging from +45 bps (AAA, non-financials) and +50 bps (AAA, financials) to 400 bps (CCC and lower)</li> <li>Mortgage loan spreads: +45 bps</li> <li>Currency: -10.7 percent depreciation of the EUR external value</li> </ul>
	Sensitivity analysis	<ul style="list-style-type: none"> <li>Parallel decline of the EUR interest term structure: -100 bps</li> <li>Appreciation of the EUR external value: +10 percent</li> </ul>
		<ul style="list-style-type: none"> <li>Default of largest banking counterparty</li> </ul>



<b>PENSION FUNDS: SOLVENCY STRESS TEST</b>		
4. Risk factors assessed		<ul style="list-style-type: none"> <li>• Market risks (equity, property)</li> <li>• Interest rate risks</li> <li>• Credit risks: bond spreads, (mortgage) loan spreads, default of largest banking counterparty</li> </ul>
5. Regulatory/accounting standards		National GAAP
6. Reporting formats for results	Output presentation	<ul style="list-style-type: none"> <li>• Change in values of assets and liabilities</li> <li>• Funding ratios</li> <li>• Dispersion across companies</li> <li>• Contribution of individual shocks</li> </ul>
<b>PENSION FUNDS: LIQUIDITY RISK</b>		
		<b>Bottom-up (conducted by DNB)</b>
1. Institutional Perimeter	Number of institutions	5 occupational pension funds (DB)
	Market Share	~60 percent of assets
	Data	Statutory returns
	Reference Date	December 31, 2022
2. Channels of Risk propagation	Methodology	Combination of interest rate (EA, U.S., UK, JP) and FX shocks (USD, GBP, JPY) leading to margin calls on pension funds' derivative positions
	Time horizon	Two days
3. Scenario Analysis	Tail shocks	<p>Four adverse scenarios:</p> <ol style="list-style-type: none"> <li>1. Parallel interest rate shock between 17 and 38 bps; EUR appreciation between 2.2 and 3.8 percent</li> <li>2. As scenario 1, with limited access to the repo market</li> <li>3. Parallel interest rate shock between 33 and 77 bps; EUR appreciation between 4.4 and 7.5 percent</li> <li>4. As scenario 3, with limited access to the repo market</li> </ol>
4. Risk factors assessed		Liquidity risks
5. Regulatory/accounting standards		National GAAP
6. Reporting Formats for results	Output presentation	<ul style="list-style-type: none"> <li>• Aggregated margin calls (absolute amount, relative to liquid assets)</li> <li>• Cashflows and liquidity position</li> <li>• Dispersion across companies</li> </ul>

## Appendix V. Status of Key Recommendations from the 2017 FSAP

Recommendations	Status
<b>Financial Risks and Stability Analysis</b>	
Enforce an industry-wide approach to informing IO mortgagors of estimated repayment shortfalls.	<b>Done.</b> AFM and SSM (DNB/ECB) established an industry-wide program. The program has concluded.
Continue to build capital buffers to ensure all banks remain above minimum leverage ratio thresholds in the case of severe adverse events.	<b>Done.</b> The Dutch authorities require G-SIBs to hold a leverage ratio buffer beyond the binding 3 percent. They also remain supportive of an Other Systemically Important Institution leverage ratio buffer and note that the Basel 3.5 standards, the activation of a 1 percent CCyB, now increased to 2 percent by May 2024 and the extension of the floor on risk weights for Dutch mortgages will also contribute to higher leverage ratios of certain Dutch Systemically Important Financial Institutions.
<b>Macroprudential Policy Framework</b>	
Strengthen the FSC by establishing it under primary law and vest it with “comply-or-explain” powers.	<b>Partially Done.</b> A Bill has been approved by Parliament giving the FSC a legal basis after an amended legislative proposal was submitted to Parliament in early summer 2022. The FSC is now legally embedded in the Bank Act 1998 as of July 1, 2023. As a ‘comply or explain mechanism’ does not fit in with the Dutch constitutional system, it was not implemented.
Accelerate the phase-out of MID and reduce the final tax rate to a neutral level.	<b>Partially Done.</b> The phasing down of the MID was accelerated from 0.5 to 3 percentage points annually starting in 2020 until the base tax rate level of 37 percent was reached in 2023. However, the tax treatment of owner-occupied housing remains favorable compared to other forms of investment.
Continue gradually reducing maximum limits on LTV ratio to no more than 90 percent after 2018, and place prudential ceilings above which DSTI limits (by income group) cannot be relaxed.	<b>Not Done.</b> The maximum LTV ratio for new mortgages was reduced to 100 percent in 2018, as planned at the time the cap was introduced in 2012, but no further reduction has been undertaken. No changes have been made in how DSTI limits are set.
<b>Cross-cutting Supervisory Issues</b>	
Enhance DNB and AFM powers to introduce technical regulations (consistent with the SSM) and to conduct examinations using outside expertise.	<b>Not Done.</b> The powers of DNB and AFM to introduce technical regulations have not been enhanced. No actions to do so are currently foreseen. DNB and AFM already have the power to adopt non-legally binding policy rules and will consider suggested policy rules when exercising the relevant supervisory powers in future. The current practice is largely effective; non-legally binding policy rules

Recommendations	Status
	are supervised and enforced. DNB and AFM can also involve outside expertise in conducting their supervisory examinations.
Exclude DNB and AFM from the proposed salary cap, and provide them with greater autonomy in setting their supervisory budgets.	<b>Not Done.</b> The Ministry of Finance has not provided DNB and AFM with greater autonomy in setting their supervisory budgets. No actions to do so are foreseen. The recommendation was revisited, and a new recommendation formulated.
DNB and AFM to undertake a cross-sectoral review of credit underwriting standards of mortgages.	<b>Done.</b> Several on-site examinations in financial institutions' mortgage portfolios have been carried out in the recent past.
Ensure that reliable and complete data is available on a timely basis to support off-site supervision.	<p><b>Done.</b> DNB and AFM are actively investigating and applying supervision techniques involving data-driven analytical approaches. In collaboration with the Ministry of Finance, the AFM is exploring an additional legal basis for periodic data requests.</p> <p><u>Insurers and pension funds:</u> DNB continues to conduct rigorous checks on the quality, consistency, and plausibility of the data it receives from insurers and pension funds, also with the help of on-site examinations. AFM is investigating the possibility of a yearly inquiry into complaints about pension funds.</p> <p><u>Banks:</u> DNB has implemented new and innovative information products for supervisors, also in collaboration with the ECB. They include rigorous checks on the consistency and plausibility of data or a system of standards and norms on the quality of regulatory reporting (for LSIs), or the ECB's thematic review on data aggregation, confirming additional investment needs into information technology (IT) infrastructure. DNB initiatives for Data Driven Supervision have been implemented. AFM has developed tools to monitor IO mortgages with coverage to be expanded to other mortgage products.</p> <p><u>Collective investment schemes:</u> Several actions have been taken by DNB and AFM to ensure reliable and complete data is available on a timely basis.</p>
<b>Banking Supervision and Regulation</b>	
Further enhance supervisory oversight of loan classification and strengthen internal model validation by providing Joint Supervisory Teams more support from risk specialist divisions.	<p><b>Done.</b></p> <p>Supervisory oversight of loan classification: Since the last FSAP, several policy measures have been introduced at the EU/EA level focusing on adequate provisioning and clarifying classification rules. In addition, the MoF admits the discussion on binding requirements on impairment charges. In line with European Commission guidance, DNB encourages the application of article 104 Credit Requirement Directive where appropriate, including through supervisory manuals.</p>

Recommendations	Status
	<b>Internal model validation:</b> The ECB upgraded processes across Joint Supervisory Teams on the model validations, including ongoing model monitoring, requiring substantial support from divisions specialists. Also, the project of Targeted Review of Internal Models (TRIM) has been launched, channeling additional expertise into the internal model validation.
Encourage a more active role of the Supervisory Board of Dutch banks via ongoing engagement.	<b>Done.</b> Engaging the Supervisory Board (SB) is part of ongoing supervision through, e.g., periodic interviews and the annual SB self-assessment. In 2022 DNB has observed the meetings of the SBs of several SIs to assess their effectiveness and conducted an on-site inspection combining a focus on governance with behavioral and cultural elements. Furthermore, DNB discusses the outcomes of the annual Supervisory Review and Evaluation Process with the SBs of all LSIs and intends to communicate the outcomes of the TRIM project.
<b>Insurance and Pension Supervision and Regulation</b>	
Monitor closely and take a series of well-defined actions, under Pillar 2, at different levels of the Volatility Adjustment (VA) and impact of the ultimate forward rate (UFR) on insurers' solvency position.	<b>Done.</b> DNB has implemented a new forward-looking approach in late 2021 that takes a step away from the current SCR ratio ex VA and UFR approach. It analyzes solvency levels and probability distributions around them to assess the sustainability of the future statutory solvency and the capacity to compensate for the UFR shortfall. It will support a dialogue with insurers at risk to take measures to improve the sustainability of the solvency position.
Harmonize the relevant laws on the quality of advice and suitability of products and provide authority for group supervision in the pension law.	<b>Not Done.</b> No mechanisms have been introduced to ensure pension participants receive financial advice. A new pension system is being implemented in 2023-28, yet supervisory powers for group supervision are not foreseen because of the pension fund structure in the Netherlands.
<b>Securities Supervision and Regulation</b>	
Broaden the supervisory authority of the AFM with regard to loan-based crowd-funding platforms.	<b>Done.</b>
Require prompt public disclosure of auditor changes or resignations.	<b>Not done.</b> Authorities consider this already sufficiently covered by existing rules and regulations.
<b>Financial Market Infrastructure</b>	
Augment the supervisory resources devoted to the oversight of European Central Counterparty (EuroCCP).	<b>Done.</b> The staff resources devoted to EuroCCP supervision have been expanded, including resources for quantitative risk management and for IT/OPS. The department head of the FMI (Financial Market Infrastructures) Oversight Department attends the supervisory meetings with the chairperson of the SB of EuroCCP.

Recommendations	Status
EuroCCP to strengthen its review of its stress testing and margin models methodology and develop a comprehensive recovery plan.	<b>Done.</b> Reverse stress testing approach broadened, margin models methodology improved, and sensitivity analyses developed. A comprehensive recovery plan was developed and updated annually to bring it in line with the requirements of the EU Recovery and Resolution Regulation.
<b><i>Crisis management and bank resolution</i></b>	
Develop adequate arrangements for systemic crisis management and make legacy frameworks for managing failing banks complementary to the new SRM framework and more transparent.	<b>Partly done.</b> Domestically, DNB has updated its crisis management manual, aligning it with the SRB's. DNB and AFM and other relevant institutions have defined their roles and responsibilities in resolution and have also updated the tripartite Memorandum of Understanding enabling information sharing and delineating responsibilities for crisis management. At the European level, the role and responsibilities of SRB, ECB, and Dutch authorities in managing a systemic crisis are formalized in the SRB and DNB crisis management manuals, the Cooperation Framework and horizontal policy guidance.
Allow the deposit guarantee scheme to finance deposit transfers in resolution and insolvency.	<b>Partly done.</b> Starting in 2017, it is possible to finance the gross amount of deposits that are transferred in resolution, albeit with a cap of 50 percent of the size of the deposit guarantee fund.