

# Financial Stability Report

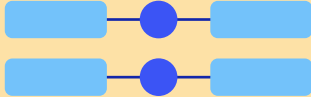
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# Table of contents

Summary

Risk outline 

Cyber risks to financial stability 

Risks of high public debt 

# Summary

**Thanks to the moderately positive economic outlook and the swift recovery in financial markets, the risk outlook for financial stability in the Netherlands is balanced.** In the euro area, inflation is edging closer to the European Central Bank's (ECB) target, and a deep recession is not on the cards for now. Looking ahead, moderate growth is expected. This means a 'soft landing' of the economy seems still within reach both for the euro area and for the Netherlands, which is good news in terms of financial stability. By and large, investors also remain upbeat about the economic outlook, anticipating interest rate cuts by central banks. Their buoyancy helped financial markets recover quickly from a brief period of turbulence last summer.

**However, economic and geopolitical uncertainty remains elevated.** Although a soft landing of the Dutch economy seems possible, there is a risk that inflation remains high in the Netherlands for longer than in the rest of the euro area. In particular, its tight labour market and accommodative fiscal policy fuel upward inflation risks. Furthermore, the economic outlook remains ambivalent, due in part by persistent geopolitical tensions and increasing geo-economic fragmentation. Geopolitical tensions can threaten financial stability in various ways, for instance through increased cyberthreats to the financial sector or a higher risk of economic shocks. Such economic downturns are particularly risky for governments targeting budget deficits close to the European deficit limit, as this gives them little leeway to support the economy in difficult times. In addition, an economic shock could trigger a price correction in the Dutch housing market, in which prices are currently rising rapidly again and valuations are high. For banks DNB therefore maintains the so-called Article 458-measure, which floors the average risk weight of certain mortgage loans.

**Dutch financial institutions enjoy robust financial positions, but economic headwinds may erode asset quality and solvency.** Economic

conditions in recent years, in particular higher interest rates without a substantial growth slowdown, have increased banks' profitability. Dutch banks also enjoy robust capital and liquidity positions. Meanwhile, economic uncertainty has so far manifested itself in a minor uptick in credit losses, and 3% of business loans is non-performing. Looking ahead, persistent geopolitical tensions and increasing geo-economic fragmentation may well induce fresh economic shocks, eroding profitability and driving up credit losses. Dutch insurance firms and pension funds are likewise in a good starting position. That said, the solvency of pension funds is vulnerable to a macroeconomic scenario of rapidly falling interest rates.

**Furthermore, as digitalisation becomes more ubiquitous and geopolitical tensions rise, cyberattacks pose a growing threat to the financial sector.** A cyberattack or disruption occurring at a single financial institution may expose the financial system to risks through vulnerabilities or channels of contagion. Three current system-wide vulnerabilities merit special mention. First, various developments make the cyberlandscape increasingly complex, not the least of which is the rise of artificial intelligence (AI). While new AI applications offer opportunities, for example in the detection of and defence against cyberattacks, such attacks may also become more frequent and be of a different nature due to AI. Second, the financial sector, which is traditionally highly concentrated in the Netherlands, is vulnerable to concentration risk due to outsourcing to a small group of third-party vendors. Issues affecting a single service provider can immediately affect multiple financial institutions in such a situation. Third, the financial system depends on vital processes, such as telecommunications, which could be a strategic target for cyberattackers. For example, a quarter of all cyberattacks worldwide affect the financial sector directly or indirectly, with the potential to disrupt services. It is important that financial institutions address these three system-wide vulnerabilities and share information with other sectors and suppliers of vital infrastructure if they are to minimise the risk of a successful

cyberattack. The risk of a cyberattack can never be wholly eliminated, which is why it is important for the financial system to be resilient. Financial institutions should therefore design and test crisis measures. Society should also be aware that a cyberattack could, in extreme cases, make financial services temporarily unavailable.

**Lastly, rising public debts pose a threat to financial stability in the Netherlands.** Governments in Europe are for the time being pursuing accommodative fiscal policies, while many countries' public debt levels are expected to rise further. High public debt affects financial stability through three channels. First, higher financing needs create refinancing risks and leave governments less leeway to adopt a stabilising fiscal policy if an economic shock occurs. Second, high-debt countries are more susceptible to a reversal of financial market sentiment, causing financing costs to surge. This was what happened in France last summer, for example, after the snap elections had been announced. Financing costs for high-debt countries rise on average four times faster after a geopolitical shock than is the case for low-debt countries. Lastly, high public debt fuels the risk of negative interaction between public finance and the financial sector, for example because sovereign bonds on financial institutions' balance sheets decline in value. Dutch pension funds and insurance firms hold about 5% of their assets in debt securities of euro area countries with debts higher than 90% of GDP. As the Netherlands' public debt is currently still low, its short-term financial stability is particularly susceptible to spillovers from high-debt countries. This means it is important for the Netherlands that all euro area countries adhere to the new Stability and Growth Pact (SGP), as this can help European governments implement growth-enhancing investment. Therefore it is desirable that the European authorities enforce the new SGP.



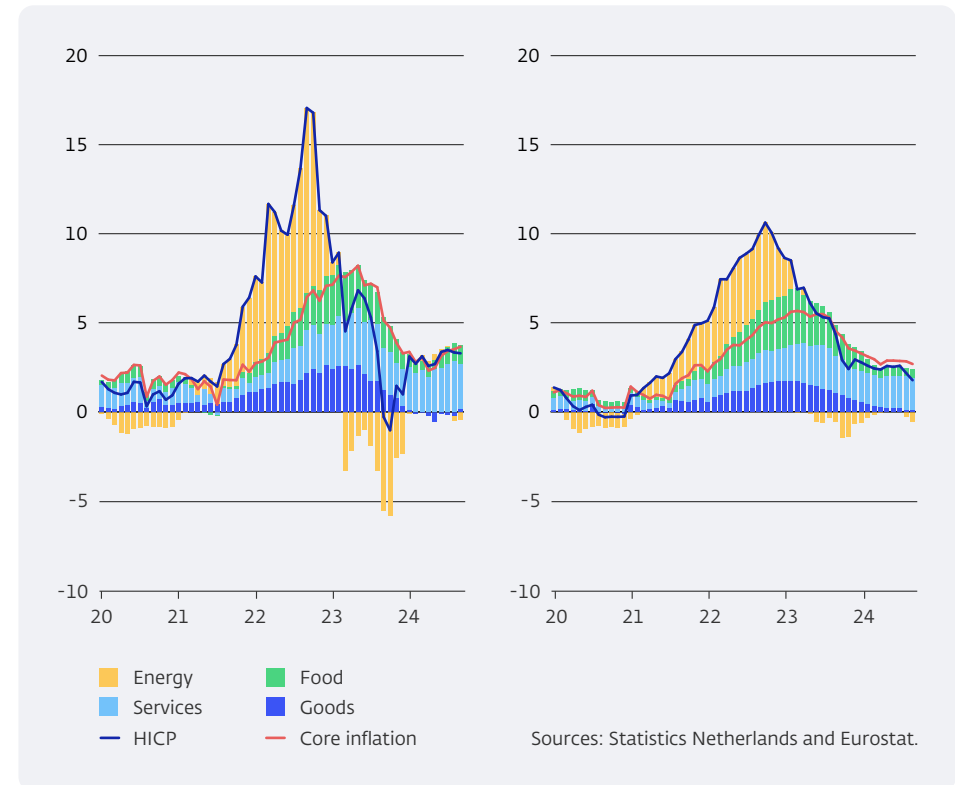
# 1 Risk outline

**A soft landing is within reach for the euro area economy, as monetary policy is being steered towards neutral territory.** Inflation in the euro area has fallen sharply this year, dipping below 2% in September (see Figure 1, right). The euro area has seen falling inflation and several quarters of low growth and increasing downside risks for growth, but a recession has so far failed to materialise. As a result, a soft landing for the euro area seems still within reach. Therefore, in view of falling inflation, the ECB is gradually steering monetary policy back to neutral territory. For example, it cut its policy rate by 25 basis points three times, to 3.25%. The US Federal Reserve likewise started cutting its policy rate, lowering the Fed funds rate by 50 basis points in September. These interest rate cuts also increase the probability of a soft landing.

**The Dutch economy is also heading for a soft landing, although inflation remains higher than the euro area average for longer.** In the second quarter, the Dutch economy expanded by 1% compared to the previous quarter (see Figure 2), outpacing most other euro area economies. The picture for this year is moderately positive. The Dutch economy is expected to grow at a moderate pace in 2024, followed by further cautious recovery next year (DNB, 2024). However, inflation has rebounded slightly in recent months to 3.3% in September (see Figure 1, left). Also, inflation is expected to recede more gradually than in the rest of the euro area and remain above 2% in 2025 (DNB, 2024; CPB, 2024). Moreover, the risk to inflation in the Netherlands is mainly to the upside. The Netherlands' labour market is tighter than that of most other euro countries as its economy is recovering more strongly. This pushes up labour costs and keeps service inflation high. A comparatively accommodative fiscal stance also puts upward pressure on inflation.

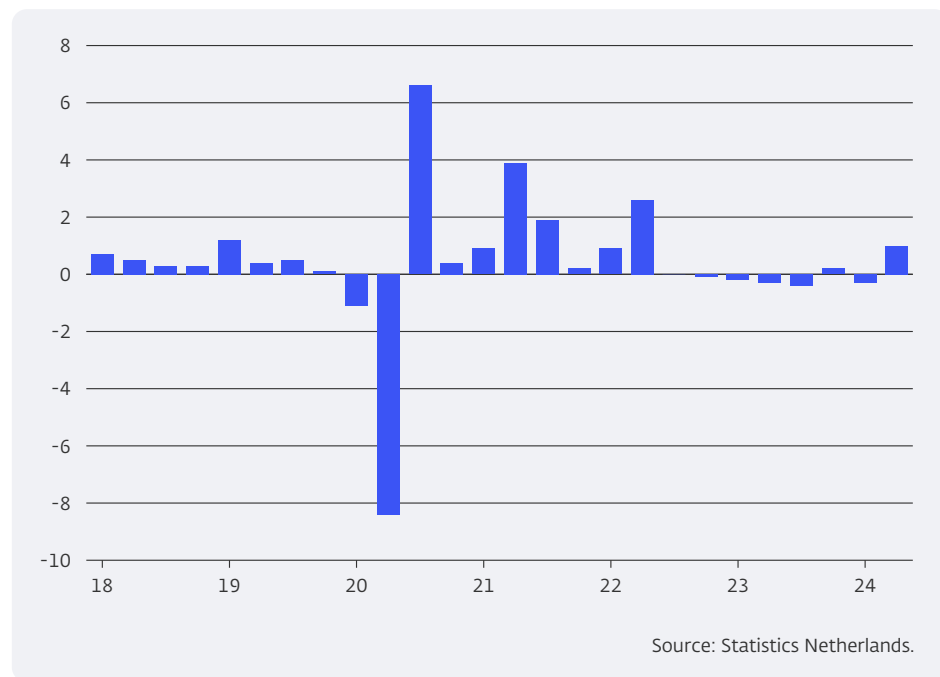
**Figure 1 Euro area inflation in line with ECB target, but the Dutch figure remains elevated for longer**

Percentages for the Netherlands (left) and euro area (right)



### Figure 2 Dutch economy grew again in second quarter

Percentage change, quarter-on-quarter



### Financial markets remain upbeat, but brief episodes of volatility show nervousness over high valuations

**Investors remain mostly optimistic about a soft landing of the economy, factoring in rapid interest rate cuts by central banks.** Surveys of institutional investors show that the vast majority still count on a soft landing of the global economy. Investors expect inflation to fall rapidly towards central banks’ target. Furthermore, the remuneration for taking inflation risk in financial markets has fallen sharply in recent months. It currently stands at 2.15% in the euro area on the basis of five-year inflation swaps, close to the lowest level seen since 2022. Investors therefore expect central banks to cut interest rates sharply in the coming period. For instance, they anticipate the ECB to have cut its policy rate by 200 basis

points to 2.0% by year-end 2025. This means they expect significantly more rate cuts than last spring, when cuts to 3.0% were anticipated, which translates into a decrease of 100 basis points (see Figure 3). A similar shift can be observed for the US Federal Reserve. Market participants expect the Fed to have cut interest rates by 190 basis points by the end of 2025, whereas as recently as this spring, cuts totalling 100 basis points were anticipated.

### Figure 3 Investors expect more ECB and Federal Reserve interest rate cuts than last spring

Basis points, expected interest rate cuts through December 2025 relative to the highest interest rate level in the past 4 years



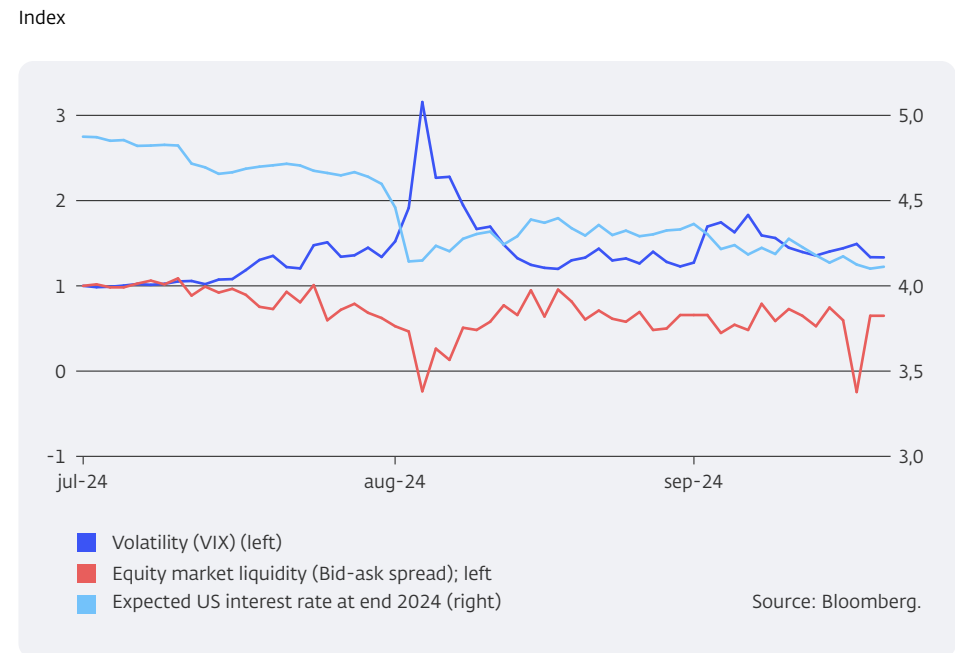
**Despite the optimism about a soft landing, last summer’s volatility shows that there is also some underlying nervousness among investors.** There are several reasons for such nervousness, all of which transpired in a single week. First, fears of a US recession fuelled expectations of more interest rate cuts and uncertainty about the future policy path. In response, stock market volatility spiked this summer, reaching levels not seen since the COVID-19 pandemic. The violent price reactions were amplified by

skewed asset allocations among investors and low market liquidity during the summer period (see Figure 4). Besides recession concerns in the United States, central banks' monetary policies are diverging. While investors were anticipating more accommodative policy from the ECB and the US Federal Reserve, they were surprised by the speed of monetary tightening in Japan this summer. Thus, an unexpected increase in policy interest rates there put pressure on a popular investment strategy known as carry trades, in which investors borrow in Japanese yen to invest elsewhere. Investors usually apply high leverage in this strategy, so they quickly unwound these positions. This contributed to significant price losses in riskier assets (see [Box 1: Forced carry trade unwind has intensified turbulence in financial markets](#)). However, equity and bond markets recovered quickly from the turmoil, partly due to monetary policy communications. For instance, reassuring language from the Japanese central bank about the cautious pace of future interest rate hikes quickly calmed markets. Fears of a US recession were quickly eased by a positive jobs report and calming Fed communications.

**The sudden increase in volatility in equity markets is also linked to high valuations.** The combination of an uncertain macroeconomic environment and high equity valuations makes markets vulnerable to a correction. As such, valuations of US equities are at historically high levels. In the United States, the CAPE ratio, which adjusts the profit/earnings ratio for the business cycle, stands at 35, significantly above its long-term average of 25. The high valuations are strongly driven by a small group of tech firms. Although valuations in Europe are closer to their long-term averages, a price correction in the United States could have adverse spillover effects in European markets. Such price fluctuations affect various market participants, and investment funds are particularly vulnerable to price losses and liquidity shortages. Margin obligations, for example, can be a major drain on the liquidity of investment funds, potentially resulting in the sale of assets during a period of turbulence in financial markets ([FSR, Autumn 2023](#)) Banks in particular have been better capitalised and regulated since the Great Financial Crisis, but this does not apply to the same extent to non-bank financial institutions, for which, moreover, data availability is typically

lower. If shocks are amplified through these institutions, financial stability becomes even more vulnerable. Looking ahead, the uncertain (geo)political environment in particular can cause volatility in financial markets, as was evidenced earlier this year when snap elections were announced in France.

**Figure 4 Financial market valuations remain sensitive to adverse scenarios, such as a substantial growth slowdown**





### Box 1 Forced carry trade unwind has intensified turbulence in financial markets

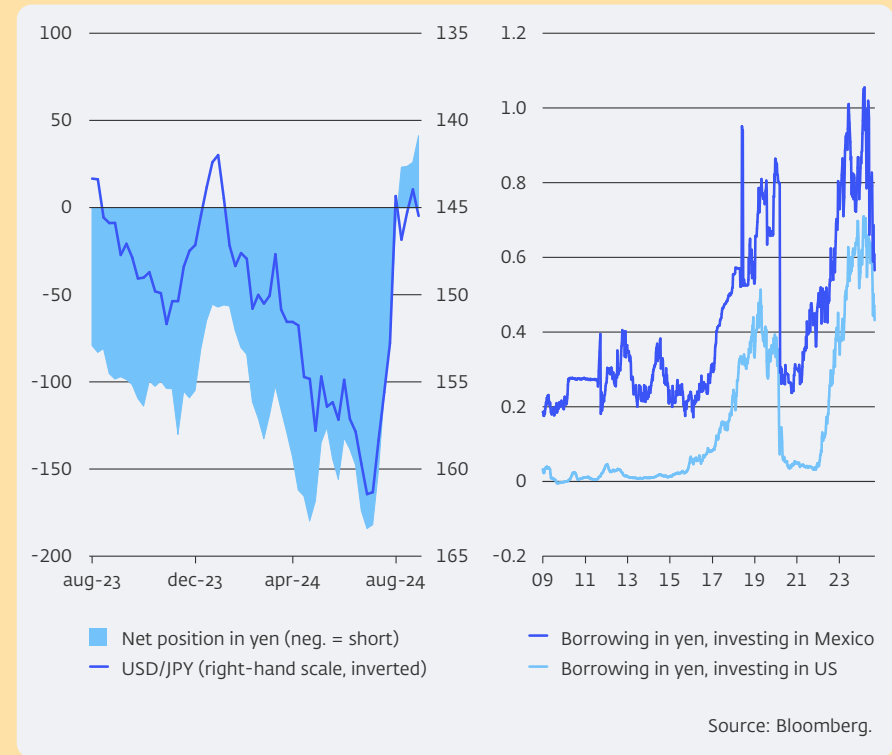
The accelerated carry trade unwind contributed to a sudden increase in volatility and large price losses in equity markets in the first week of August. Japanese equity markets saw sharp intraday losses as prices plummeted more than 20%. One of the drivers behind the plunge was the rapid unwinding of a risky investment strategy known as carry trades. This investment strategy is particularly risky because many market participants involved, including hedge funds, hold leveraged positions. The Bank for International Settlements (BIS) reckons hedge funds typically operate with a leverage of more than 10, which means that small price movements can spark large losses. A popular carry trade strategy is to borrow in Japanese yen at a relatively low interest rate and use these funds to invest in higher-yielding assets in other jurisdictions, such as the United States and Mexico. Japan's faster-than-expected monetary tightening, however, meant that the summer saw a substantial appreciation of the Japanese yen, putting pressure on these carry trades. Investors had to rapidly unwind their positions to avoid larger losses. Moreover, many speculative investors held the same positions. A combination of illiquidity and accumulated positions in derivatives markets amplified price movements (BIS, 2024). This can be seen in the sharp appreciation of the Japanese yen and the simultaneous decrease in the number of speculative short positions in yen during the summer, among other phenomena (see Figure 5, left).

Carry trades have long been attractive because of Japan's comparatively low interest rates and its stable currency markets. For instance, an indicator adjusting the interest rate differential for the volatility of the yen-dollar exchange rate shows that it has become increasingly attractive to borrow in yen and subsequently invest in Mexico or the United States (see Figure 5, right). The total volume of the yen carry trade is estimated at around \$250 billion,

which means a rapid unwinding could cause outsized financial market reactions (BIS, 2024).

Figure 5 Speculative investors rapidly unwind short positions in yen (left) following a period of attractive returns (right)

Number of contracts (thousands; long less short), JPY per USD (left), carry-to-risk ratio (right)



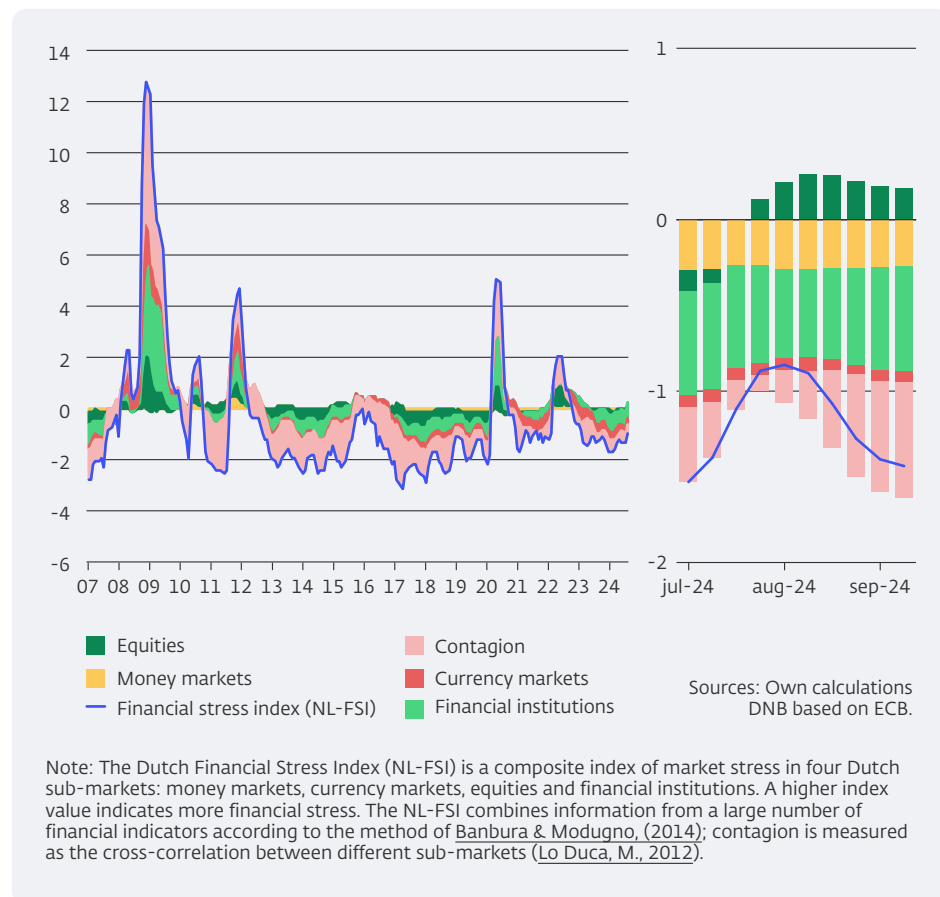


## The risk picture for the Netherlands remains balanced

**Thanks to the economic outlook and the rapid recovery in the financial markets, the risk picture is balanced.** Thus, the expected soft landing of the Dutch economy underpins financial stability. This is also helped by the swift recovery in financial markets following the brief episode of turbulence during the summer.

**Figure 6 Stress in Dutch financial markets remains muted for now**








Index



For example the Dutch Financial Stress Index, which is an indicator of financial market stress, is still below its long-term average. Also, contagion to other Dutch financial sub-markets was limited (see Figure 6). Financial institutions remain well capitalised and Dutch banks' profitability is still high on average, although earnings expectations are declining. Furthermore, banks' credit losses remain limited for now.

**Meanwhile, the uncertain economic outlook and persistent geopolitical tensions continue to cloud the risk landscape.** The risk table below shows the main current risks to financial stability in the Netherlands (see [page 10](#)). Increased uncertainty about the economy is driving several risks, such as refinancing risks and liquidity risks in financial markets. Moreover, persistent geo-economic fragmentation creates an increased risk to financial stability in the short to medium term. Rising tensions in the Middle East and the Russian aggression against Ukraine continue to contribute to the risk of geopolitical escalation and fragmentation of the global economy. For instance, further escalation in the Middle East could trigger a correction in financial markets. Uncertainty about the outcome of the US presidential elections and their possible impact on economic trade relations with other regions in the world also play a role. The trend of increasing geopolitical tensions and rising geo-economic fragmentation continues unabated, as is evident in the high number of trade restrictions imposed. As an open economy with a large financial sector, the Netherlands is relatively sensitive to these developments ([Financial Stability Report, Spring 2024](#); [DNB, 2023](#)). As such, further fragmentation of the global economy remains a prime risk to financial stability. For example, it might complicate the consistent and timely implementation of global regulatory efforts for the banking sector, such as the final Basel III reforms.

# Risk table illustrating financial stability in the Netherlands

Principal risks	Status	Examples of channels
Geo-economic fragmentation		Global conflicts lead to trade distortions
Cyberthreats		Cyberattack disrupts payment system
Refinancing and interest rates		Sustainability of public debt declines due to accommodative fiscal policy
Real estate price correction		Lower demand for office space; overvaluation in housing market
Liquidity		Disappointing macro news leads to price corrections in financial markets and low liquidity
Climate and nature-related		Major damage and claims/losses due to flooding
Credit losses		Increase in corporate insolvencies leading to credit losses

This risk table illustrates the principal risks to financial stability in the Netherlands in the short to medium term. The colour of the circles reflects whether, compared with its long-term average, a risk is: moderately elevated or in line with its long-term trend (grey), elevated (yellow) or highly elevated (red). The right-hand column lists examples of channels through which the risks could affect financial stability.

**The central questions in this FSR are how geopolitical tensions contribute to cyberthreats to the financial sector, and how these tensions erode the economic resilience of the Netherlands and of high-debt European governments.** Not only can financial institutions and the payment system be hit directly by a cyberattack, but they can also be hindered by cyberattacks on critical third parties and vital processes, such as the energy and telecommunications sectors. Moreover, the cyber-landscape is becoming increasingly complex, for instance due in to the rise of artificial intelligence (AI). The second chapter of this FSR focuses on the systemic risk of cyberthreats and the potential channels of contagion within the financial system. In addition, the sustainability of public debt remains a major risk to financial stability. If an accommodative fiscal stance, low economic growth and high interest payments coincide, governments will find themselves more sensitive to policy uncertainty and geopolitical risks. This has potential spillover effects to the financial sector. The third chapter examines the short- and long-term financial stability implications which this issue has for the Netherlands.

**Several risks listed in the risk table are briefly discussed in the remainder of this chapter,** namely developments in real estate markets, climate and nature risks, and the development of credit risks in financial institutions.

## Commercial real estate market shows signs of stabilisation, but will housing market risks resurge?

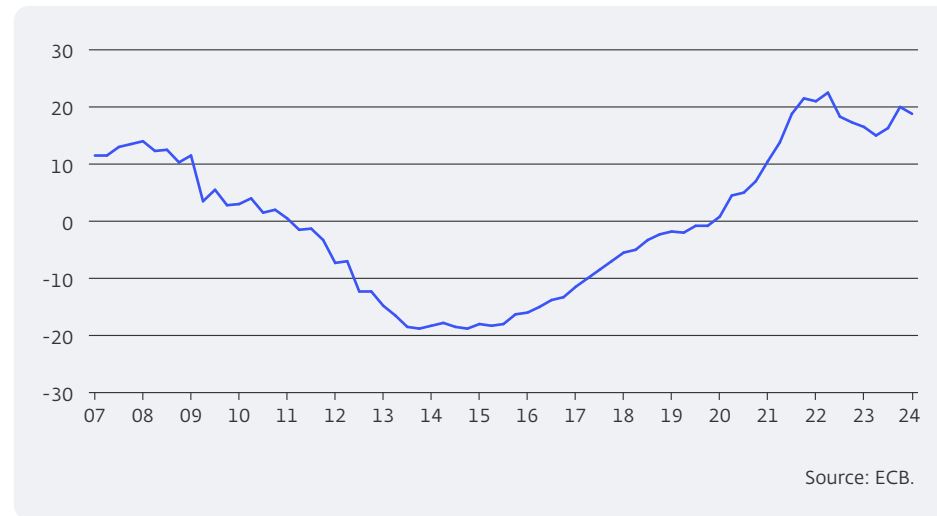
**Due to high cyclical sensitivity, the Dutch commercial real estate market remains vulnerable, although some signs of stabilisation can be discerned.** Prices in the Dutch commercial real estate market are starting to stabilise following a price correction of almost 13% that started in 2022. For instance, transaction values rose 0.6% in the second quarter of 2024, which is the first quarterly increase since the start of the price correction in 2022 (MSCI, 2024). This stabilisation is mainly due to cyclical improvement, including lower interest rates and fallen construction costs. This has a

positive impact on real estate investments, which were some 44% higher in the first half of 2024 than a year earlier. As a result, more and more investors expect the market to gradually recover next year (RICS, 2024). Credit risk for loans secured on commercial real estate also seems to be stabilising. For instance, the share of non-performing loans secured by commercial real estate at Dutch banks remained comparatively stable in the second quarter. Banks also reduced the proportion of past-due loans from 18% to 13% in the second quarter of 2024, which is below the long-term average. Besides structural challenges – such as the rising telework trend – the main risk to recovery in the commercial real estate market is persistently high inflation, which drives up both interest rates and construction costs.

**Meanwhile, the Dutch housing market has seen prices pick up since December 2023, fuelling the risk of overvaluation.** Since December, house prices in the Netherlands have rebounded, accelerating from April 2024 and gaining more than 7% year-on-year (CBS, 2024). In both July and August 2024, the year-on-year growth rate stood at 11%. This means the Dutch house price index reached another all-time high. Rising prices and lagging borrowing capacity have put further pressure on affordability, especially for first-time buyers (ESB, 2024 - Dutch). Addressing the problems in the housing market requires a coherent set of measures that target both the demand and the supply side (DNB, 2024). Meanwhile, signs of overvaluation are returning, and systemic risk in the Dutch housing market remains at a high level. Tellingly, by the end of 2023, the Netherlands' price-to-income ratio stood at 125, against the European average of 107 (OECD, 2024). Moreover, an ESRB model based on a set of indicators, including affordability, also points to overvaluation in the Dutch housing market (ESRB, 2024; see Figure 7). The risk of a price correction therefore persists, which could hit financial institutions, most notably banks, through both direct and indirect channels. Furthermore, the Dutch economy is still comparatively sensitive to house price declines, due in part to relatively high household indebtedness. At 94% of GDP, it is sizeable, especially when compared to the euro area average of 54% (Eurostat, 2024, ECB, 2024).

### Figure 7 Models point to overvaluation in Dutch housing market

Percentage of overvaluation



**To support banks' continued resilience to the systemic risk of a house price drop, DNB extends the 'Article 458 measure' by two years.** Despite signs of overvaluation and high household debt levels, the systemic risk inherent in the Dutch housing market has not been sufficiently reflected in the (low) risk weights that banks apply in calculating their capital requirements when they use internal models. Therefore, we have since 2022 set a floor for the average risk weights in the Dutch mortgage loan book under the Article 458 measure. Due to the persistent systemic risk, we are extending this measure by a further two years until 30 November 2026 (DNB, 2024 - Dutch). After having analysed the situation, we have concluded that a targeted and temporary measure under Article 458 remains the most effective tool to mitigate this systemic risk. Other macroprudential tools and buffers are less appropriate or effective in specifically or fully addressing systemic risk in the housing market. We have also specifically looked at the connection with impending changes in prudential regulations for banks, and in particular the introduction of the output floor that will be phased in gradually from 2025. The output sets a

lower limit for the capital requirements of banks that use internal models. As the output floor will not yet have a binding impact on Dutch banks during the two-year extension of the Article 458 measure, this is no reason to adjust the Article 458 measure. DNB also notes that the capital impact of the measure has decreased recently, and may decrease further due to new prudent rules in the CRR3 on collateral valuation. They may cause risk weights in internal models for mortgages to increase, thereby shifting the impact of the Article 458 measure to higher requirements stemming from the CRR. This potential shift will have no negative impact on the banking sector's resilience, and prevent double counting. DNB will continue to monitor the effects of the Article 458 measure closely during the extension period and if deemed necessary, DNB will consider discontinuing the measure earlier.

### The financial sector is also exposed to physical and transition risks.

**Climate change and increases in wider natural risks, such as nature loss, remain as relevant as ever to the financial sector.** Currently, six of the nine natural boundaries that make Earth a safe operating space for humanity are being transgressed (Richardson et al, 2023; IP BES, 2019). This gives rise to risks of accelerating climate change, increasing the urgency of pursuing clear and gradual transition policies, preferably at the international level. The longer such policies are delayed, the more frequent and intense the impacts of climate and broader natural hazards may be, and the more likely it is that rapid and unpredictable transition policies must be pursued. The financial sector is also exposed to these physical and transition risks. Due to their systemic nature, once climate and natural loss risks materialise, they affect multiple financial institutions simultaneously and through multiple channels. To better understand these effects, we have developed a framework that supplements previous climate change studies that identifies the sensitivity of European bank capital ratios to various forms of natural loss. The framework reveals significant differences in sensitivities between types of nature loss.

This shows how important it is for banks to identify the types of natural loss most relevant to their portfolios ([Gallet et al, 2024](#)).

**Because climate change and broader nature risks are highly relevant, financial institutions must be able to properly identify and mitigate the associated material risks.**

New prudential provisions enacted in CRR3, CRD6 and Solvency II require banks and insurance firms to recognise environmental, social and governance (ESG) risks in their strategies and procedures for evaluating their internal capital requirements and risk management, while also requiring them to draft transition plans. It is up to supervisors to review these analyses and plans. Where necessary, macroprudential authorities can take additional measures to bolster the resilience of financial institutions to systemic risks. CRD6 clarifies that they may use a sectoral risk buffer to mitigate systemic risks related to climate change, among other things. To determine the level of the required systemic risk buffer, macroprudential authorities may use stress tests ([Bartsch et al, 2024](#)). For now, DNB has not deployed a macroprudential tool for this systemic risk.

## Financial institutions maintain good starting position; credit losses remain limited for now

**Dutch financial institutions have robust financial positions.** Higher interest rates in recent years and the prospect of a soft landing of the economy are translating into relatively high bank earnings and modest increases in provisions – a combination that contributes to higher profitability. In addition, Dutch banks have solid financial positions. The average common equity tier 1 capital ratio of the Dutch banks stands at 16.3%, while their leverage ratio is 6%. In addition, bank earnings – despite an anticipated decline – are expected to remain at healthy levels for the time being. This makes banks resilient to interest rate changes, which is beneficial given the ongoing uncertainty about the future interest rate path ([FSR, Spring 2024](#)). In addition, Dutch banks' liquidity ratios are well above requirements. Dutch insurance firms and pension funds are likewise in a

good starting position. The average solvency II ratios of Dutch life and non-life insurance firms were 188% and 173% respectively in the second quarter of 2024, and Dutch pension funds have an average funding ratio of 119%. That said, the solvency position of Dutch pension funds deteriorates in a scenario with rapid interest rate cuts ([FSR, Spring 2024](#)). In light of higher interest rates and in the run-up to the new pension system, Dutch pension funds have increased their average interest rate protection from 37% to 64% over the past four years, reducing the negative impact of declining interest rates. The conversion to the new pension system is a complex process that spans many years. It is therefore important that pension funds take account of changing financial and economic conditions between the decision to convert to the new system and the actual time of conversion. For instance, higher public debt can reduce pension assets as sovereign bonds decline in value (see '[Elevated public debt levels create greater vulnerability in financial markets](#)').

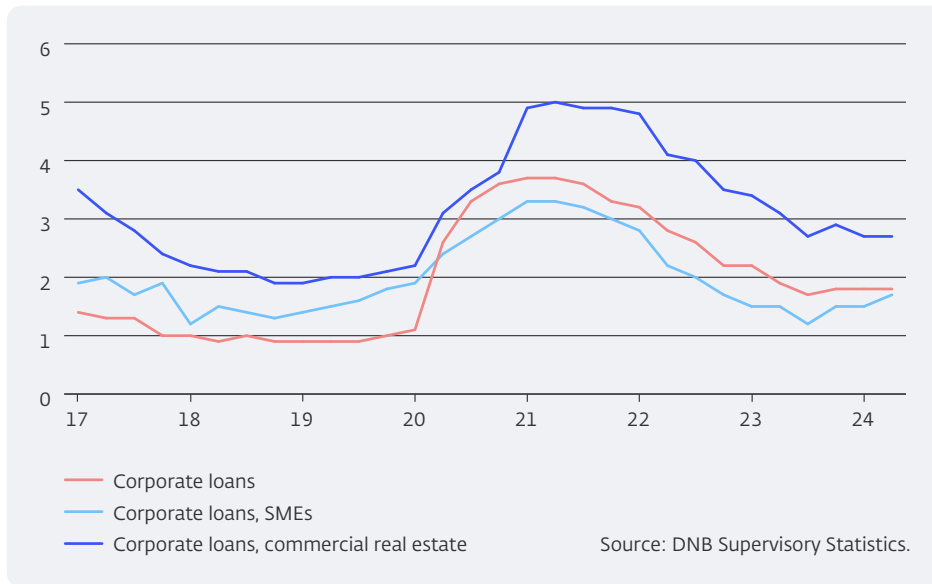
**Lastly, economic uncertainty has so far manifested itself in a minor uptick in credit losses among Dutch banks.**

On average, Dutch firms can still meet their interest obligations despite the interest rate hikes seen in recent years. For instance, the interest coverage ratio, which measures a firm's ability to meet its interest obligations, stabilised at around 6, remaining above its long-term average. However, the number of business insolvencies in the Netherlands has been on the rise in recent months, making banks vulnerable to credit losses going forward. For now, banks have seen their non-performing corporate loans rise only moderately to 3% by mid-2024. However, the share of loans subject to repayment arrangements did increase slightly for loans to small and medium-sized enterprises (SMEs), although it remains comparatively low (see Figure 8). Credit losses can also affect insurance firms and pension funds, including through investments in private assets. In recent years, insurance firms and pension funds have expanded their asset allocations to these illiquid and risky investments ([FSR Spring 2024](#)). The opaque nature of this market, in which the valuation of underlying firms depends on third parties, and the fact that the fledgling market for these investments has never weathered an economic downturn before, can cause losses to transpire late and, moreover, they can be highly interlinked.

It is therefore essential that financial institutions have sound risk management in place and monitor loans closely and frequently, looking out for potential interlinkages with other parties.

**Figure 8 Repayment arrangements for bank loans to Dutch small and medium-sized enterprises (SMEs) have gone up**

Percentage of outstanding loans





## 2 Cyber risks to financial stability

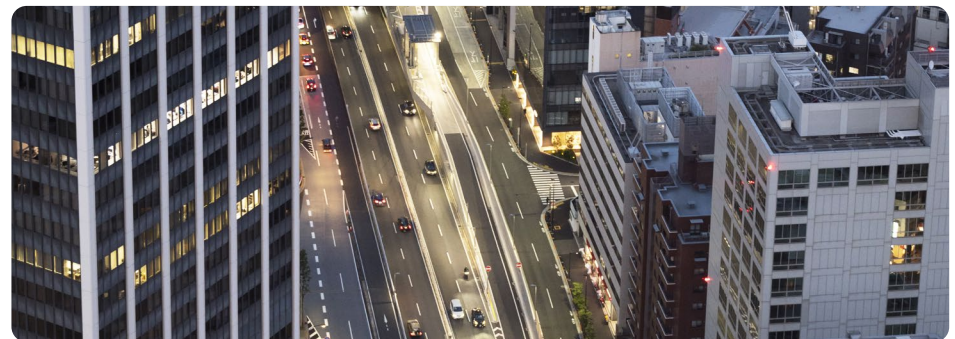
### **Cyberattacks are an increasing threat to the Dutch economy and financial sector, driven in part by a further digitalisation of society..**

Dutch society is highly digitalised – 61% of Dutch firms use cloud services and almost half have high or very high digital intensity. This puts the Netherlands in the European vanguard ([Eurostat, 2024](#)). The country's high degree of digitalisation can also be observed in the financial sector, and it has benefited customers greatly. For example, payments are faster than ever and 96% of the Netherlands' residents have access to digital banking or payment services, significantly higher than the European average of 70% ([Eurostat, 2024](#)). One downside of this high level of digitalisation is that the financial sector is vulnerable to digital disruption in direct and indirect ways. A disruption can occur, for example, through deliberate actions by malicious parties, such as cyberattacks aimed at financial gain, sabotage or espionage. For example, the US subsidiary of Industrial and Commercial Bank of China (ICBC) fell victim to a ransomware attack last year, which temporarily prevented it from trading US sovereign bonds. The bank required emergency liquidity to avoid default ([Reuters, 2023](#); [Fitch, 2023](#)). While this case did not involve contagion to other institutions, it illustrates the potential cascading effect that this attack could have caused in the financial system.

**A cyberattack or disruption occurring at a single financial institution may expose the financial system to risks through vulnerabilities or channels of contagion.** A cyberattack has a systemic impact when the system is no longer able to absorb and recover from the shock ([ESRB, 2020](#)). The systemic impact of a cyberattack depends on its environment, the shock it causes, and any vulnerabilities in the system ([ESRB, 2020](#); [FSR, Autumn 2020](#)). The likelihood and risk of a cyberattack depend in part on its environment. For example, a payment system could be an attractive target for a cyberattack because of its important role in the economy, and the global cyberthreat increases as geopolitical tensions rise ([FSR, Spring 2024](#)). The severity or shock to the system depends mainly on the impact on

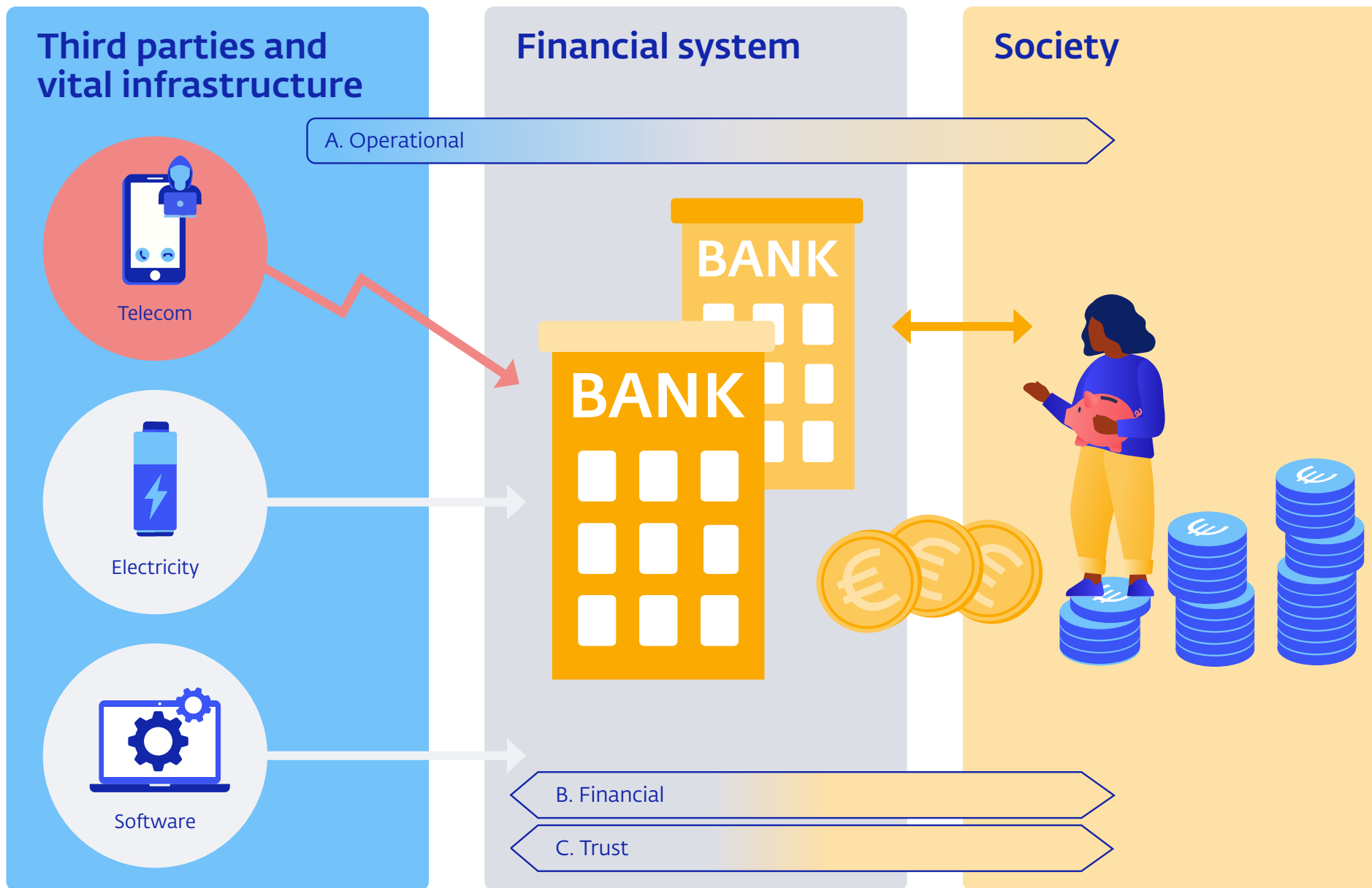
operational management and the extent to which risks are managed. Also, micro and macro vulnerabilities determine systemic risk. Micro or firm-level vulnerabilities follow from the financial institution's business model or operational set-up, while macro or system-level vulnerabilities mainly relate to interconnectedness and concentration in the financial system as a whole ([Bank of England, 2024](#)). Subsequently, a cyberattack can cause contagion throughout the financial sector through three channels if it causes, in multiple financial institutions: i) disruption of services (*operational channel*), ii) financial losses (*financial channel*) and/or iii) a loss of trust (*trust channel*), see the infographic on page 17. While the contagion channels separately affect financial stability, they can also reinforce each other.

**This section examines system-wide vulnerabilities, such as concentration in third-party service providers, that may pose risks to financial stability.** The cyberthreat landscape is being reshaped, also due to geopolitical tensions. At the same time, system-wide vulnerabilities can amplify the risk that cyberattacks pose to financial stability. The three main system-wide vulnerabilities are the increased complexity of the cyberlandscape (due in part to the rise of AI), the high degree of concentration in outsourcing to third parties, and the broad dependence on vital infrastructure. In conclusion, this sections presents recommendations for enhancing the resilience of the financial system in this respect.





# How a cyberattack on a third party can cause contagion through three channels



## Cyberthreat landscape is becoming increasingly complex

**Specifically for financial stability, the greatest risk lies in cyberattacks undertaken by ransomware groups and nation-state actors.** The first category can have a potentially large impact with its attacks, which can immobilise a financial institution's operations either briefly or for a longer duration. Cyberattacks conducted by nation-state actors are aimed at undermining trust in society and can pose a threat to financial stability due to potential, long-term infiltration for purposes of espionage or to disrupt processes. These types of attacks are reported only to a limited extent, which is partly explained by the modus operandi of these government-driven, sophisticated hacker groups: rather than negotiating openly with their victims, they try to remain undiscovered for as long as possible.

**In particular, ransomware attacks are becoming faster and faster, making the threat landscape more complex.** In ever larger numbers, attackers are constantly looking for new vulnerabilities on the internet, and they are increasingly quick to exploit vulnerabilities in software. In addition, attackers specifically target service providers' hardware located close to the data source or end user, such as routers and smart sensors. Since this hardware is located in different places, attackers can hit multiple firms and organisations by exploiting a single vulnerability. A case in point is an attack on software firm Ivanti in late 2023, in which cyberattackers bypassed security systems and penetrated internal networks ([CISA, 2024](#)). Financial institutions worldwide also encountered hardware problems following the attack. Lastly, attackers are increasingly selling knowledge about vulnerabilities and software among themselves, which they use to attack institutions. This is known as the *Crime-as-a-Service* model, which can also target financial institutions.

**New AI applications are also reshaping the cyberthreat landscape, both in the number and types of cyberattacks.** The development of new AI applications presents opportunities for financial institutions, including to improve their cybersecurity. For instance, AI can help detect patterns and

anomalies that indicate cyberthreats in real time. At the same time, new AI applications are changing the cyberthreat landscape as new types of cyberthreats emerge, attacks become more sophisticated and can occur more frequently (see [Box 3 Artificial intelligence: implications for financial stability](#)). For example, a foreign firm was scammed out of \$25 million early this year after cyberattackers tricked a staff member by impersonating executives in an internal video conference using face and voice impersonation software ([FT, 2024](#)). In addition, the rise of AI applications can make cyberattacks a more frequent phenomenon if generative AI is used, for example to predict passwords based on big data. It is therefore important for financial institutions to be knowledgeable about and protect themselves against the new techniques which attackers are developing to penetrate institutions.

## Growing outsourcing trend creates additional concentration risks in the financial system

**The high degree of concentration in the Dutch financial system also constitutes a system-wide vulnerability in the event of a cyberattack.** The five largest banks in the Netherlands together hold 82% of assets ([DNB Statistics, 2024 - Dutch](#)). Besides economies of scale, this creates a potential concentration risk. Moreover, other parts of the financial system are also experiencing concentration, including the derivatives transactions market. Financial institutions such as pension funds depend on a limited number of clearing members if they wish to enter into derivatives contracts, and only a small number of central counterparties are able to bear the associated counterparty risks. Moreover, the payment system in the Netherlands – as in other countries – relies on the Eurosystem's TARGET services (settlement systems for monetary, collateral and bond transactions), and on the international payment messaging system SWIFT for other payments. These system concentrations increase the risk of a cyberincident at a single institution spreading throughout the financial system.

**Concentration risk is amplified as many financial institutions outsource digital services to a small group of third parties.**

Financial institutions often outsource part of the services and infrastructure to third parties to perform their core functions, such as payments, cloud storage and cybersecurity. However, in several areas of expertise, the number of service providers is limited, so many financial institutions rely on the same parties for such services. This increases concentration risk – if one service provider experiences problems, they can affect a host of financial institutions. For example, financial institutions often rely on large technology firms such as Google or Microsoft for their cloud services. In addition, such services usually consists of a chain of multiple links, with each third-party provider in turn having its own suppliers. In such an outsourcing chain, interdependencies may be unclear, causing uncertainty about the impact which a disruption at one digital service provider will have on operations at other institutions. For example, in the summer of 2024, an incident at security firm CrowdStrike – a third-party security provider for Microsoft systems – had far-reaching global consequences for business operations, including at some Dutch shops and in the aviation sector. Although this incident was caused by human error, it illustrates the risks of increasing concentration and digital dependencies.

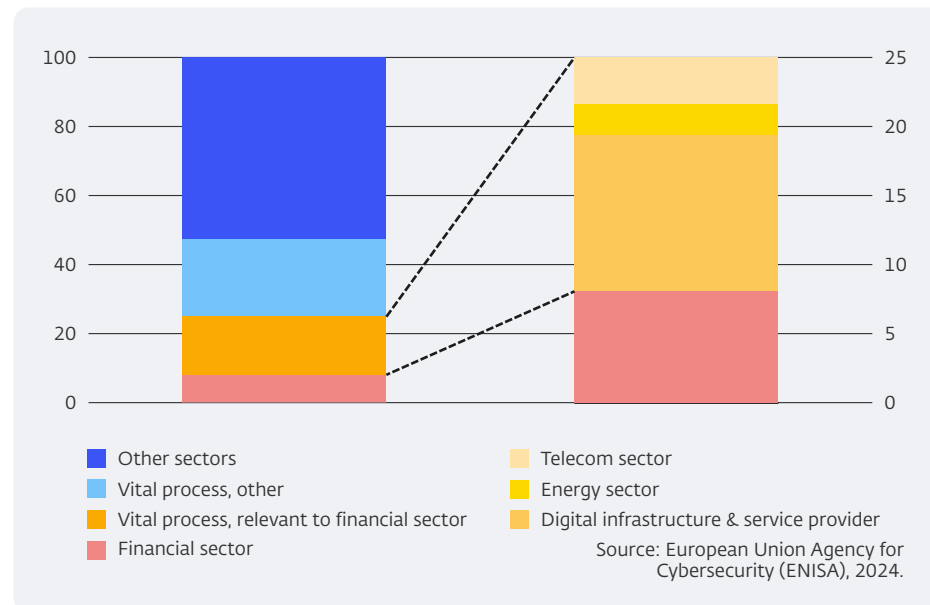
**Elevated cyberthreats in vital infrastructure also affects the financial system**

**A third system-wide vulnerability concerns dependence on vital processes, such as telecommunications or energy supply, in which disruptions pose a risk to the functioning of the financial system.** A nation’s vital infrastructure comprises processes whose disruption, outage or manipulation could damage national security. Such potentially serious consequences make these processes attractive cyberattack targets for nation-state actors. Half of all cyberattacks reported globally target a sector with vital processes (see Figure 9, left). The Dutch National Coordinator for Security and Counter Terrorism (NCTV) classifies some activities of financial institutions, including funds transfers, and point-of-sale payments and

securities transactions, as vital processes. In addition, the NCTV has classified various sectors on which financial institutions depend for their operations, such as telecommunications and energy supply, as vital processes (NCTV, 2024 - Dutch). The dependence on vital service providers increases the financial sector’s vulnerability to cyberattacks. For example, a quarter of all cyberattacks worldwide affect the financial sector directly or indirectly through a vital process on which the financial system depends (see Figure 9, right). A cyberattack on vital infrastructure could cause an outage that disrupts the financial sector, thus leading to systemic risks. A fictitious scenario described in Box 2 illustrates how a cyberattack on vital infrastructure could affect the financial sector and cause systemic risk.

**Figure 9 A quarter of global cyberincidents affect the financial sector directly or indirectly through vital infrastructure**

Percentages



## Box 2 Scenario analysis: how a cyberattack on vital infrastructure could cause systemic risks to the financial sector

**To identify the potential systemic effects of a cyberattack on vital infrastructure, we analyse a fictitious scenario involving a cyberattack on a telecom provider.** In this scenario, a ransomware group uses a cyberattack to disrupt the operations of Telecom Provider A, one of three telecom providers in the Netherlands. Telecom Provider A needs days to restore its operations, leaving all users without access to internet, Wi-Fi and telephone services during that period. In addition to households and firms, Bank I also uses Telecom Provider A's services, which means that its customers are temporarily unable to make debit card payments or transfer funds to other banks. As Banks II and III use the services of Telecom Providers B and C, their customers can continue to use banking services. T2 and SWIFT also remain operational, as its business is conducted through one or more foreign telecom providers.

**Bank I and others switch to a different telecom provider, causing overload and contagion through the operational channel.** Due to the disruption at Telecom Provider A, Bank I - along with other affected firms - switches to Telecom Provider B as a backup. The latter is unable to handle the sudden increase in data traffic, causing its systems to become overloaded and fail. In addition to Bank I's services, this also disrupts Bank II's services, causing contagion through the operational channel. While a telecom provider's overload is easy to solve by allocating additional capacity, Telecom Provider B needs hours to scale up its operations.

**At the same time, cyberattackers launch a disinformation attack which also creates contagion through the trust channel.** Through social media, malicious actors spread reports that banks, rather than telecom providers, have been hit by cyberattacks in which customer

savings have been stolen. This gives rise to concerns among customers about the financial positions of Banks I and II, thus causing contagion through the trust channel.

**The combination of these attacks leads to a large outflow of savings and other deposits from the affected banks, thereby also causing contagion through the financial channel.** As customers experience difficulty contacting their banks, they tend to take the rumours spread by malicious actors seriously and withdraw their savings as soon as possible. This causes large withdrawals from the affected banks, which could cause liquidity problems, thereby causing contagion through the financial channel. Although this scenario is simplified and fictitious, and does not take into account any management action that banks may undertake, it illustrates the possible contagion channels and systemic impact of a combined disruptive and disinformation attack.

## A resilient financial system requires awareness and action from all parties

**The digital resilience of the financial system starts with resilient individual financial institutions.** For instance, all financial institutions – like central banks – must have robust operational risk management policies that are regularly updated. Cyber stress tests can be used to test the resilience of financial institutions and identify where improvement is needed. The recent ECB stress test focusing on cyber resilience is a case in point. It follows from this stress test that, to continue to meet supervisory expectations, banks need to make improvements on several fronts, such as having adequate recovery plans in place and assessing their reliance on critical third parties (ECB, 2024). Likewise, resilient financial institutions need executives that have sufficient knowledge of cyberthreats.

**Financial institutions need to devote more attention to system-wide vulnerabilities.** For instance, it is important for financial institutions to consider and manage risks inherent in outsourcing. The Financial Stability Board (FSB) published a toolkit in late 2023 to help identify critical third parties and manage potential risks throughout the lifecycle of a third-party service relationship, such as planning, due diligence and contracting ([FSB, 2023](#)). Moreover, as the Digital Operational Resilience Act (DORA) takes effect next year, financial institutions will be required to have checked their outsourcing chain for critical third parties. In November, a DNB study will discuss the operational resilience of individual financial institutions under DORA in more detail. Lastly, it is important that the sector and its supervisors monitor developments in the cyberthreat landscape, as well as the use of AI tools. This will allow domestic and international policymakers to address any regulatory and supervisory gaps with respect to identifying and mitigating AI vulnerabilities and risks in a timely manner.

**In addition, information sharing between domestic and international sectors is fundamental to keep up with rapid developments in the threat landscape.** Under the aegis of the Information Sharing and Analysis Center (ISAC), Dutch financial institutions have been exchanging strategic and operational information on cyberattacks for many years, also with their international counterparts.<sup>1</sup> This information exchange allows financial institutions to better protect their systems against identified vulnerabilities and new attack techniques. In addition, we encourage initiatives to share information on vulnerabilities and collaborate with other sectors and vital infrastructure providers. For instance, ISACs from different sectors could cooperate more frequently and extend their collaboration to the operational domain.

**Lastly, resilience in the financial system is vital, which requires preparing crisis measures, including testing and creating backups.** Solid and up-to-date risk management by financial institutions can reduce the

risk of a successful cyberattack (1st line of defence). Penetration tests are highly relevant in this area, such as the Threat Intelligence-based Ethical Red Teaming (TIBER) and Advanced Red Teaming (ART) tests, which we supervise.<sup>2</sup> It must be kept in mind, however, that this risk can never be fully eliminated, given the highly interconnected and fast-moving nature of the cyberlandscape. Resilience therefore also hinges on effective crisis measures that are regularly prepared and tested (2nd line of defence). Adequate crisis management also requires all possible stakeholders in the outsourcing chain to be on the same page, so that they know what is expected of them. It is therefore of vital importance that drills with critical third parties are held on a regular basis. Collaboration between public and private parties is equally important, allowing resilience and crisis response to be tested by running system-wide cyberscenarios or stress tests. In the public arena in the Netherlands, a crisis structure has been set up specifically focusing on the financial sector: the Tripartite Crisis Management Body (Dutch acronym: TCO). In addition, financial institutions can also make arrangements for back-up providers for critical services and vital infrastructure, such as telecom services, where needed. Such back-up services also come with costs, so conducting a proper cost-benefit analysis is important. Ultimately, the public at large also needs to realise that not all financial services may be available in the event of major disruptions.

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<sup>1</sup> The financial sector has four ISACs: Financial Institutions-ISAC, Insurance-ISAC, Pension-ISAC and Payment Institutions-ISAC.

<sup>2</sup> TIBER and ART tests provide financial institutions with insight into the strengths and weaknesses of their resilience to advanced cyberattacks ([ECB, 2024](#); [DNB, 2024 - Dutch](#)).

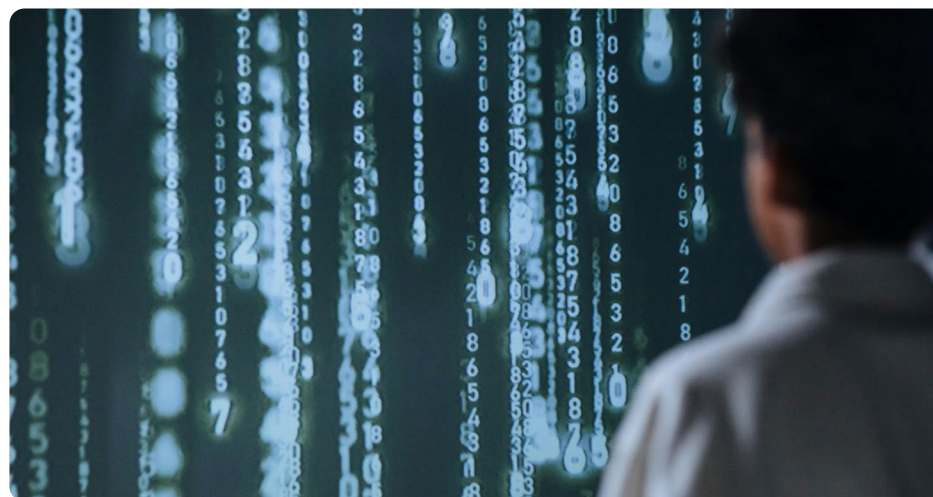
### Box 3 Artificial intelligence: implications for financial stability

**Artificial intelligence (AI) is developing rapidly and the Dutch financial sector is also increasingly using AI tools.** Dutch financial institutions use systems and models that incorporate AI. For example, the banking sector is using AI for credit scoring, fraud detection and countering cybercrime. In the insurance sector, AI is most commonly used in chatbots, personalised online marketing and fraud detection. According to a joint study by the Dutch Authority for the Financial Markets (AFM) and DNB, financial institutions expect to use AI increasingly, in line with global trends ([AFM-DNB, 2024](#)). The main developments underlying the rise of AI are the increasing ability to collect and process large amounts of unstructured data from different sources (big data), the explosive growth of cloud computing and the increasing use of off-the-shelf, open-source AI models.<sup>3</sup> The advent of large language models (LLMs) and generative AI (GenAI) could further accelerate the integration of AI into existing and new applications, although financial institutions are reluctant to use them.

**The use of AI presents opportunities for financial institutions, but also brings new risks.** Responsible use of AI offers financial institutions the opportunity to cut costs and improve operational efficiency, as well as risk management opportunities. For example, machine learning algorithms can be used in fraud detection. However, risks can arise in the different phases of an AI application – in selecting data (input phase), editing the data (throughput phase) and the results (output phase). In the input phase, poor data quality poses a risk, for example if an AI model is trained with incorrect or incomplete data. In addition, the data may contain (historical) biases, which the AI model adopts (model bias) and may lead to unwanted or incorrect results.

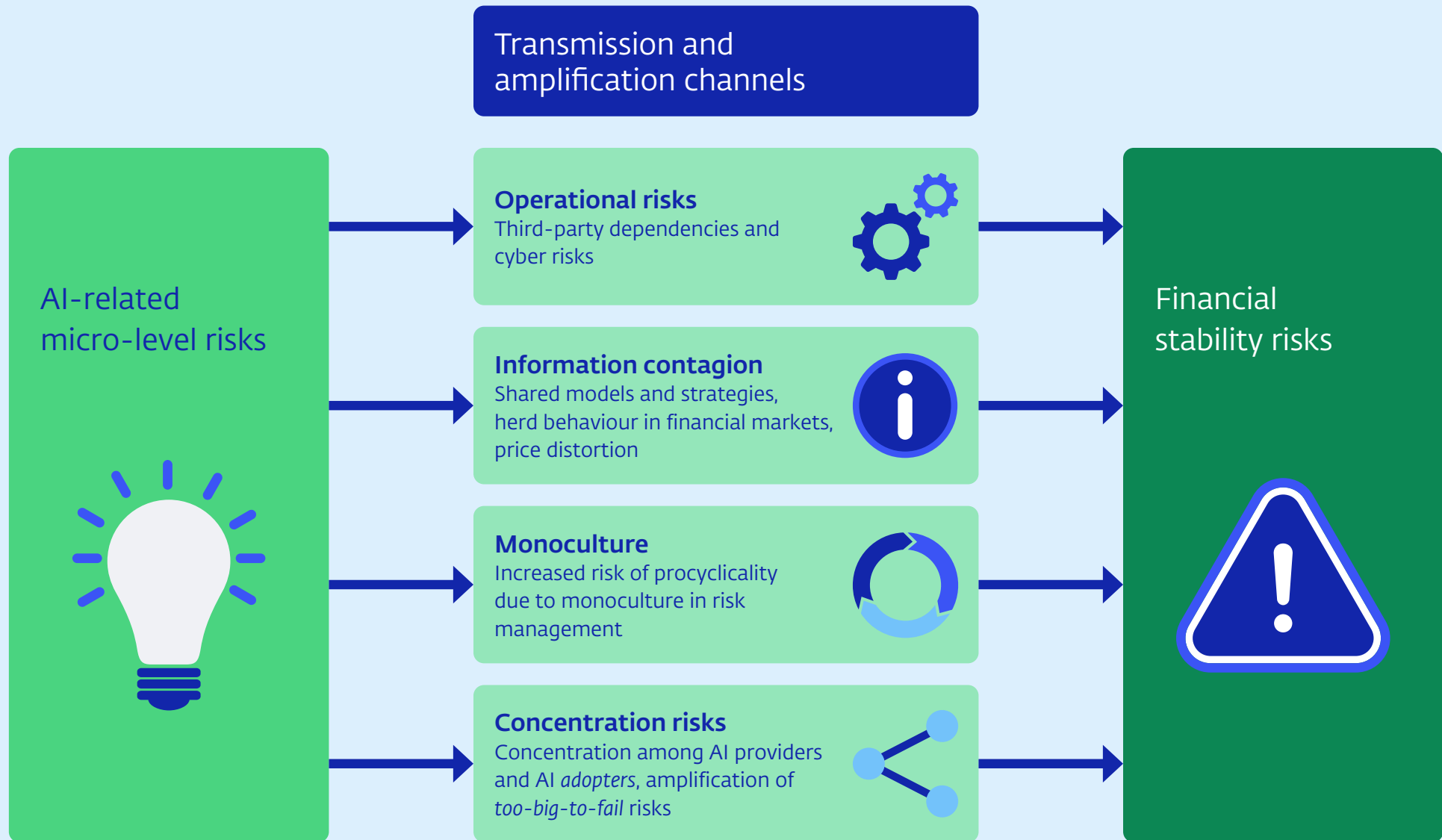
Finally, the output phase can lead to socially undesirable outcomes, for example when a biased model excludes certain market segments or discriminates. There may also be abuse of or over-reliance on AI-generated results ([AFM-DNB, 2024](#)).

**Broadly speaking, AI-related vulnerabilities can lead to risks to financial stability through four transmission and amplification channels:** (i) operational risks, (ii) information contagion, (iii) monoculture in risk management, and (iv) concentration risks (see [infographic](#)). First of all, the extent to which AI-related risks can evolve into systemic risks depends on the extent to which AI is adopted going forward. As more financial institutions integrate AI systems and models into their operation for an increasing number of use cases, an ever growing part of the financial system becomes vulnerable to the risks associated with AI. Through the four channels discussed above, risks to individual institutions can then evolve into risks to the financial system as a whole (see also [IMF, 2021](#); [ECB, 2024](#)).



<sup>3</sup> These models can be set up according to a firm's specific needs, thereby significantly reducing the cost of developing and training complex models.

# Financial stability risks of artificial intelligence (AI)





**First, AI applications can lead to increased operational risks.** When AI is widely integrated into key core systems, new risks arise when too much reliance is placed on AI-driven systems. This makes the financial sector more susceptible to operational incidents and cyberattacks. Moreover, large-scale data collection to train AI systems increases the number of entry points through which cyberattacks can be carried out. AI, and GenAI tools in particular, also allow cyberattackers to expand their arsenal with more complex forms of malware, personalised phishing and deepfakes, for instance.

**The use of AI can also lead to herd behaviour in financial markets.** AI-driven asset management and risk management models often use similar data sets and algorithms, which increases the likelihood of producing similar output (Gensler & Bailey, 2020). This could cause strategies of market participants to be highly interrelated, resulting in groupthink and herd behaviour in financial markets. This could amplify financial instability, also because prices may diverge from underlying fundamentals. Other factors that may further increase contagion risks are the growing pace and automation (algorithmic trading) in financial markets and the ability of AI to learn and adapt to circumstances independently. Thus, an AI model can recognise the emergence of herd behaviour and try to get ahead of other algorithms, which can encourage procyclicality.

**Widespread use of AI in financial institutions' risk management can incubate a monoculture, potentially resulting in procyclicality.** The main risk of the aforementioned market concentration is that financial institutions will base their actions on information and models from the same provider. Financial institutions could start interpreting opportunities and risks in the same way, including how they are affected by current or hypothetical scenarios, and they could thus see

their risk management practices becoming increasingly homogeneous. Such a monoculture may encourage procyclicality, as financial institutions may increasingly make similar assessments of risk, returns and costs and may make the same decisions based on them. This could heighten the aforementioned risk of herd behaviour.

**More widespread use of AI may additionally lead to concentration risks in the financial sector and increase too-big-to-fail risks.** AI providers enjoy economies of scale in terms of data and technology, which complicates market entry by new providers. Due in part to high costs involved in training AI models, the market for AI tools seems to be moving towards an oligopoly, with only a few service providers holding the lion's share of the market between them.<sup>4</sup> Reliance on a group of technology parties that is expected to remain small for the time being leads to risks. If these parties should be unable to provide their services properly or at all, it is impossible to switch to another supplier, creating problems for financial institutions using this technology (single-point-of-failure). Concentration among suppliers can also increase the risk of coordinated cyberattacks. The fact that this technology is only available from mainly non-European providers also makes for a geopolitical dimension. In 2023, for example, of the leading AI models, 61 were from US firms, which is considerably more than the 21 from the EU and 15 from China (Artificial Intelligence Index Report, Stanford University). Also for the users of AI, too-big-to-fail risks may go up. Using AI may require large (initial) investments, both financially and in terms of resources. It may be easier for larger financial institutions with a high-quality data infrastructure and a network of third parties to gain the required knowledge and create the infrastructure that is needed. AI may thus contribute to a further shift in market power and lead to higher concentration in the financial system, among both existing players and new entrants (e.g. from the technology sector).

<sup>4</sup> The training costs for OpenAI and Google's AI models are estimated to be around \$78 million and \$191 million, respectively. High training costs and concentration of data to train AI models mean that BigTech firms are well positioned to dominate the AI market. In 2023, most AI models were released by Google (18), Meta (11), Microsoft (9) and OpenAI (7).

### 3 Risks of high public debt

**Public finances in the euro area will be under pressure in the years ahead.**

Despite the economic recovery seen after the COVID-19 pandemic, euro area countries' public debt – averaging 89% of GDP – remains high. In addition, the outlook for public finances has worsened in many countries. Partly due to accommodative fiscal policy, almost all euro area countries still have larger budget deficits than before the pandemic. In addition, several countries that have high public debts are pursuing accommodative fiscal policies as yet, even after adjusting for interest charges, potentially causing indebtedness to mount further (see Figure 10). Risks regarding debt levels that are difficult to sustain are heightened by structurally low economic growth, high economic uncertainty and rising interest expenditures in many EU Member States. Added to this are the long-term challenges associated with the ageing population, making the economy more sustainable, and higher defence spending. Lastly, Europe, and with it the Netherlands, is susceptible to geopolitical risks, including uncertainty surrounding the US elections and increasing geo-economic fragmentation. For instance, policies pursued in the United States have a significant impact on financial conditions in the Netherlands and the rest of the euro area (see [Box 4 Effects of US fiscal policy on financial conditions in the euro area](#)).

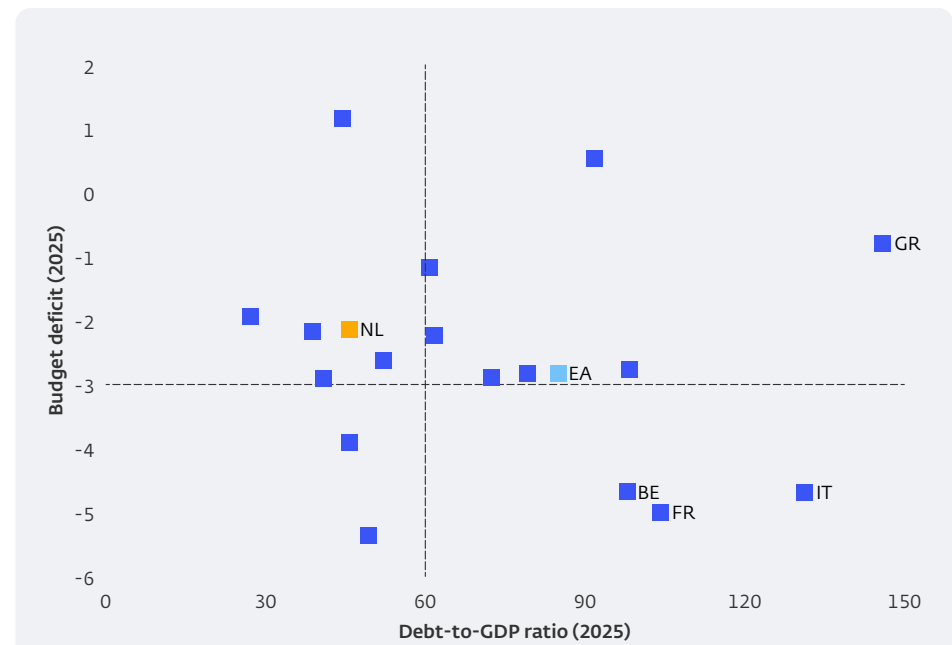
**Despite its solid starting point, Dutch public debt is expected to increase in the years ahead.**

The Dutch public sector is currently indebted to the tune of 46% of GDP, which is still well below the euro area average of 89% of GDP. Greater risks are looming down the line, however. The Netherlands pursues a fiscal policy close to the 3% deficit limit adopted as part of the Stability and Growth Pact (SGP). This gives it little leeway for additional spending to protect the economy in the event of adversity or if fresh shocks occur. In addition, DNB calculations show that the Dutch public debt is set to rise sharply over the long term, possibly even to a level in excess of 90% of GDP by 2050 (DNB, 2024 - Dutch). Apart from higher interest charges, structural factors such as population ageing play an important role in this projection. As the budget deficit and public debt

widen, the Netherlands becomes more susceptible to future vulnerabilities stemming from high public debt.

**Figure 10 High-debt euro area countries tend to have larger budget deficits**

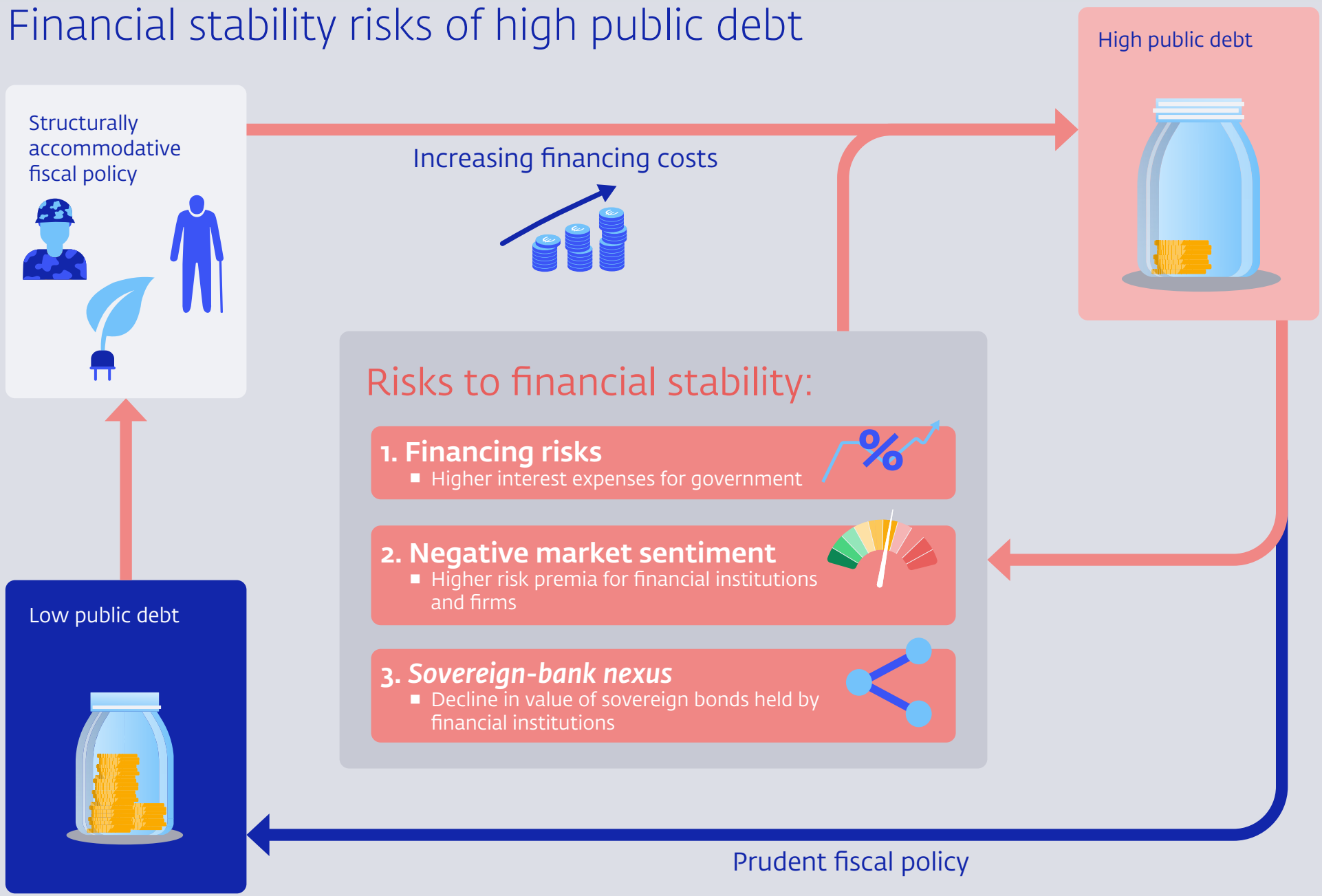
Percentages of GDP



Source: AMECO database

Note: The dotted lines show the 3% deficit limit (horizontal axis) and the 60% debt-to-GDP ratio from the Stability and Growth Pact (SGP) (vertical axis).

# Financial stability risks of high public debt



**This section explains how higher public debt and more accommodative fiscal stance can pose a direct or indirect risk to financial stability in the Netherlands.**

When rising public debt reflects investment in the economy's growth potential, the risks to long-term financial stability may diminish. This section, however, takes a closer look at the three channels through which high public debt can have an adverse impact on financial stability. First, high-debt countries – defined as having a public debt in excess of 90% of their GDP – have higher financing needs. This leads to refinancing risks and reduces the scope for fiscal stabilisation policies.<sup>5</sup> Second, high-debt countries are more susceptible to a reversal of financial market sentiment. Finally, there is a higher risk of negative interaction between the public and domestic financial sectors (see [infographic](#)). The section concludes with recommendations for mitigating financial stability risks which the Netherlands faces.

**Box 4 Impact of US fiscal policy on financial conditions in the euro area**

**Despite a growing economy and low unemployment, the US budget deficit remains large.** The budget deficit is expected to be around 7% of GDP this year, a level normally seen only in times of recession or war. On unchanged policies, the US public debt is expected to rise to a new record level of 122% of GDP over the next decade ([CBO, 2024](#)). Institutions such as the IMF and the BIS therefore warn that persistently accommodative US fiscal policies pose a risk to global economic and financial stability ([IMF, 2024](#)).

**The accommodative US fiscal policy may have implications for financial stability in the euro area through several channels.** In the extreme scenario, the role of US government bonds as a global risk-free standard and the role of the dollar as a reserve currency come

under pressure. This could cause major turbulence in financial markets, with negative economic consequences for the euro area. Impacts are also relevant in less extreme scenarios. For instance, more accommodative fiscal policy has a potential upward effect on US inflation, leading to higher risk-free interest rates in the United States and, through spillovers, also in Europe. Finally, uncertainty about future fiscal policy may lead to risk aversion and push up risk premia in financial markets. Both channels result in tighter financing conditions for European governments, firms and households.

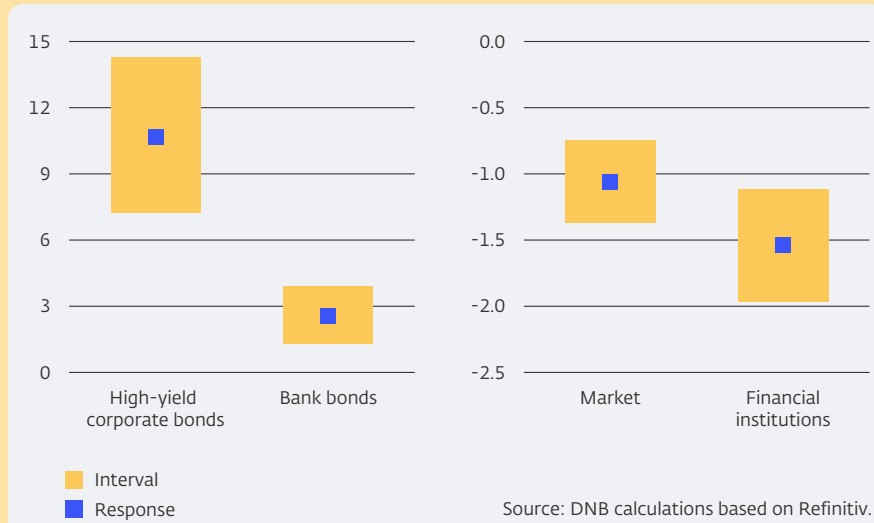
**Empirical analysis confirms that uncertainty about US fiscal policy leads to a tightening of financial conditions in Europe.**

Uncertainty about US fiscal policy was measured using an index based on newspaper articles, from Baker et. al. (2016). The index measures the extent to which newspapers report on US fiscal policy using terms such as 'uncertainty' or its synonyms. For example, the index rises sharply during debt ceiling negotiations. The time series model used here also includes a constructed index for general economic uncertainty, to check that the results are not driven by recessions, for example. The outcome shows that risk premia in European financial markets go up due to a rise in the fiscal uncertainty index (see Figure 11). For example, the risk premia on debt securities of high-risk European firms go up, as well as, to a lesser extent, those of large European banks. Similarly, European equity prices decline following a rise in fiscal uncertainty, especially those of financial institutions. Uncertainty about US fiscal policy therefore also tightens financial conditions in the euro area.

<sup>5</sup> The [EU Debt Sustainability Monitor](#) classifies a debt-to-GDP ratio of 90% as a threshold above which countries are at increased risk of financial stress.

**Figure 11 Uncertainty over US fiscal policy drives up financing costs for European firms (left) and sends valuations lower (right)**

Basis points (left) and percentages (right)



Note: The graph shows the direct response of each indicator to a shock of one standard deviation in US fiscal uncertainty, estimated separately for each indicator in a Bayesian VAR model with four lags and with global policy uncertainty and US 10-year interest rates as control variables. Responses were identified based on a Cholesky decomposition, using US fiscal uncertainty as the most exogenous variable. 'Interval' refers to the estimate's confidence interval. Estimation period: January 2010 to June 2024.

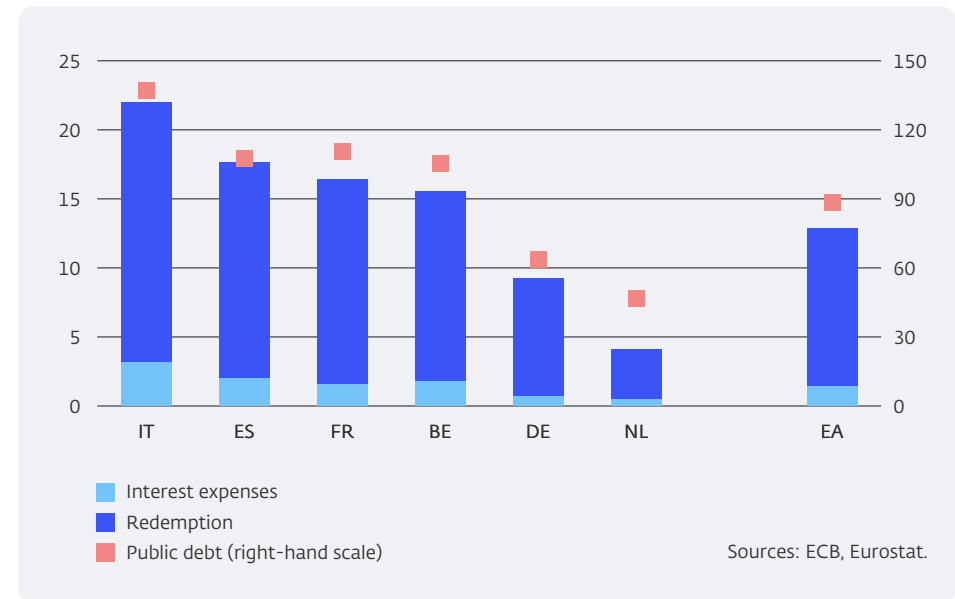
## Greater financing needs pose higher risks to financial stability

**The financing needs of governments is set to increase in the years ahead, driving up refinancing risks.** Thanks to the relatively long maturity of euro area sovereign debt, the impact of previous interest rate hikes on sovereign interest payments is limited for now. For example, the average maturity of Dutch public debt is around 9 years, so only 11% of the interest rate hikes witnessed since July 2022 has been reflected in the Dutch government's interest charges. Looking ahead, however, budget deficits are

expected to remain high and interest rates are unlikely to return to pre-pandemic levels. This increases refinancing risks, as maturing debt will have to be refinanced at higher rates. Short-term financing needs in the euro area, which is the sum of interest and repayment of existing debt, average around 12% of GDP. However, high-debt euro area countries face significantly higher financing needs. For instance, Italy, France and Spain will next year have financing needs of more than 15% of GDP, while in the Netherlands this will be a mere 4% of GDP (see Figure 12).

**Figure 12 Some euro area countries have substantial short-term refinancing needs**

Percentages of GDP



**If financing needs are high, governments have less headroom to stabilise the economy.** The way fiscal policy, interest payments and economic growth interact has major implications for the resilience of the economy and the ability to sustain debt levels. Thus, long-term debt sustainability is mainly determined by the extent to which a government is

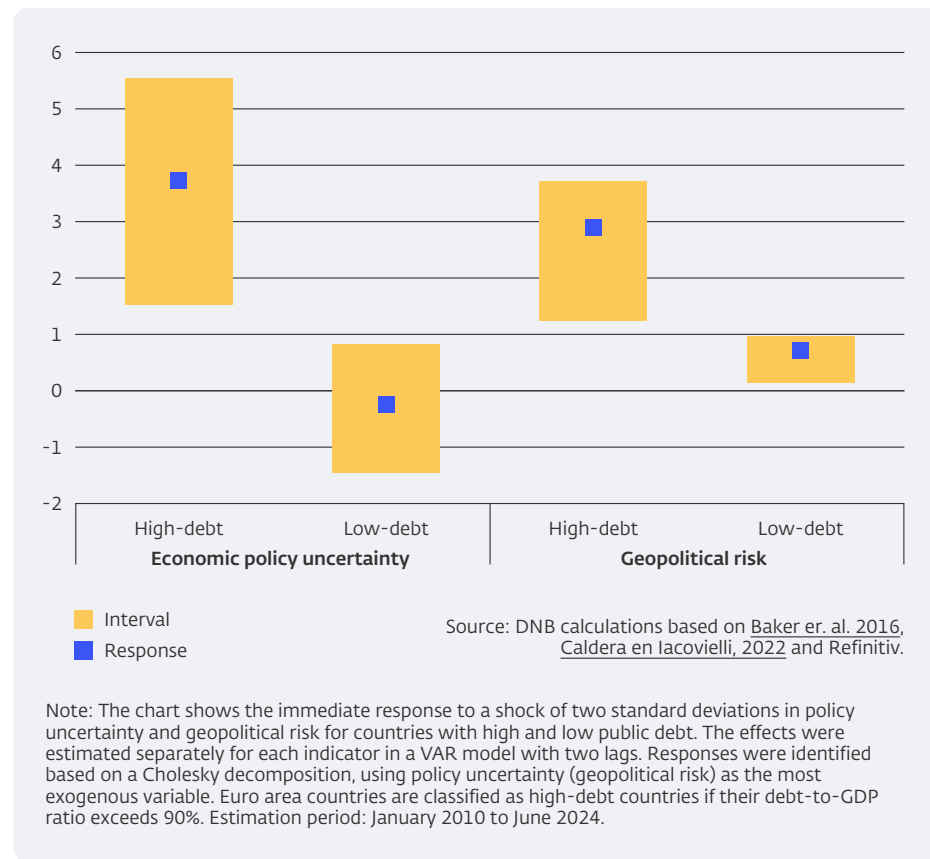
able to cough up its interest charges. On the revenue side, a government depends on the economy's robustness. In times of strong economic growth, revenues are high, e.g. from taxes, but in economic downturns they tend to decline rapidly. In the latter case, however, interest charges remain as high as ever, leaving governments with less leeway to stabilise the economy. In addition, the probability of shocks currently remains high, while the fiscal space to absorb them is limited (see: [The risk picture for the Netherlands remains balanced](#)). The lack of fiscal space in an economic downturn or during shocks could then translate into heightened financial distress for firms and households. As a result, financial institutions will face higher credit risks and capital losses. The importance of fiscal space became especially clear during the recent pandemic, when fiscal buffers allowed the Dutch government to respond adequately without jeopardising the sustainability of public finances.

### Elevated public debt levels create greater vulnerability in financial markets

**High financing needs make a country more sensitive to a reversal of sentiment in financial markets, for instance due to heightened policy uncertainty.** For example, our own analysis shows that when (global) economic policy uncertainty increases, risk premia and interest charges facing high-debt countries tend to go up more than those for low-debt countries (see Figure 13). With sovereign bonds providing a benchmark for an economy's interest costs, higher risk premia also translate into higher financing costs for firms, households and the financial sector. We saw this in France last summer, for example, when financing costs for the government, firms and banks increased substantially following the announcement of snap elections. Incidentally, the same analysis shows no evidence of such a link between policy uncertainty and financing costs in lower-debt countries, such as the Netherlands. Thanks in part to the lower debt position, this makes the Dutch economy less vulnerable to a reversal of sentiment in financial markets.

**Figure 13 Risk premia of high-debt countries are more sensitive to economic and geopolitical risk shocks**

Impact on risk premium in percentage points



**Countries with higher sovereign debt are likewise more susceptible to rising geopolitical tensions.** High sovereign debt levels make the euro area sensitive to a further increase in geopolitical risks, as geopolitical shocks could significantly drive up financing costs for governments (DNB, 2023). Further analysis shows that risk premia on sovereign bonds issued by high-debt countries respond four times more strongly to a geopolitical shock on average than those on bonds issued by low-debt countries

(see Figure 13). In addition, liquidity in the sovereign bond market also decreases more sharply for high-debt countries after a geopolitical shock. The current trend of rising geopolitical tensions thus increases the vulnerability of public finances in high-debt countries. This is because market participants develop higher risk aversion in times of greater economic uncertainty.

**For high-debt countries, higher risk premia in financial markets increase the probability of a vicious cycle between debt levels and financing costs.** This vicious cycle occurs as debt levels go up due to higher financing costs. Investors in turn demand a higher risk premium to reflect the higher debt levels, which drives borrowing costs up even more (see [infographic on page 25](#)). As a result, markets may lose confidence in the sustainability of a country's public finances. When these dynamics are self-reinforcing, the sharply rising financing costs not only reflect economic factors, but may also be driven by a poorly functioning market, for example when market liquidity dries up. This affects not only public finances in the country in question, but also the ECB's monetary policy, as the financing costs in that country increases more than in the rest of the euro area. To counter such dynamics, the ECB introduced the transmission protection instrument (TPI) in July 2022 ([DNB, 2022](#)). This monetary instrument allows the ECB to intervene in a specific sovereign bond market to ensure the balanced functioning of monetary policy across the euro area (see [Box 5 The impact of the transmission protection instrument \(TPI\) on sovereign bond risk premia](#)).

**Given its relatively low sovereign debt, financial stability in the Netherlands is particularly susceptible to spillovers from high-debt countries.** For the Netherlands, the risk of a reversal in market sentiment is currently limited. However, the Netherlands is susceptible to spillovers from high-debt countries. This may be the case, for instance, when concerns in financial markets over whether one or more countries can sustain their debt levels depress the value of financial assets of Dutch financial institutions. For example, Dutch insurance firms and pension funds hold around 5% of their assets in sovereign bonds issued by a euro area country

whose debts exceed 90% of GDP. For Dutch banks, this figure is 1%. Moreover, losses in the value of sovereign bonds may trigger wider price corrections, also reducing the value of other assets held by pension funds and insurance firms. Finally, debt sustainability issues abroad may have an adverse impact on the Dutch economy, which could then affect the financial sector.

### Box 5 The impact of the transmission protection instrument (TPI) on sovereign bond risk premia

**In introducing the TPI, the ECB aimed to ensure that it could raise its policy rates as far and as rapidly as needed to curb inflation, without causing disorderly market movements.** The July 2022 introduction took place simultaneously with the start of the tightening cycle. In concrete terms, the ECB wants to avoid a situation where an interest rate increase in one country would have a disproportionately greater effect than in another. The TPI allows the ECB to purchase sovereign bonds issued by countries which face sharp interest rate movements that are not justified, given their economic fundamentals, and that jeopardise monetary transmission. The volume of the purchases depends on the severity of the situation. Interventions are temporary and end when the market turbulence has passed, or if the Governing Council of the ECB assesses that the ongoing turbulence is due to fundamentals, e.g. a failure to meet SGP requirements. The TPI therefore aims to reduce financial fragmentation, thereby helping to ensure financial stability.

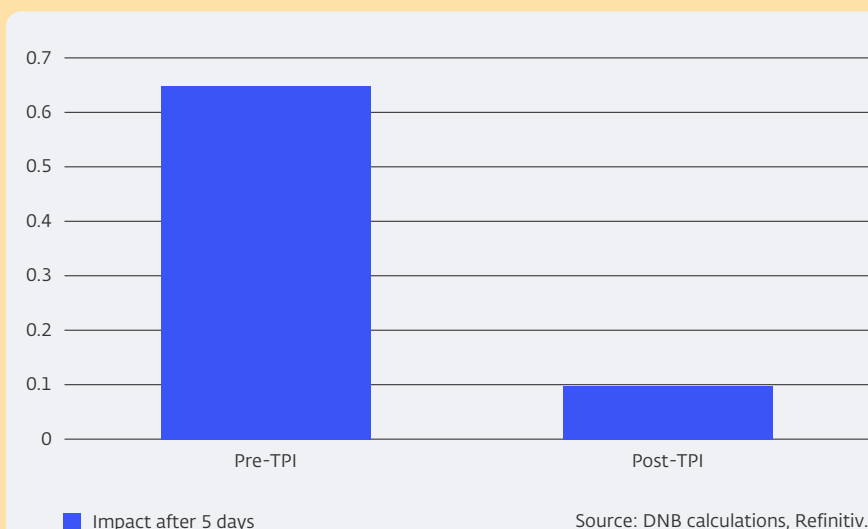
**Since the TPI's introduction was announced, risk premia on sovereign bonds of high-debt countries have been less sensitive to risk shocks.** Our analysis shows that the impact of a shock on the risk premium for high-debt countries decreased by two-thirds compared to the period before the TPI's introduction (see Figure 14). A shock is an unexpected change in investors' risk appetite, for example due to concerns over the global economy. Moreover, spillovers between



high-debt countries have diminished and they have also become less sensitive to shifts in interest rate expectations. These findings show that the introduction of the TPI has so far been effective in safeguarding monetary transmission by mitigating the risk of capital market rates diverging too widely between euro area countries.

**Figure 14 TPI has made sovereign bond yields of high-debt countries less sensitive to risk shocks**

Basis points



Note: The chart shows the response of the 10-year spread of high-debt euro area countries to a global risk shock. Countries are classified as high-debt countries if their debt-to-GDP ratio exceeds 90%. Global risk shocks were identified using a bayesian VAR model (Brandt, 2021). The pre-TPI period is two years (21 July 2019-21 July 2022), while the post-TPI period is an equal period following the TPI's introduction (21 July 2022-21 July 2024).

**Failure of countries to meet European fiscal standards could lead the ECB to terminate the TPI, thus posing a risk to financial stability.** There are clear criteria for Member States to qualify for TPI activation. These criteria are designed to ensure that the instrument can only be applied to countries that pursue sustainable fiscal and

macroeconomic policies. The criteria include that fiscal policy meets the requirements specified under the EU fiscal framework (SGP), that the country is not subject to an excessive deficit procedure (EDP), and that fiscal policy contributes to long-term debt sustainability (ECB, 2022). The criteria thereby contribute to sustainable public finances and financial stability in the euro area. The conditionality of the TPI means that failure to meet its criteria poses an additional risk to financial stability. After all, in addition to public debt becoming unsustainable in the long run and risks to financial stability increasing (see *Greater financing needs pose higher risks to financial stability*), the option of activating TPI will be unavailable.

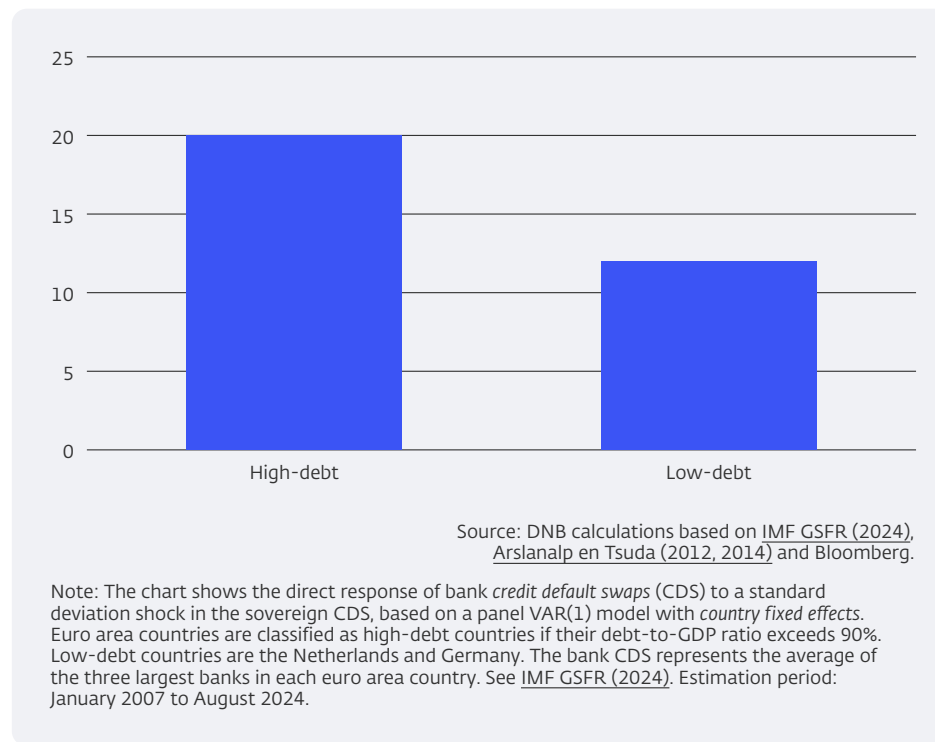
### High public debt levels lead to negative interaction between governments and financial institutions

**Finally, the risk of negative interactions between financial institutions and governments (sovereign-bank nexus) tends to be higher in high-debt countries.** Financial institutions hold government bonds as part of their regular operations and liquidity management. In addition, the preferential treatment of sovereign bonds in the prudential framework increases their attractiveness (FSR, Autumn 2023). For example, banks in high-debt countries hold significantly more domestic public debt than banks in the other euro area countries. For instance, at Italian banks, bonds issued by their own national government account for around 9% of assets, which is more than the figure of a decade ago. Banks in other euro area countries saw this share increased much less, standing at a mere 3% on average. With public debt at historically high levels and worsening fiscal prospects, a strong sovereign-bank nexus poses a risk that potentially undermines financial stability. In countries with higher sovereign debt, risk premia for banks and sovereigns is correlated twice as closely as in countries with lower sovereign debt (see Figure 15, IMF 2024). An increase in sovereign credit risk can thus adversely impact banks' balance sheets and funding capacity, as banks' funding costs also go up. In the Netherlands,

banks and the government are not very closely interconnected. At less than 1%, Dutch banks have a relatively low volume in government bonds on their balance sheets, and public debt is low. Nevertheless, the interconnectedness of Dutch banks with the European financial system could still lead to rising financing costs. For example, the cost of capital for Dutch banks, too, rose sharply during the European sovereign debt crisis.

**Figure 15 A shock in risk premia on sovereign bonds hits risk premia for banks in high-debt countries harder**

Basis points



## Policy recommendations: High (economic) uncertainty calls for buffers in public finances

**A solid buffer in Dutch public finances is needed to cope with future shocks, thus supporting financial stability in the Netherlands.** In the near term, the projected fiscal path is of particular concern. Despite the relatively favourable economic outlook, the Dutch government is heading for a deficit close to the 3% limit set by the Stability and Growth Pact (SGP). This leaves little fiscal space to protect the Dutch economy from future economic shocks, as was successfully done during the COVID-19 pandemic. This increases the risk of a pro-cyclical fiscal policy, requiring austerity measures during an economic downturn. In addition, such a policy increases the likelihood of intervention from Brussels if the 3% limit is exceeded, increasing policy uncertainty. Lastly, in the current economic environment, such a large fiscal deficit does not contribute to pushing inflation towards the ECB’s 2% target, which is a prerequisite for a soft landing of the Dutch economy. It is therefore important that the Dutch government takes action to further reduce the budget deficit over the coming years and creates sufficient resilience to economic shocks. For example, the Working Group on Fiscal Space recommended that the government implements structural reforms to ensure that public finances remain sustainable and future generations are not burdened with higher debt ([17th Working Group on Fiscal Space, 2023 - Dutch](#))

**For the Netherlands, it is important that all euro area countries comply with the new Stability and Growth Pact (SGP) and that its rules are enforced.** With debt levels already high and in the face of structurally low economic growth, some euro area countries are struggling to comply with European fiscal rules. Seeking to remedy these problems, the new SGP rules prescribe that all Member States prepare what is known as a fiscal structural plan, committing to a path for maximum growth in public expenditure and explaining how they will implement investments and reforms ([DNB, 2024 - Dutch](#)). As a result, the new SGP rules help reduce public debt and make fiscal policy less pro-cyclical. Given that financial stability in the Netherlands is vulnerable to spillovers from high-debt

countries, the country stands to benefit if other governments adhere to fiscal agreements. It is equally important that European authorities, in particular the European Commission and the Council do not hesitate to enforce compliance. In addition, governments in Europe should make investments that promote growth and pursue structural policies to increase competitiveness and productivity. On that note, a recently published report 'The future of European competitiveness' prepared by Mario Draghi, offers some useful guidance on policy options in Europe, for example on strengthening the Capital Markets Union ([European Commission, 2024](#)).

**Finally, a robust financial sector will always be the first line of defence to prevent a harmful sovereign-bank nexus.** Financial institutions and governments are closely interlinked. For instance, banks, insurance corporations and pension funds hold sovereign bonds as investments and as part of their liquidity management. As a result, if it becomes difficult to sustain sovereign debt levels, the resulting fall in the value of government bonds also affects asset valuations in the financial sector. If financial institutions enjoy solid solvency and liquidity positions, the likelihood of a negative interaction is reduced as their buffers are sufficient to absorb such drops in value. Conversely, a robust financial sector also helps prevent the government from having to bail out financial institutions through capital injections in times of economic hardship, as happened during the 2008 financial crisis. Furthermore, it is important that financial institutions acknowledge the risks of mounting debt levels in their risk assessment of sovereign bonds. Ideally, capital frameworks automatically incorporate such changes in risk characteristics of sovereign debt. However, currently, under the standardised approach, banks and insurance firms are not required to hold additional capital for exposures to European sovereigns. Moreover, banks' exposures are exempt from concentration limits. This means banks and insurance firms are incentivised to purchase European government bonds, so it is up to them to have careful risk management in place.



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