Financial Stability Report

Autumn 2022

DeNederlandscheBank

EUROSYSTEEM

Content

Summary

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Summary

Inflation has risen at an unprecedented pace since the summer of 2021 and is currently well above the price stability target. Central banks are intervening with significant interest rate rises, leading to a substantial tightening of financial conditions in a short period of time. Inflation may remain high for longer than is currently being anticipated in economic projections and financial markets. Central banks will need to keep raising interest rates as long as inflation is above the price stability target. There is a high degree of uncertainty, partly due to the lack of clarity as to the future course of the war in Ukraine and its economic impact. Concerns about a global recession have consequently increased. Vulnerabilities that have accumulated in a low interest rate environment in recent years pose a risk to financial stability. Although a combination of high inflation and rising incomes has a favourable effect on debt positions, highly indebted households, businesses and governments, for example, may get into difficulty as interest rates rise. Also, further rate hikes may trigger sudden corrections in financial markets, potentially leading to major losses on risky investments. Moreover, the impact of the high inflation is unevenly spread, with pressure increasing particularly on low-income households and energy-intensive business sectors. The Dutch financial sector is in a strong position, but its resilience is being tested again. Banks need to prepare for an increase in credit losses and make adequate provisions for them in good time. Due to the persistent systemic risks in the housing market, we have decided to extend the lower limit for the risk weighting of banks' mortgage loans.

General outline of risks

The risk of persistently high inflation has increased. High inflation is lasting longer than previously thought and central banks have raised interest rates substantially in a short period of time. They will continue to do so as long as inflation is above their target. Inflation may therefore prove more persistent and the level of interest rates needed to curb it may be higher than is currently being anticipated in economic projections and financial markets. Inflation rates continue to exceed expectations and the forecast inflation peak is shifting further into the future.

Inflation is dampening economic growth and the outlook has deteriorated. Inflation is leading to substantial losses of purchasing power, exacerbating the financial concerns particularly of low- and middle-income households. Businesses' financing and refinancing costs are rising, weighing on corporate investment. The economic consequences of the war in Ukraine are also continuing, particularly in the form of supply disruptions and higher and volatile energy and commodity prices. Although the economy remains in good shape, there is now a greater risk of a slowdown in economic growth and potential recessions in many advanced economies, and projections are being revised downwards.

Vulnerabilities that have accumulated in recent years may cause problems in the period ahead. Many vulnerabilities have posed risks to financial stability for some time, but they have been further exacerbated by the economic consequences of the coronavirus (COVID-19) crisis, the war in Ukraine and high inflation. Governments, businesses and households became more indebted during the pandemic, for example. Although the combination of high inflation and rising incomes reduces liabilities in relative terms, rising interest rates are putting pressure on short-term debt in particular. Financial markets have also been highly volatile for a long time and sudden changes in market expectations, for example due to inflation and the monetary tightening trajectory, may trigger sudden revaluations. The housing market also poses a risk to financial stability. Further rises in mortgage interest rates and growing financial pressure on households due to continued loss of purchasing power may lead to price corrections and wider macroeconomic damage.

The resilience of the financial sector is being tested again. Financial institutions are being hit in various ways by persistently high inflation and (sometimes sudden) rises in interest rates. On the one hand, the higher interest rates have a positive impact on banks' interest income, thereby easing the long-standing pressure on their profitability. The rise in interest rates is also positive in principle for pension funds and insurers due to lower valuations of long-term liabilities. On the other hand, higher prices and interest may lead to payment difficulties and an increase in credit losses. Problems in the corporate sector have so far been limited but are set to increase amid slower growth and persistently high energy and commodity prices.

The increased risks are to some extent offset by the Dutch financial sector's strong starting position. Financial institutions have withstood the coronavirus crisis well, partly due to the extensive support measures taken by the government and central banks. Banks' capital positions, insurers' solvency and pension funds' funding ratios have remained stable or even improved in recent months. A stress test in this FSR based on continued high inflation and a further rise in interest rates also bears out the resilience of the banking sector.

Policy

High inflation requires a collective response in which monetary and fiscal policies do not counteract each other. When monetary policy is aimed at curbing demand, it is important that public policy does not stimulate demand. Stimulative fiscal policy and across-the-board compensation for households and businesses for higher energy costs, for example, leads to more demand and thereby drives prices higher. Compensating vulnerable households is desirable and necessary to prevent them from getting into financial difficulty. But targeted, commensurate measures are essential in these times of high inflation and compensation must be of a temporary nature. Excessive demand stimulation can be limited by strict application of fiscal rules. The government must provide financial cover for the additional expenditure rather than funding them on the basis of uncertain future proceeds. Finally, wage growth can compensate for a large part of the loss of purchasing power suffered by working people. A wage-price spiral must be avoided, but there is nevertheless scope for wage increases in various sectors.

Financial institutions must prepare for higher credit losses and falls in the value of investment portfolios. There has not so far been any significant increase in banks' non-performing loans. Banks must nevertheless allow for a possible rise in credit losses due to increased payment difficulties among businesses and households. Insurers and pension funds must also be prepared for market corrections and sudden adjustments in financial markets.

Banks should exercise restraint in dividend payouts and share buybacks and maintain buffers above the legal requirements as far as possible. In view of the increased risks and elevated uncertainty, it is important that banks maintain their levels of capital. They must therefore be prudent with regard to dividend payouts and share buybacks, and take account of a possible increase in credit losses and consequent impact on their capital position.

We maintain that a 2% CCyB must be built up. Following the outbreak of the pandemic we lowered the systemic buffers for large banks to support lending. At that time we also decided to replace the lowering of systemic buffers with a gradual build-up of the countercyclical capital buffer (CCyB) to a level of 2% in a neutral risk environment. In May of this year we took the first step by raising the CCyB to 1%. Banks will have to comply with this requirement by 25 May 2023, provided there is no substantial change in the risk assessment.

We are extending the lower limit for the risk weighting of mortgage loans by two years. On 1 January 2022 we introduced a floor on banks' risk weighting of mortgage loans based on internal risk models, because these models do not take sufficient account of the systemic risk in the housing market. This measure will ensure that banks are better able to absorb the impact of any correction in the housing market. The extension means the measure will be in force at least until 1 December 2024.

Macrofinancial environment

High inflation and rising interest rates increase risks to financial stability

Menno van der Ven and Ralph Verhoeks

Inflation has risen to historically high levels since the summer of 2021. Driven mainly by energy and food prices, high inflation is also persisting for longer than was previously expected. Central banks are therefore intervening heavily, leading to a significant tightening of financial conditions in a relatively short period of time. Inflation may remain high for longer than is currently being anticipated in projections and markets. High inflation and tighter financing conditions have led to a deterioration in the macroeconomic outlook and heightened concerns about a global recession. Vulnerabilities that have accumulated in a low interest rate environment in recent years may now cause problems and pose a risk to financial stability. High debt levels, combined with higher financing costs, may lead to debt sustainability problems for households, businesses and governments. The resilience of the financial system is consequently being tested again.

Inflation has risen at an unprecedented pace in recent months. Inflation is currently well above the price stability target. According to Eurostat's flash estimate, euro area inflation stood at 10.0% in September (based on the Harmonised Index of Consumer Prices, HICP). In the Netherlands, inflation was as high as 13.7% in August, reaching 17.1% in September (Statistics Netherlands). Strong rises in energy and food prices in particular are continuing to drive inflation higher. In addition, the relaxation of coronavirus rules boosted demand in the second half of 2021, but supply could only be scaled up to a limited extent due to disruptions in production and distribution chains and shortages in commodity and energy markets. The war in Ukraine has reinforced these effects and pushed energy prices to new record highs (see Box 1 – "Energy prices are the main driver, but inflationary pressure is increasingly broad-based").

Financing conditions have tightened and the resilience of the financial system is being tested again. Against this background of high inflation, central banks have implemented significant rate rises in the past six months. They will need to continue to raise rates as long as inflation is above their targets. As a result, financial conditions have tightened at a pace not seen since the immediate aftermath of the 2008 credit crisis. Market and bank interest rates have also risen. Markets have already seen several price corrections, but valuations remain high and very dependent on inflation, monetary policy and the consequent impact on the economy. New interest rate rises and further adjustments to market expectations may cause a resurgence of volatility in financial markets (see "Financial markets"). Households, businesses and governments may also find themselves financially squeezed by higher financing and refinancing costs. The financial pressure will increase especially if household incomes stagnate and business incomes decline, or if businesses are unable to pass rising costs on to consumers. Rising mortgage interest rates are also reducing households' mortgage borrowing capacity, which already appears to be having a dampening effect on strong house price growth and, combined with declining confidence, may result in price corrections (see "Financial Institutions"). High inflation and rising financing costs are therefore exacerbating long-standing financial vulnerabilities that may test the resilience of the financial system again after the coronavirus crisis.

Box 1 Energy prices are the main driver, but inflationary pressure is increasingly broad-based

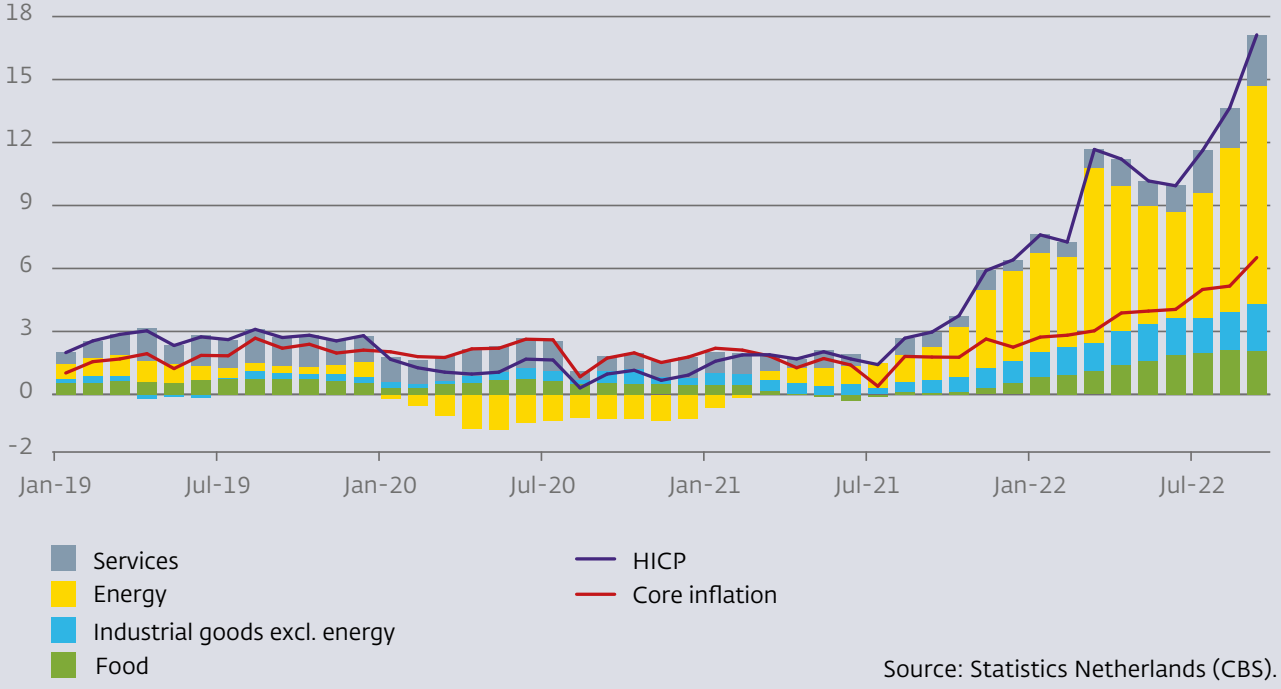
Ralph Verhoeks

Surging energy prices are still the main driver of high inflation. Figure 1 shows the evolution of the Harmonised Index of Consumer Prices (HICP), a European price index developed to compare the inflation rates of European Union Member States, broken down into the various components. This shows that the increase in energy prices is the main driver of the rise in inflation in the Netherlands. At the same time, the contribution from other HICP components, such as food items, has also increased. The higher energy and food prices are in turn being driven mainly by higher commodity prices.

Although energy prices have undeniably contributed, inflation is rising on an increasingly broad front. A key indicator for this is core inflation, the HICP excluding energy and food, which stood at 6.5% in September. We are also seeing a steady decline in the share of expenditure on goods and services whose prices fell. The share of these deflationary components in the HICP inflation basket has ranged between 20% and 30% in recent years. This share has now fallen to 6%, however. That means the prices of 94% of the goods and services in our shopping basket have risen.

Figure 1 Rising energy prices are still the principal cause of high inflation

Percentages



Source: Statistics Netherlands (CBS).

This more broadly based inflation is due in part to higher prices for energy, commodities and transport feeding through into prices of industrial goods such as furniture, cars and computer equipment. Disruptions to supply chains (albeit having eased in 2022) and the tight labour market are also pushing core inflation higher.

The Dutch HICP inflation rate exceeds that of the euro area. In September, inflation stood at 17.1% (Statistics Netherlands), more than seven percentage points higher than in the euro area. If we exclude rises in energy prices, however, the difference is only 1.0 percentage point. See the June Economic Developments and Outlook (EOV) for an explanation of the inflation differential versus the euro area and the role of energy inflation.[1]

The global economic outlook has deteriorated in the past six months and concerns about a recession are mounting. Inflationary pressures are resulting in substantial losses of purchasing power due to falling real incomes. Increased financing costs are also depressing business investment and the economic consequences of the war in Ukraine are continuing, particularly in the form of supply disruptions and higher, volatile energy and commodity prices. As a result, concerns about a slowdown in economic growth and a possible recession have increased in many developed countries (Figure 2). The IMF, in its July update, revised global economic growth expectations downwards by 0.4 percentage points for 2022 and by 0.7 percentage points for 2023. The IMF's downward revisions for the euro area, as well as those of the United States, are the largest.[2] In September, the ECB also lowered its growth forecast for the euro area by 1.2 percentage points for 2023, while raising it by 0.3 percentage points for 2022 following the unexpected strong growth in the first half of this year. This takes the ECB's growth outlook for the euro area to 3.1% in 2022 and 0.9% in 2023. The Netherlands actually had relatively high growth in the first half of this year, so according to CPB it will amount to 4.6% in 2022.

Inflation may remain high for longer than is currently being anticipated in projections and financial markets. For example, current market expectations are that euro area inflation will move back close to the 2% target in the first half of 2024 (see "Financial markets"). In the recent period, inflation rates have consistently exceeded expectations and the risk of persistently high inflation is increasing. The risk of impact from a recession may also be higher than is currently being anticipated in projections and financial markets (see for example also the World Bank (2022)). It is therefore important to take sufficient account of alternative scenarios other than the current expectations.

The macroeconomic outlook is also highly uncertain and heavily dependent on developments in the energy market. In the short term, inflation developments and macroeconomic stability will depend greatly on further movements in energy prices. In 2021, almost 40% of European gas came from Russia through Nord Stream 1. Russia halted supplies through this pipeline several times in recent months, before Nord Stream was severely damaged at various locations in September. Further disruptions are a major uncertainty in the outlook, for example in the event of a total cut-off of supplies and particularly during a severe winter period.[3] The shutdown of Nord Stream 1 caused gas market shortages to worsen rapidly. Demand for gas also increased as a result of the REPowerEU plan, which aims to reduce Europe's dependence on Russian gas and introduced new regulations requiring Member States to fill their storage fields to at least 80% by 1 November 2022. When a large number of

1 The difference is mainly due to movements in gas and electricity prices. Gas and electricity price movements are measured differently in the Netherlands than in most other euro area countries. Statistics Netherlands (CBS) measures movements in prices offered by the energy companies in new contracts, whereas a large proportion of consumers have permanent contracts. Consequently they are not yet being impacted by the high energy prices, even though these prices have already been fully included in the HICP inflation rate.
2 For the euro area, the IMF lowered its projections for 2022 and 2023 by 0.2 percentage point and 1.1 percentage points respectively, taking projected GDP growth to 2.6% and 1.2% respectively. Following corrections of 1.4% and 1.3%, the projections for the United States are 2.3% for 2022 and 1.0% for 2023.
3 In the event of complete cut-off of Russian supplies, gas shortages in Central and Eastern European countries could amount to 40% of consumption and lead to an economic contraction of 6% (IMF). Germany is also heavily dependent on Russian gas and a complete cut-off of supplies would likely reduce economic growth by between 0.4 and 2.7 percentage points over the next three years. This also has consequences for Germany's trading partners, including the Netherlands.

European countries met this requirement, pressure on the gas market eased slightly.[4] Efforts are also being made at European level to reduce consumption by 15%. Energy prices nevertheless remain very high compared to the longer-term average (see Figure 3). In view of the ongoing war in Ukraine and the tense relationship with Russia, the gas price is not expected to fall to prewar levels in the short term.

The rise in interest rates is needed to bring inflation back to target, but it may put pressure on the debt sustainability of businesses and governments. On the one hand, high inflation results in a relative erosion of debt positions if incomes also go up: rising household wages, higher business turnover and consequent higher government tax revenues reduce the present debt liabilities relative to expected revenues. On the other hand, the speed of the tightening of financing conditions means that businesses and governments have little time to adjust to the changed circumstances. Higher financing costs particularly affect less creditworthy businesses and highly indebted countries. European high-yield corporate bond spreads have widened by 420 basis points (bps) up to the end of September this year, against a 90 bps increase in spreads for healthier (investment grade) companies.

Interest rate differentials in the European government bond market have also increased. Debt levels are high particularly in Southern European countries and have risen further during the pandemic, with Italy and Greece recording the highest levels of 189% and 152% of GDP respectively (Figure 4). With capital market interest rates now rising and differentials widening, there are growing concerns about debt sustainability in southern European countries. For example, the Italian spread (i.e. the 10-year interest rate differential relative to Germany) has increased to around 250 bps (see Figure 5). At the same time, no rapid increase in the Italian interest burden is expected, because the government has long-term financing and part of the maturing debt can still be financed at a lower interest rate than the original loans.
The average residual duration of Italian public debt is currently almost eight years and 16% of the total debt is due to mature before the end of 2023. At this juncture a fall in economic growth poses a greater risk to debt sustainability than rising interest rates. Very recently, concerns have emerged over the United Kingdom's budgetary policy and its impact on debt sustainability (see Box 2 – "UK financial markets unsettled by fiscal policy").

4 At European level around 85% of storage capacity was filled on 15 September according to Gas Infrastructure Europe data.

Box 2 UK financial markets unsettled by fiscal policy

Thomas van den Berg, Kasper Goosen en Romain Meuwissen

The Bank of England (BoE) decided on Wednesday 28 September to intervene in the secondary bond market following concerns about liquidity in UK pension funds. There had been turmoil in the UK sovereign debt market following the government's announced loosening of fiscal policy, including tax cuts for firms and high-income households. After the UK's budget plans were announced, the 30-year gilt yield rose by 140 basis points (bps) in just a few days, only to recede by 100 bps after the BoE's intervention. Due to the turmoil, UK pension funds faced margin calls on their interest rate derivative positions, forcing them to sell securities including UK sovereign bonds to maintain their positions. This drained liquidity from the sovereign bond market, and the BoE felt compelled to act in accordance with its financial stability mandate.

The turmoil in UK financial markets has had limited spillover effects on European bond markets and swap rates. European bond yields rose to a lesser extent and only marginally at the time of the UK budget announcement and BoE intervention. The UK yield rise was partly driven by market dysfunction, which did not occur in the euro area. On the day of the fiscal announcement, the 10-year UK gilt yield and equivalent swap rates rose by about 30 bps, while German 10-year and EU swap rates rose by only about 7 bps. German 30-year rates and EU swap rates were indeed unchanged. The same goes for the day the BoE announced its intervention: the 30-year UK gilt yield fell by around 100 bps, compared to 8 bps for its German counterpart. Currency markets saw less volatility in the euro/sterling rate.

These developments show that unexpected major changes in fiscal policy can create risks to financial stability. The response of financial markets to the UK government's fiscal policy and the BoE's intervention underline the importance of credible budgetary policy. Even after the BoE's intervention, concerns remained about the opposite effects of fiscal and monetary policy, the unchanged plans for easing fiscal policy (despite the tax rate for top earners not being scrapped after all) and the lack of consultation with, among others, the UK's fiscal watchdog OBR. While the euro area's fiscal policy is not going through a credibility crisis of such magnitude, there are concerns about the opposite effects of fiscal and monetary policy.
The main risk is that the loose fiscal policy will increase inflationary pressures, forcing the ECB to raise interest rates further. It is therefore important that government measures are temporary, targeted and fully funded.

Growth in the Dutch economy is also under pressure due to the war in Ukraine and high inflation. While confidence among Dutch consumers in May was at its lowest level on record, households' consumer expenditure and industrial production indicate that the Dutch economy is still operating at full throttle (see Figure 6). Producer confidence and sentiment remain positive, but have declined over the past year (see Figure 7). High inflation and high energy costs are causing a significant loss of households' purchasing power, although this loss is partly offset by the plans announced by the government on Budget Day. CPB has issued new projections based on the plans set out by the government in the budget memorandum and expects the Dutch economy to grow by 4.6% in 2022. Economic growth is expected to slow to 1.5% in 2023.[5] Moreover, the economic projections are highly uncertain.

There are also serious concerns in the Netherlands about the security of energy supply. Gasunie, the public company responsible for transporting natural gas in the Netherlands, finds from its own research, that a total absence of Russian gas this winter would not necessarily lead to a gas shortage.[6] There are nevertheless continuing concerns about potential shortages. Partly for this reason, energy prices in the Netherlands have risen at an unprecedented pace this year. The average variable supply tariff that a consumer paid for 1 m^3 of gas and 1 MWh of electricity in August 2022 was €2.11 and €0.50 respectively, which in both cases is more than five times the level of a year earlier (Statistics Netherlands). The wholesale prices paid by businesses for gas and electricity are 300% and 200% higher than a year ago.

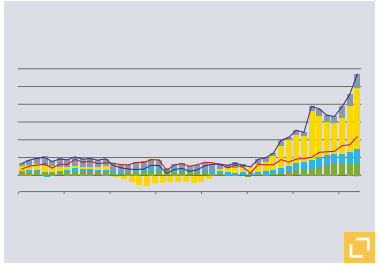
Dutch households, particularly low-income groups, are being financially squeezed by high inflation. As wages lag behind inflation, households are losing purchasing power and payment problems look set to increase (see "Financial institutions" for the impact of high inflation on credit quality in banks' mortgage portfolios). Households with low and middle incomes and small financial buffers will soon find themselves struggling with the current rises in prices of basic necessities. A recent CPB cost-of-living stress test shows that between 540,000 and 860,000 Dutch households face affordability problems due to high inflation.[7]

High energy prices are putting only limited pressure on the profitability of Dutch businesses. A DNB analysis suggests that the impact on businesses at the macro level is less severe than feared. The rise in prices is leading to higher energy costs for certain businesses, but some of the energy consumption has already been purchased under long-term contracts. Moreover, businesses' vulnerability to rising energy prices depends greatly on their energy consumption. Energy-intensive sectors, such as metals and chemicals, are nevertheless being hit hard by high energy costs.

The increased risks are offset to some extent by the continued strong position of the Dutch financial sector. An increase in payment problems for households and businesses will lead to increasing credit losses for banks. Dutch banks are well capitalised, however, with an average core capital ratio of 16.3%. The average solvency ratio of Dutch insurers is also above the statutory requirements, and pension funds' (nominal) funding ratios rose in 2022 in the wake of interest rates. Although the financial stability risks are rising, the resilience of financial institutions, and hence their starting position in the event of an economic downturn, is strong (see "Financial institutions").

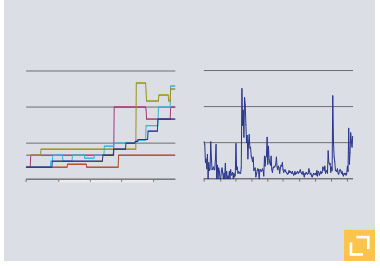
5 In these projections CPB has not yet taken into account the gas and electricity price cap for households announced on Budget Day.
6 However, this requires market demand remaining 20% below the long-term average, maximum sourcing of LNG and gas storages filled to 80% before the winter.
7 This stress test incorporates the government's purchasing power package presented on Budget Day, but the calculations do not take into account the energy price cap announced by the government.

Figures



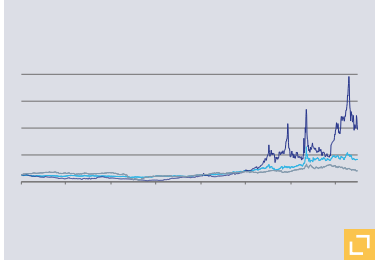
Rising energy prices are still the principal cause of high inflation

See Figure 1 →



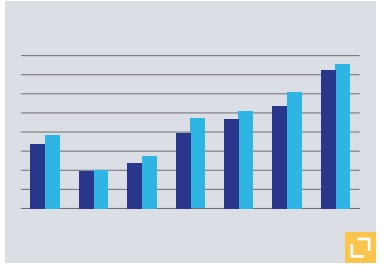
Concerns about a potential recession are mounting

See Figure 2 →



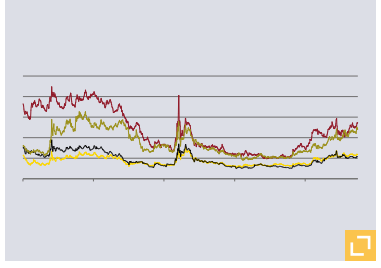
Gas price is breaking records

See Figure 3 →



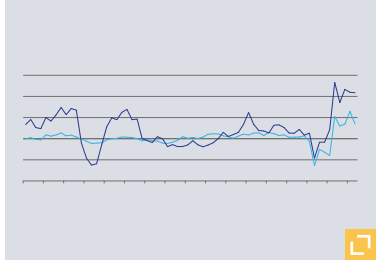
Public debts have risen sharply in the euro area, with large differences between individual countries

See Figure 4 →



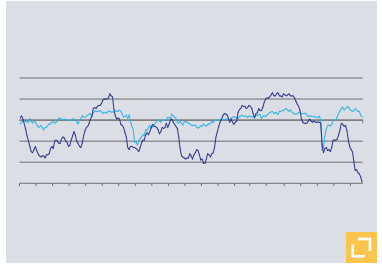
Spreads have widened substantially since early 2022, especially in Italy and Greece

See Figure 5 →



Both private consumption and wholesale sales still grew in the Netherlands during the first half of 2022

See Figure 6 →

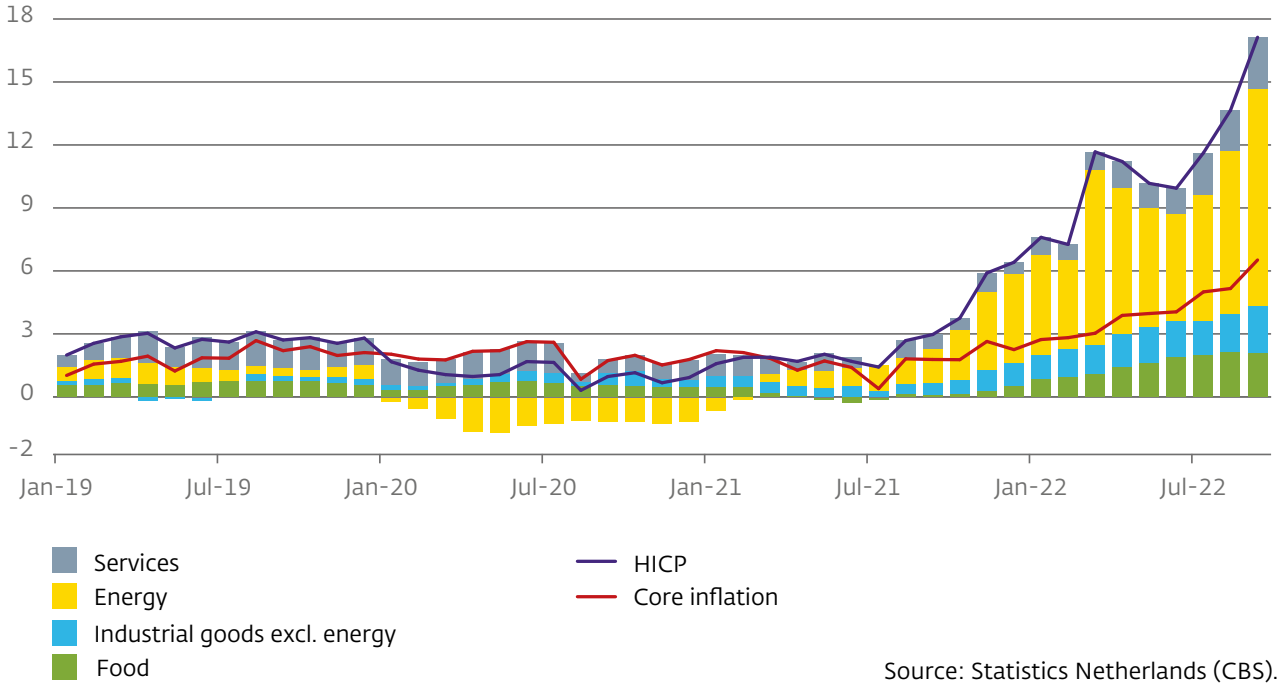


Consumer confidence in the Netherlands has fallen to its lowest level on record

See Figure 7 →

Figure 1 Rising energy prices are still the principal cause of high inflation

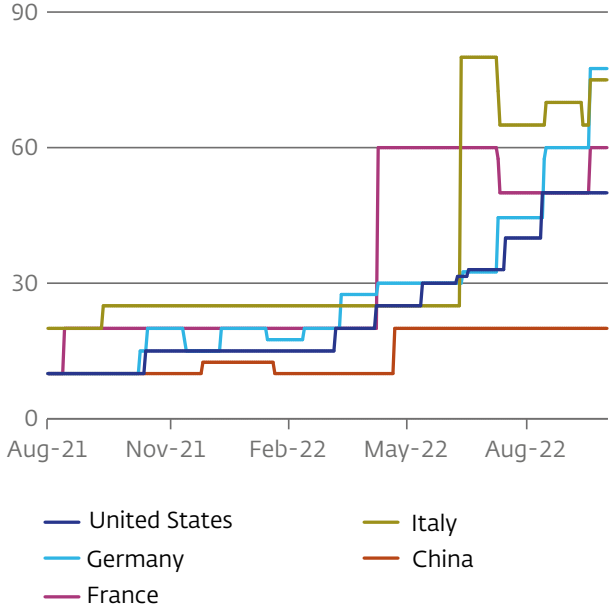
Percentages



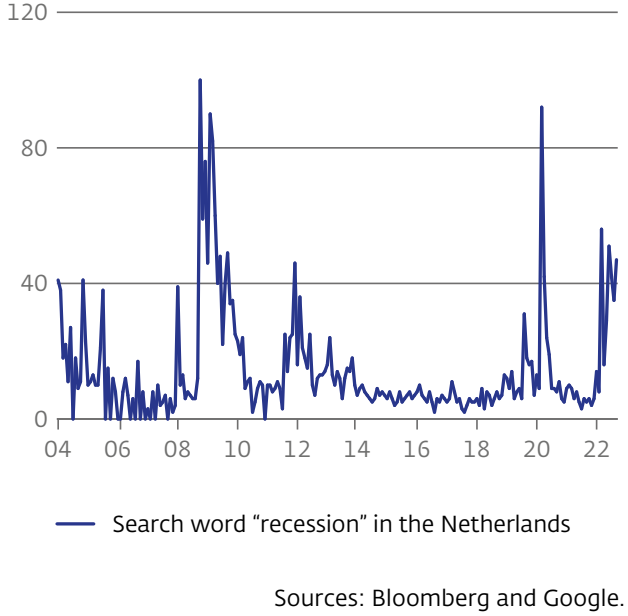
Source: Statistics Netherlands (CBS).

Figure 2 Concerns about a potential recession are mounting

Percentage of respondents expecting a recession within 1 year



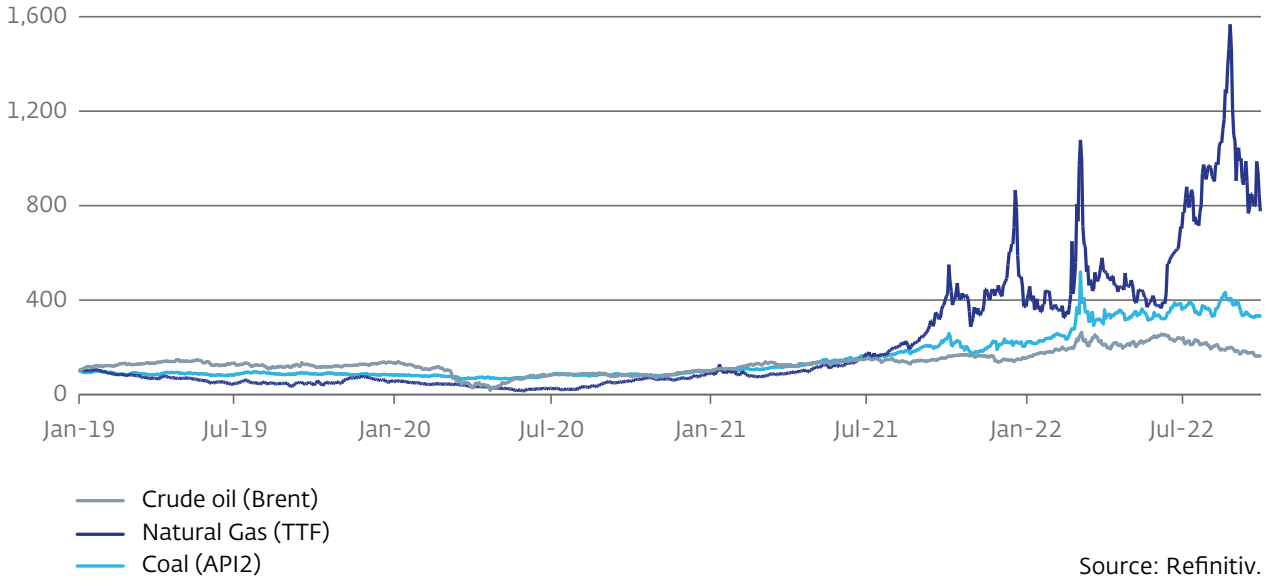
Number of times searched on Google, index October 2008 (peak) = 100



Sources: Bloomberg and Google.

Figure 3 Gas price is breaking records

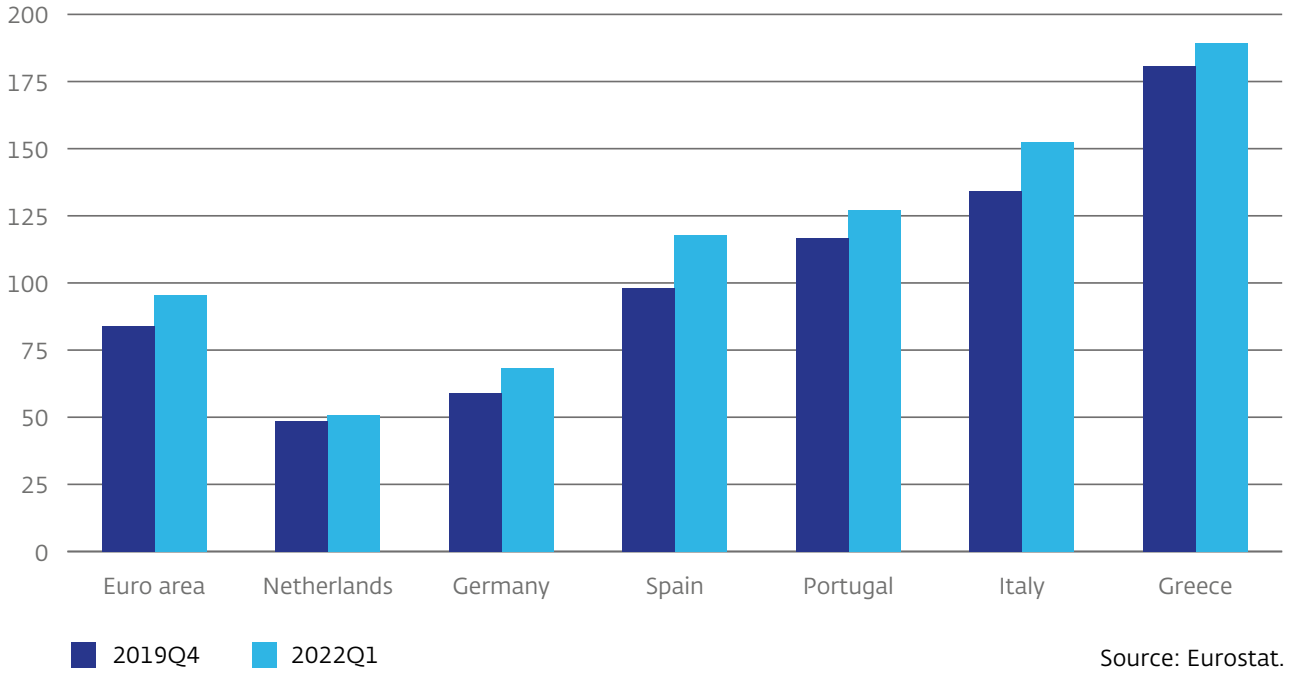
Index 1 January 2019=100



Source: Refinitiv.

Figure 4 Public debts have risen sharply in the euro area, with large differences between individual countries

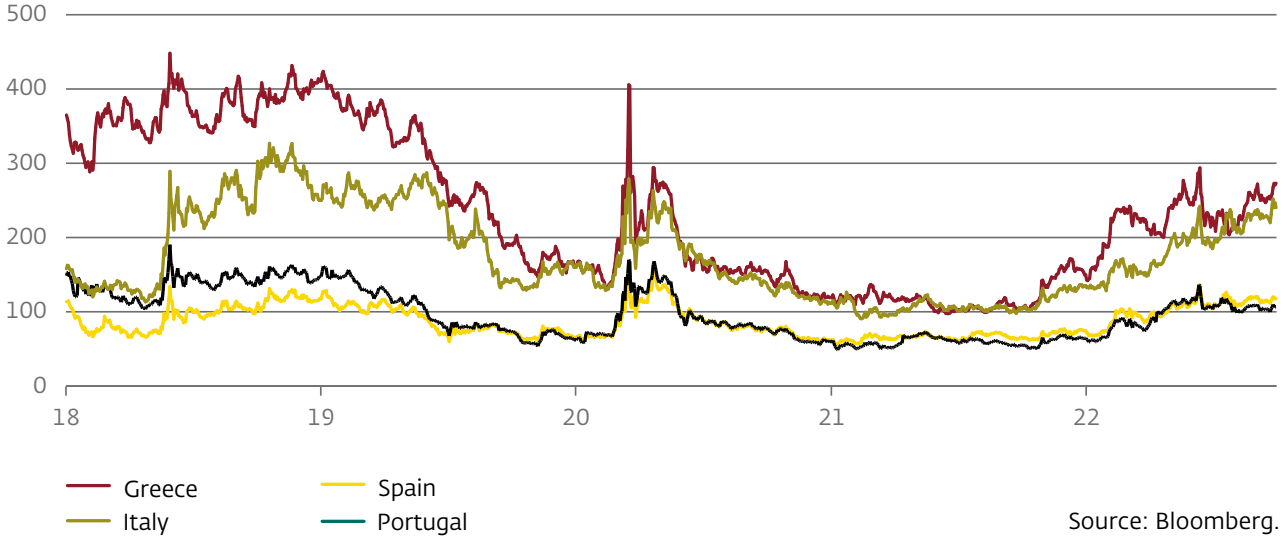
Percentages of GDP



Source: Eurostat.

Figure 5 Spreads have widened substantially since early 2022, especially in Italy and Greece.

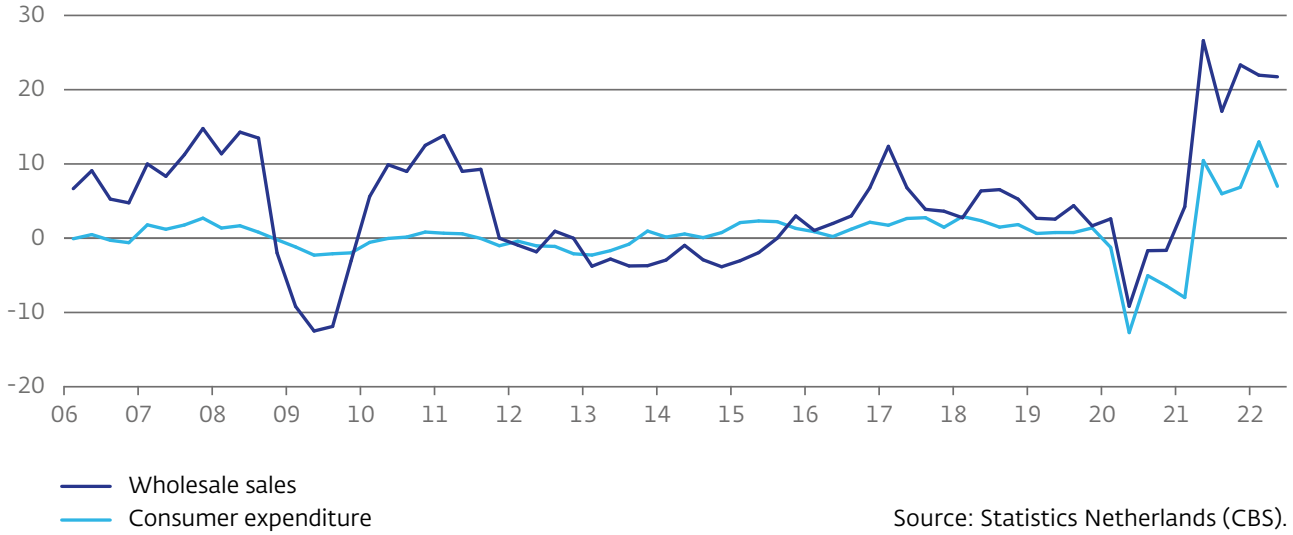
Percentage; spread against German 10-year bond yield



Source: Bloomberg.

Figure 6 Both private consumption and wholesale sales still grew in the Netherlands during the first half of 2022

Percentage volume changes y-o-y



Source: Statistics Netherlands (CBS).

Figure 7 Consumer confidence in the Netherlands has fallen to its lowest level on record

Sentiment indicator

Source: Statistics Netherlands (CBS).

Financial markets

From “low-for-long” to the search for a new equilibrium

Koen Verbruggen, Ralph Verhoeks and Gibran Watfe

After years of low interest rates and inflation, the post-pandemic period is characterised by historically high inflation and rapidly rising interest rates. Financial conditions have tightened considerably in a relatively short period and in these circumstances financial markets are looking for a new equilibrium. As a result of high inflation rates, central banks are rapidly adjusting their monetary policies. Interest rate rises are needed to bring inflation back to target, but this will expose previously accumulated vulnerabilities. Debt sustainability problems may increase among businesses and governments, for example. In addition, current market valuations are still based partly on the assumption that inflation will quickly return to target. If this fails to materialise further sudden corrections could occur.

The tightness of the energy market increases the risks in the financial system. The Russian invasion of Ukraine and subsequent uncertainty about Russian gas supplies are leading to a sharp increase in energy prices, with gas prices rising tenfold (see Figure 8). Markets also expect gas prices to remain high in the years ahead. For example, gas forward contracts currently indicate that the gas price will remain high until 2025. In addition to high prices, volatility in energy markets has also increased sharply, so energy traders have to meet higher collateral obligations on outstanding derivatives. These additional obligations may increase significantly for European utilities, possibly causing them liquidity problems, with potential contagion effects on other operators in the financial system. Contagion effects seem limited at present, partly because several countries have intervened, for example by providing utilities with liquidity. Continued turmoil and volatility in the energy markets could cause collateral requirements to remain high or rise further, prompt banks to reduce their exposures to this sector and lead energy traders to withdraw from the market. This would reduce liquidity in the derivatives market and could further increase price movements in the energy market. The primary channel through which energy companies’ liquidity requirements can be met is the banking system, in which governments can temporarily intervene to prevent the failure of essentially solvent energy providers.

Partly as a result of higher energy prices, inflation rates in the euro area are higher than previously anticipated, and inflation expectations are also rising. To date, inflation rates have exceeded consensus expectations among market participants (see Figure 9). Whereas the peak was initially believed to have passed already, it is now expected towards the end of 2022. Based on inflation-linked swaps, however, markets expect inflation to return close to the 2% target in the first half of 2024. Longer-term inflation expectations also remain well anchored around the inflation target at present. There are initial signs that consumers’ inflation expectations are beginning to shift, however. According to an ECB survey, consumers are now expecting inflation of 3.0% over three years and the uncertainty surrounding this expectation is increasing. Inflation expectations among Dutch households have also risen sharply since last summer. According to a DNB survey, households now estimate the probability of high inflation (4% or higher) to be around 50% in the long term.

As a result of persistently high inflation rates, central banks are tightening their monetary policy faster than expected. The ECB has so far raised its key policy rate by 125 basis points (bps) to

0.75% this year, including a historically large 75 bp hike in September. Markets expect additional interest rate rises totalling 135 bps this calendar year and 90 bps in 2023, taking the key policy rate to 3%. Markets then expect rate rises of 90 bps in 2023, resulting in a peak of 3%.[8] The unexpectedly rapid tightening of monetary policy has led to a sharp rise in market interest rates, but these movements have so far been orderly and financial markets continue to operate smoothly. Inflationary pressures are also higher and more persistent in the United States than previously assumed. Unlike in the euro area, a key factor here is the post-pandemic increase in demand, as well as the government response to the pandemic. The Federal Reserve has so far raised its federal funds rate by 300 bps this year to a range of 3% to 3.25%, while the markets still expect 115 bps of additional interest rate rises over the rest of the year. The Federal Reserve is ahead of the ECB, so the US 10-year interest rate is currently higher than its European counterpart. US monetary policy also impacts financial conditions in the euro area (see Box 3 – "Effects of US monetary policy on financial conditions in the euro area"). The interest rate differential, combined with the euro area's relative dependence on Russian gas, is weakening the euro against the US dollar. The euro is trading below parity, its lowest level since 2002.

8 The reference date for these expectations is the end of September.

Box 3 Effects of US monetary policy on financial conditions in the euro area

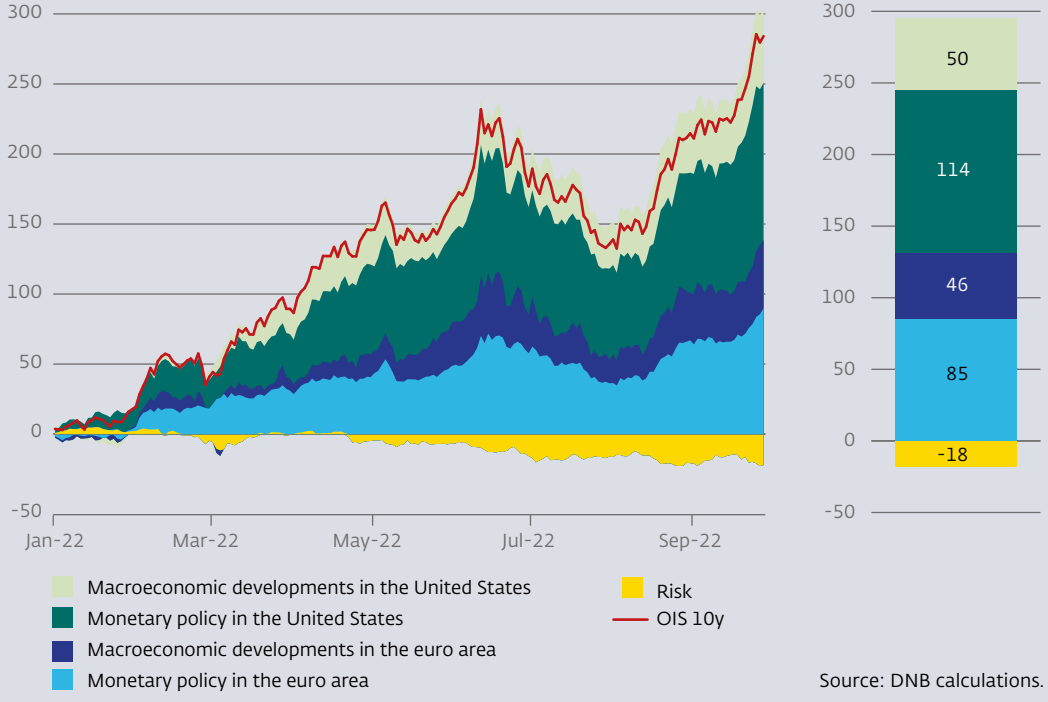
Kasper Goosen and Meilina Hoogland

The Federal Reserve has substantially tightened its monetary policy since March of this year, which is also impacting financial conditions in the euro area. As well as raising interest rates substantially, the Federal Reserve (Fed) has started to reduce its balance sheet, partly by not refinancing government bonds at maturity. Changes in the Fed's policy stance also have implications for financial conditions in the euro area. For example, investors may adjust their interest rate expectations for the ECB in response to Fed policy changes, or uncertainty about US monetary policy may lead to higher risk premiums. In this box we estimate these so-called spillover effects of US monetary policy on financial conditions in the euro area.

A model-derived decomposition of European interest rate movements points to an important role of spillover effects from the United States. We use a BVAR model to decompose movements in the European risk-free interest rate (overnight interest swap, OIS) with a 10-year term into European drivers, US drivers and a global risk component (according to the method used by Brand et al., 2021). This shows that,

Figure 10 Decomposition of European swap interest rate movements since early 2022

Basis points



Source: DNB calculations.

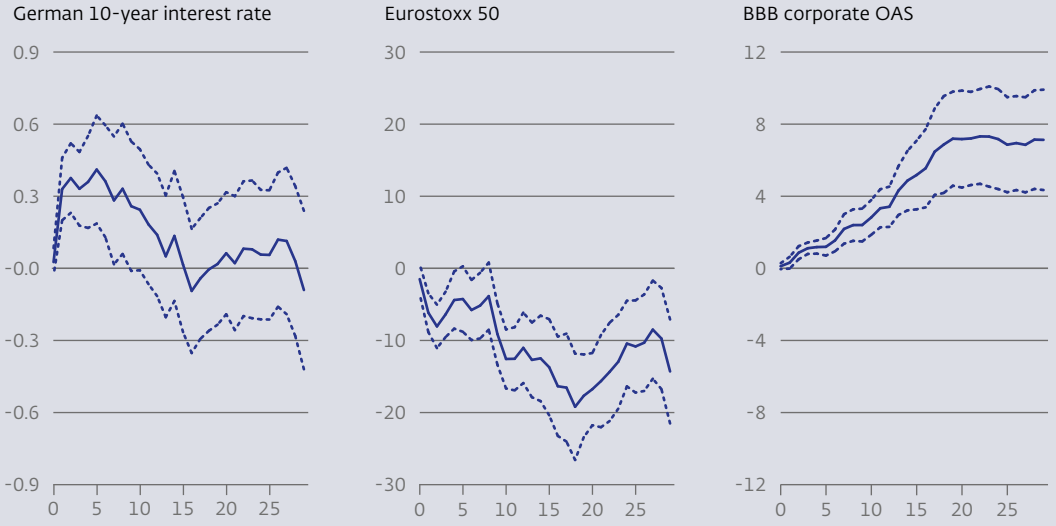
Notes: The decomposition is based on a BVAR model, where shocks are identified by sign restrictions. The model includes the 10-year euro area swap rate, the European equity index (EuroStoxx 50), the US equity index (S&P 500), the EUR/USD exchange rate and the interest rate differential between the euro area swap rate and US government bonds (both 10-year). In the model, a US monetary policy shock leads to higher European interest rates, lower US equity prices, a lower EUR/USD exchange rate, and a widening interest rate differential (i.e. US rates rise more than European rates). See Berben et al. (2021) for the full identification scheme.

over the entire time span of the model (2005-2022), US monetary policy is responsible for around 12% of the variation in European interest rates. From the beginning of this year, US monetary policy has already contributed 114 bps to the 277 bps rise in European interest rates (see Figure 10). This relatively large contribution in recent months can be explained by the major shifts in the Fed's monetary policy since the start of this year.

Policy shocks in the United States have a tightening effect on European financial conditions. We can isolate spillovers more effectively by examining interest rate movements immediately after a Fed monetary decision. Market movements in that period are likely to be driven solely by this and not by other factors. We divide the response into two different components: unexpected changes in the monetary policy stance ("policy shock") and changes in the economic outlook ("information shock").[9] Figure 11 shows the impact of the Fed's policy shocks on euro area financial variables over a 30-day horizon. This shows that policy shocks in the United States lead to a major tightening of European financial conditions. Specifically, a policy shock will lead to lower European equity prices and higher credit risk premiums on risky corporate bonds. The impact on German 10-year rates during the period under review (2001-2019) is not persistent, presumably because the ECB's forward guidance partly mitigates the effect. This is not the case for risky assets such as equities and corporate bonds.

Figure 11 Impulse response functions of Fed shocks on euro area financial conditions

Basis points



Source: DNB calculations.

Note: The figures show the cumulative impact in basis points over 30 days of a Fed policy shock, i.e. an unexpected 1 basis point increase in the US 1-year interest rate.

9 This is because a policy change also indirectly discloses information about the central bank's economic outlook. To make the breakdown we use the shock decomposition of Jarocsinki and Karadi (2020), which is based on changes in interest rates and equities in a short time frame after a Fed decision. We then estimate the impact of both shocks on financial conditions in the euro area.

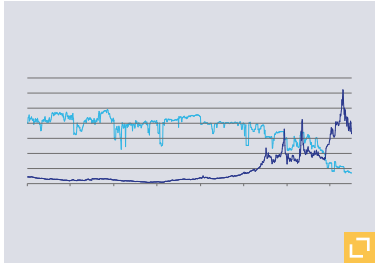
The uncertain growth and inflation outlook is leading to heightened volatility in bond markets. After staying relatively calm for a long time, the government bond markets have been remarkably volatile this year. The uncertainty surrounding inflation trends and the subsequent reaction of central banks have triggered large movements in interest rates. These fluctuations are being amplified by lower liquidity in government bond markets. The high volatility increases risks for traders, leading them to withdraw, at least partially. In both the euro area and the US, the market depth for government bond forward contracts is at its lowest level since the pandemic-related market stress in the spring of 2020. This means that relatively small transactions can have a significant impact on market prices. The spread between bid and offer prices in government bond markets has so far been limited, so there are no pricing problems. Hence although market liquidity has decreased, markets have so far functioned well.

Volatility in bond and other markets may potentially trigger amplification effects in the financial system. Sudden interest rate shocks may result in large amounts of liquidity being moved around the system to meet collateral requirements on positions in interest rate derivatives. If this involves sales of investments in large quantities or in less liquid market segments (risk of fire sales), market stress may also spread to other parts of the system. Prices will then be disproportionately affected, for example in markets which actually exhibit a low correlation with interest rates. This contagion may then be exacerbated by liquidity mismatches, for example in money market and open-ended funds that are also forced to sell to meet withdrawals. A recent example is the money market turmoil in March 2020, where high interest rate volatility led investors to liquidate large sums over a short period to meet margin calls. The vulnerabilities revealed at that time in money market funds, among others, have been recognised (FSB, 2020) but not yet sufficiently addressed. As a result, the weaknesses that played a major role in the spread of stress in the financial system in 2020 remain present.

The rise in real interest rates and heightened concerns about the economic growth outlook are putting the valuations of risky assets under pressure. Global stock markets lost more than 24% of value in the period from January to September this year as a result of higher interest rates and heightened growth concerns. European equities have also suffered heavy losses and are around 23% lower than at the start of the year. These losses are driven mainly by the rise in interest rates (see Figure 12 for a model-derived breakdown of the factors behind the movements in the Euro Stoxx 50 over the January-August 2022 period). Although equity valuations have returned to long-term averages as a result of the recent falls, they remain vulnerable to a substantial slowdown in growth. The European banking sector has also suffered major losses in equity markets this year (-23%). Although the banking sector stands to benefit from higher interest rates, concerns are mounting about the impact of the energy crisis and the forthcoming growth slowdown on losses in loan books (see "Financial institutions – banks"). Higher interest rates also lead to losses on the most speculative investments that surged before and during the pandemic. Bitcoin, for example, has lost around 60% of its value since the start of the year and a basket of US speculative technology stocks that have not yet made a profit has lost 50% in the year to date.

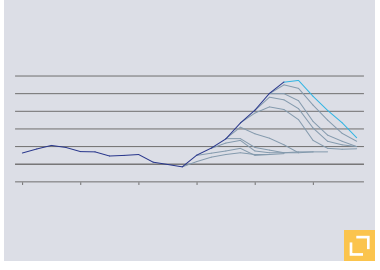
Current valuations are based partly on the assumption that inflation will rapidly return to target, so a change in market expectations may lead to further sudden corrections. As investors are still assuming that inflation will move back close to target in the first half of 2024, longer-lasting and persistently higher-than-expected inflation may trigger new, sudden adjustments in financial markets. In the recent past, markets have already been reacting strongly to unexpected inflation rates. By way of illustration, US inflation on 13 September was higher than expected (8.3% versus an expected 8.1% y-o-y) and led to a stock market correction of around 5% in a single day. Similarly, any further deterioration in the growth outlook and corporate earnings expectations may also weigh on valuations. Financial markets have so far continued to operate smoothly and have absorbed shocks well, but risks to financial stability may arise in the event of a sudden change in market expectations. In such cases sudden adjustments to investors' risk appetite and valuations of risky assets cannot be ruled out.

Figures



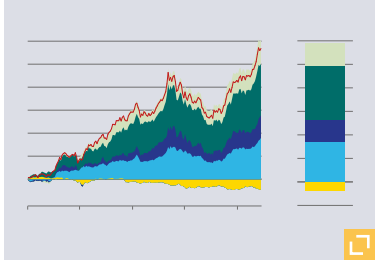
Russian gas supplies decline, gas price surges

See Figure 8 →



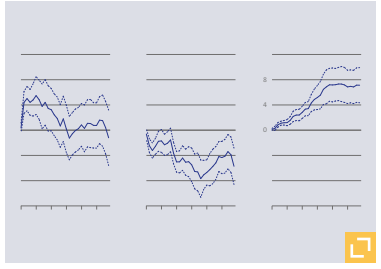
Inflation continuously exceeds market expectations

See Figure 9 →



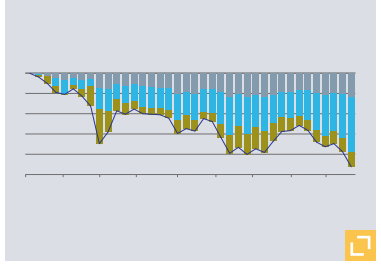
Decomposition of European swap interest rate movements since early 2022

See Figure 10 →



Impulse response functions of Fed shocks on euro area financial conditions

See Figure 11 →

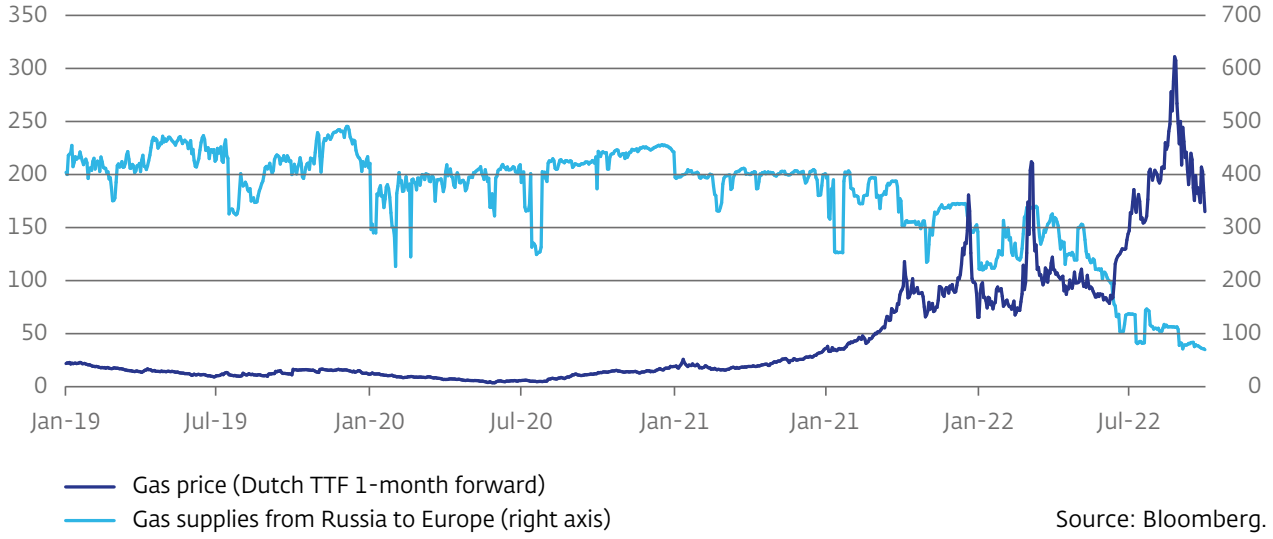


Cumulative losses of European equities since early 2022 are mainly driven by higher interest rates

See Figure 12 →

Figure 8 Russian gas supplies decline, gas price surges

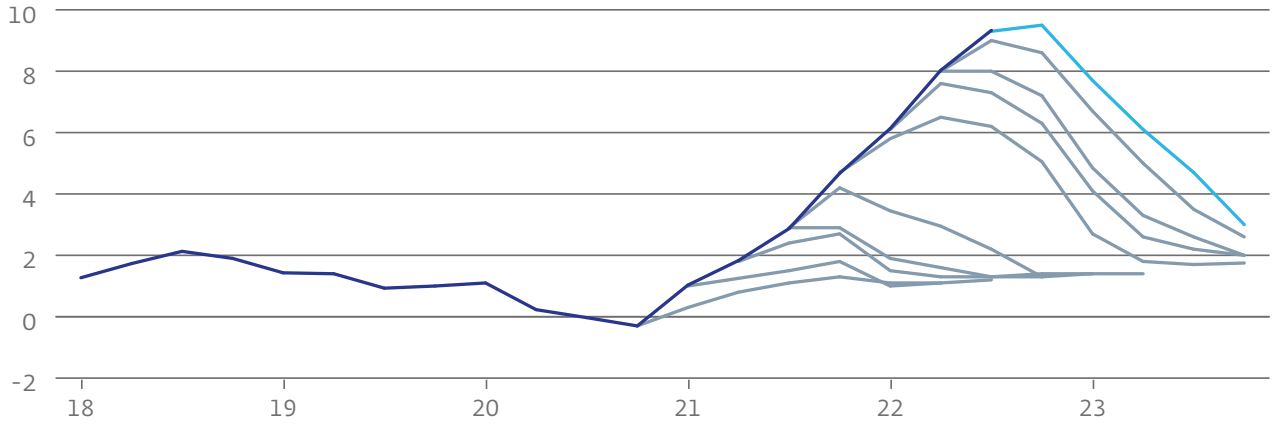
Euro per MWh, millions of m^3 per day



Source: Bloomberg.

Figure 9 Inflation continuously exceeds market expectations

Percentage y-o-y change

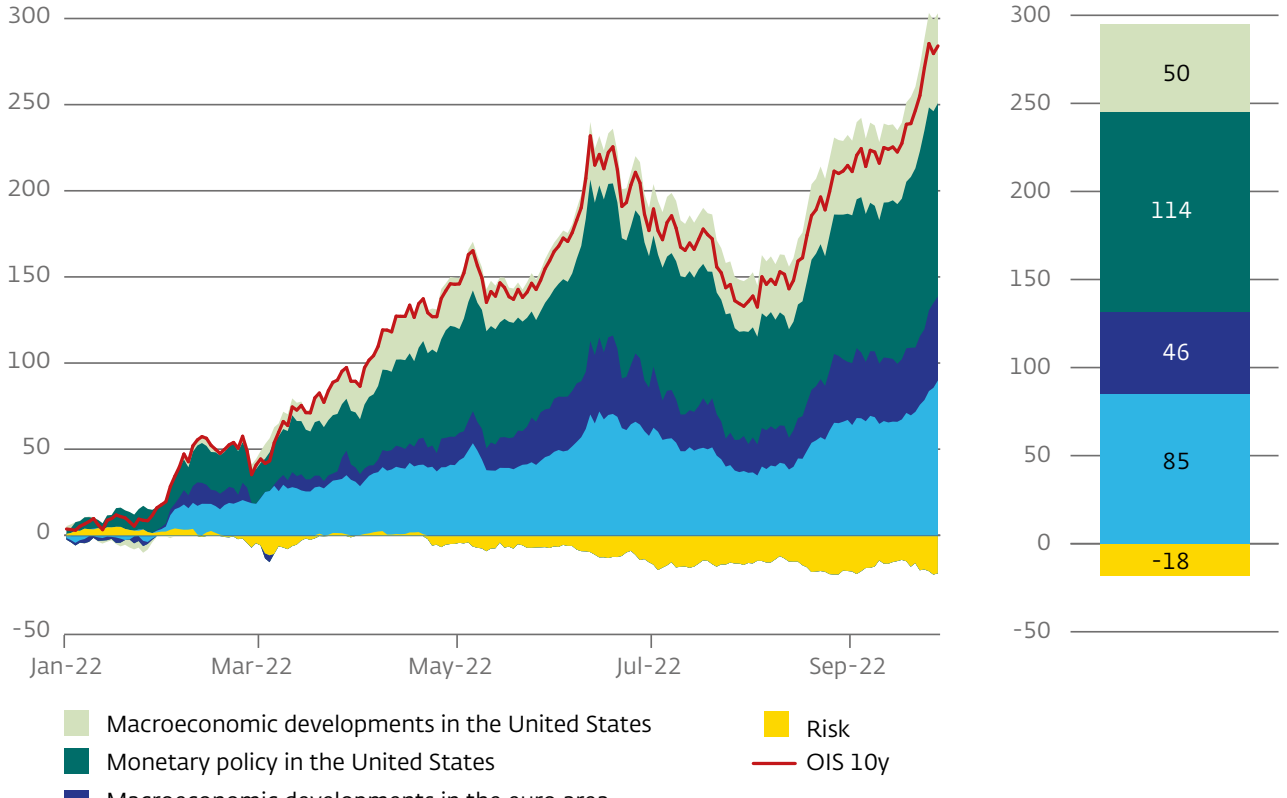


Source: Bloomberg.

Note: based on median analyst expectations from Bloomberg (average quarterly inflation, y-o-y).

Figure 10 Decomposition of European swap interest rate movements since early 2022

Basis points

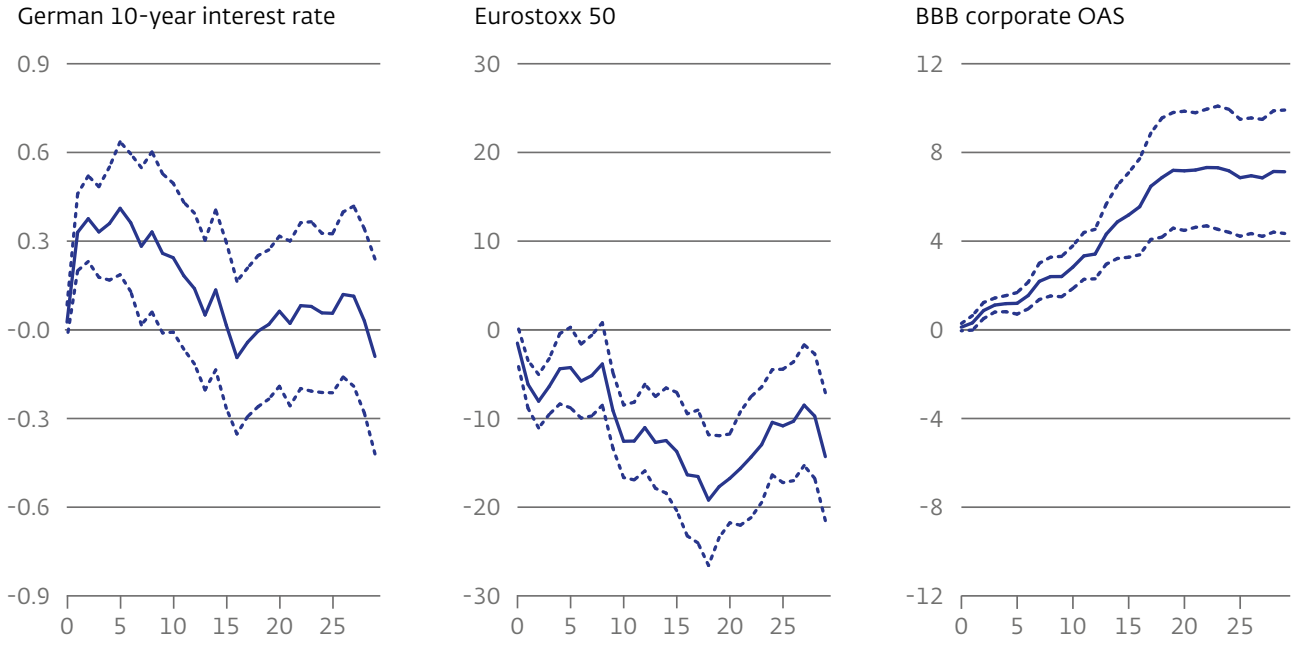


Notes: The decomposition is based on a BVAR model, with shocks being identified by sign restrictions. The model covers the 10-year euro area swap rate, the European equity index (Eurostoxx 50), the US equity index (S&P 500), the EUR/USD exchange rate and the spread between the euro area swap rate and US government bonds (both 10-year). In the model an American monetary policy shock leads to higher European interest rates, lower US equity prices, a lower EUR/USD exchange rate and a widening interest rate differential (i.e. US interest rates rising more than European interest rates). See Brand et al. (2021) for the full identification scheme. Data obtained from Bloomberg.

Source: DNB calculations.

Figure 11 Impulse response functions of Fed shocks on euro area financial conditions

Basis points

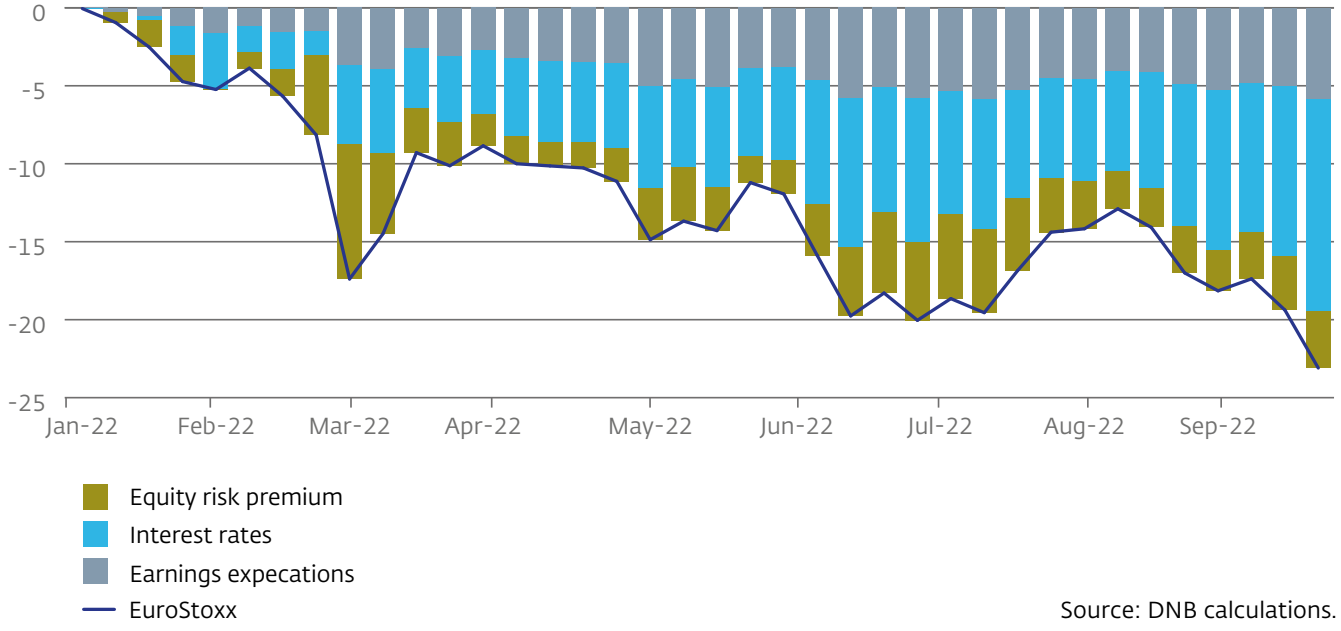


Source: DNB calculations.

Note: The figures show the cumulative impact in basis points over 30 days of a Fed policy shock, i.e. an unexpected 1 basis point increase in the US 1-year interest rate.

Figure 12 Cumulative losses of European equities since early 2022 are mainly driven by higher interest rates

Percentages



Source: DNB calculations.

Financial institutions

Resilience of the financial sector is being tested again

Thomas van den Berg, Francesco Caloia, Marco van Hengel, Menno van der Ven and Ralph Verhoeks

Financial institutions are being affected in various ways by high inflation and rising interest rates. In the longer term, higher interest rates improve banks' profitability and in principle are also good news for insurers and pension funds. At the same time, businesses and households may experience more payment difficulties due to higher interest rates, high energy costs and lower economic growth. Financial institutions consequently need to prepare for an increase in credit losses. Banks should therefore exercise restraint in dividend payouts and share buybacks and maintain buffers above the legal requirements as far as possible.

Banks

Banks have thus far succeeded in maintaining profitability levels. Partly due to the accommodative fiscal and monetary measures, credit losses during the coronavirus (COVID-19) crisis were lower than expected. Higher fee and commission income and targeted longer-term refinancing operations (TLTROs), through which the ECB issues long-term loans to banks at favourable rates, contributed to the earnings performance. Finally, the strong economic recovery from the coronavirus crisis also helped limit banks' credit losses.

In the longer term, higher interest rates improve the outlook for bank earnings. Banks' income depends to a large extent on the margin between deposit remuneration and the interest charged on lending. This margin has been under pressure during the recent years of persistently low interest rates, but almost 75% of Dutch banks' operating income is still generated by interest income (see Figure 13). In a positive interest rate environment it is easier for banks to maintain or increase their interest margin. First, there is a limit to the extent to which banks can pass on low or negative interest rates to consumers. Second, banks face relatively strong competition from non-banking institutions when a high level of liquidity is available in the market and businesses consequently have easier and cheap access to other funding sources. From a structural perspective, the current rise in interest rates can therefore ultimately be seen as a favourable development for banks' profitability and business models.

Banks are also negatively impacted by rising interest rates in the shorter term, however. A major reversal of the interest rate trend has occurred within a short period of time. This is impacting banks in various ways. Income is under pressure as banks' funding costs increase earlier than interest income. Outstanding lending, such as mortgage loans, typically has a longer maturity than the financing that banks attract, which mainly comprises short-term deposits. This mismatch means that higher interest rates will translate only gradually and after a time lag into higher interest income. Banks have often hedged this interest rate risk largely by means of interest rate derivatives, but this varies from bank to bank and depends on various factors, such as business model, size of contracts and residual term. Banks' income may also decrease due to a slowdown in lending and a reduction in non-interest income in a downward economic scenario.

Banks must also prepare for a sharp rise in credit losses in the period ahead. The combination of lower economic growth, higher interest rates and a further rise in energy costs may lead to payment problems for businesses and households due to high debts and reduced repayment capacity. These credit risks are particularly evident in the case of outstanding loans to non-

financial corporations, exposure to commercial real estate and mortgage portfolios.

Loans to non-financial corporations

Dutch non-financial corporations have relatively high debt. Total corporate debt has decreased in recent years. Total Dutch corporate debt (as a percentage of GDP) has also barely risen during the coronavirus crisis. However, at 143% of GDP in the first quarter of 2022, total Dutch corporate debt was still well above the euro area average of 110%. At 127% of GDP, Dutch corporate debt after adjustment for intragroup loans was also higher than the euro area figure of 82% of GDP (see Figure 14). High debt levels make Dutch businesses vulnerable to a slowdown in economic growth. This underlines the importance of fiscal measures that make debt financing less attractive. Businesses with higher shareholders' equity and a diversified funding mix are better able to absorb shocks.

In the short term, higher interest rates will translate into higher financing costs for a large proportion of businesses. Low interest rates and ample liquidity in recent years made it attractive for businesses to borrow, and they often borrowed over longer terms. Businesses have also taken advantage of the low interest rates to issue more bonds. Nevertheless, over 43% of businesses have debt that is due to be refinanced or subject to an interest rate reset in the year ahead (see Figure 15). When these debts are refinanced, these businesses will face higher interest charges and potential liquidity risks. The impact varies greatly because Dutch businesses have very different financing structures. Small and medium-sized enterprises (SMEs) in particular depend on bank lending, making them more vulnerable to higher interest rates. In addition, businesses which had benefited from tax deferrals during the coronavirus pandemic will soon need to pay their outstanding tax debts. Around 269,000 firms must pay €19 billion euro over the next five years.

The vulnerability to higher energy prices varies widely and differs depending on the sector. Two-thirds of the domestic part of Dutch corporate debt is held by banks. Total outstanding bank lending to non-financial corporations amounts to around €620 billion. That represents around 22% of the balance sheet total of the Dutch banks. Dutch banks' exposure to the most energy-intensive sectors, such as metals, chemicals, water companies, transport and hospitality, is relatively limited, at between 10% and 15% of total outstanding loans (second quarter of 2022). Second-round effects may be more important, however, and remain uncertain. If sectors whose profitability could be impacted by higher energy costs, such as agriculture and manufacturing, are also included, the total (indirect) exposure amounts to just over 40% of the total loan portfolio (see Figure 16).

Dutch banks will likely need to make additional provisions for non-performing corporate loans in the period ahead. The percentage of corporate loans classified as non-performing (so-called stage 3 loans) up to the end of the second quarter of 2022 is still low from a long-term perspective, at only 3.1%. The proportion of corporate loans deemed to pose increased payment risk (stage 2 loans) has also fallen from 15.1% to 12.1% since the peak of the coronavirus crisis. With persistent inflation, higher interest rates and a further deterioration in the economy, however, more businesses are expected to get into difficulty. Banks must therefore continue to monitor their loan portfolios carefully in order to identify potential payment problems in good time. This is also important particularly because of the high degree of uncertainty and the unique economic conditions, which may cause payment problems sooner than is currently being estimated in banks' model calculations. Models may not be sufficiently equipped for the new environment. It is therefore important to be particularly alert to the specific circumstances and to make higher provisions in good time where necessary.

Exposures to commercial real estate

Deteriorating financial conditions increase the risks for real estate developers. High interest rates make it costlier to finance new projects and renovations and they reduce the borrowing capacity of real estate companies. Real estate investments are often financed largely by debt. An interest rate rise may consequently slow investment in this sector in the near future. High interest rates also entail refinancing risks. Almost 52% of loans backed by commercial real estate are due to be revalued in the next three years. That means real estate developers face substantial refinancing risks on their outstanding debt, leading to increased credit risks for lenders. In the first half of 2022,

the number of stage 2 loans for commercial real estate increased by 2.9 percentage points.

Rising production costs and supply chain disruptions increase the risk of delays and cost overruns in the development of new real estate. Figure 17 shows that construction costs increased by 7% in the first six months of 2022, mainly due to high material costs (+10%). High construction costs can lead to delays and cost overruns in new construction projects and renovations. Combined with high interest rates, this may slow investment in the commercial real estate sector. At the same time, inflation is actually a positive factor for real estate returns and valuations, because rental income is closely linked to inflation. Rent increases in the liberalised rental housing segment, for example, are capped at inflation plus 1% over the 2022-2024 period .

Inflation, higher interest rates and a greater risk of recession may put pressure on real estate valuations and the debt servicing capacity of real estate companies. The normalisation of interest rates leads to higher interest payments for real estate investors. If the rental income generated by leased property lags behind the current inflation rate (e.g. due to political pressure to protect tenants), the debt service coverage ratio (DSCR) and borrowers' debt repayment capacity could deteriorate. Higher interest rates reduce the present value of future rental income, putting additional pressure on real estate valuations. Finally, the recession risk contributes negatively to these valuations by increasing the likelihood of vacancy.

Mortgage lending to households

Rising mortgage rates and the deteriorating economic outlook increase the likelihood of a price correction in the housing market. The strong price growth seen in recent years has largely been the result of households' increased financing capacity: since interest rates fell for a long time and incomes rose, households were able to borrow ever higher sums to purchase a home. Scarce supply and tax incentives for home ownership and debt financing have prompted households to make use of this financing capacity, pushing prices higher. With interest rates now rising and confidence in the housing market declining, price growth has been cooling off for several months. We expect price growth to moderate further (see Figure 18). Rising mortgage rates reduce the amount households can borrow to purchase a home, thereby dampening price growth. For a household with gross annual income of €50,000, an interest rate rise of 2 percentage points would reduce borrowing capacity by around €15,000, while for a household with twice that level of income with a 3 percentage point interest rate rise the reduction would be €64,000 (see Figure 19). A household's borrowing capacity also depends on possible increases in income.

Falling house prices pose a risk of negative equity for some home owners. The steep rise in house prices and regular and voluntary repayments of mortgage debt have led to a sharp decline in the average loan-to-value (LTV) ratio. As a result, households will generally go into negative equity (or "under water") less quickly in the event of falling house prices than in the run-up to the previous price correction in 2008. The differences between homeowners are considerable, however, with recent, often still young, first-time buyers generally having to repay a large mortgage debt while older homeowners have built up a large amount of equity in the home. A scenario analysis shows that if house prices were to fall by 20%, the LTV ratio of 13% of homeowners would rise to over 90%. Such a price fall causes 8% of homeowners to actually go into negative equity (see Figure 20).[10] Falling house prices have a negative impact on consumption as homeowners become increasingly uncertain about the value of their assets. This also impacts the real economy.

Rising interest rates also represent a refinancing risk for households when the fixed-interest period or the term of their mortgage loan ends. On average, households that took out a mortgage at the beginning of this year opted for a certain degree of security: the average fixed-rate period on new mortgages was more than 15 years in the first quarter of 2022. 75% of outstanding

10 DNB calculation based on the RRE dataset.

mortgage debt has an interest rate that is fixed for more than five years. For a quarter of mortgage debt, the interest rate risk will materialise in the shorter term, so households may face higher monthly payments as a percentage of their disposable income (debt-service-to-income or DSTI ratio). A scenario analysis shows that if mortgage interest rates rise by 3 percentage points, the average DSTI ratio of homeowners whose fixed-interest period expires in the short term will rise from 12% to 17% (Figure 21). The percentage of households that spend more than a quarter of their disposable income on monthly mortgage payments following this interest rate hike will rise from 12% to 26%. However, the additional losses incurred by banks in their mortgage loan portfolios with a 2 percentage point rate hike are expected to be limited.[11] Dutch lenders have for many years suffered hardly any losses on their mortgage portfolios, even during previous economic downturns, partly because the government has provided national mortgage guarantees (NHG) for a substantial part of their mortgage debt. Moreover, lenders are in a strong position in the Netherlands if borrowers default.

Financial pressures on households have increased due to high debt-to-income ratios, high inflation and rising interest rates, which may also have an impact on the quality of mortgage portfolios. Inflation has risen particularly rapidly in the Netherlands over the past year and prices of basic necessities such as energy and food in particular have risen sharply. The higher expenses mean that households have less disposable income left to meet their mortgage costs. Households have increasingly pushed the borrowing limits for house purchases in recent years, so there has also been an increase in debt-to-income ratios: around 60% of households under the age of 36 and 45% of older households have a debt-to-income ratio above 450% (Figure 22). At the same time, mortgage interest rates have also risen, so homeowners may face higher interest expenses at the end of the fixed rate period. Reports of household defaults have been increasing for several months and, according to Nibud, more and more households are facing financial difficulties. This increases the risk that households will be unable to continue meeting their mortgage obligations, potentially leading to growing losses on lenders' mortgage portfolios over time. A positive point is that unemployment is low and is expected to remain low with the tight labour market. Government policy is also cushioning the purchasing power impacts to some extent, particularly in the case of higher energy prices.

In view of the persistent systemic risks in the housing market, we are extending the lower limit for the risk weighting of mortgage loans by two years. On 1 January 2022 we introduced a minimum limit on banks' risk weighting of mortgage loans based on internal risk models, because these models do not take sufficient account of the systemic risk in the housing market described above. The strong rises in house prices have resulted in decreasing risk weights through lower loan-to-value ratios, reducing the need for banks to hold capital for their mortgage portfolios. As a result of the measure, banks are better able to absorb the impact of any price correction in the housing market and its economic consequences. The extension means the measure will be in force at least until 1 December 2024. We will continue to monitor developments in the housing market closely and will reconsider the measure if the systemic risk in the housing market decreases or materialises significantly.

Resilience of the banking sector

Dutch banks currently have a good starting position. The Dutch banking sector's capital position and liquidity ratios are currently well above the minimum requirements (see Figure 23) [12].
This means the Dutch banking sector is better capitalised than the EU average. The increased risks are therefore offset to some extent by a continued strong position.

Dutch banks are also resilient in a stress scenario of persistently high inflation and further rises in interest rates. We have used a stress test to assess the resilience of the banking sector. In this stress scenario, the capital position of the banking sector deteriorates but remains well above the required minimum.

11 In the event of a 2 percentage point rise in interest rates, the *probability of default* on mortgage loans rises by 2 percentage points.
12 The CET1 ratio falls in 2022 because risk-weighted assets increase, partly due to the introduction of the Regulation on minimum risk weighting for mortgage loans (*Regeling minimum risicoweging hypothecaire leningen*).

The credit losses in the stress test scenario amount to almost €23 billion and the average CET1 ratio of Dutch banks falls by 2.7 percentage points by the end of 2024. The banks' capital positions give them a good starting position from which to absorb the losses in the stress scenario without any impact on lending. Even if macroeconomic developments were to turn out even worse than assumed in the stress scenario, the banks' starting position appears strong enough to prevent them getting into difficulties in the near term (see also Box 4 – "Stress test on banks' resilience").

Banks should exercise prudence in dividend payouts and share buybacks and maintain buffers above the legal requirements as far as possible. In view of the increased risks, it is important that banks maintain their levels of capital. They must therefore be prudent with regard to dividend payouts and share buybacks and closely monitor any increase in credit losses and their impact on the capital position. Further reductions in operating costs and higher profits also contribute to maintaining a strong capital position.

We maintain that a 2% CCyB must be built up. Following the outbreak of the pandemic we lowered the systemic buffers to support lending. At that time we also decided to compensate for the lowering of the systemic buffers with a gradual build-up of the countercyclical capital buffer (CCyB) to a level of 2% in a neutral risk environment. In May of this year we took the first step by raising the CCyB to 1%. Banks will have to comply with this requirement by 25 May 2023, provided there is no substantial change in the current risk assessment. In addition, in 2023 we will review the framework for the systemic importance buffers for other systemically important institutions (O-SII buffers).

Box 4 Stress test on banks' resilience

Francesco Caloia, Remco van der Molen and Alessandro Pollastri

We use a stress test to assess the resilience of the Dutch banking sector. The stress test is based on an adverse, but still plausible, macroeconomic scenario. The development of the main macroeconomic variables in this scenario is worse than currently expected. It must be noted, however, that even a more adverse scenario is not inconceivable, given the current uncertainties. The stress test calculates the impact of this scenario on the capital position of the four largest Dutch banks. This will help us understand the resilience of the Dutch banking sector and assess the extent of any threat to financial stability.

The stress scenario is characterised by more protracted inflation and a further increase in interest rates.[13] In this scenario, inflation turns out significantly higher than currently projected, at 10.0% in 2023, falling back to 2.8% in 2024. Accordingly, the interest rate also rises further. Short-term interest rates rise to 2.6% in 2024, while long-term interest rates stand at 2.7% in 2024. High inflation means consumers have less to spend and high interest rates lead to lower business investment. Lower real incomes and higher interest rates also dampen house price growth. Combined with a negative confidence shock, this leads to a total fall in house prices of more than 18% in 2023 and 2024 (see Figure 24, right).[14] In this scenario, the Dutch economy goes into recession at the end of 2022. GDP shrinks by 1.8% in 2023, and 2024 also shows a slight economic contraction (-0.2%, see Figure 24, left). Unemployment rises to 6.8% in 2024 in this stress scenario.

In the stress test we explicitly take into account the vulnerabilities of homeowners and businesses described above. In the case of homeowners we take into account the impact of high inflation – including energy costs – and higher interest rates. These mean that households have less to spend and increase the likelihood that they will no longer be able to

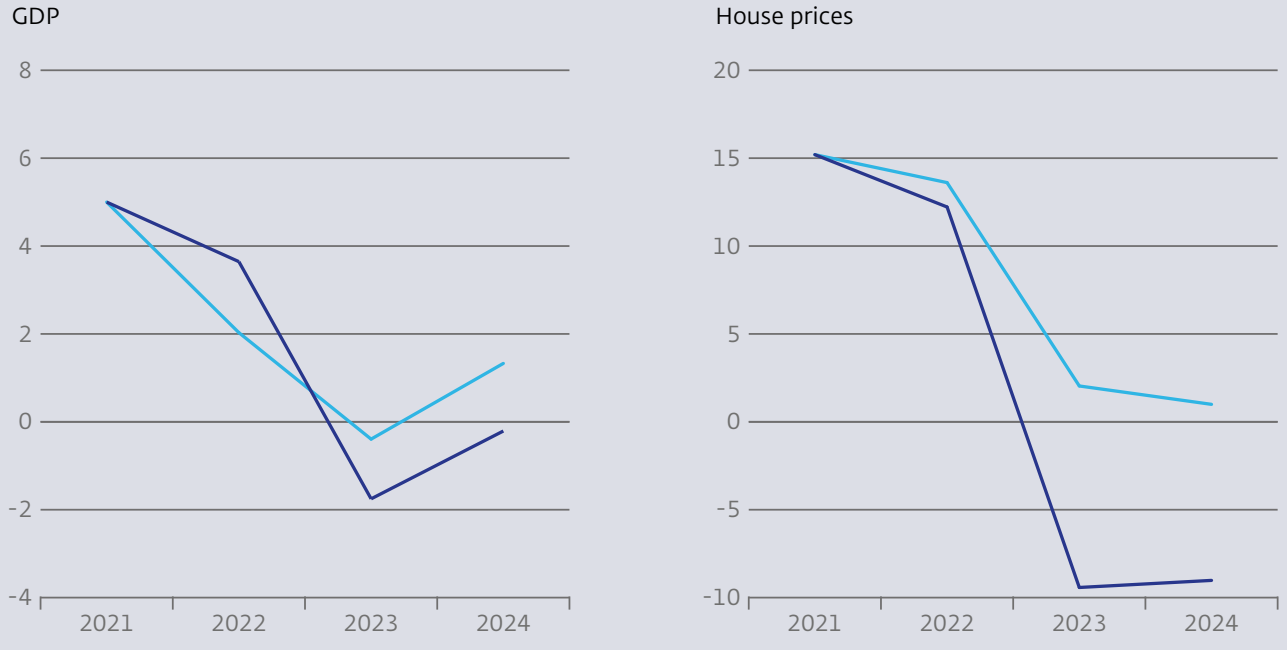
13 This macroeconomic scenario was compiled using DELFI.
14 By way of comparison, in the aftermath of the financial crisis house prices fell by a total of 21% over five years.

afford their mortgage costs. Higher interest rates may cause difficulties for homeowners whose mortgage rates are reset. Falling house prices also increase the risk of residual debt for households and credit losses for banks. In the case of banks' commercial real estate portfolios, we also take into account the impact of higher interest rates and lower real rental income on debt servicing and the value of the real estate. Finally, we assume that businesses in energy-intensive sectors are unable to pass on all of the higher energy prices, putting additional pressure on their profitability. Banks' credit losses on loans to these businesses consequently rise more sharply than those on loans to other businesses.

In the stress scenario, the average CET1 ratio of Dutch banks is expected to fall by 2.7 percentage points. We use our stress test model to monitor the evolution of banks' capital positions in this scenario. Although banks' profitability declines in the years ahead due to the recession, it still contributes positively to the CET1 ratio. This is partly due to strong economic growth in the first half of 2022 and higher interest rates, which have a positive impact on banks' net interest income. This positive impact is more than offset by rising credit losses and an increase in credit risks. In the scenario, total credit losses reach almost €23 billion over the 2022-2024 period, which translates into a negative CET1 impact of 3.5 percentage points. The banks' assets thus become riskier, increasing risk-weighted assets (RWA) by 15% on average.

Figure 24 Scenario stress test more severe than alternative in our Economic Developments and Outlook

Percentage y-o-y change



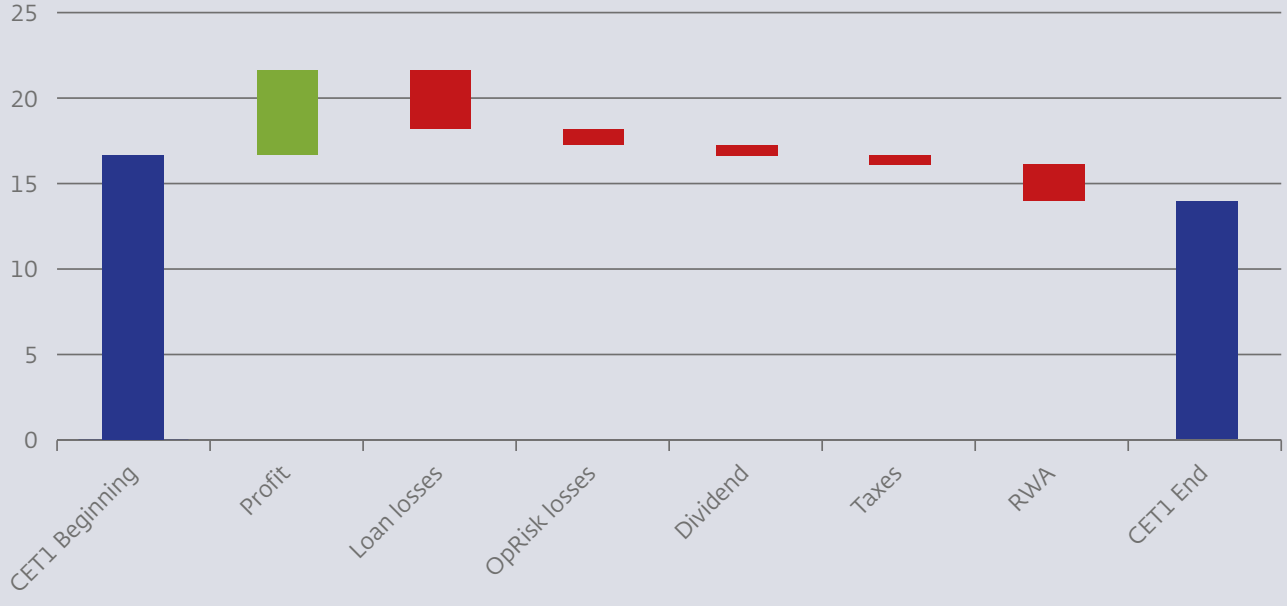
Source: DNB calculations.

The average CET1 ratio consequently falls by 2.1 percentage points (see Figure 25).

In this stress scenario, the capital position of the banking sector deteriorates but remains well above the required minimum. In the stress test scenario, the average CET1 ratio of Dutch banks falls by 2.7 percentage points up to the end of 2024. The banks' current relatively high capital ratios give them a good starting position from which to absorb the losses in this scenario without having to reduce their lending. Even if macroeconomic developments were to turn out even worse than in the stress scenario, the banks' capital positions appear strong enough to prevent them getting into difficulties in the near term.

Figure 25 Impact of stress scenario on banks' CET1 ratio

Percentage of risk-weighted assets



Source: DNB calculations.

Insurers

Higher inflation and rising interest rates pose risks for insurers on both sides of the balance sheet. On the liabilities side, inflation leads to higher operating costs (cost inflation) and higher benefit costs (benefit inflation), thereby resulting in higher technical provisions. On the other hand, higher interest rates have a dampening effect on liabilities. Inflation affects insurers' investments in different ways, depending on the type of investments on the balance sheet. Rising interest rates have a negative impact on the value of investments, for example because equities and bonds fall in value when interest rates rise.

Inflation affects the liabilities of different types of insurers in different ways (Table 1). Cost inflation manifests itself in the form of higher wage costs and higher (expected) costs for buildings, ICT and other costs and its impact is common to all types of insurers. Benefit inflation is mainly due to higher-than-expected benefit payouts. In the case of loss-of-income insurance, for example, inflation guarantees may have been issued and in the case of car insurance repair costs may be higher. Non-life insurers are generally more impacted by benefit inflation than life insurers.

The further rise in inflation leads to a decrease in insurers' own funds, although the impact varies. The extent to which high inflation and rising interest rates ultimately affect insurers' solvency depends greatly on, for example, contract and premium terms, the hedging policy and the inflation curve used by the insurer. According to a DNB survey, if the entire inflation curve as used by insurers to value liabilities and calculate the required capital rises by 100 bps, the available own funds of life and non-life insurers at aggregate level falls by 7% and 11% respectively. The decrease in own funds is mainly due to the increase in technical provisions resulting from higher payouts and costs. The impact on life insurers is smaller than on non-life insurers, because non-life insurers generally have a larger proportion of provisions that are sensitive to inflation (in some cases up to 100%).In the case of life insurers, only a small proportion of benefits are sensitive to inflation (around 6%). Moreover, inflation sensitivity differs greatly depending on the product. Both life and non-life insurers' costs are sensitive to inflation. Investments rise in value slightly (1%) as a result of increases in the value of inflation swaps and inflation-linked bonds.[15]

Higher interest rates are in principle good news for insurers, but also give rise to new risks. Protracted low interest rates have long been the main challenge facing insurers, partly because of long-term guarantees they have issued in the past. Low interest

Table 1 Inflation affects insurers' liabilities in different ways

Type of insurer	Products	Benefit inflation	Cost inflation
Life and funeral	Pensions and funerals	Indexation of (pension) benefits and funded benefits, increase in funeral costs	Rise in wages, staff pension liabilities, offices, energy and other costs
Non-life	Liability, fire and other	Rise in repair costs and claim payouts	
Loss-of-income	Individual and group loss-of-income insurance	Increase in insured sums and indexation of benefits	
Health	Health insurance policies	Rise in wages and prices of medical treatments	

15 This does not include second-order effects on investments (for example due to further interest rate rises following higher inflation).

rates also mean that insurers need to sell new life insurance policies with relatively high premiums in order to maintain profitability. Rising interest rates therefore ease the pressure on profitability. In addition, a higher market interest rate narrows the difference relative to the interest rate at which insurers value their liabilities (using the Ultimate Forward Rate and the Volatility Adjustment). At the same time, higher interest rates are not necessarily positive for all insurers. For example, rapid interest rate rises can entail liquidity risks for life insurers as a result of margin calls on their interest rate derivatives (see also "Pension funds"). The impact of an interest rate rise on solvency also depends greatly on the interest rate hedging policy.

The average solvency of insurers has so far remained stable amid the increased risks. The solvency ratio under the Solvency II framework for non-life insurers and life insurers, at 178% and 199% respectively, is still well above the statutory requirements and has not recently seen any material change (see Figure 26). It should be noted, however, that due to the use of the Ultimate Forward Rate and the Volatility Adjustment the statutory solvency does not always provide a clear picture of insurers' underlying vulnerabilities. The current review of the Solvency II framework has an important role to play in this respect (for more information see FSR Spring 2022). In addition, the health insurance sector has already seen a downward trend in its solvency ratio for several quarters (141% in mid-2022), caused by the return of reserves amid uncertain premiums, investment losses and an increase in claim provisions. The scope for additional use of buffers in the 2023 health insurance premium for basic insurance appears limited at present.

Pension funds

The rise in interest rates has significantly improved the nominal financial position of pension funds. Figure 27 shows the development of the funding ratio, together with equity prices and interest rates. It is clear that the level of interest rates has a dominant influence on the nominal funding ratio. This is because pension funds' liabilities have longer terms than their fixed-income investments and the interest rate risk is only partly hedged. Consequently, liabilities fall in value more than investments when interest rates rise. By way of illustration, in 2022, the 20-year interest rate on Dutch government paper rose by 185 basis points up to the end of August; equities (based on the S&P 500) fell by 18%. Liabilities fell by 23% due to the interest rate rise and investments fell by a total of 15%. The net impact on the funding ratio was 11.1 percentage points.

In real terms, however, the financial position of pension funds is less favourable as a result of high inflation. Given the current nominal framework, high inflation has no direct impact on pension funds' funding ratios. Actual and expected inflation developments may nevertheless impact the value of pension funds' investments. Moreover, high inflation erodes the real value of the accrued assets. Even if pension funds are able to index pensions in the near future, indexation is in most cases unlikely to compensate fully for inflation at the current levels.

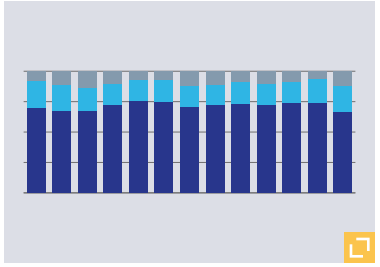
Financial market corrections may, however, impact pension funds through losses on their investment portfolios. If the risk-free interest rate continues to rise, this will have a positive impact (*ceteris paribus*) on pension funds' (nominal) funding ratios. If, however, interest rates rise due to rising risk premiums on lower-rated bonds, an increase in interest rates may lead to adjustments to the market value of the investments. If such a correction is not accompanied by a higher risk-free interest rate, the interest rate rise may have a negative overall impact on the financial position, particularly as pension funds have relatively riskier investment portfolios than insurers and banks. For example, pension funds allocate around 50% of investments to higher-risk assets such as equities, hedge funds, real estate and alternative investments. A calculation shows that a scenario with rising risk premiums (+ 150 bps for A and BBB bonds, + 250 bps for a rating below BBB) and a decrease in equity prices (-20%) leads to a loss of 7% in the market value of the investments.

A rapid rise in interest rates may also entail liquidity risks through an increase in margin calls. Pension funds use derivatives such as interest rate swaps to match the interest rate sensitivity of their investments more closely to that of their long-term liabilities. Counterparties with which these contracts are concluded require collateral in the form of margin calls. As interest rates rise, these margin calls increase. In the first half of 2022, pension funds sold a record €88 billion of investments (4.6% of invested capital), mainly comprising units in investment funds and money market funds and listed equities. Over the same

period, €82 billion was added to margin accounts, largely funded from sales of investments. When interest rates rise gradually, there is no liquidity risk. However, in the event of a rapid rise in interest rates, when investments have to be realised within a short period, there may be liquidity risks with a potential market impact, especially when market liquidity is limited.

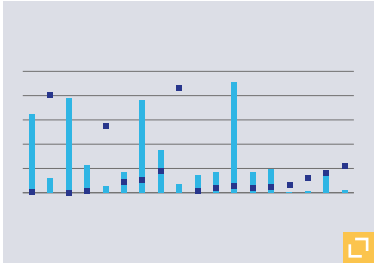
In the transition to the new pension contract, pension funds can index pensions earlier, also due to the increased funding ratios, but this requires careful consideration. From this year, many pension funds have been able to index pensions for the first time in many years. This is due partly to the increased funding ratios, but partly also to the increased statutory options for doing so. The Future Pensions Act (*Wet toekomst pensioenen*) provides for a transition period centred on the switch to the new system. During this transition period, pension funds that wish to use the amended transition assessment framework will be subject to amended rules on pension increases and reductions.
By postponing the entry into force of the Act, the government made it possible as of 1 July 2022 – by means of a general administrative order – to index pensions under certain conditions once the policy funding ratio reaches 105%. Fund boards must consider whether use of the scheme represents a proper balancing of interests. After all, earlier indexation leads to redistribution and impacts the resources available to implement the transition to the new system.

Figures



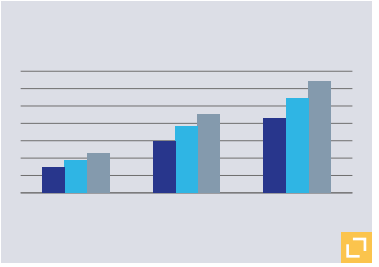
Profitability of banks largely depends on interest income

See Figure 13 →



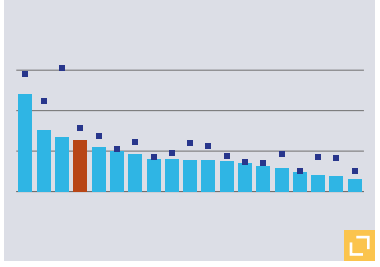
Exposure of Dutch banks to energy-intensive sectors

See Figure 16 →



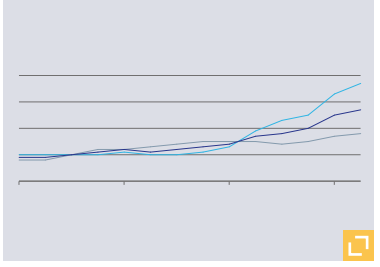
Households can borrow less to buy a home due to an increase in mortgage rates

See Figure 19 →



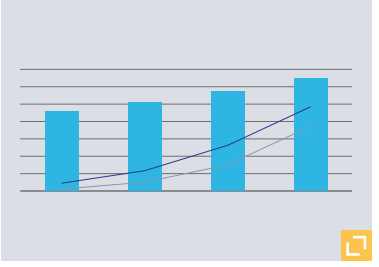
Level and development of corporate debt in the euro area vary substantially

See Figure 14 →



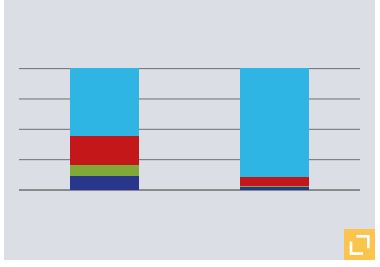
Commercial property construction costs rise rapidly

See Figure 17 →



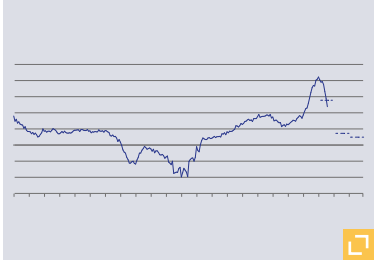
A proportion of Dutch homeowners run the risk of being underwater in the event of a price correction

See Figure 20 →



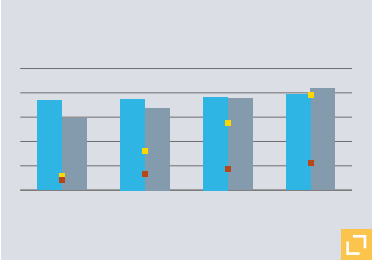
Composition of loan portfolios to businesses and households by interest term

See Figure 15 →



The surge in house prices is waning and growth is forecast to normalise further

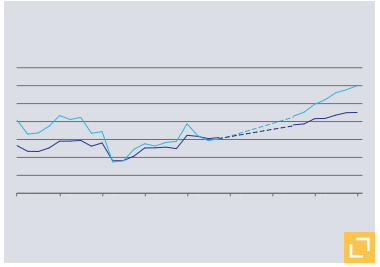
See Figure 18 →



Interest rate rises lead to higher financing costs for homeowners at the end of the term of their interest rate or mortgage contract

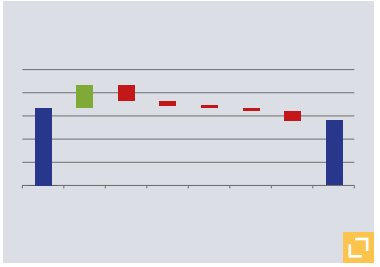
See Figure 21 →

Figures



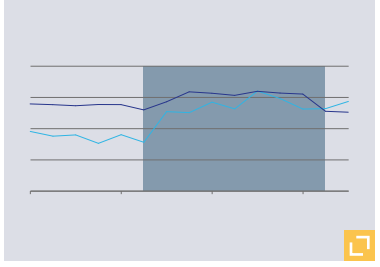
Proportion of homebuyers borrowing a large amount relative to income has been rising

See Figure 22 →



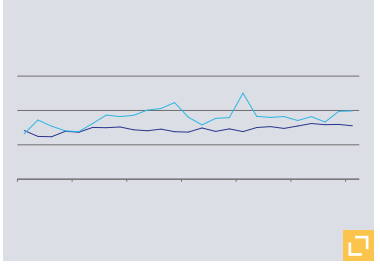
Impact of stress scenario on banks' CET1 ratio

See Figure 25 →



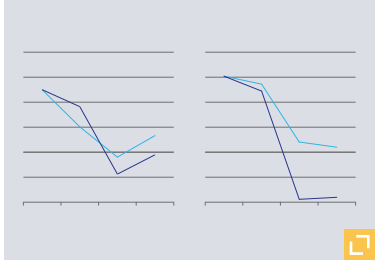
Dutch banks' capital and liquidity positions remain well above the required minimum

See Figure 23 →



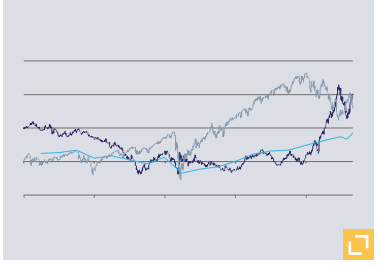
Insurers' solvency holds steady

See Figure 26 →



Scenario stress test more severe than alternative in our Economic Developments and Outlook

See Figure 24 →

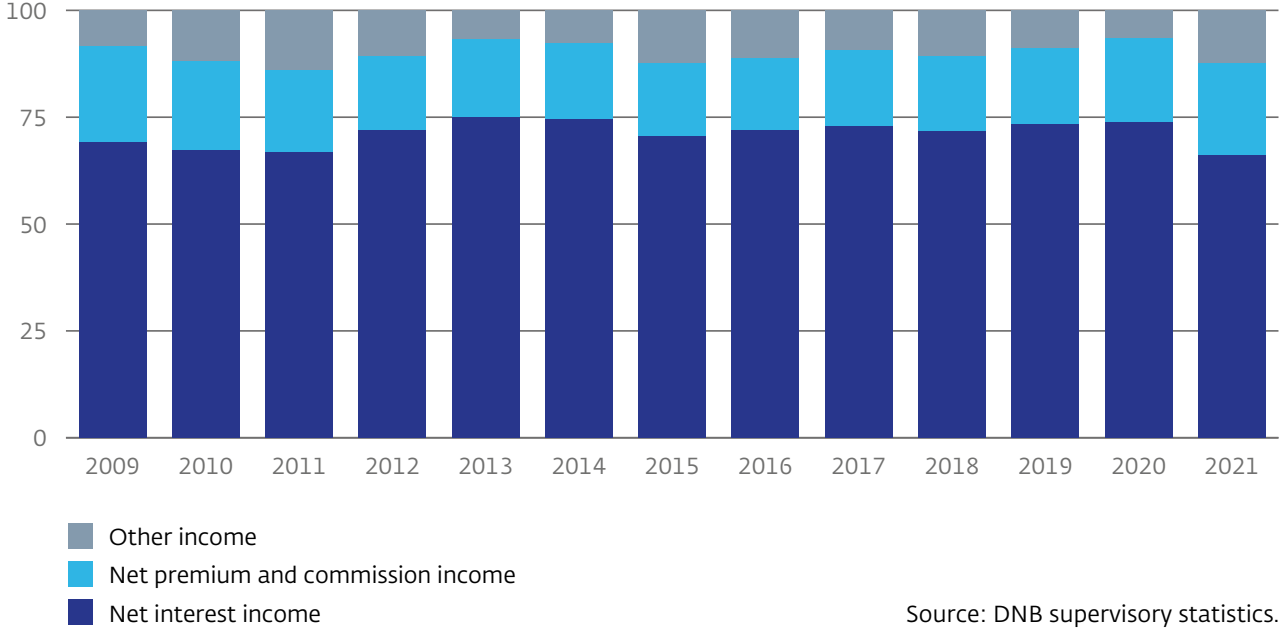


Nominal funding ratio is highly dependent on interest rate developments and equity prices

See Figure 27 →

Figure 13 Profitability of banks largely depends on interest income[16]

Percentage of operating income

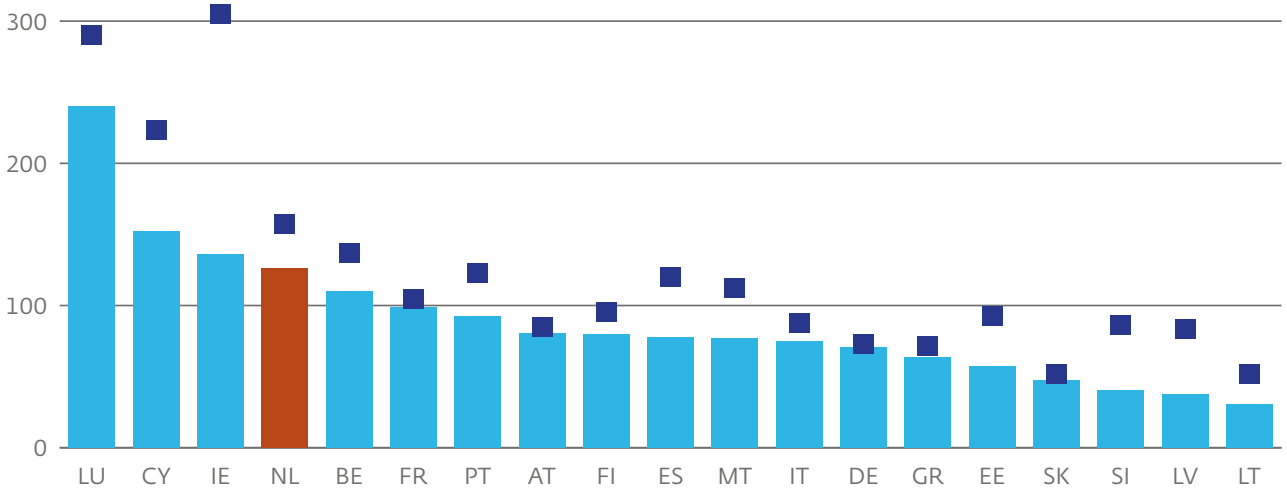


Source: DNB supervisory statistics.

16 Interest rates, resilience and return: a scenario analysis of the profitability of Dutch banks (DNB, 2022)

Figure 14 Level and development of corporate debt in the euro area vary substantially

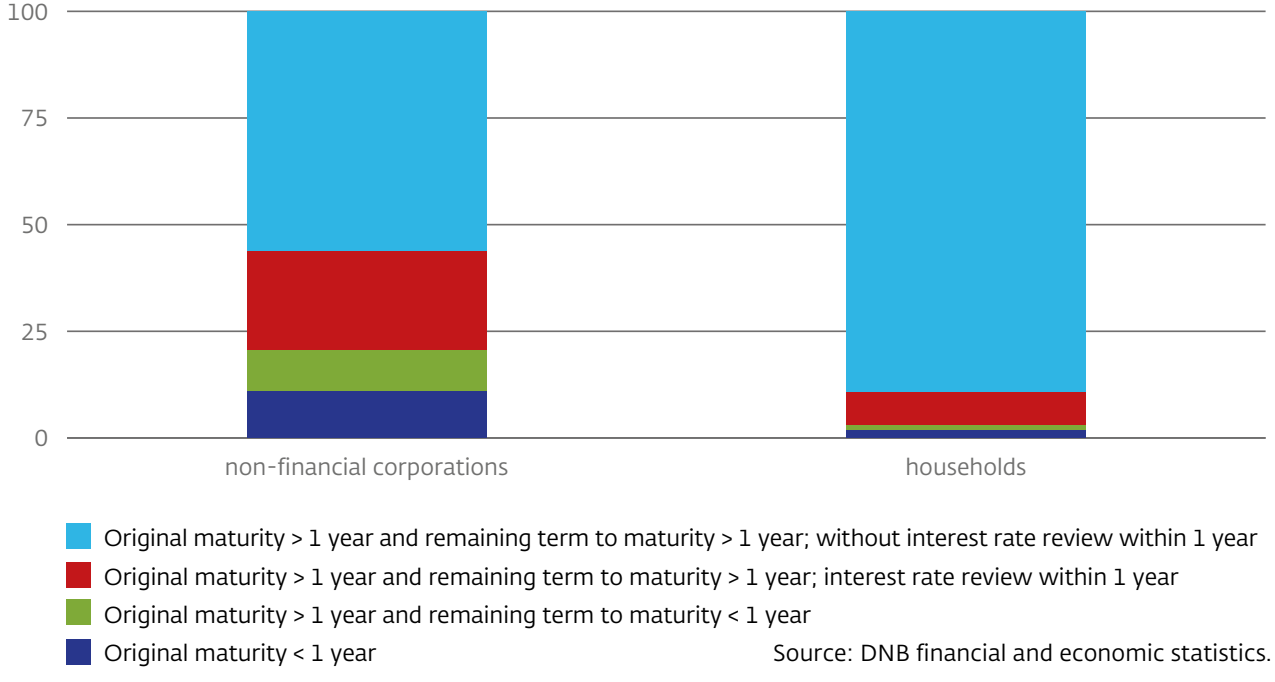
Percentage of GDP, first quarter of 2022



Source: ECB.

Figure 15 Composition of loan portfolios to businesses and households by interest term

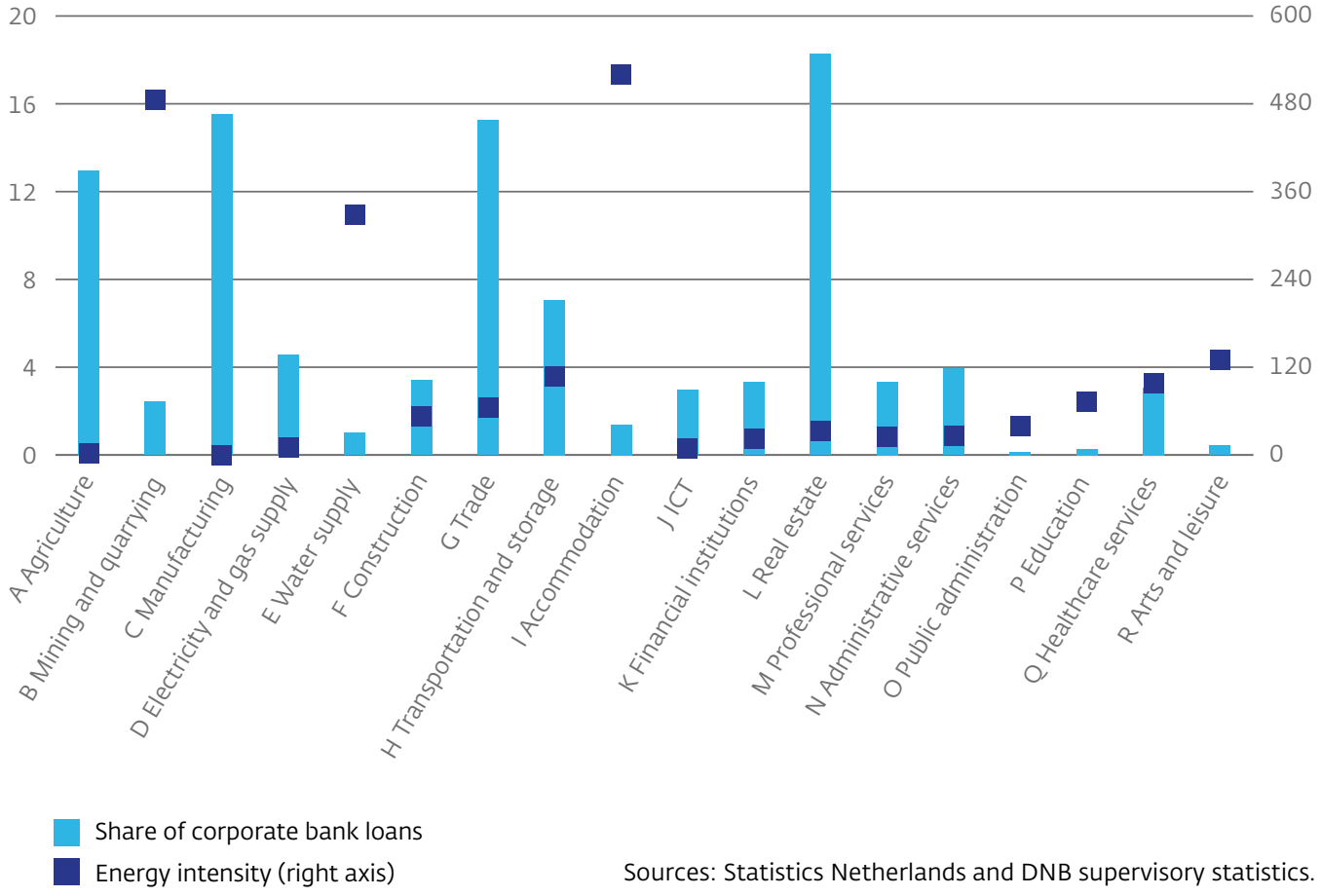
Proportion of loan portfolio, 31 December 2021



Source: DNB financial and economic statistics.

Figure 16 Exposure of Dutch banks to energy-intensive sectors

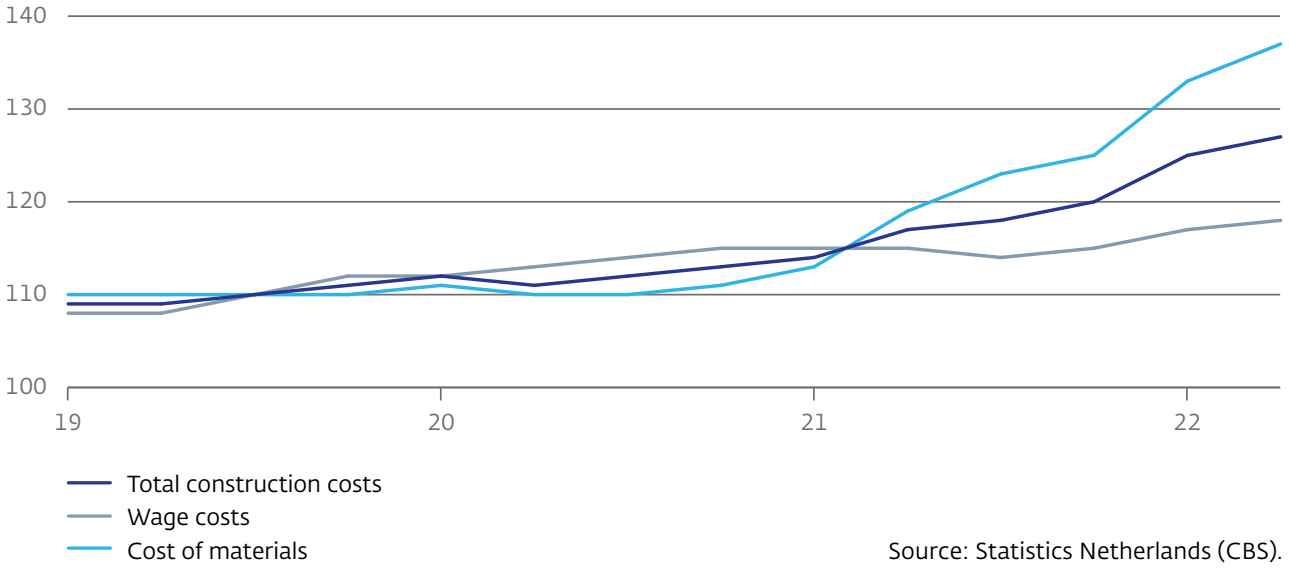
Percentages of gas and electricity consumption in KWh per thousand euro of value added



Sources: Statistics Netherlands and DNB supervisory statistics.

Figure 17 Commercial property construction costs rise rapidly

Index 2015=100



Source: Statistics Netherlands (CBS).

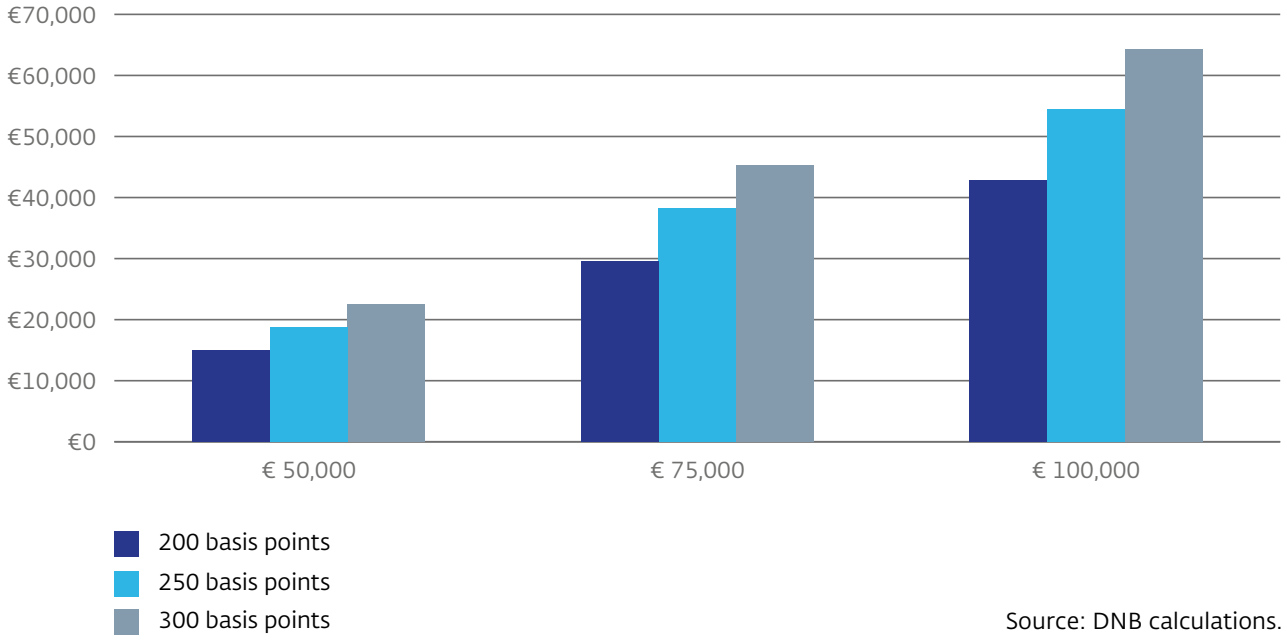
Figure 18 The surge in house prices is waning and growth is forecast to normalise further

Percentage y-o-y change

Sources: Statistics Netherlands and DNB.

Figure 19 Households can borrow less to buy a home due to an increase in mortgage rates

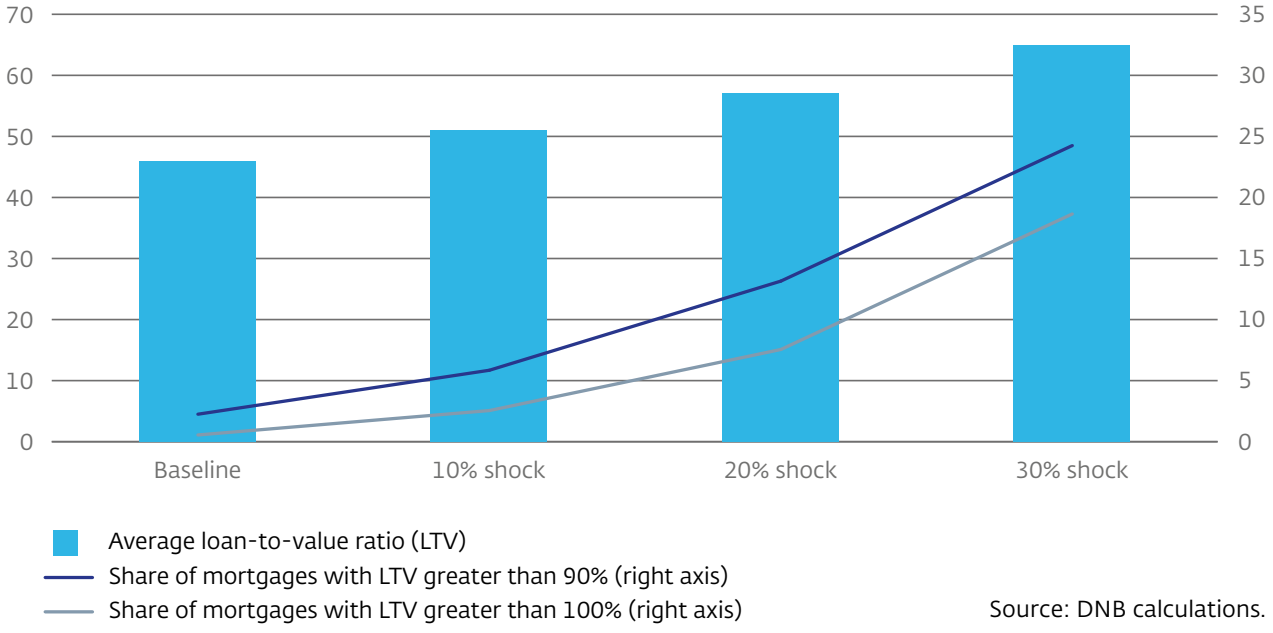
Decline in maximum mortgage amounts by gross annual household income



Source: DNB calculations.

Figure 20 A proportion of Dutch homeowners run the risk of being underwater in the event of a price correction

Percentages



Source: DNB calculations.

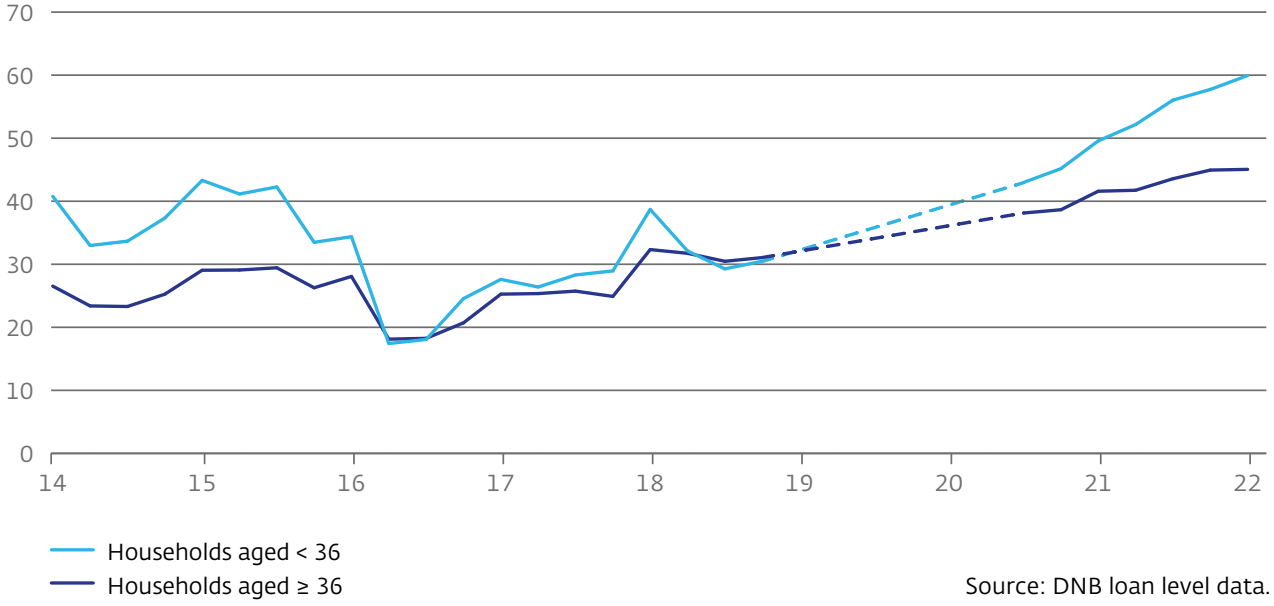
Figure 21 Interest rate rises lead to higher financing costs for homeowners at the end of the term of their interest rate or mortgage contract

Percentages

Source: DNB calculations.

Figure 22 Proportion of homebuyers borrowing a large amount relative to income has been rising

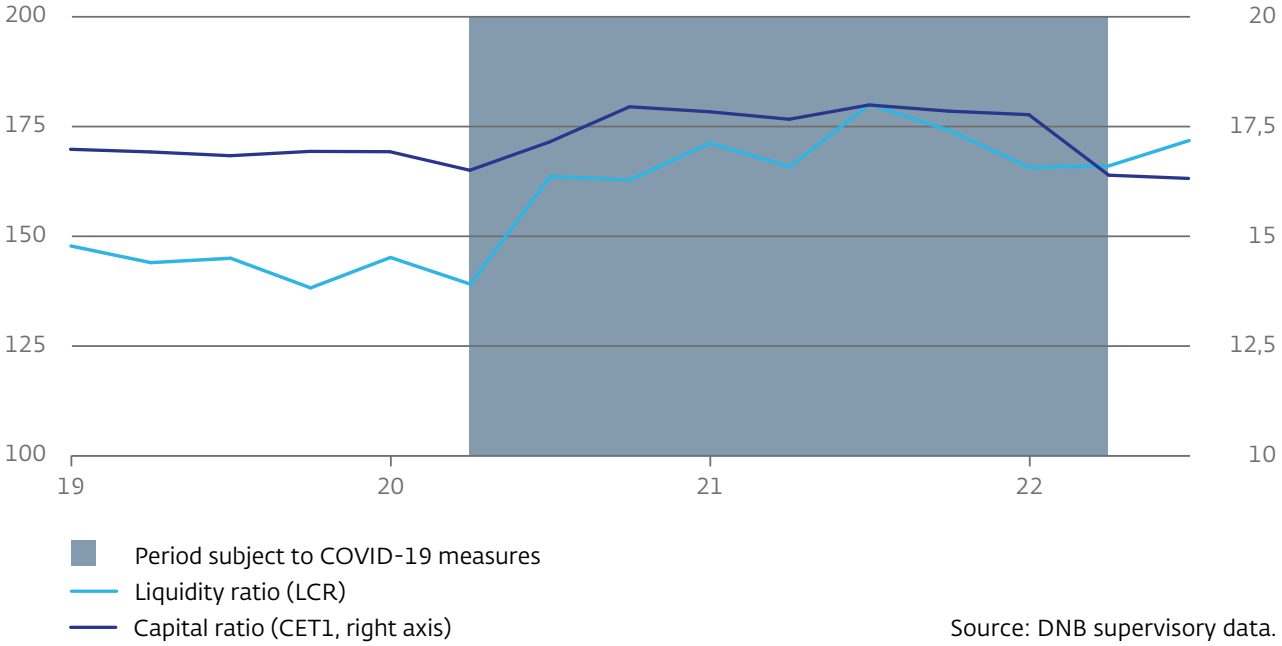
Percentage of new mortgages with a debt-to-income ratio over 450%



Source: DNB loan level data.

Figure 23 Dutch banks' capital and liquidity positions remain well above the required minimum

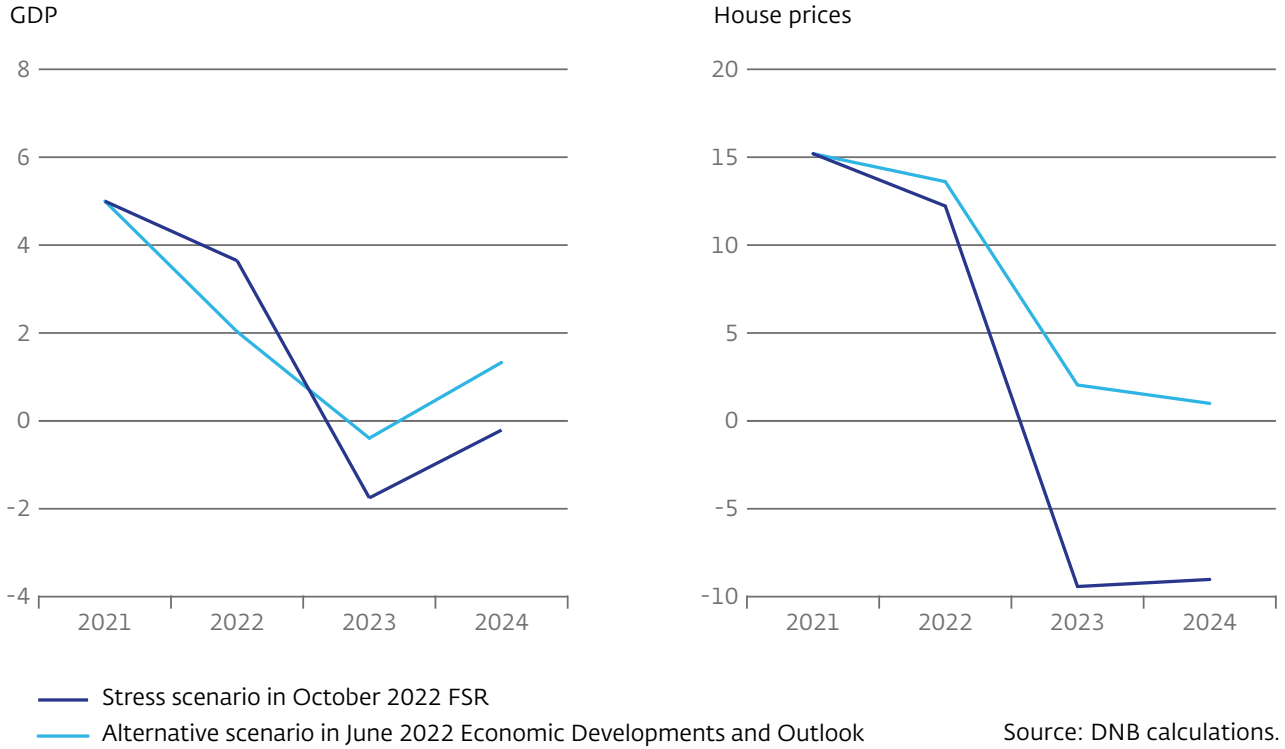
Percentages



Source: DNB supervisory data.

Figure 24 Scenario stress test more severe than alternative in our Economic Developments and Outlook

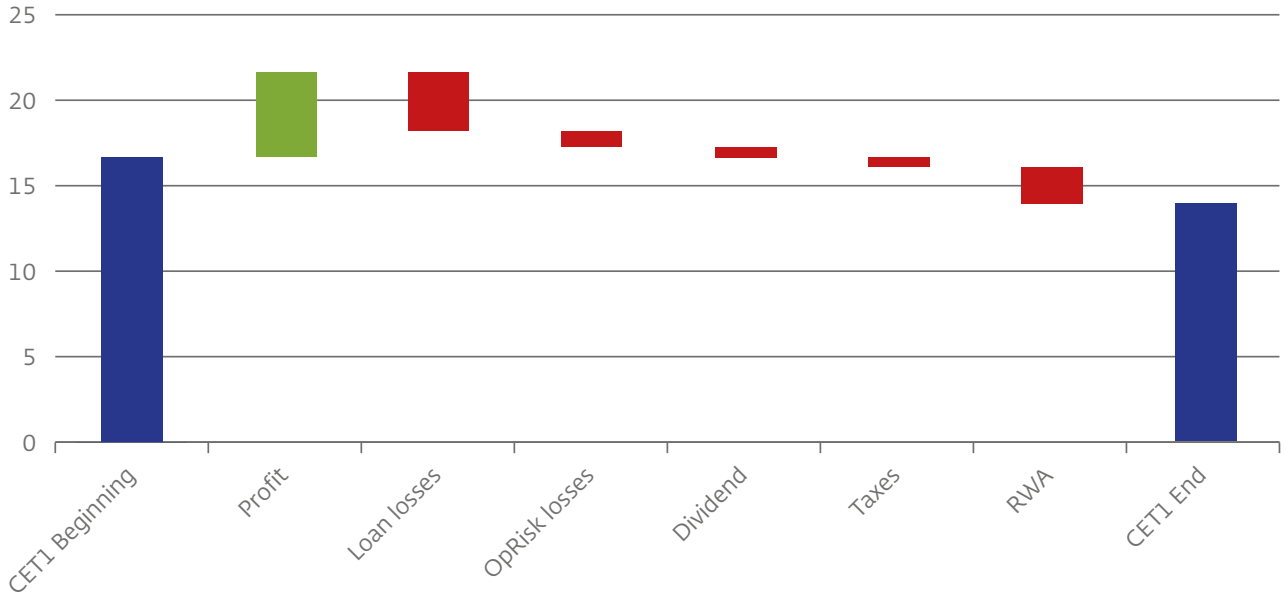
Percentage y-o-y change



Source: DNB calculations.

Figure 25 Impact of stress scenario on banks' CET1 ratio

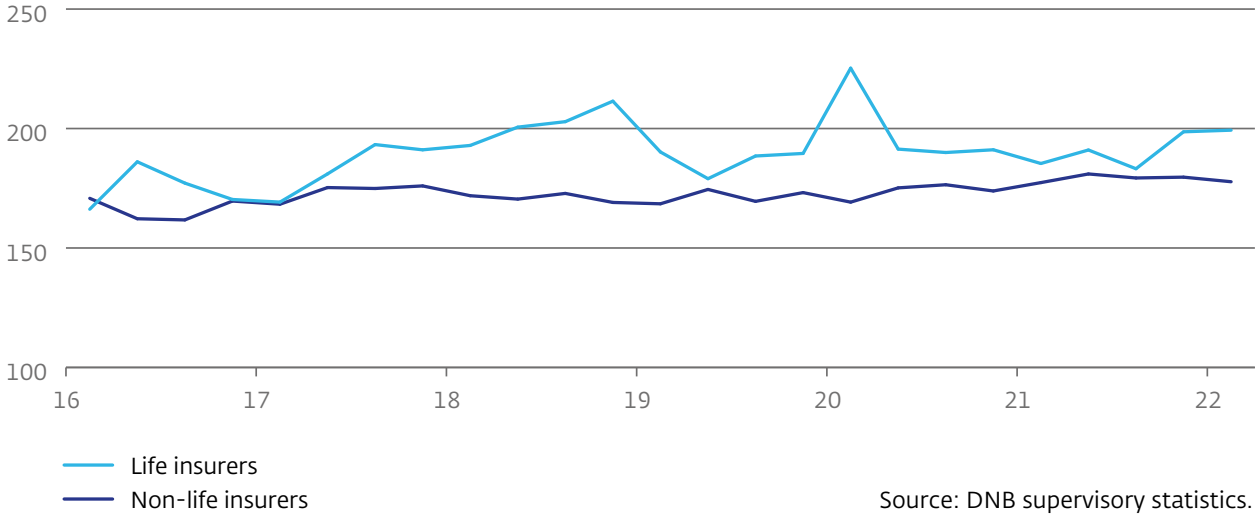
Percentage of risk-weighted assets



Source: DNB calculations.

Figure 26 Insurers' solvency holds steady

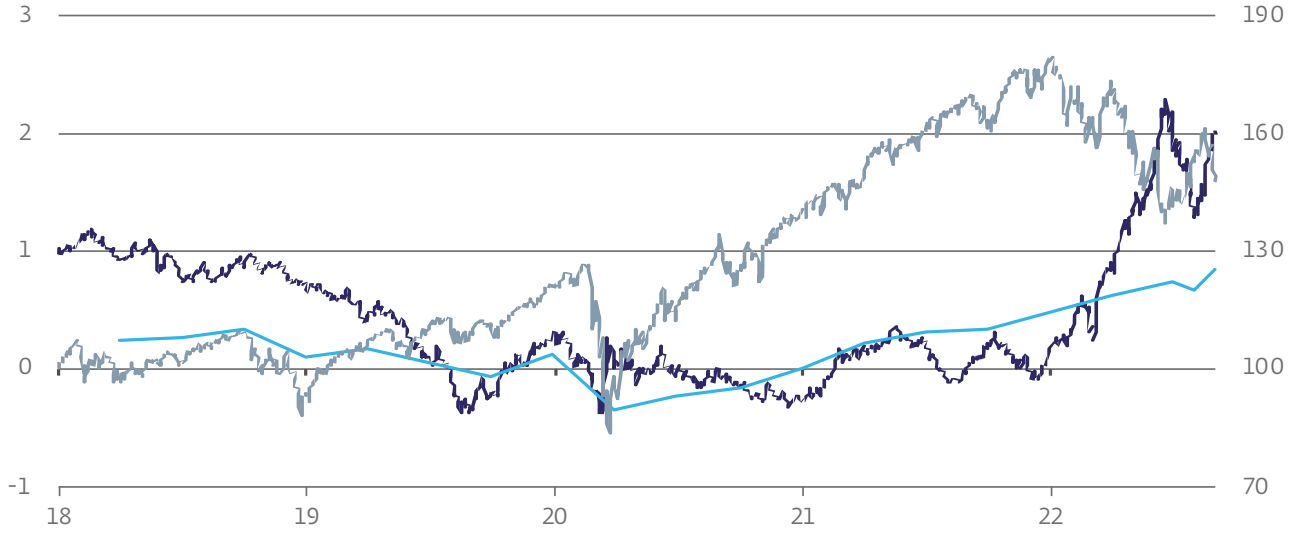
Percentages



Source: DNB supervisory statistics.

Figure 27 Nominal funding ratio is highly dependent on interest rate developments and equity prices

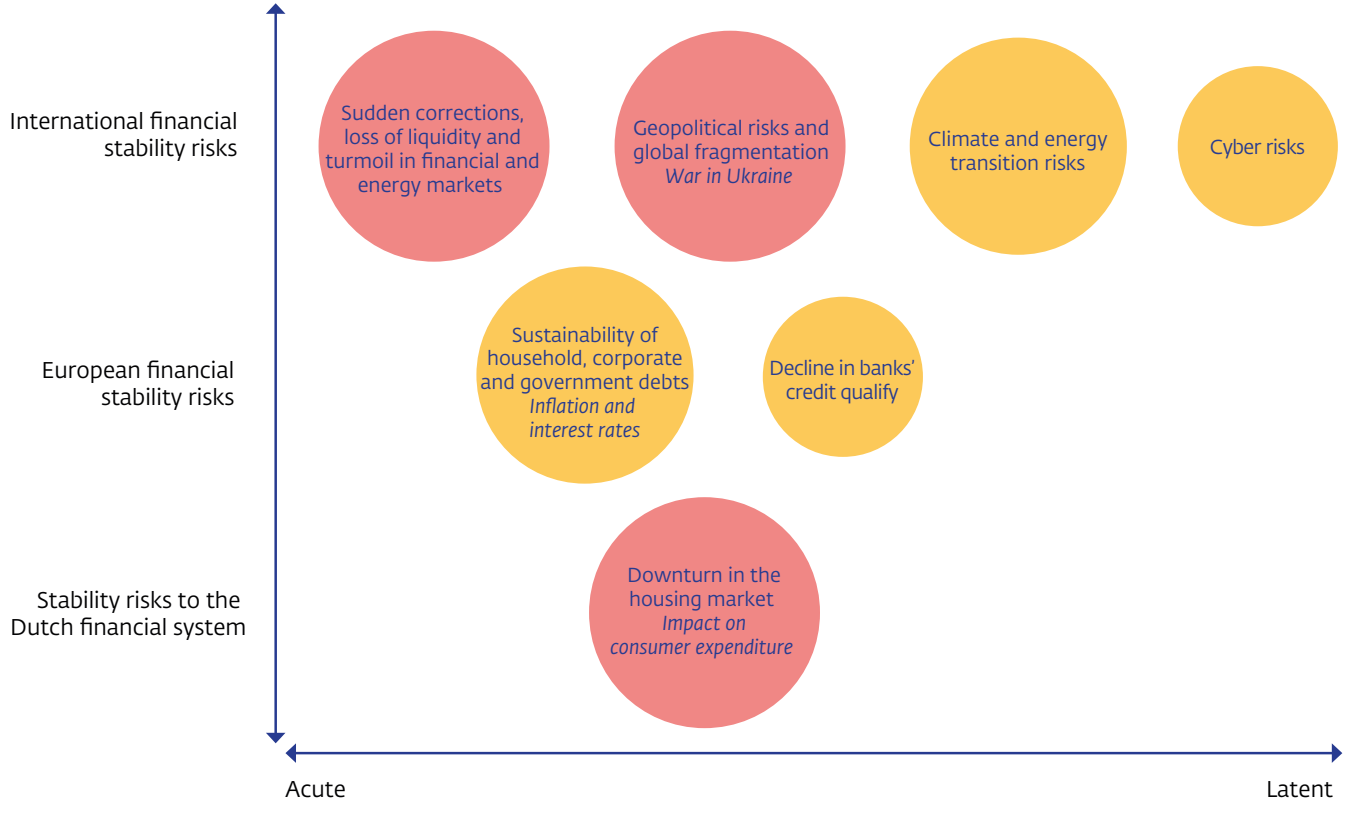
Percentages, index January 2018=100



Sources: Refinitiv and DNB supervisory statistics.

Risk map

Note
The data used in this FSR are separately available in a single data file on dnb.nl, together with an overview of macroprudential indicators. The cut-off date for the data in this FSR is 1 October 2022.



Note
The risk map presents a schematic overview of the main risks to financial stability. The size of the circles reflects the magnitude of risk. The colour of the circles reflects whether, viewed over the medium term, a risk sharply increases (red), moderately increases (yellow), decreases (green) or remains unchanged (grey).

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