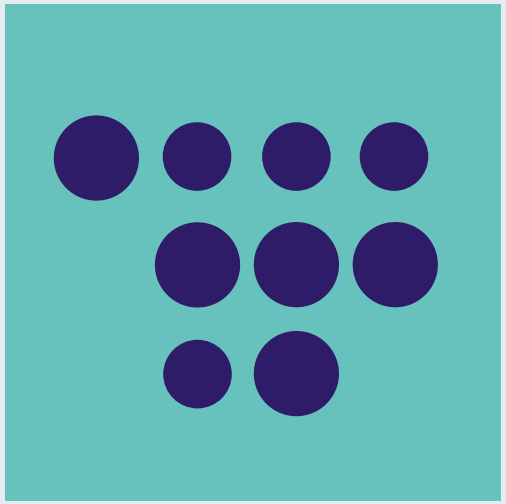
Financial Stability Report

Spring 2020

DeNederlandscheBank

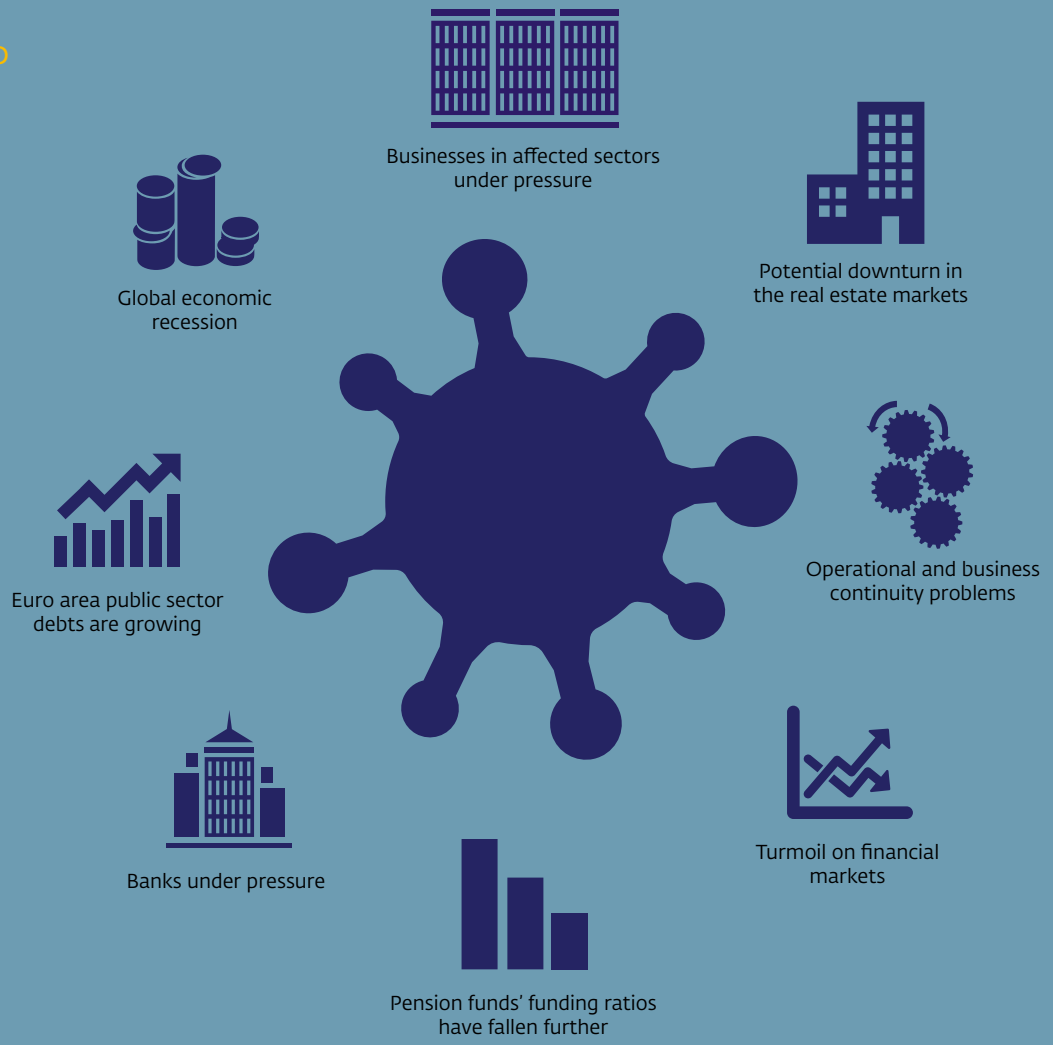
EUROSYSTEEM

Contents



De Nederlandsche Bank (DNB) is responsible for overseeing financial stability in the Netherlands, a task embedded in the Bank Act. Early detection of systemic risks comprises an important part of our financial stability task. Twice a year we publish our Financial Stability Report (FSR). In it, we raise awareness of these systemic risks among stakeholders – financial institutions, policymakers and the general public. The FSR does not provide forecasts, but instead analyses scenarios. Where possible, we use macroprudential instruments and issue policy recommendations to prevent or mitigate the systemic risks identified in the FSR.

Risk outline
Risk map
Pandemic stress test



Risk outline

Introduction

The coronavirus (COVID-19) outbreak has sent an exceptionally severe economic shock through the global economy. Across the world, governments have imposed social distancing rules to prevent the virus from spreading any further. As a result, the production of goods and services has fallen sharply, having come to a virtual standstill in some sectors (supply shock). In addition, social distancing, along with reduced confidence and falling incomes cause spending and investment to be sluggish (demand shock). The economic outlook has deteriorated sharply in consequence. The Netherlands and other European countries are also hit hard and face an economic recession which is expected to be significantly deeper than that resulting from the financial crisis of 2008.

Inevitably, the financial sector is also affected by this economic crisis. An important difference between the current crisis and that of 2008 is that the cause of this crisis does not lie within the financial sector itself. Nevertheless, the financial sector will also be hit hard, especially if the recession should prove to linger. Accordingly, risks to financial stability are increasing as a result of this crisis, both in the short term and in the longer term.

Uncertainty about the economic impact of the pandemic is currently very high. The longer it takes for the virus to be under control and before restrictive measures can be lifted, the greater the economic impact will be. While many countries have recently eased

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their restrictive measures somewhat, the risk of renewed tightening in response to new outbreaks over the coming months is real. Only when there is certainty as to when exactly the virus will be under control can an accurate assessment be made of the eventual economic and financial damage. The open Dutch economy and financial sector complicate making such an assessment.

How does the coronavirus crisis affect financial stability?

The virus outbreak initially triggered sharp corrections in financial markets. For example, the MSCI World Index fell by more than 30% over a five-week period starting in mid-February. Oil prices also fell sharply in anticipation of lower demand for oil. Volatility in the financial markets surged to record levels in March due to nervousness over the pandemic's impact on the global economy. Investors flocked to safe assets, causing risk-free interest rates to decline further and pushing up risk premiums, in particular on high-yield corporate bonds and sovereign bonds from less creditworthy countries. As during the 2008 financial crisis, key funding markets largely dried up for a while.

The sharp market correction manifested itself following a long period characterised by a search for yield and high risk appetites. Equity prices fell from very high levels. High-risk corporate debt markets had grown sharply in both Europe and the United States in recent years, but came to a virtual standstill in March. A number of factors amplified the correction. For example, market liquidity dried up significantly in some market segments. Also, many investment funds, which have played an increasingly important role in the financial system in recent years, had to contend temporarily with massive withdrawals.

Markets have rebounded strongly, but financing conditions are still worse than in early 2020. The policy response of central banks and governments has reversed market sentiment since mid-March, and a significant part of the initial decline in equity prices has now been undone. Divergence between developments in financial markets and in the real economy has widened, with markets appearing upbeat about the speed of economic recovery. In addition, volatility remains high, and some markets are still dysfunctional. Uncertainty about how the pandemic will play out and how it will impact the economy dominate investor sentiment. Further market corrections may take place if sentiment deteriorates or credit ratings of businesses or governments are downgraded (see Financial market volatility and insufficient market liquidity).

Banks are also hit, but are still able to keep up lending to healthy businesses. Banks are facing increasing loan losses, worsened funding conditions and falling revenues. This depresses their profitability, which was already under pressure due to the persistently low interest rates. As a result, prices of European bank shares have almost halved since mid-February. Even so, the Dutch banking sector is more resilient than it was in 2008, when the financial crisis erupted, due in part to the stricter regulations and higher buffer requirements imposed in recent years. At year-end 2019, its capital ratio was 16.9% of risk-weighted assets, which is almost double that of 2008. As a result, the sector can initially cope well with this external shock and help prevent liquidity issues among businesses and households develop into solvency issues. Banks do so by

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granting repayment holidays to businesses and households and providing new loans to solvent businesses, in part under the broadened government guarantee schemes.

As economic recovery takes longer to materialise, banks will suffer more severe consequences and find it more difficult to keep up lending. In the face of this major economic shock, banks inevitably suffer losses and draw down their buffers. Losses increase as the recession is deeper and lasts longer. This has also emerged from the pandemic stress test we conducted. In a severe stress test scenario, with 2020 marked by stronger GDP contraction than in our forecast and 2021 and 2022 seeing some economic recovery, loan losses could reach EUR 23 billion. In this scenario, the Dutch banking sector's core capital ratio, or CET1 ratio, slides 5.5 percentage points until year-end 2022. On the positive side, the banks' relatively high capital ratios enable them to absorb these losses without significant impact on lending levels. By contrast, a more severe scenario features continued strong contraction throughout 2021, with a rebound occurring only in 2022. In this 'perfect storm' stress test scenario, loan losses could mount to EUR 39 billion. Banks will want to scale back lending to businesses and households to limit their losses and prevent their capital ratios from getting uncomfortably close to the minimum requirements. This will hamper the banks in playing their role in financial intermediation, which will amplify the blow dealt to the economy (see A pandemic stress test for the Dutch banking sector).

Insurers and pension funds are also being affected by developments in financial markets. The sharp market correction seen in March and the subsequent flight to quality have severely affected institutional investors, notably on the assets side of their balance sheets as higher-risk asset classes, such as equities, corporate bonds and real estate, in particular, suffered from value losses. Most of all, the already highly vulnerable financial position of Dutch pension funds has further deteriorated as a consequence. Their weighted average funding ratio fell from 104% at year-end 2019 to 91.4% in mid-May 2020. Developments in recent months attest to the fact that the current pension system with its firm commitments for benefits payable in the distant future is unsustainable. This supports the case for an overhaul of the Dutch pension system. Life insurers likewise experience challenging market conditions, due in part to the persistently low interest rates. In response to the coronavirus crisis, Dutch insurers have deferred dividend distribution (see Vulnerabilities of pension funds and insurers).

The coronavirus crisis exacerbates pre-existing macro-financial vulnerabilities. Private sector and public sector debt already peaked before coronavirus and will grow further due to the crisis. The sustainability of this high indebtedness varies widely between countries and sectors. While extensive government support is needed to contain economic damage, medium-term challenges could ensue with regard to debt sustainability. Also, the harmful interaction between banks and governments could resurface in vulnerable countries. A key vulnerability in the Netherlands is high private sector debt. Non-financial corporations face high debts and see their balance sheets deteriorate further. Meanwhile, higher financing costs and credit downgrades push up the

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refinancing risk (see Sustainability of public sector and private sector debt in Europe).

The coronavirus crisis can also take its toll on the financial sector through its impact on real estate markets. The commercial real estate market, which is very sensitive to cyclical fluctuations, is being severely hit in particular. Real estate owners and investors, including pension funds, are losing rental income and face a lower earnings potential. On top of this, sharp price corrections of commercial real estate cannot be ruled out, if only because pre-crisis prices were already at peak levels, while the structural outlook for some real estate categories is clouding even more due to the coronavirus crisis. Banks could incur losses on their real estate loans. The housing market has seen continued robust demand and subdued supply as the impact of the coronavirus crisis will only become visible over time and depend on the depth and duration of the economic recession. Highly indebted households are vulnerable, especially if they face income uncertainty, as is the case for self-employed workers and flex workers. Compared with the 2008 financial crisis, current loan to value ratios for mortgage loans are lower, meaning that homeowners end up underwater less quickly in the event of a house price correction. Given the pre-existing bottlenecks in the housing market, the coronavirus crisis must be prevented from bringing the construction of new houses to a halt (see Downturn in real estate markets).

Policy

With a view to financial stability, preventing the economic crisis from sparking a financial crisis will now be the main challenge in the short run. It is important to minimise damage to the economy and safeguard the soundness of the financial sector. Previous economic crises have shown that a healthy financial sector is an absolute precondition for a strong economic recovery.

Central banks and governments are taking comprehensive support measures to minimise the economic damage caused by the pandemic. To prevent the financial system from amplifying the impact of the coronavirus crisis, central banks have provided large amounts of liquidity to banks and financial markets. The European Central Bank (ECB) extended liquidity provision to banks and introduced the Pandemic Emergency Purchase Programme (PEPP), under which, following the programme's extension, a total of EUR 1,350 billion in sovereign and corporate bonds can be purchased. By 29 May 2020, the ECB had purchased EUR 235 billion in debt securities under this programme. In response to the announcement of the ECB's measures, yields on euro area government bonds fell sharply. Subsequently, bond yields and spreads have grown somewhat due in part to uncertainty about a coordinated policy response by European governments. Governments have announced a wide array of compensation, deferral and guarantee schemes in a bid to prevent liquidity problems among businesses from causing unnecessary business failures and job losses, and thus lasting economic damage. In the Netherlands, public expenditure on these measures is estimated at some EUR 35 billion in 2020. Box 1 lists the relevant measures.

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Box 1 Measures taken in response to the coronavirus crisis

Monetary measures	
ECB	Pandemic Emergency Purchase Programme (PEPP): temporary programme involving private and public debt securities (volume: EUR 1,350 billion).
	Existing refinancing facilities for banks are extended and new facilities introduced (TLTRO and PELTRO).
	Collateral requirements are relaxed.
Budgetary measures	
Dutch national government	Temporary emergency scheme for job retention (NOW): a grant towards 90% of an employer's wage costs.
	Self-employment income support and loan scheme (TOZO): a temporary support scheme for self-employed workers who are experiencing financial difficulties.
	Reimbursement for entrepreneurs in affected sectors (TOGS): a one-time compensation of EUR 4,000 for businesses in the most severely affected sectors.
	Corona: Reimbursement Fixed Costs SMEs (TVL): SMEs that have suffered a turnover loss of more than 30% are eligible for reimbursement of up to EUR 20,000.
	Extension of state credit guarantee schemes for business loans: SME credit guarantee scheme (BMKB-C), Business loan guarantee scheme (GO-C), Small Credits Corona Guarantee Scheme (KKC) and Credit Guarantee scheme for Agriculture (BL-C).
	Tax measures, including tax payment extensions.
	Support for specific sectors, including culture, catering, agriculture, aeronautics, education and sports.
Europe	European Investment Bank Pan-European Guarantee fund mobilising EUR 200 billion; fund facilitating shorter working hours of EUR 100 billion.
	Crisis support by the European Stability Mechanism (ESM) through a dedicated precautionary credit line, to which Member States have access equal to 2% of their GDP (maximum of EUR 240 billion).
	Coronavirus response investment initiative (CRII), based in part on structural funds and the Solidarity Fund (EUR 37 billion).
	Additional SME financing through the EIB Group (EUR 40 billion).
	Temporary relaxation of European budget rules and state aid regulations.
IMF	Raised emergency financing limits, newly introduced liquidity instrument, complementary financing and temporary deferral of debt service payments for low-income countries.
Macroprudential measures	
DNB	Temporary relief by lowering the systemic buffers of the three major banks (capital relief of EUR 5 billion).
	Postponed introduction of a floor for mortgage loan risk weighting (capital relief of EUR 3 billion).
Microprudential measures*	
ECB/SSM in tandem with DNB	Relief based on capital and liquidity requirements: banks are allowed to draw down their buffers, including P2G and LCR and use lower-quality capital sooner to meet the Pillar 2 requirement.
ECB/SSM, DNB, EIOPA, EBA	Recommendations to banks and insurers to refrain from dividend distributions and share repurchases.
ECB/SSM and EBA	Financial institutions can benefit from flexibility in accounting and prudential frameworks. For example, public and private payment moratoria do not automatically trigger classification as forbearance. The EBA has drawn up Guidelines on the criteria.
DNB, SSM, EBA	Various extensions and deferrals: submission deadlines for supervisory reports, EBA stress test, measures concerning internal models (TRIM), on-site inspections and effective dates of SREP requirements.

* See the Dutch-language overview on dnb.nl for a detailed description of the measures.

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Various measures taken by supervisors and governments provide banks more headroom to continue lending. Whereas banks were forced to scale down lending during the financial crisis of 2008, they can now draw down their buffers. Various measures enable them to keep up their lending for the time being. For example, we temporarily lowered the buffer requirements for the large Dutch banks and deferred the imposition of a lower limit for mortgage loan risk weighting announced in October 2019. This frees up a total of EUR 8 billion in capital, which banks can use to support lending. In addition, the ECB and the European Banking Authority (EBA) have allowed flexible compliance with supervisory requirements. Banks have followed up on the ECB's recommendation to refrain from distributing dividends, thereby creating additional room for continued lending. Also, widening the scope of the various government guarantee schemes underpinning corporate loans contributes to maintaining credit availability. Banks have meanwhile provided relief to a large number of businesses and households, including by granting them repayment holidays and issuing additional loans. The guarantee schemes could be made even more effective, for instance by including objective eligibility criteria to assess whether a business is essentially healthy.

Keeping up bank lending cannot be allowed to undermine healthy bank balance sheets. Granting repayment holidays and issuing new loans exposes banks to increased credit risks, which is why they must continue to prepare thorough risk assessments and not take irresponsible risks. While banks may use the room for manoeuvre offered under international standards in applying prudential and accounting rules, they should not disregard underlying problems. Doing so could undermine public confidence in banks. European banking supervision must therefore monitor the permanent adequacy of banks' capitalisation and urge banks to restore their balance sheets as soon as possible after the crisis. After all, sound financial institutions are vital not only to prevent credit contraction during the crisis, but also to support a rapid recovery after the crisis.

Preventing a financial crisis may require further government support to businesses and financial institutions. Banks maintain sufficient buffers to withstand significant stress without having to resort to reduced lending. However, the magnitude of the present shock is much greater than that of shocks assumed in regular stress testing. While government support measures help mitigate risks to the financial sector both directly (through guarantees) and indirectly (through support to businesses and households), additional government measures may be needed in the event of a prolonged recession. For example, a further broadening of government guarantees on corporate loans may limit the risks to banks. Broadly granted guarantees carry the risk, however, of the government shoring up essentially non-viable businesses. This risk can be mitigated by ensuring that banks continue to have a financial incentive for assessing risks thoroughly when granting loans. Additionally, the options for providing more customised additional relief should be explored. Likewise, if it takes long for recovery to materialise, the unhoped-for scenario cannot be ruled out in which banks must be provided with direct support, as was done in the 2008 financial crisis, but with due observance of applicable resolution laws. This would prevent banks from running into such difficulties that lending to businesses and households is jeopardised.

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A powerful joint European policy response could reduce the risk of a renewed European sovereign debt crisis. The extent to which euro area countries are affected by the crisis and the degree to which governments, businesses and households can cope with this shock vary widely across the euro area. Even so, the euro area countries are closely connected economically and financially, creating the need for a coordinated joint approach in order to minimise permanent damage to the euro area economy, keep debts manageable and prevent the crisis from resulting in further divergence within the EMU. First and foremost, the EUR 540 billion emergency package decided upon by the European Council should be made fully operational as soon as possible. Further, agreement must be reached on coordinated European policies in the recovery phase. A recovery fund or joint financial instruments could play a useful role in this.

Integrating the climate agenda into measures aimed at revitalising the economy could prevent the energy transition from being bogged down with concomitant increases in financial risks. Obviously, government support is initially primarily aimed at alleviating acute liquidity problems among households and businesses. In a subsequent stage, however, investment in making the Dutch economy more sustainable, as set out in the Dutch climate agreement, should be integrated where possible with the measures and investment aimed at spurring economic recovery. In a similar vein, sustainability criteria should be imposed on specific emission-intensive businesses receiving government support. Furthermore, strengthening the European Emissions Trading System (ETS) is now even more important. Such measures not only drive economic recovery, they also reduce the risk of the energy transition process suffering delays, which could result in abrupt shocks to the financial system at a later point in time (see Climate and energy transition risks).

It is important to prevent temporary crisis measures taken as part of prudential supervision from becoming permanent. Supervisors have in various ways eased their regulatory requirements, offering scope for flexibility in complying with standards or deferring regulatory reform. Such relief measures should be cancelled in good time so as to prevent them from becoming lasting in nature. The vital reforms of supervisory frameworks that were undertaken in response to the 2008 financial crisis must remain in place to ensure the soundness of the financial sector. The present crisis does not detract from the need for their further implementation. Equally importantly, waiving macroprudential buffer requirements must not result in the structural weakening of capital positions. We will decide on the effective date of the floor for mortgage loan risk weighting later in 2020. As soon as the economic situation has normalised, we will compensate for the lowering of systemic buffer requirements by gradually increasing the countercyclical capital buffer requirements. The advantage of these buffer requirements is that they can easily be loosened in times of crisis. This change in the composition of buffers will be capital-neutral to the maximum extent possible, which will eventually bring the buffer requirements back to pre-crisis levels.

A strategy for exiting from the exceptionally accommodative monetary policy must be in place once the economic situation has normalised. At present, the ECB's policy is

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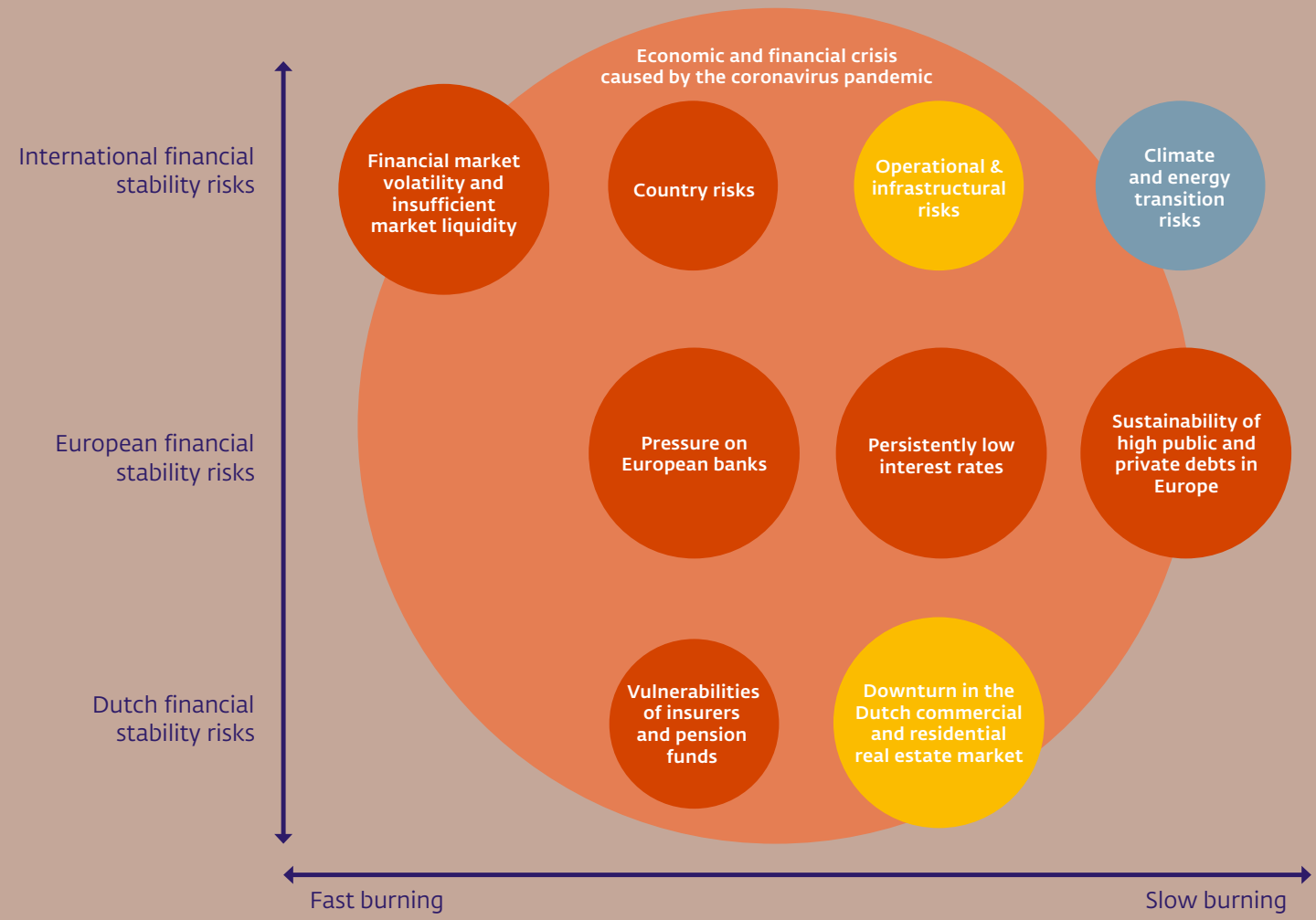
largely focused on responding to the coronavirus crisis, and the ECB announced it would do everything within its mandate to prevent financial fragmentation in the euro area. There are compelling reasons for pursuing this policy in times of crisis, but it further increases dependence on central bank financing. Over the longer term, it is undesirable for governments and banks to become overly dependent on the central bank to finance their debts. As the exceptionally broad monetary policy is maintained longer, risks to financial stability increase and subsequent tightening will be harder, especially given that public sector debt is bound to rise sharply. Accordingly, preparing an exit strategy will be an important first step towards monetary policy normalisation.

Public sector debt will need to be scaled down very gradually in due course. Governments are absorbing a large part of the impact of the coronavirus crisis, as they should when such a severe external shock occurs. They act as insurers of this tail risk, and they can spread the costs over time and across multiple generations. As this crisis is expected to substantially deplete the buffers of businesses and households, reducing public sector debt should preferably be undertaken very gradually in due course. In addition, the widespread uncertainty about the economic fallout of the coronavirus crisis suggests that no drastic budgetary measures should be taken in the next few years. Instead, the automatic stabilisers should, as far as possible, be allowed to operate freely. Governments can increase the sustainability of their debt by strengthening the growth potential of their economy. In some countries, this will require significantly greater efforts than those undertaken in recent years. Within the euro area, an important role as part of this challenge could be played by a simplified Stability and Growth Pact that places more emphasis on debt reduction.

How to read this document
Clicking on a risk will take you to an overview page. There, you can click to go to the Background, Policy and Figures sections.

The figures presented in this Financial Stability Report are also available in a data file on dnb.nl, as is an overview of macroprudential indicators.

The closing date for the figures is 26 May 2020.



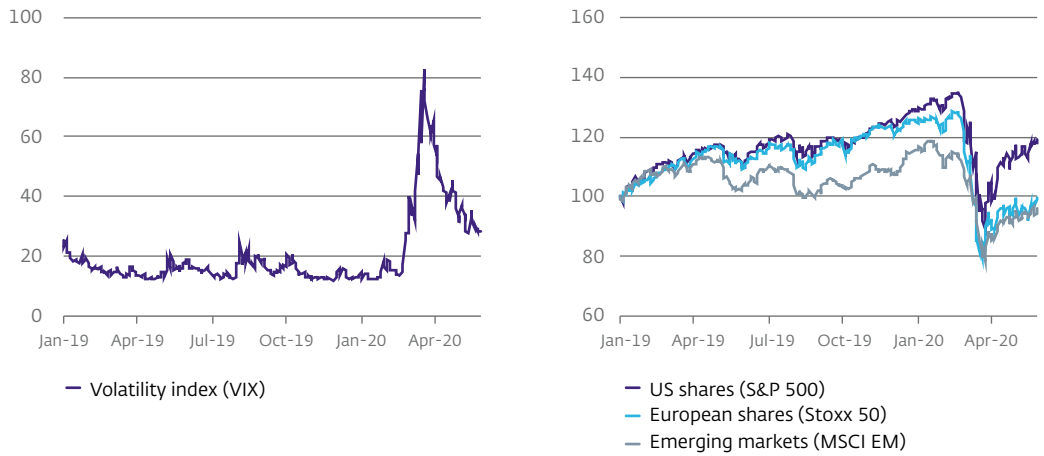
Note
The risk map presents a schematic overview of the main risks to financial stability. The biggest risk shown is that of an economic and financial crisis due to the coronavirus pandemic. Other risks to financial stability are mostly related to the coronavirus crisis. The size of the circles reflects the magnitude of risk. The colour of the circles reflects whether, viewed over the medium term, a risk sharply increases (red), moderately increases (yellow) or remains unchanged (grey).

Financial market volatility and insufficient market liquidity

- Volatility in the financial markets surged to record levels in March and high-risk asset prices fell sharply due to nervousness over the impact of the coronavirus crisis on the global economy (see Figure 1). A flight to quality depressed risk-free interest rates and pushed risk premiums on corporate bonds and sovereign bonds of lower-rated countries sharply up. Additionally, market liquidity dried up significantly in some market segments.
- Financial markets subsequently reached calmer waters, thanks to exceptional fiscal and monetary stimulus, including the introduction of the ECB's Pandemic Emergency Purchase Programme (PEPP) and the Fed's unlimited purchase programme. While a significant part of the initial market correction was made good, financial conditions remain tight.
- The risk of further market corrections and renewed volatility in financial markets remains high amid lingering uncertainty over the pandemic's impact on global growth.

Figure 1 Volatility reached unprecedented levels as coronavirus crisis depressed stock exchanges

Index; Index 1 January 2019=100



Source: Refinitiv.

Financial market volatility and insufficient market liquidity: Background

Financial markets have been in the red since the beginning of the year due to the worldwide spread of coronavirus and uncertainty about its economic ramifications. Stock exchanges plummeted globally in the first quarter. For example, the MSCI World Index fell by more than 30% in just five weeks starting in mid-February. Circuit breakers were regularly activated, temporarily shutting down stock trading due to large price movements. European stock exchanges at the end of February recorded the worst weekly result since the credit crisis (see Figure 2). Bond markets were also severely affected by the souring market sentiment and a flight to quality. Risk premiums, in particular from high-yield corporate bonds and sovereign bonds of lower-rated countries in the euro area, went up sharply. Additionally, market liquidity dried up significantly in some market segments. In particular, sovereign and high-yield corporate bond markets in the United States grappled with drying liquidity. The US and euro area primary markets for corporate bond issuance were inactive for some time in March. In particular, the speed at which the market correction occurred in the first quarter and spread across various market segments was unique in several respects. As of yet, however, the overall slump in asset prices during the first months of the coronavirus crisis has been less dramatic than during the credit crisis (see Figure 3).

Central banks have taken exceptional measures in response to the pandemic. In efforts to mitigate the economic damage caused by the coronavirus outbreak, central banks announced substantial support measures in rapid succession. In March, the Fed reduced the federal funds rate by as much as 1.5 percentage points in two steps, to 0-0.25%, in addition to announcing the launch of a new purchase programme. The programme would initially involve USD 500 billion in sovereign bonds and USD 200 billion in mortgage debt, but the Fed later widened its scope, turning it into an unlimited purchase programme. To ease strains in the money markets, the dollar swap line arrangements between the Fed and other central banks were also expanded. In April, the Fed announced another package of measures to support the economy, greatly expanding its lending capacity in terms of both volume and eligibility. The ECB likewise took a range of measures from March onwards. The existing purchase programme was increased by a EUR 120 billion envelope until the end of 2020, on top of the previously announced monthly purchases of EUR 20 billion. It also launched its Pandemic Emergency Purchase Programme (PEPP), involving potential purchases totalling EUR 1,350 billion in sovereign and corporate bonds following its extension in June 2020. Other central banks also introduced supplementary measures. Their policy responses to the coronavirus outbreak followed earlier easing in the second half of 2019, when rising trade tensions and concerns about the world economy depressed the outlook for inflation.

Financial market volatility and insufficient market liquidity: Background

Amid robust recovery in financial markets, financial conditions have as yet remained tighter than at the beginning of 2020. The policy response of central banks and governments has reversed part of the market sentiment since mid-March. In response to the monetary stimuli, yields on euro area government bonds fell sharply while spreads narrowed (see Figure 4). In the meantime, a significant part of the initial share price correction has been made good, especially in the United States. Even so, volatility remains high, and some markets are still not functioning the way they were. Uncertainty about how the pandemic will play out and impact the economy is unsettling investors.

The sharp market correction followed a long period characterised by a search for yield and high risk appetite. Encouraged by low interest rates and accommodative monetary policies, many investors have ventured into ever riskier asset classes, causing almost continuous and sustained growth in asset prices and valuations. As risk appetite among investors remained high for a long time, even when the economic outlook clouded and corporate fundamentals weakened, the financial system became increasingly vulnerable to a change in sentiment.

The high risk appetite in the run-up to the coronavirus crisis has boosted risky high-yield corporate debts. For example, the proportion of lower-rated corporate bonds has been increasing for a long time (see Figure 5), and both the European and US markets for high-risk corporate debt have grown sharply in recent years. The booming leveraged lending market is another noticeable feature. Leveraged loans are loans with a heightened risk profile, extended to businesses that are less creditworthy or already heavily depend on debt financing. Bank of England figures show that this market grew by 30% to a total size of USD 3.4 trillion between 2016 and 2019. In developed countries, it now accounts for 11% of credit extended to non-financial corporations. In a worrying development, credit standards have eased in recent years, while leverage on the loans has increased on average (FSB, 2019). The average size of leveraged loans issued in 2019 stood at 5.4 times the operational cash flow (EBITDA), which is higher than during the peak in the run-up to the credit crisis (Bank of England, 2019). High-risk corporate debts have been hit hard by the coronavirus crisis due to mounting concerns over their sustainability.

The sizeable net outflows from investment funds have amplified the substantial correction in financial markets. Investment funds have grown significantly since the financial crisis. Accordingly, they play a bigger part in financial markets than before. Investment funds have increasingly favoured securities that are less liquid and carry higher risks in recent years, while cash buffers have been declining across

Financial market volatility and insufficient market liquidity: Background

the sector (IMF, 2019). In March, large outflows from investment funds were seen in both the United States and Europe as investments were redirected in large volumes towards lower-risk assets (see Figure 6). The largest outflows were from funds investing in less liquid corporate bonds with relatively high risk profiles. The outflows from investment funds have amplified the downward adjustment in financial markets. As investors in open-ended investment funds have the option of liquidating their investments, funds that face a liquidity mismatch could be forced to wind up their less liquid positions in a fire sale to meet their obligations, thereby amplifying a previously initiated price correction. In the Netherlands, outflows from investment funds were relatively limited, as most investments originated from pension funds. Exchange-traded funds (ETFs), by contrast, experienced substantial outflows.

Due to the widespread uncertainty about the economic consequences of the coronavirus pandemic and policy uncertainty in other areas, further market corrections cannot be ruled out. Investor sentiment will largely depend on the dispersion of the pandemic and the extent to which fiscal and monetary stimuli succeed in limiting its impact on the economy. In addition, a downgrading of BBB-rated bonds can in particular create volatility, as it may force many investors to sell these bonds, given that these will no longer have investment grade status. In addition to nervousness over the coronavirus crisis, there are various global uncertainties that can also prompt a sudden souring of investor sentiment. For example, a disorderly Brexit or re-escalating trade tensions between the United States and China can make sentiment turn negative (see also Country risks). Similarly, other geopolitical conflicts can ignite renewed risk-off sentiment among investors.

As financial markets recovered in the wake of the sharp market correction, their divergence with the real economy increased. For example, in April, US stock exchanges rallied in their best month since 1987. Meanwhile, economic prospects deteriorated and unemployment rates increased rapidly. The upswing in financial markets is strongly driven by monetary stimulus. This could create a stark divide between the prices of high-risk assets and their fundamental values based on the actual state of the economy. Increasing divergence between financial markets and the real economy poses the risk of renewed disorderly market corrections, for example if the pandemic resurges in a new wave of infections.

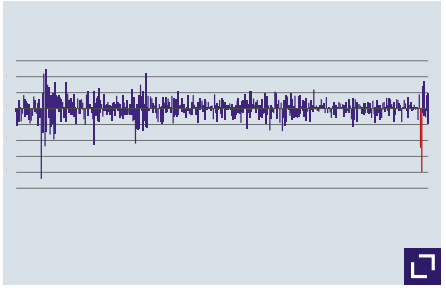
Financial market volatility and insufficient market liquidity: Policy

Investors and financial institutions need to be prepared for further market corrections, as financial markets are moving to find a new equilibrium. The economic consequences of the coronavirus crisis will play out more clearly over the coming months. To a large extent, developments in financial markets will therefore depend on the further dispersion of the pandemic and the policy responses of governments and central banks. If it takes longer for the virus to be under control and if its economic impact is greater than financial markets have priced in, volatility in financial markets will flare up. For this reason, financial institutions should take into account different scenarios as part of their risk management, for example by conducting stress tests to assess the impact of potential shocks. Moreover, they must be aware of the fact that they cannot rely on their existing risk management frameworks as these may not take sufficient account of the unique specificities of the current crisis.

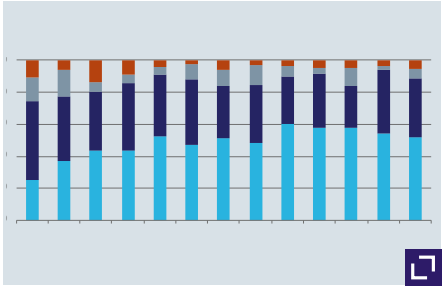
While exceptional monetary stimulus is needed in response to the coronavirus crisis, it increases dependence on central bank policies. The dominant position of central banks in the financial markets has caused the interrelation between the price formation of different assets to increase, as market participants are now more sensitive to central bank policies than before. The high dependence on central bank policies also increases the risk of sudden outliers when the prevailing market view changes.

Risk outline
Risk map
Pandemic stress test

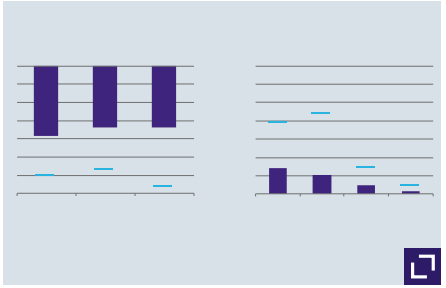
Financial market volatility and insufficient market liquidity: Figures



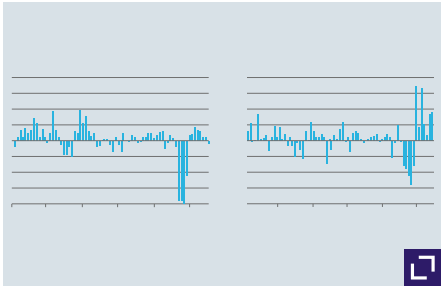
During the coronavirus crisis the European stock exchanges recorded their worst weekly result since the credit crisis
See figure 2 →



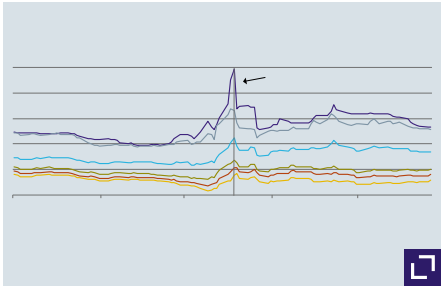
Issuance of lower-rated corporate bonds has increased in EU
See figure 5 →



Market correction prompted by coronavirus crisis affects high-risk assets, but asset price declines have not yet reached levels seen in the credit crisis
See figure 3 →



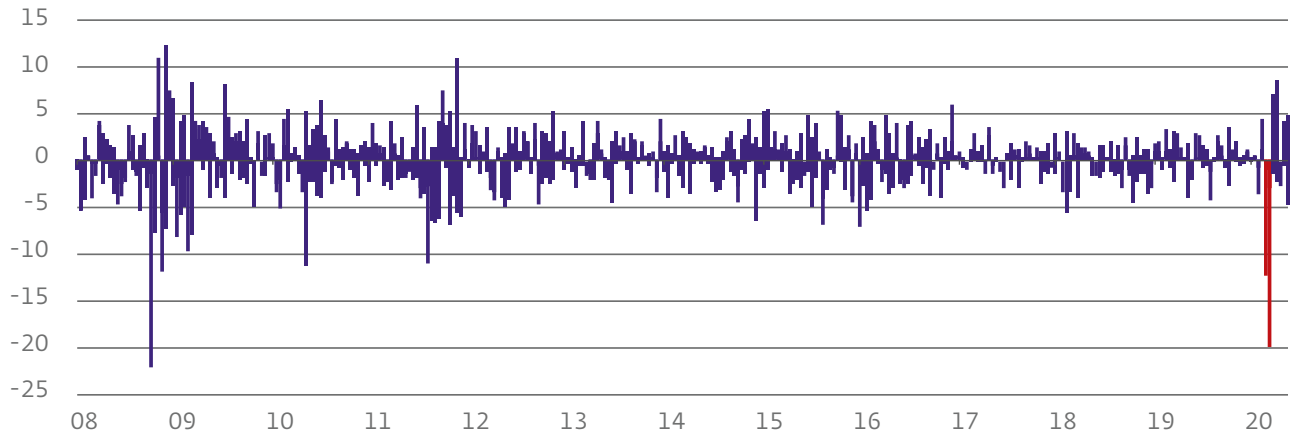
Sizeable outflows from investment funds driven by risk-off investor sentiment
See figure 6 →



Sovereign bond yields fell following introduction of Pandemic Emergency Purchase Programme
See figure 4 →

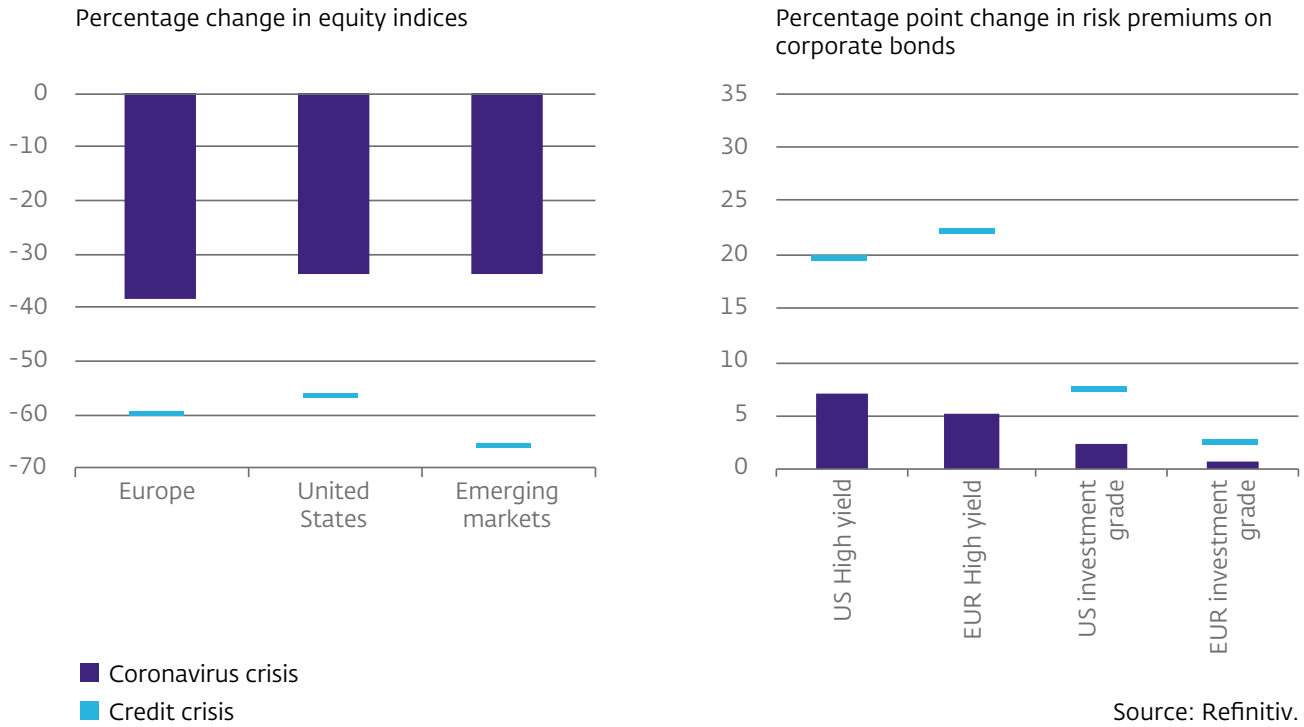
Figure 2 During the coronavirus crisis the European stock exchanges recorded their worst weekly result since the credit crisis

Percentage price change per week



Source: Refinitiv.

Figure 3 Market correction prompted by coronavirus crisis affects high-risk assets, but asset price declines have not yet reached levels seen in the credit crisis



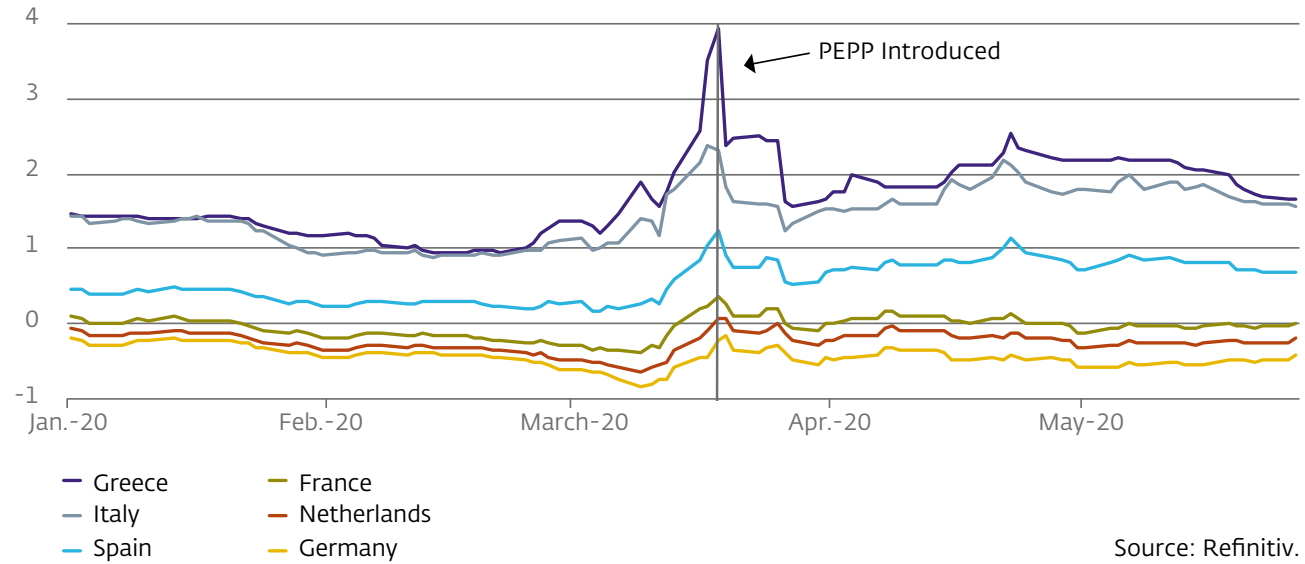
Source: Refinitiv.

Notes: The chart shows the peak-to-through difference in the financial crisis (measured from 2007 to 2009) and the coronavirus crisis (measured in 2020 to date). Risk premiums compared with one-year treasury bonds (US) and five-year German government bonds (EUR).

Risk outline
Risk map
Pandemic stress test

Figure 4 Sovereign bond yields fell following introduction of Pandemic Emergency Purchase Programme

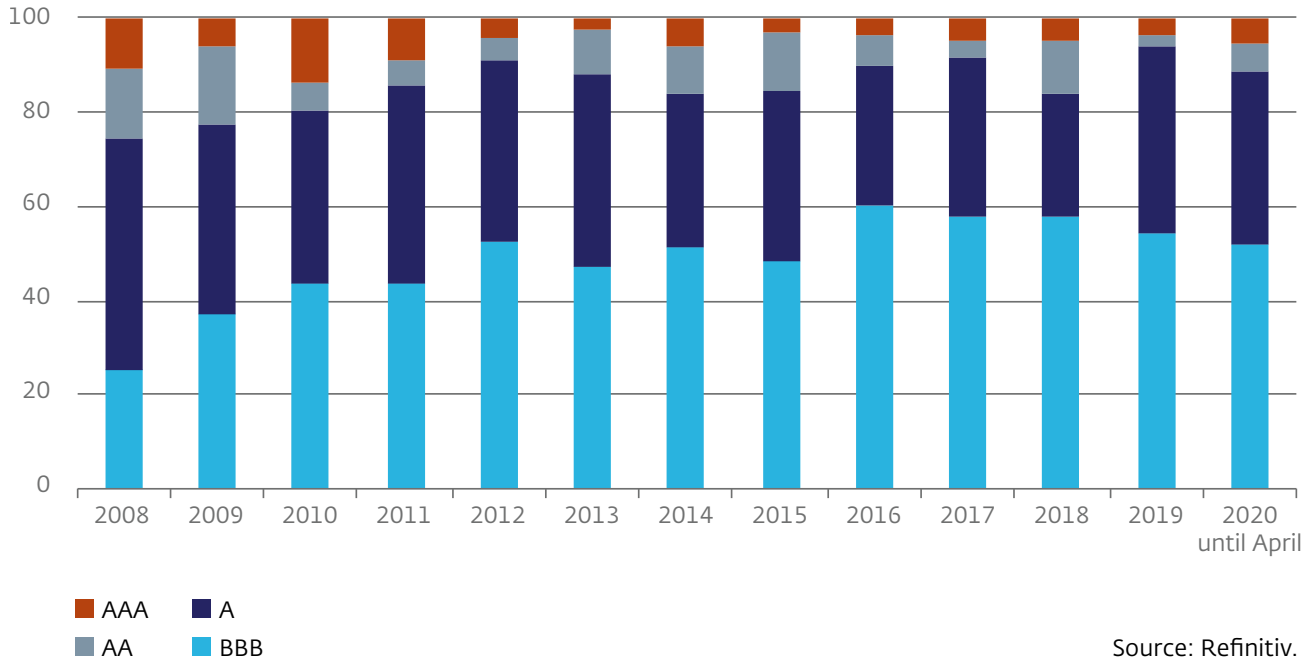
Percentages; yield on ten-year sovereign bonds



Source: Refinitiv.

Figure 5 Issuance of lower-rated corporate bonds has increased in EU

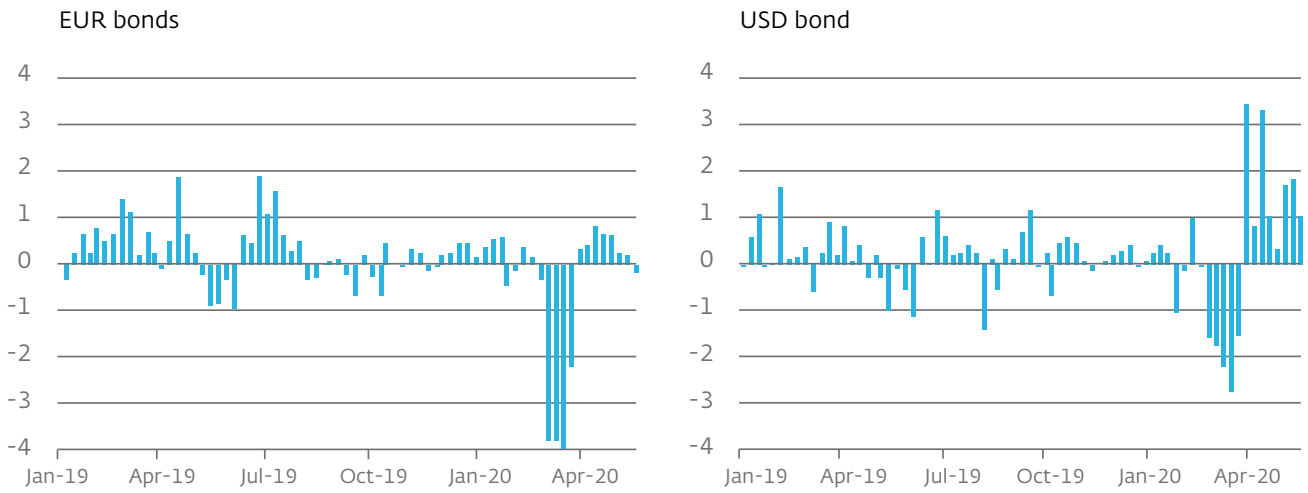
Percentage of new issuance of investment grade corporate bonds per year



Source: Refinitiv.

Figure 6 Sizeable outflows from investment funds driven by risk-off investor sentiment

Percentage of weekly inflow in assets under management



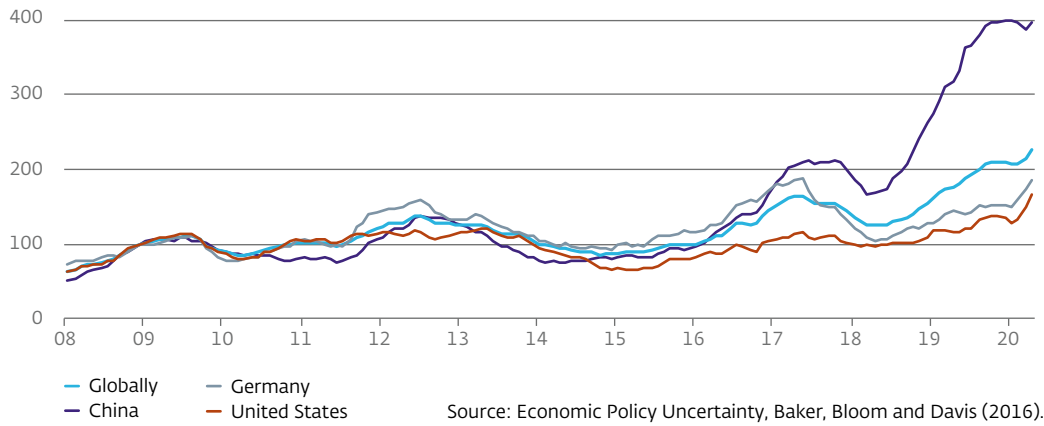
Source: Refinitiv (Lipper).

Country risks

- The economies of several countries that have a major impact on global growth, such as China and the United States, have been hit hard by the effects of the global coronavirus outbreak.
- Structural vulnerabilities had already developed in these countries over the past years. The United States is characterised by high public and corporate indebtedness. In China, high corporate debt and rapidly growing household debt are particularly problematic, including for the Chinese banking sector.
- Emerging economies have seen unprecedented capital outflows as a result of the coronavirus crisis.
- Global policy uncertainty is high (see Figure 7). Geopolitical risks stem from tensions in the Middle East, the oil conflict between Russia and Saudi Arabia, and trade tensions and increasing protectionism. In Europe, uncertainties surrounding Brexit and the future relationship between the EU and the United Kingdom pose risks to financial stability.

Figure 7 High policy uncertainty worldwide

Index 1 January 2008=100; 12-month moving average



Source: Economic Policy Uncertainty, Baker, Bloom and Davis (2016).

Risk outline
Risk map
Pandemic stress test

Country risks: Background

Developments in individual systemically important countries are also of relevance to the Dutch financial system. Dutch financial institutions have significant exposures abroad. For example, as much as 87% of Dutch pension funds' investments are located abroad. Adverse events abroad can trigger loan losses and rising risk premiums in the country concerned, thereby causing Dutch financial institutions to face losses on their investment portfolios. In addition to this direct impact, adverse events abroad can also have an indirect impact, for example if they trigger a downturn in the prevailing market sentiment or result in lower global economic growth.

Global impact of the coronavirus crisis

The global coronavirus outbreak has a major impact on the economies of countries such as the United States and China, which drive global growth. The virus outbreak was not limited to a specific region but spread rapidly across all continents. As a result, its global economic impact is significant. In China, which was the first country to face the coronavirus outbreak, the impact on economic growth appears to be significant. Consumer and business expenditure in January and February were roughly 20% to 25% lower than they were a year earlier, while industrial output fell by almost 15%. The Chinese economy contracted by 6.8% in the opening quarter relative to that of 2019. No rapid recovery is in sight as demand for Chinese goods has fallen sharply, notably from the United States and the EU. Ultimately, the impact will therefore largely depend on how developments play out at a global level. The US economy has also been badly bruised by the coronavirus crisis. Its flexible labour market, high proportion of small businesses and strong dependence on the services sector make the US economy relatively vulnerable to the economic consequences of the pandemic. This vulnerability is reflected in the sharp rise in unemployment and the number of jobless claims. The impact on disposable incomes is significant, partly due to limited unemployment insurance in the United States.

Prior to the coronavirus crisis, corporate debt grew sharply in several countries, among which the United States and China. Corporate debt increases have outpaced GDP growth in the United States since 2012. Since early 2012, debts of US non-financial corporations rose by 54%, or more than 9% of GDP. Bank of England figures show that the issuance of leveraged loans has also grown rapidly in the United States in recent years, significantly faster than in Europe and the rest of the world. Total leveraged loans outstanding in the United States grew from USD 600 billion in 2008 to USD 1,150 billion by year-end 2019. The eruption of the coronavirus crisis and the resulting flight to quality caused interest rates on high-risk corporate debt to rise rapidly (see Figure 8). Investors have misgivings about the sustainability of US corporate debt, especially

Country risks: Background

in the higher-risk segment. In China, too, corporate debt has grown sharply in recent years. The rapid accumulation of debt is accompanied by lower profitability among Chinese companies, pushing up the debt service ratio (i.e. the ratio of debt payments to income) of the non-financial sector to 20% in 2019, from 11% in 2008. The growth in the Chinese shadow banking sector plays an important role in the increase in Chinese lending and poses a risk to financial stability.

In the euro area, Italy and Spain were the hardest hit by the coronavirus pandemic, with the financial situation, particularly in Italy, already causing serious concern before. In March, risk premiums on Italian sovereign debt increased sharply. Once financial markets had reached calmer waters following the ECB's announcement of the Pandemic Emergency Purchase Programme (PEPP), risk premiums fell back temporarily. From an economic perspective, the effects of the coronavirus could not come at a worse time for Italy, given that there had been concerns about budgetary sustainability before, both in the short and medium term (see Sustainability of public sector and private sector debt in Europe). Moreover, the Italian economy has limited scope for recovery as the country has a relatively low growth potential.

Emerging countries

Emerging countries experience major capital flight caused by the coronavirus crisis. Capital outflows from emerging markets between the end of January and the end of March even outstripped those during the 2008 credit crisis. Emerging countries' currencies have been under severe pressure since the beginning of the coronavirus crisis (see Figure 9). A further notable feature is the large number of countries affected by capital outflows. Many debts in emerging economies are denominated in US dollars, which has fuelled doubts about their sustainability and caused the refinancing risk to rise rapidly.

The sharp decline in commodity prices is severely affecting a number of emerging countries. The decline eliminates part of the dollar revenues from commodities, while at the same time making it more difficult to meet dollar-denominated liabilities. In particular, commodity producing countries such as Brazil, Colombia, Mexico, Russia and Saudi Arabia are hit by sliding commodity prices.

Many emerging countries are on a weaker footing than they were in the run-up to the financial crisis. Debt levels have risen sharply in recent years and average credit ratings are lower (IMF, 2020). The policy scope of many emerging countries is limited, as policy interest rates are low and high debt levels limit the scope for fiscal stimulus. In addition, emerging countries increasingly depend on foreign investors to finance their debt, and reliance on external financing has increased.

Country risks: Background

The IMF has rolled out a wide range of crisis assistance packages. For example, it has temporarily widened access to emergency financing, introduced a new precautionary and liquidity line and taken a range of measures aimed at assisting its poorest members. Over one hundred countries have already applied for emergency financial assistance, more than half of which has been approved. Given the unprecedented capital outflows from emerging countries, it is these countries in particular that rely on emergency funding. In addition to applying for rapid emergency financing to cope with the immediate impact of the health crisis, they can still benefit from the IMF's longer-term financial assistance as part of a conventional economic reform programme.

Trade tensions

Trade tensions between the United States and China have eased due to the Phase One trade deal, but relations between the two countries remain strained. Over the course of 2019, the trade dispute between the United States and China exceedingly escalated, with mutual import tariffs and trade curbs being imposed. Trade tensions, especially if they are permanent, can cause serious harm to global economic growth (IMF, 2019). The Phase One trade deal reached in January 2020 relieved trade tensions between the two countries. In particular, the agreement spares the large Chinese manufacturing industry, while the US agriculture and industrial sector should benefit from growing Chinese imports. Mutual trust remains fragile nevertheless, due also to controversy over the origin of the coronavirus.

Renewed protectionism equally poses a major long-term risk to the global economy, and policy uncertainty remains high. Even after the Phase One trade deal, a large proportion of the US and Chinese import levies remain in place. In fact, import tariffs and the volume of qualifying imports have barely fallen since the deal was concluded. As long as further implementation and compliance are uncertain, trade tensions can resurface, and the scope for follow-up negotiations will be limited. Many sensitive issues were not addressed in the Phase One deal. Besides trade tensions, the upcoming presidential elections in the United States also create policy uncertainty, given that it is unclear what the US administration's stance will be in the years ahead.

Brexit

Brexit continues to pose a threat to financial stability. Early Lower House elections and a Tory victory in December 2019 ensured a majority in favour of the withdrawal agreement with the EU. This paved the way for the UK's departure from the EU on 31 January 2020, after which a transition period started that will last to the end of 2020. This has, however, not put an end to uncertainties surrounding Brexit. Before the year is out, the UK and the

Country risks: Background

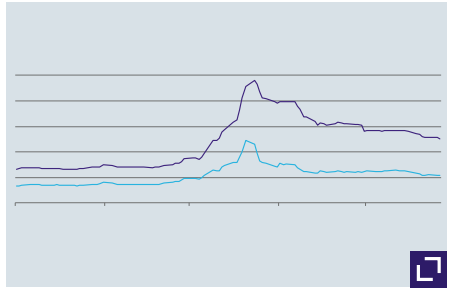
EU should reach agreement on how to shape their future relationship. Nervousness over the post-Brexit relationship and a possible trade cliff pose a risk to financial stability. Moreover, as policymakers and politicians focus their attention on the coronavirus crisis in the EU and the UK alike, the timelines for concluding a timely trade agreement due to enter into force by 2021 have come under even more pressure. A disorderly Brexit could inflict substantial losses on institutions with sizeable investments in the UK or exposure to firms directly hit by the absence of a trade deal. The Dutch financial sector's direct exposure to the UK is roughly 4% of its total exposure. Pension funds have the largest investment exposure to the UK, at 5% of their total exposures. Also, financial institutions should continue to prepare for the scenario of significantly reduced reciprocal market access as of 2021. For example, there is still a lack of clarity about European financial institutions' access to UK-based central counterparties (CCPs) from 2021 onwards.

Country risks: Policy

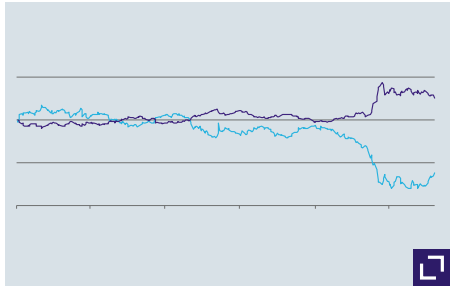
Financial institutions must identify and mitigate country risks as part of their risk management. We pursue a policy aimed at mitigating financial institutions' concentration risk related to emerging countries, but the emphasis is on financial institutions' own responsibility to manage concentration risk. It is up to them to assess the level of country risk they are running on their exposures, and which supplementary risk controls, such as specific concentration limits, are needed. Both we and the ECB may, however, impose additional requirements on individual banks, for example if they have a heightened risk profile. We apply various policy rules to curb the risks of exposure to emerging economies. In case of a material concentration of exposures to an emerging country, banks are required to hold additional capital. We also apply a maximum to exposures to countries that are not part of the European Economic Area (EEA) relative to the deposits guaranteed in the Netherlands. The ECB can impose institution-specific measures with regard to country risks on banks subject to European supervision. Likewise, we can impose risk mitigation measures on pension funds and insurers if their country and concentration risk management is inadequate.

Financial institutions must continue to prepare for a lack of agreement on the future relationship between the UK and the EU and the expiry of transitional arrangements, even after the UK's final departure from the EU. The financial sector has been working to prepare itself for different Brexit scenarios, which has significantly reduced the financial stability risks of a disorderly Brexit. Nonetheless, numerous uncertainties remain about the future relationship between the UK and the EU, which will be negotiated during the transitional period. In addition, many arrangements are of a temporary nature. Financial institutions must therefore continue to prepare for a possible "hard" exit from the EU and the expiry of temporary arrangements. The coronavirus outbreak has increased the urgency of such preparations as policymakers are lending priority to combating the crisis. As a consequence, negotiations between the EU and the UK on their future relationship may well show few signs of progress. Financial institutions are therefore well advised to factor in the risk of a no-deal Brexit at year-end 2020.

Country risks: Figures



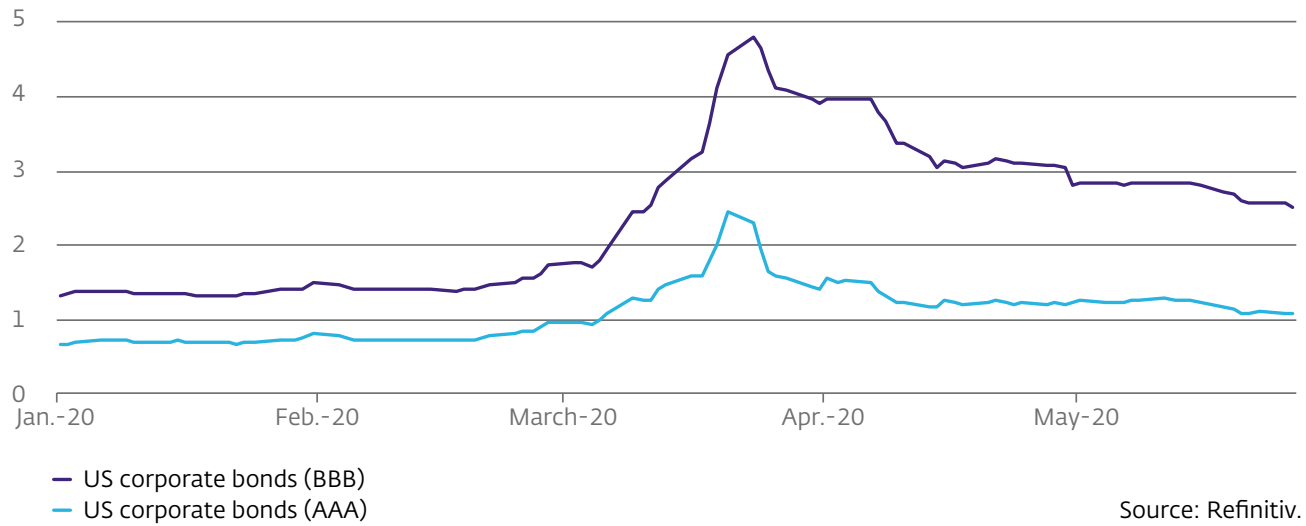
Spreads on US corporate debt instruments surged as concerns about debt sustainability mounted due to coronavirus crisis
See figure 8 →



Currencies of emerging countries fell sharply versus the US dollar
See figure 9 →

Figure 8 Spreads on US corporate debt instruments surged as concerns about debt sustainability mounted due to coronavirus crisis

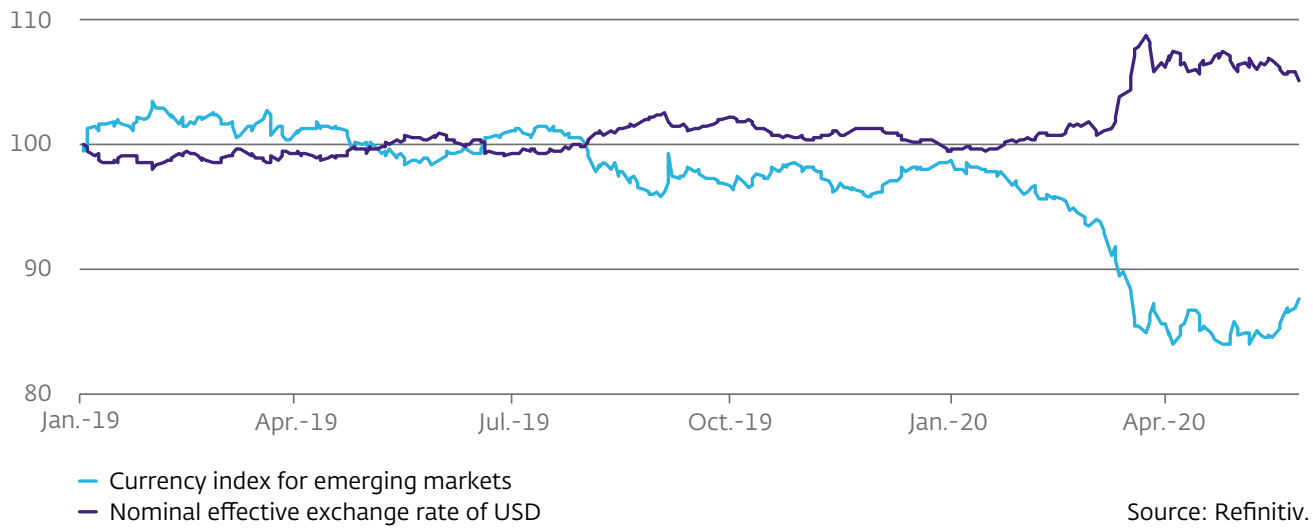
Percentage; discrepancy from 10-year Treasury paper



Source: Refinitiv.

Figure 9 Currencies of emerging countries fell sharply versus the US dollar

Index 1 January 2019=100



Source: Refinitiv.

Risk outline
Risk map
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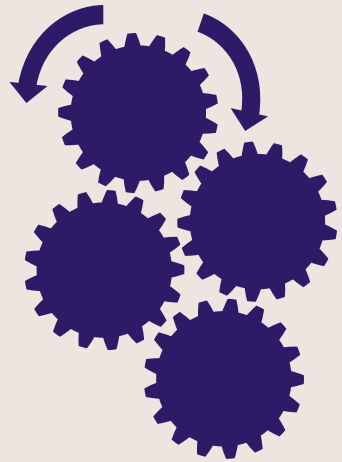
Operational & infrastructural risks

- The coronavirus crisis leads to an increase in operational risks that can affect business continuity. For example, cybercriminals attempt to exploit the fact that many employees are currently working remotely and need to connect to their institutions' systems.
- Increasing dependence on online services makes the financial sector more vulnerable to cyberattacks. Financial institutions must never cease investing in their digital resilience and must apply multi-layered cyberdefence systems. To enhance cybersecurity, we conduct hack tests together with financial sector participants.
- Technological innovation spurs the introduction of new products and services and affects the business models of traditional financial institutions. However, the coronavirus crisis acts as a drag on investment in the fintech sector, which could bring the rapid growth of fintech companies to a halt. At the same time, new opportunities for fintechs present themselves. The coronavirus crisis illustrates the need for digital transition to bolster the financial system, and fintechs could play a major role in driving innovation.



Risk outline
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Operational & infrastructural risks: Background

Business continuity

The coronavirus can affect the business continuity of financial institutions and requires a different approach from conventional continuity processes. Business continuity plans are typically designed to restore critical business processes after relatively brief disruptions caused by natural disasters, power failures or terrorist attacks. However, the effects of the coronavirus outbreak may well disrupt business plans for months, or even years in a severe scenario. Due to the coronavirus crisis, financial institutions are confronted with staff absenteeism due to employee illness (either their own or of a family member) or fear of contamination. Quarantine measures imposed by the authorities and aimed at preventing or limiting the spread of infection can bring business activities to a standstill in buildings or even entire geographical regions. Because of the cross-border impact, it will not always be possible to ensure the continuity of critical operational processes in fall-back locations. Lastly, the coronavirus crisis can also complicate decision-making processes within financial institutions.

Cyberattacks

Cybercriminals and state actors use the corona crisis and adapt their attacks. Cybercriminals try to spread malware through phishing emails about the coronavirus in attempts to profit from the fact that many workers are currently working remotely and need to connect to their institution's systems. Distributed denial of service (DDoS) attacks have also been detected at financial institutions. Actors that are linked to nation states are also active. Their main focus is on gathering information about policy plans addressing the coronavirus pandemic before they are disclosed, and on obtaining data from widely used digital facilities such as video services for espionage purposes.

Increasing dependence on online services makes the financial sector more vulnerable to cyberattacks. Working internet connections and remote services are exceedingly vital. Protracted payment service disruptions or interruptions in online service provision by financial institutions can harm trust and damage financial stability. In addition, data are rapidly gaining importance. This makes financial institutions more vulnerable to cunning cybercriminals and state actors trying to obtain data from customers, intellectual property or information for corporate takeovers. Lastly, financial institutions increasingly outsource parts of their critical business processes to third parties. Cybercriminals and state actors seek to gain access to financial institutions' systems by using these third parties as a springboard.

Fintech

Technological innovation spurs the introduction of new products and services and affects the business models of traditional financial institutions. Technological innovation fuels competition in the financial sector, thereby promoting diversity. However, it can also drive

Operational & infrastructural risks: Background

volatility in financial markets, for example if multiple investment services simultaneously issue algorithm-based buy and sell advice. Traditional financial institutions such as banks typically team up with start-ups, whose threat to existing business models has therefore been limited as yet. However, BigTechs, such as Facebook, Apple, Google, WeChatPay and AliPay may eventually offer a wide range of regulated financial services in Europe, putting further pressure on the business models of traditional financial institutions.

The fintech sector faces both challenges and opportunities from the coronavirus crisis. The coronavirus crisis acts as a drag on investment in the fintech sector, which could bring the rapid growth of fintech companies to a halt. In times of uncertainty investors tend to allocate their funds to incumbent, profitable firms. Global financing declined significantly as a result in the first quarter of 2020. At the same time, new opportunities for fintechs present themselves.

The coronavirus crisis illustrates the need for digital transition to bolster the financial system, and fintechs could play a major role in driving innovation, notably in such areas as remote onboarding, cybersecurity and combating fraud. Besides, the Dutch fintech sector focuses on business-to-business customers to a larger extent, meaning it is expected to be less affected by declining consumer confidence.

According to the IMF, China's experience shows that fintech can also help to mitigate the economic impact of the coronavirus crisis. Chinese authorities have called on fintechs to provide credit to small businesses affected by the coronavirus crisis. Chinese banks are encouraged to use artificial intelligence and big data to analyse credit risks. Lastly, several fintechs have launched products that help households monitor the dispersion of the COVID-19 virus. For example, Alipay and WeChatPay offer epidemic trackers, integrated into their digital services.

More information

- In our report Transforming for trust, we describe how the market for lending, saving and paying is evolving as data become ever more important.
- In the Annual information security monitor, we discuss findings from investigations into information security at financial institutions. Given the current circumstances, it also reflects on the specific risks that have emerged due to the COVID-19 pandemic.

Operational & infrastructural risks: Policy

Business continuity

In the light of the coronavirus crisis, financial institutions must, where necessary, take additional measures with regard to business continuity management. During the coronavirus crisis, we monitor the business continuity management of financial institutions more closely. For example, we have asked them how they have safeguarded their business continuity management and what impact they expect the crisis to have on their business model. We expect financial institutions to proactively monitor developments surrounding the virus and to identify and mitigate its impact where possible. Safeguarding management decision-making is crucial in this respect.

Cyberattacks

It is exceedingly important for financial institutions to invest in multi-layered cybersecurity. Financial institutions are required to invest continuously in their digital resilience. In doing so, they must look not only at the outer boundaries of their organisations as chances are high that attackers will at some point succeed in penetrating these. This makes it all the more important to closely monitor and detect activity within an institution's own network. Mission-critical internal applications and systems, often referred to as crown jewels, require an extra layer of protection. In addition, unrelenting attention is needed to the risks and effectiveness of risk management practised by outsourcing partners. With outsourcing now ubiquitous and interconnectedness in the financial sector increasing, institutions become more vulnerable to cyberattacks, while their view of the risks is diminishing.

To enhance cybersecurity, we conduct hack tests together with financial sector participants. We have developed the threat intelligence-based ethical red teaming (TIBER) programme together with the sector. Within the TIBER programme, financial institutions are subjected to hack tests based on current threat information to obtain a clearer picture of the latest cyberthreats and the institutions' resilience to them. The outcome of cyberattack simulations is used to make systems, processes and people across the Dutch financial sector more resilient.

Because cyberthreats often originate abroad, we collaborate internationally to develop a joint approach. For example, the TIBER programme is now being followed up in the form of TIBER-EU. Also, chairing and co-chairing EBA and EIOPA working groups, we have contributed to the elaboration of relevant laws and regulations in the field of cybersecurity and cloud outsourcing. At a global level, policymakers are also working to improve cybersecurity and resilience. We participate in working groups of the Financial Stability Board (FSB) that address these topics.

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Operational & infrastructural risks: Policy

Fintech

To ensure that our supervision is effective in the data age, we work alongside non-financial authorities and engage in dialogue with the sector. For example, we work with the Dutch Data Protection Authority to ensure financial institutions comply with the requirements of PSD2 concerning access to and security of payment data. Protecting privacy is essential in order to maintain trust in the financial sector. The competences of the various supervisory authorities for specific issues differ from one situation to another. In most cases, issues can be resolved within the current regulatory framework. If not, as in the case of cryptocurrency regulation, we advise on amendments and extension of the supervisory framework. We also seek to facilitate innovation, and we aim to ensure that innovation is not unnecessarily hampered by laws and regulations, while mitigating emerging risks. To do so, we engage in dialogue with the sector.

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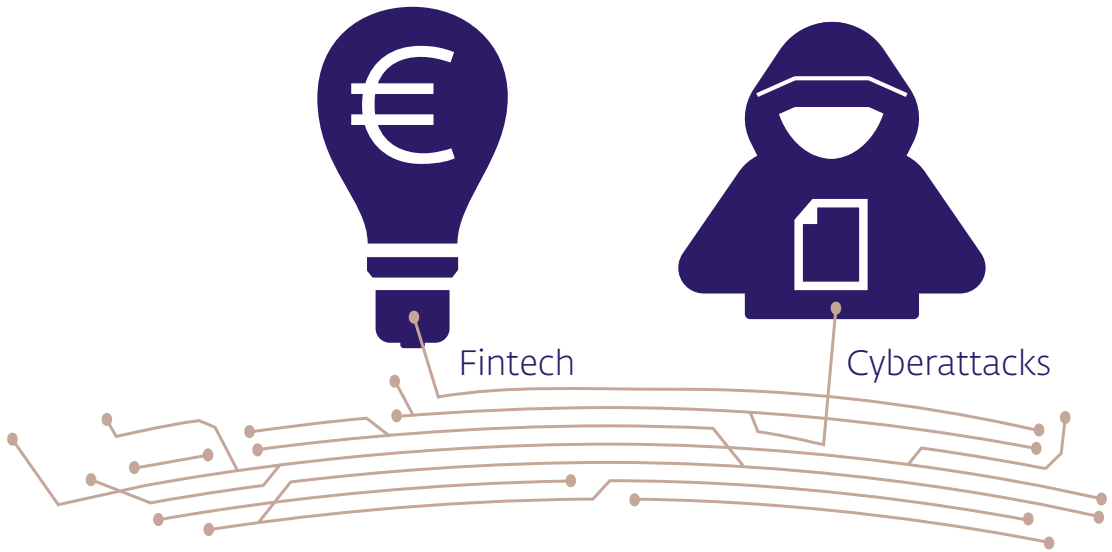
Operational & infrastructural risks: Figures



Fintech
Global investment:
2019: **USD 135.7 billion**
2018: **USD 141.0 billion**
2017: **USD 54.4 billion**
(Source: KPMG)

Cyberattacks
Attack techniques 2019/2020
- **25% phishing** (targeting large groups)
- **16% spear phishing** (targeting specific persons)
- **15% cross-site scripting** (XSS)
- **5% backdoor**
- **4% distributed denial of service** (DDoS)
- **35% other**

(Source: Europol OSINT dashboards, DNB information security monitor)

Risk outline
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Climate and energy transition risks

- The transition to a climate-neutral economy may pose risks if it is accompanied by shocks. The coronavirus crisis could potentially increase the risk of shocks if the transition is delayed as climate measures are relegated to the background and sustainability investments are postponed. At the same time, government stimulus packages aimed at mitigating the economic damage caused by the coronavirus provide an opportunity to stimulate both the economy and sustainability. Integrating the climate agenda into measures aimed at revitalising the economy could prevent the energy transition from being bogged down with concomitant increases in financial risks.
- Climate change leads to physical risks and is likely to increase the scale and frequency of natural disasters such as floods and storms.
- The stress test methodology we have developed to assess the impact of a disruptive energy transition on the Dutch financial sector is now also being used at European level. In addition, we will develop a stress test to assess the consequences of flooding for the Dutch financial sector, focusing on the potential impact on the sector's direct and indirect exposures to real estate.

Risk outline
Risk map
Pandemic stress test

Climate and energy transition risks: Background

Energy transition

The energy transition may pose risks to the financial sector if it is accompanied by shocks. The 2015 Paris Agreement requires signatories to transition to a carbon-neutral economy. We previously developed a stress test to assess the impact of a disruptive energy transition on the Dutch financial sector. This showed that climate policy, technological developments and changing consumer preferences could lead to significant losses for the financial sector. Losses on asset positions could be very high in some scenarios. The stress test also showed that carbon-intensive sectors would not be the only ones suffering losses. Carbon-intensive sectors also impact other sectors, and hence the economy as a whole, through production chains. The stress test methodology we developed is now also being used at European level. The European Systemic Risk Board (ESRB) is due to publish the results later this year.

The coronavirus crisis may increase the risk of shocks if it delays the further implementation of climate policy. The coronavirus crisis will trigger a sharp drop in global carbon emissions this year. But in all likelihood this effect will only be temporary; emissions will rise sharply again as activity returns to previous levels once the economy recovers. We are already seeing this in China, for example. A catch-up effect was also seen after the credit crisis, with emissions rising strongly once the economy picked up. A timely transition to a climate-neutral economy is as necessary as ever. The coronavirus crisis nevertheless risks delaying the negotiations on climate policy and the further implementation of the European Commission's Green Deal. Sustainability projects are also being delayed due to concerns about the risk of mechanics and fitters being exposed to infection and problems with the supply of materials due to factory closures. Looking ahead, the prospect of an economic recession may result in banks providing less funding for green projects. Green investments may also become less profitable in the years ahead as emission allowance prices fall on the back of lower demand due to declining production. Low oil prices also make investing in sustainable alternatives less attractive.

At the same time, the coronavirus crisis offers opportunities for a green economic recovery. Obviously, government support is initially aimed primarily at alleviating acute liquidity problems among households and businesses. If at a subsequent stage the necessary sustainability investments are integrated into the stimulus agenda aimed at revitalising the economy, that will stimulate the economy and at the same time make it more sustainable, thereby reducing the risk of the energy transition being delayed and accompanied by sudden shocks (see also Policy).

Climate and energy transition risks: Background

Climate change

In the long run, the cost of doing nothing outweighs the cost of climate policy to meet the targets of the Paris Agreement. The IMF has investigated the effects of climate change on labour productivity and hence per-capita GDP for 174 countries. A structural rise in temperatures and/or changes in precipitation patterns may negatively impact labour productivity and harm human health. In a scenario with no mitigating climate policy and temperatures rising by 0.04 °C per year, global per-capita GDP will be more than 7% lower in 2100 than if the temperature continues to rise in line with the historical trend (1960-2014). That scenario is negative for all countries, but the degree of impact varies from country to country (see Figure 10). If the Paris Agreement targets are met, with temperatures rising by a maximum of 0.01 °C per year up to 2100, the economic impact of climate change is estimated to be limited to 1% of global per-capita GDP.

Financial institutions may be affected by the increasing scale and frequency of natural disasters caused by climate change. In the Netherlands, for example, flooding may lead to high damage claims. Although the risk of flooding in the Netherlands is low, the potential impacts are high. The amount of damage caused by a flood depends in part on the location and the economic activity in the flood area. Flood damage is often uninsured, so the cost would have to be borne largely by the government, households and businesses. This would also impact financial institutions with exposures to these parties. For example, financial institutions may face damage to their collateral and loan losses on mortgage loans and commercial real estate. We are currently developing a stress test to assess the impact of flooding on the Dutch financial sector, focusing particularly on the consequences for real estate.

Biodiversity

It is increasingly clear that financial institutions can also be affected by declining biodiversity. A fall in the number and diversity of insects, for example, leads to less pollination, reducing crop yields. This has implications for agriculture, and hence for financial institutions with exposures to agricultural businesses. Institutions also incur reputational risks if they invest in companies that exacerbate biodiversity loss, for example through deforestation. Together with PBL Netherlands Environmental Assessment Agency, we are assessing Dutch financial institutions' exposure to risks from biodiversity loss. The resulting report is due to be published in mid-June.

More information

- Chapter 4 of the Financial Stability Report, autumn 2018 discusses the risks which a disruptive energy transition entails for financial stability.

Risk outline
Risk map
Pandemic stress test

Climate and energy transition risks: Policy

Governments have an ongoing duty to set out a clear and reliable transition path towards a climate-neutral economy. This will avoid the need for abrupt policy measures that could trigger financial shocks in the future. The crisis caused by the global coronavirus outbreak may heighten the risk of such shocks, since governments' priority now is to combat the effects of the virus, with less focus on climate policy. Transition measures must not be put on hold while more pressing challenges are addressed.

By integrating the necessary sustainability investments at a subsequent stage into the measures aimed at economic recovery, it will be possible to prevent delays in the energy transition and an increase in financial risks. Obviously, government support measures are initially aimed primarily at alleviating acute liquidity problems among households and businesses. At a subsequent stage, however, necessary sustainability investments should be integrated where possible with the measures and investments aimed at spurring economic recovery. If state aid has to be given to specific emission-intensive companies, governments should impose sustainability requirements. The strengthening of the European Emissions Trading System (ETS) has also become even more important as the European price per tonne of carbon emissions has fallen sharply since the start of the crisis. The government may bring forward investments associated with the Climate Agreement, for example to increase the sustainability of the built environment, public transport and electric vehicles. At European level the implementation of the Green Deal should be accelerated to foster a green recovery of the economy.

Banks should take a long-term view and ensure that the risk assessment as part of their crisis response includes the potential impact of climate-related risks. It is important that banks also have a long-term perspective when providing emergency loans and granting interest and repayment holidays, and that they take into account the potential impact of climate-related risks. We provide various guidelines on these aspects. For example, we have published a good practice guide showing how banks can integrate climate-related risks into their risk management.

In addition to DNB, the ECB and the NGFS also offer guidance on analysing climate and energy transition risks. On 20 May the ECB/SSM published a consultation version of the Guide on climate-related and environmental risks: supervisory expectations relating to risk management and disclosure. This guide details 13 expectations on the way in which the supervised (significant) banks should deal with climate-related and environmental risks. The Network for Greening the Financial System (NGFS), a partnership of central banks and supervisory authorities, also published two

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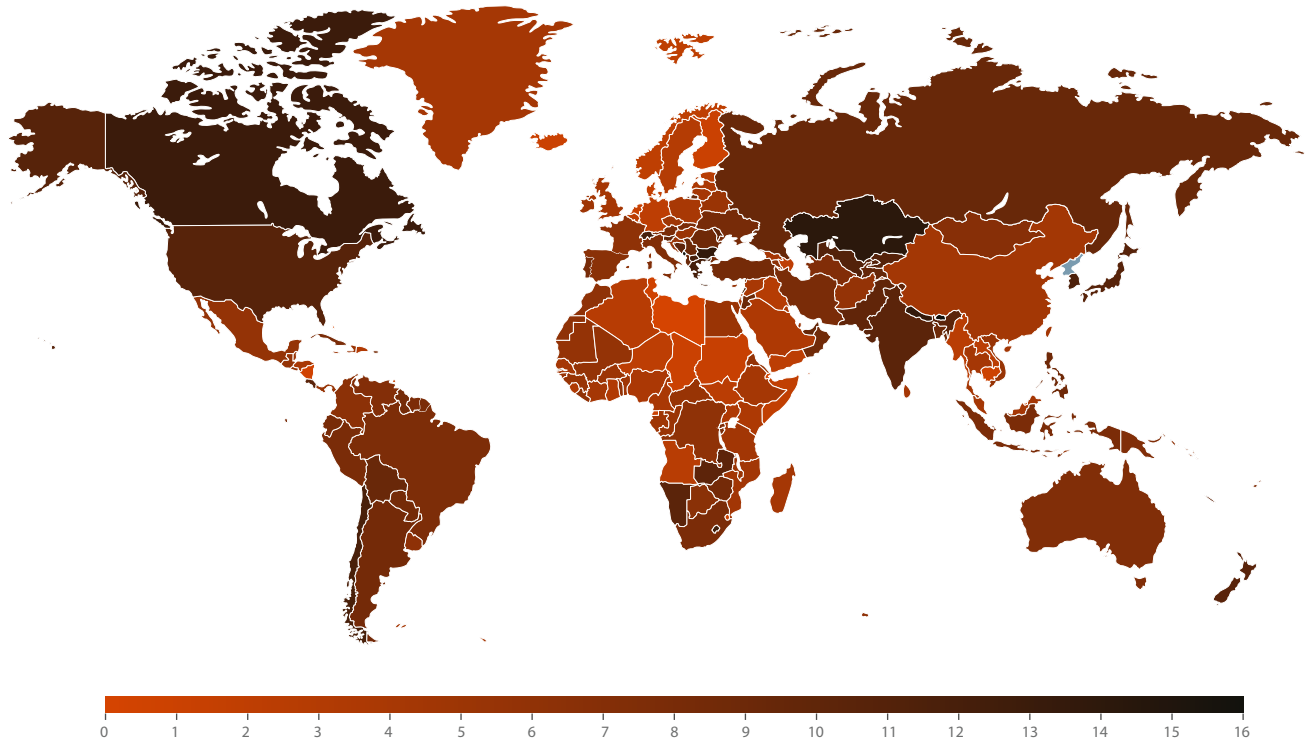
reports at the end of May: one on integrating climate-related and environmental risks in prudential supervision and one on the different ways in which financial institutions integrate climate-related risks into their risk management. The NGFS will also shortly publish a guide on scenario analysis.

Climate and energy transition risks: Figures

Figure 10 IMF: not adopting any mitigating policies results in lower per-capita GDP in all countries



Note: Percentages loss in GDP per capita in 2100, in a scenario without mitigating climate policy (RCP 8.5 Scenario).

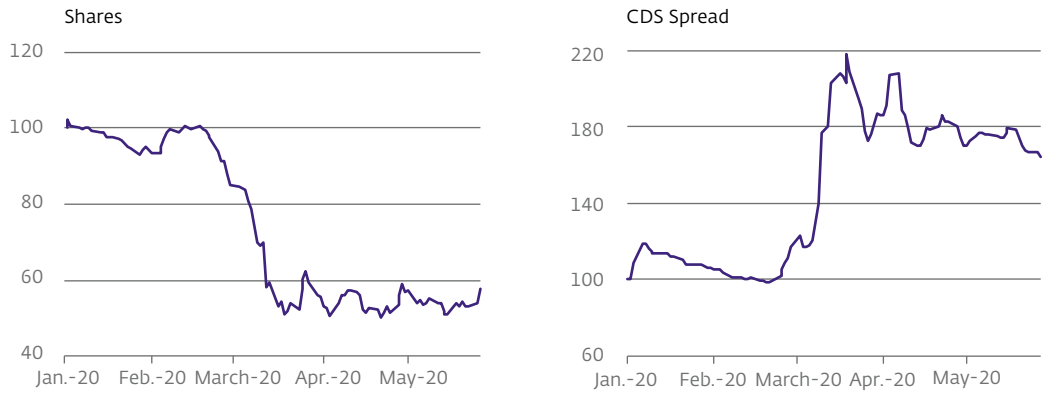
Source: IMF.

Pressure on European banks

- The coronavirus outbreak is having a substantial impact on European banks. Their share prices and financing conditions have been affected (see Figure 11), and over the long term they will have to increase their non-performing loan provisions as credit risks rise sharply in some sectors.
- European banks' profitability was already under pressure due to a deteriorating economic outlook and persistently low interest rates.
- As the capital position of the European banking sector as a whole has improved greatly in recent years, banks are more resilient to shocks and the sector is better placed to absorb the impact of the coronavirus outbreak. Many banks, including the large Dutch banks, have temporarily stopped paying dividends, further improving their shock resilience.
- Both macroprudential and microprudential requirements for banks have been relaxed temporarily to facilitate lending.
- Vulnerable countries may see a return of negative interaction between banks and governments.

Figure 11 Equity prices and funding conditions of European banks have been affected by the coronavirus crisis

Index 1 January 2020=100



Source: Refinitiv.

Note: Averages for European banks.

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Pressure on European banks: Background

The coronavirus outbreak has profound consequences for European banks. The value of European banks' shares and debt securities has fallen sharply since the coronavirus outbreak due to investor concerns about the impact of the crisis on European banks through lower economic growth, persistently low interest rates and higher non-performing loan provisions. European banks saw their share prices almost halved between mid-February and the end of March (see Figure 11), causing them to trade below the levels seen in the 2008 financial crisis. Interest rates on European banks' debt securities rose sharply in the first quarter, particularly in Italy and Spain, which were hit relatively hard by the coronavirus crisis (see Figure 12). Moreover, due to the worsening economic conditions, banks will have to increase provisions on theiroutstanding loans, putting further pressure on profitability. Depending on the depth and duration of the global recession, defaults and bankruptcy losses will increase (see also A pandemic stress test for the Dutch banking sector).

Banks in the US are also having to contend with the consequences of the coronavirus crisis. Due to the relatively severe impact of the pandemic on the US economy, American banks are being hit hard, which is reflected in a fivefold increase in provisions for non-performing loans in the first quarter of this year. On the other hand, US banks are more profitable than European banks, so they have greater scope to absorb macroeconomic shocks and declining profitability.

Banks' profitability was already under pressure from historically low interest rates, leading to falling interest income. Figure 13 shows the trend in European banks' interest margins on outstanding loans. The difference between interest rates on new loans to households and non-financial corporations and interest rates on savings and deposits has narrowed gradually over the years due to the effect of persistently low interest rates. On average, interest income accounts for around 60% of European banks' total income. Figures from the ECB show that despite narrowing margins the European banking sector's interest income grew slightly in 2019 as the number of loans increased. The negative impact of falling interest rates was thus offset by volume growth. The declining interest margin will nevertheless put banks' interest income under growing pressure. Moreover, because the yield curve is not only historically low but also very flat with only a small difference between long- and short-term interest rates, it is also difficult to generate income from maturity transformation. Dutch banks earn relatively little from maturity transformation as their interest rate risk is largely hedged, but the business models of European banks that do rely heavily on this type of interest income have been under pressure for some time due to the flattening of the yield curve.

Pressure on European banks: Background

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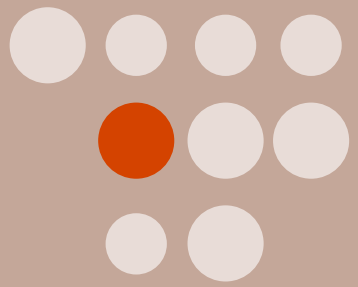

Table 1 Macroprudential buffers have been lowered in response to coronavirus crisis

Netherlands	Lowering of systemic buffers and postponement of the introduction of a minimum limit for the risk weighting of mortgage loans.
Denmark, France, Iceland, Ireland, Lithuania, Sweden, United Kingdom	Full release of accumulated countercyclical buffer (CCyB).
Czech Republic, Norway	Partial release of accumulated countercyclical buffer (CCyB).
Belgium, Bulgaria, Denmark, France, Germany, Slovakia, United Kingdom	Non-implementation of planned activation or planned increase of countercyclical buffer (CCyB).
Estonia, Finland, Hungary, Ireland, Latvia, Portugal	Lowering of systemic buffers (systemic risk buffer and/or O-SII buffer)

Many European countries have temporarily lowered their macroprudential buffer requirements for banks in response to the coronavirus crisis. In many countries where the countercyclical capital buffer (CCyB) had been activated, it has been fully or partially released (Table 1). Some countries have also scrapped plans to activate or increase the CCyB. In March we decided that bank requirements would be eased temporarily to limit the impact of the coronavirus on lending and the Dutch economy. It is crucial that lending is maintained to minimise the economic damage caused by the coronavirus outbreak. We have therefore lowered the systemic buffers for the large banks ING, Rabobank and ABN Amro and postponed the measure announced in October 2019 that would have imposed a minimum limit for the risk weighting of mortgage loans. These two measures will release more than EUR 8 billion of capital, or roughly 5% of the total capitalisation of the Dutch banking sector. Expectations are that the impact on lending could amount to EUR 200 billion. In the long term, the lowering of the systemic buffer will be offset by a gradual increase in the countercyclical capital buffer (CCyB), which will ultimately restore the aggregate buffer requirements for these banks to current levels.

Microprudential capital requirements have also been eased. For example, the ECB has announced that banks are temporarily permitted to operate below the level of capital as defined by the Pillar 2 Guidance (P2G), the capital conservation buffer (CCB) and the liquidity coverage ratio (LCR). Banks can also use additional capital instruments not qualifying as Common Equity Tier 1 (CET1) capital to meet the Pillar 2 requirements. The European Banking Authority (EBA) has also indicated that the deferral of interest and repayments (moratoria) granted by many banks will not be deemed to be forbearance measures under the IFRS 9 accounting standard. This means banks do not have to increase their provisions as quickly. In

Pressure on European banks: Background

addition to an easing of capital requirements, pressure on banks' operations is also being relieved. The ECB has postponed many on-site inspections and given banks more time to address previous findings. The biennial EBA stress test has been postponed by one year.

As the banking sector's capitalisation has improved in recent years, banks are better able to absorb the impact of the coronavirus crisis. On average, European banks have significantly strengthened their capital position in recent years. The average capital ratio (CET1) of the European banking sector increased by over 2 percentage points between 2015 and 2019. This improvement is due to both higher equity and lower risk-weighted assets. In addition, banks' non-risk-weighted capital requirement, the leverage ratio, has increased over the years (see Figure 14). Dutch banks have also built up additional buffers in recent years. From an international perspective, Dutch banks' CET1 ratio is high at 16.9% (end of 2019). Dutch banks' leverage ratio has also increased over recent years, from 3.4% at the beginning of 2015 to 5.1% at the end of 2019, but from an international perspective the leverage ratio is relatively low. The increase in buffers means banks are much better placed to cope with the impact of the coronavirus crisis than before the credit crisis. In that regard the current crisis is fundamentally different from the financial crisis, because its direct cause does not lie in the economy or in the financial sector itself.

A significant proportion of European banks nevertheless remain vulnerable. Whereas low interest rates and the deteriorating economic outlook affect all banks in Europe, profitability in a number of European countries remains under pressure due to surplus capacity, high operating costs and a high percentage of non-performing loans (NPLs). The average return on equity in the euro area was close to 5.5% in 2019, but the returns of German, Greek and Portuguese banks in particular fell far short of this figure. NPL ratios across the European banking sector as a whole have fallen significantly in recent years, from over 8% at the end of 2014 to over 3% at the end of 2019 (see Figure 15), but they are expected to rise again due to the deterioration of the economic outlook. NPL ratios are also significantly above average in some countries. Greek banks in particular are vulnerable due to the large proportion of NPLs.

Vulnerable countries may see a return of negative interaction between banks and governments. That risk is all the greater since the economic contraction and fiscal stimulus measures in response to the coronavirus crisis will lead to a deterioration in governments' debt positions. Almost all European countries have provided substantial support in response to the coronavirus crisis, even countries where public finances offered little or no room for

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manoeuvre (see Sustainability of public sector and private sector debt in Europe). Particularly in Italy, Portugal, Slovakia, Slovenia and Spain, governments are still heavily dependent on their own banking sector for sovereign debt financing. A sharp increase in risk premiums may thus directly impact the financial sector through losses on banks' investment portfolios. Conversely, problems in the banking sector may have an impact on these countries' public finances. The negative spiral of the sovereign-bank nexus is liable to resurface particularly if credit agencies downgrade the ratings of governments or banks. This is particularly true in the case of the Italian and Portuguese governments and Spanish banks, because their ratings are close to the investment grade limit.

As well as managing financial soundness risks, banks need to focus on the management of integrity risks and prevent involvement in financial crime. Anti-money laundering (AML) and combating the financing of terrorism (CFT) have become important areas in recent years. National police, supervisory authorities and public prosecution departments have made more capacity available for investigation and prosecution, not only of money laundering and terrorist financing, but also of the facilitation of such crimes by financial institutions. Banks play an important role in preventing financial crime through their gatekeeper function. They are expected to keep criminals at bay. Controlling integrity risks is therefore important, with adequate procedures, systems and directors committing personally to preventing involvement in financial crime. Banks will have to continue investing significant sums to improve operational management in this area in the years ahead.
As a result of frequent homeworking or remote working, for example, the coronavirus crisis leads to an increase in operational risks, requiring extra vigilance (see also Operational & infrastructure risks).

More information

- The autumn 2019 Financial Stability Report assesses the interaction between banks and governments in greater depth.

Pressure on European banks: Policy

There is no uniform solution to the challenges facing European banks. In some countries banks may focus on further cost savings and measures to tackle structural inefficiencies, while in countries with fragmented banking sectors the consolidation of small and medium-sized banks may provide a solution to surplus capacity and promote the soundness of the banking sector.

In the event of falling profitability, banks face increasing pressure to cut costs. European banks have made little progress in improving their cost efficiency since the financial crisis. After rising between 2009 and 2012, cost-to-income ratios have shown no improvement in recent years (see Figure 16). Costs absorbed 66% of the income of European banks in 2019. Figures from the ECB show that European banks' cost ratios are almost 10 percentage points higher than those of their American peers. Many banks have cut their workforce in recent years, thereby reducing costs, but on the other hand digitisation requires substantial investment, which weighs heavily on banks' operating costs.

Even with buffers and capital requirements now being temporarily lowered, it is important not to lose sight of structural vulnerabilities. In the long term, weak European banks should strengthen their balance sheets when economic conditions permit, for example by increasing their cost efficiency or diversifying their income sources. Banks' balance sheets must become less susceptible to problems with their own government, in order to break the negative interaction between banks and governments. The preferential treatment of sovereign debt should therefore be phased out. Obliging banks to hold capital to cover the credit risk of public sector debt will improve incentives for banks and allocation of capital. Concentration limits can also curb banks' exposures to their own government.

European banks will need to allow for increased capital requirements when the economy enters calmer waters. The measures easing both macroprudential and microprudential buffers are designed to limit the impact of the coronavirus on the real economy and to enable banks to maintain lending levels. They are therefore temporary. We intend to restore the buffers eventually by gradually increasing the countercyclical capital buffer to a neutral level of 2%. This buffer must be formed gradually once conditions have normalised and the impact of the coronavirus pandemic on the banking sector has faded.

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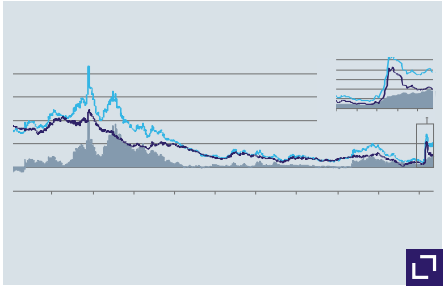
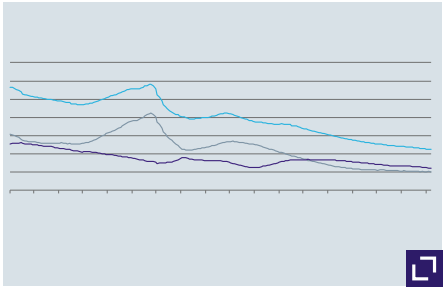
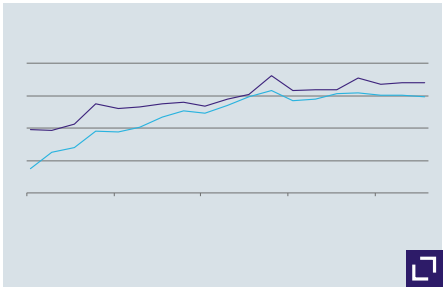


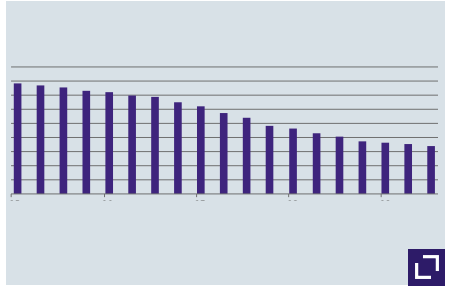
Coronavirus crisis has caused credit spreads between senior debt instruments of peripheral and core countries to widen
See figure 12 →



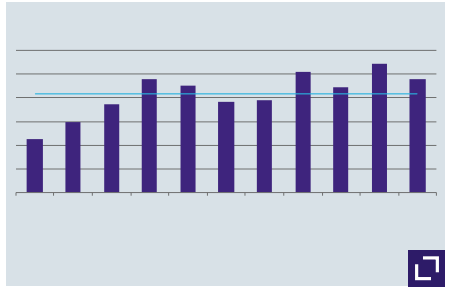
European banks have seen their interest margins on outstanding loans narrow
See figure 13 →



EU banks' shock resilience has significantly improved
See figure 14 →



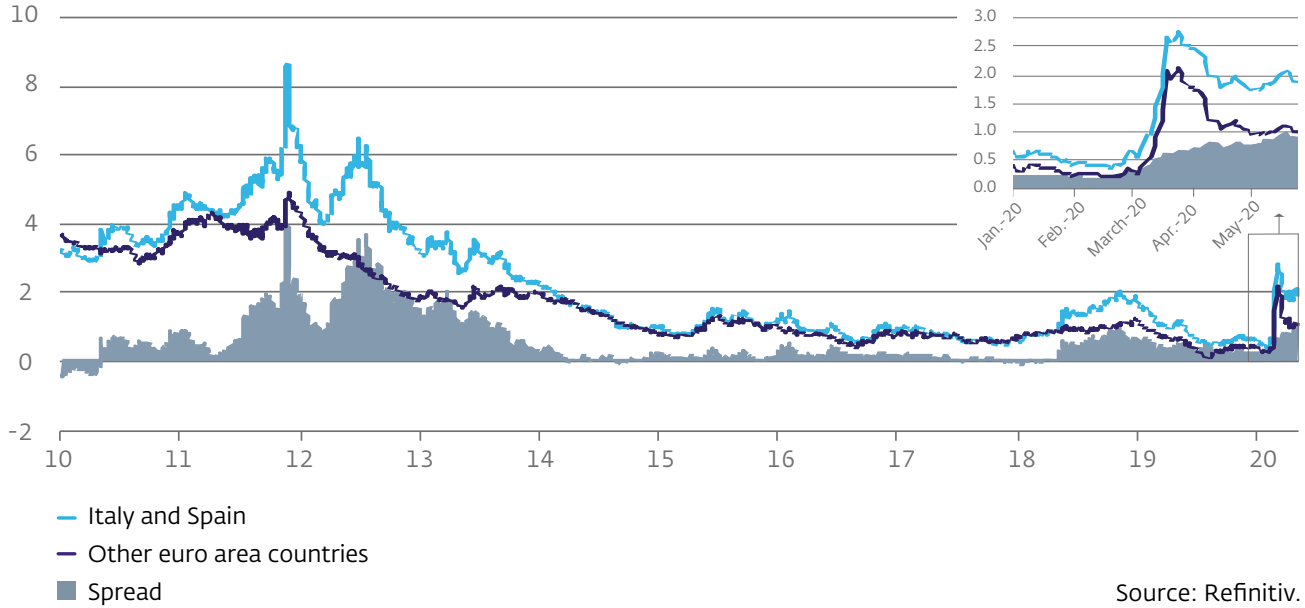
NPL issue has faded into the background in recent years, but NPLs are bound to increase again to due to the coronavirus crisis
See figure 15 →



Cost-to-income ratio of European banks remains high
See figure 16 →

Figure 12 Coronavirus crisis has caused credit spreads between senior debt instruments of peripheral and core countries to widen

Percentages



Source: Refinitiv.

Note: "Other euro area countries" refers to banks in Belgium, Germany, Finland, France and the Netherlands. Data for other countries are unavailable.

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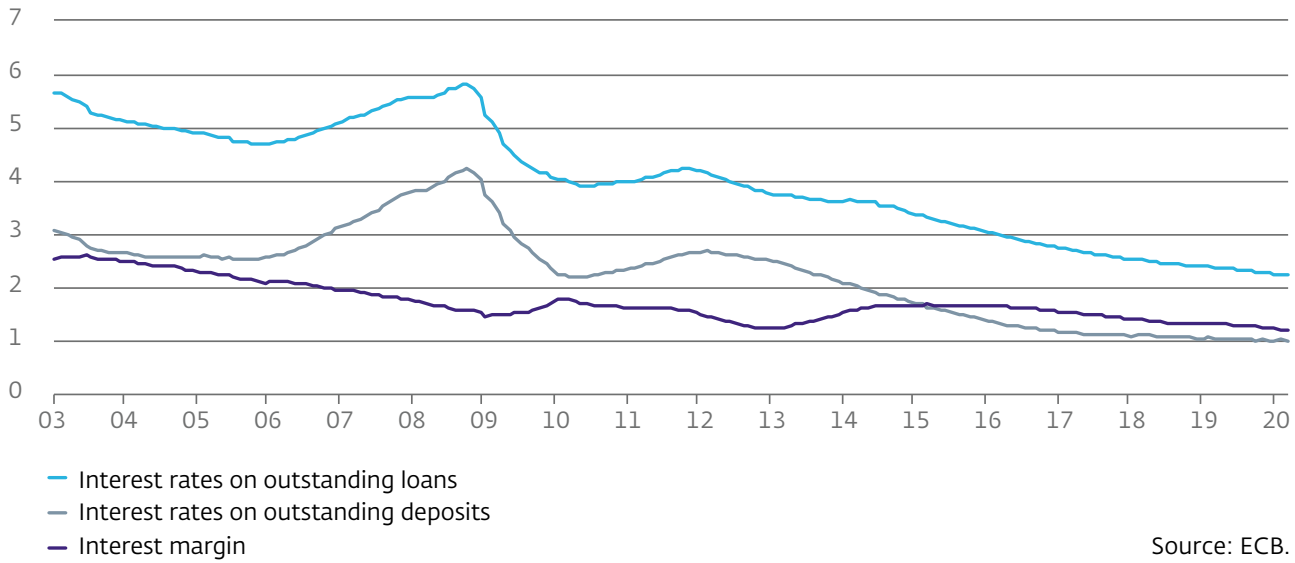
Figure 13 European banks have seen their interest margins on outstanding loans narrow

Percentages



Source: ECB.

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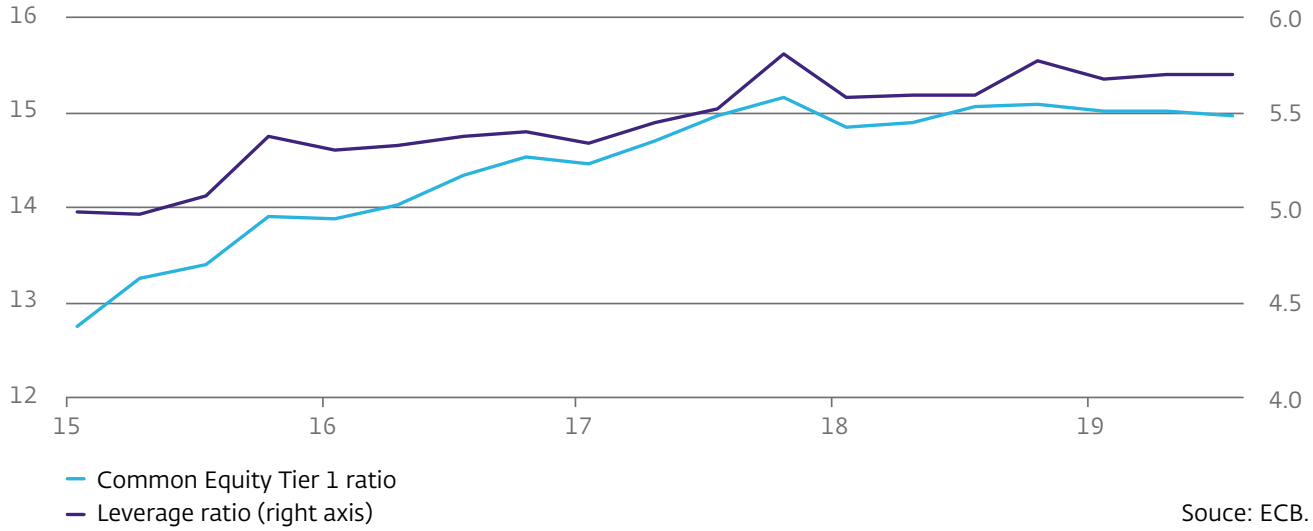
Figure 14 EU banks' shock resilience has significantly improved

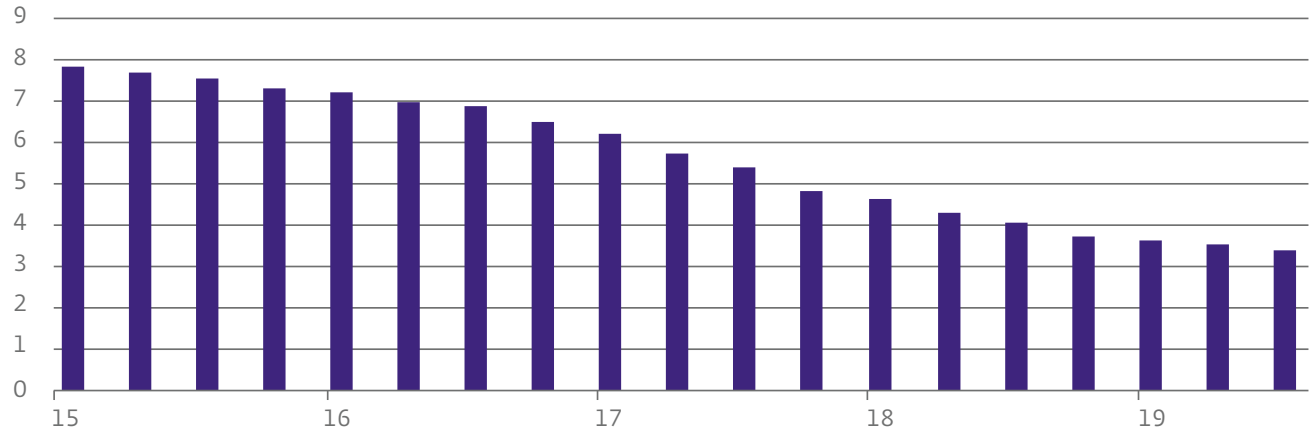
Percentages of risk-weighted assets; percentages of total exposure



Souce: ECB.

Figure 15 NPL issue has faded into the background in recent years, but NPLs are bound to increase again to due to the coronavirus crisis

Non-performing loans as a percentage of total debt instruments issued in the euro area



Source: ECB.

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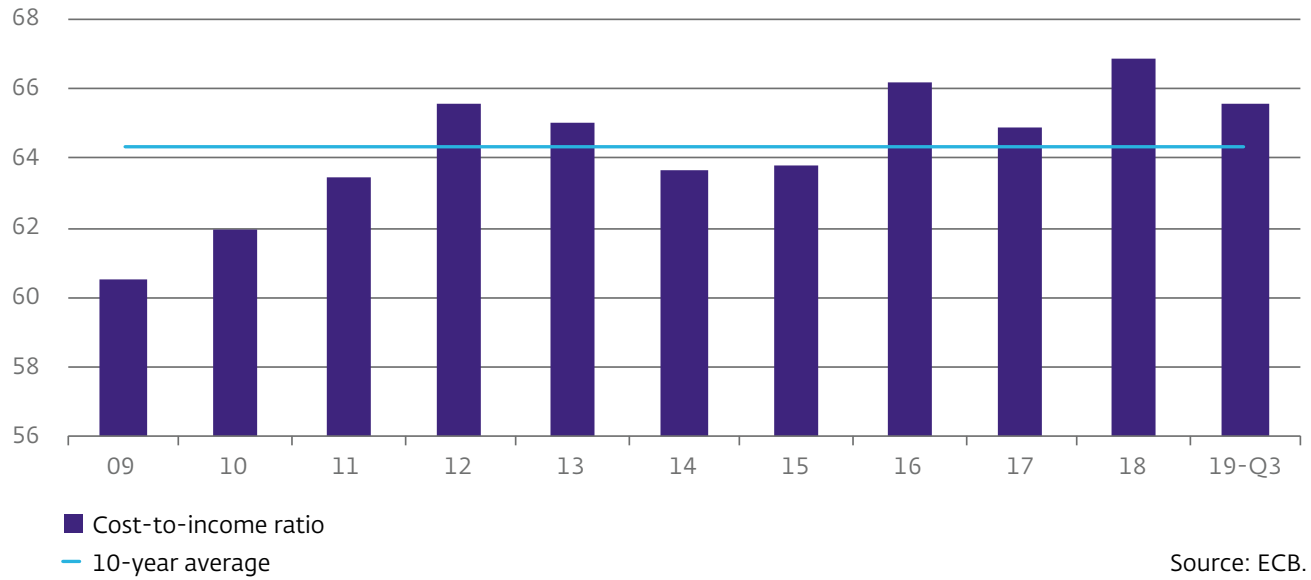
Figure 16 Cost-to-income ratio of European banks remains high

Costs as a percentage of income



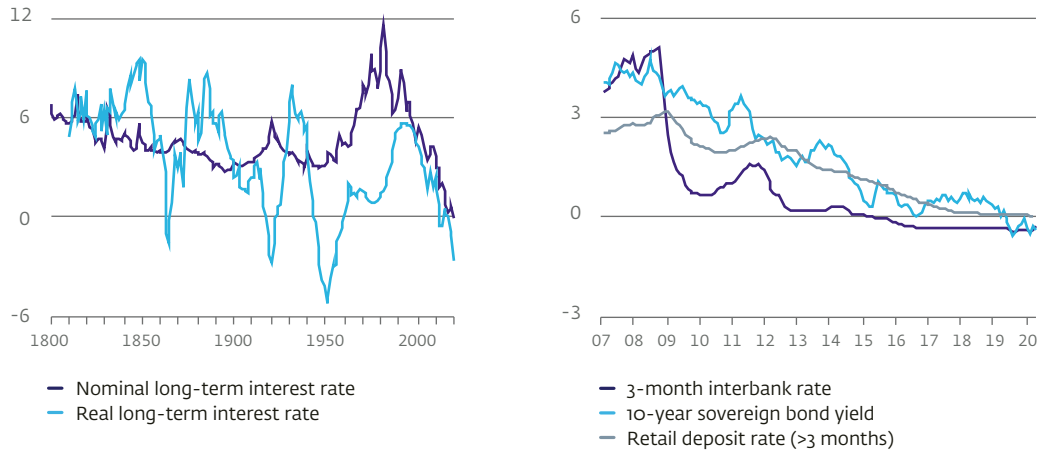
Source: ECB.

Persistently low interest rates

- Interest rates are historically low worldwide (see Figure 17). The coronavirus crisis is having a negative impact on economic growth and thus putting further pressure on interest rates. Monetary policy is very accommodative, especially following the monetary stimulus in response to the coronavirus outbreak.
- With persistently low interest rates, vulnerabilities continue to build up and risks to financial stability continue to increase.
- Banks' profitability is comes under growing pressure as interest rates remain low for a protracted period. Persistently low interest rates have long been a major challenge for pension funds and insurers, particularly in the life segment.
- At the same time, the scenario of rising interest rates must also be taken into account. The substantial increase in the issuance of secure public sector debt as a result of the coronavirus crisis increases the supply of secure assets, thus meeting savers' demand for secure assets at an earlier stage. This puts upward pressure on the equilibrium rate.

Figure 17 Interest rates reach historical low in the Netherlands

Percentages



Sources: DNB and Statistics Netherlands.

Note: The real long-term interest rate is a ten-year moving average based on consumer prices (from 1900), and various sources (before 1900, source: Reinhart/Rogoff database).

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Persistently low interest rates: Background

Interest rates are historically low and could remain low for a long time. The downward trend in interest rates in recent decades, in both nominal and real terms (see Figure 17), is a global phenomenon and is mainly associated with low inflation and structural factors in the global economy, such as lower potential growth, increased global savings (partly due to population ageing) and declining readiness to invest. Central banks' expansionary policies have also contributed to the low interest rates. The benchmark used for monetary policy is the interest rate determined by structural factors, known as the equilibrium rate. Since the financial crisis, central banks have repeatedly lowered their policy rates, pushing them below equilibrium rates and thus fuelling inflation. In addition, to reduce capital market rates further, central banks have taken unconventional measures, such as purchasing sovereign bonds. The yield curve is currently not only historically low but also very flat, with only a small difference between long- and short-term rates (see Figure 18).

The monetary stimulus measures in response to the coronavirus crisis are putting further pressure on interest rates. Central banks have announced drastic support measures in a short space of time in order to limit the economic impact of the coronavirus outbreak. These measures have restored calm to the financial markets, at least temporarily. With no prospect of the accommodative monetary policy being scaled back, interest rates may stay low for a long time yet.

At the same time, the scenario of rising interest rates must also be taken into account. The fall in the equilibrium rate in recent decades can be attributed in part to increased savings. The high demand for secure assets has put downward pressure on interest rates. The coronavirus crisis is now leading to a sharp increase in public spending, mainly financed by new debt. This increase in debt issuance may enable demand for secure assets to be met earlier, thereby preventing interest rates from falling further or putting upward pressure on interest rates.

Impact on financial stability

Partly due to low interest rates and the accommodative monetary policy, vulnerabilities continue to build up, posing increased risks to financial stability. In the short and medium term, low interest rates help limit deflation risks and stimulate the economy. Households can access cheaper debt to finance their consumption, while businesses have sufficient liquidity to cope at least temporarily with the impact of the coronavirus crisis. At the same time, vulnerabilities continue to build up in an environment of persistently low interest rates. The side effects of the expansionary monetary policy over recent years are also becoming increasingly clear.

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Persistently low interest rates: Background

After a protracted search for yield, driven by low interest rates and an accommodative monetary policy, the coronavirus crisis triggered a large-scale sell-off of risky assets. Many investors have shifted their portfolios towards assets with higher risk and expected return in recent years. This shift to riskier investments has pushed the prices of these assets higher. This search for yield has made the financial system more vulnerable to market corrections, as the coronavirus outbreak has clearly shown (see also Financial market volatility and insufficient market liquidity).

Persistently low interest rates provide an incentive for further debt financing. Low financing costs mean that debt remains an attractive way to finance expenditure. BIS figures show that government, business and household debt, collectively amounting to 242% of GDP worldwide, was significantly higher at the end of 2019 than just before the crisis (210% at the end of 2007). In the Netherlands, household, business and government debt has fallen slightly relative to GDP, but private sector debt in particular remains high (see also Sustainability of public sector and private sector debt in Europe).

Persistently low interest rates can also damage the growth potential of the economy. Weak businesses can survive relatively easily when interests rates are low. An increase in the number of weak businesses could lead to a misallocation of production factors. Weak businesses use up production resources, making it more difficult for healthy businesses to grow. In the Netherlands, there is little evidence of misallocation in relation to low interest rates at present, but a study we published shows that the misallocation of capital has increased since the credit crisis, as small and productive businesses in particular have difficulty raising capital. Research in other countries also shows that persistently low interest rates are associated with an increased risk of misallocation, with negative effects on potential growth.

Impact on financial institutions

Persistently low interest rates put increasing pressure on banks' profitability. Banks have benefited from the favourable economic climate in recent years, to which low interest rates have contributed. However, with interest rates remaining low over a protracted period, banks have increasingly had to contend with negative impacts due to growing downward pressure on their interest income. Dutch banks also became more dependent on interest income after the crisis. Whereas in 2000 interest income made up 52% of Dutch banks' total income, the figure in 2019 was 74%, partly because of their decreasing focus on merchant banking. Of all banks in Europe, Dutch banks are the most dependent on interest income (see Figure 19).

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Persistently low interest rates: Background

On the funding side, it is becoming increasingly expensive to use deposits, as banks are reluctant to pass on negative interest rates to savers. Since deposit rates are usually higher than swap rates, banks' borrowing margins are now negative (see Figure 20). In recent years, banks have translated declining interest rates into lower remuneration of deposits. Although most banks have introduced negative interest rates above a certain threshold, they are reluctant to pass on market rates fully in interest on savings and retail deposits.

Interest income is also under growing pressure on the lending side, particularly in the case of mortgage loans. Banks have been able to maintain levels of interest income on corporate and mortgage loans for a long time. Mortgage rates have fallen since the second half of 2019, however, leading to a decrease in lending margins on new mortgage loans (see Figure 20). This decrease on the lending side comes on top of the negative borrowing margin. In addition, mortgage loans are expected to be granted and rolled over at lower margins in the coming period. The fixed-interest period of a large proportion of mortgage loans taken out between 2010 and 2014, which were granted on relatively profitable terms, is due to expire in the next five years. Some of the other high-margin mortgage loans are also being repaid early, for example as a result of house sales or voluntary repayments. Lending margins on new corporate loans are being maintained at present, however (see Figure 20).

The financial position of pension funds and insurers has been under pressure from low interest rates for a long time. Low interest rates have a major impact on these institutions because of their long-term liabilities, which are discounted at ever lower interest rates and have therefore increased sharply. Persistently low interest rates also squeeze investment returns on the assets side of the balance sheet, making it increasingly difficult to meet the liabilities. This is particularly problematic for life insurers, because many policies concluded in the past have a minimum return guarantee. Stress tests by EIOPA, the European supervisory authority for pension funds and insurers, show that Dutch pension funds and insurers, even compared to their European peers, are sensitive to a scenario of persistently low interest rates, particularly due to their relatively long-term liabilities (see also Vulnerabilities of pension funds and insurers).

More information

- At the request of the House of Representatives, the Financial Stability Committee (FSC) investigated the impact of a protracted period of low interest rates and a possible rise in interest rates. The FSC report assesses the impact of persistently low interest rates on the Dutch economy, financial stability and financial institutions and also explores the impact of a 1 percentage point interest rate rise.

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Persistently low interest rates: Policy

When interest rates are persistently low, Dutch banks can focus on cost savings or on increasing their income from other sources. Banks have been trying for some years to increase income from other sources – such as commissions – in order to reduce their dependence on interest income. They can also focus on further cost savings and pass on more costs to customers in order to maintain their profitability. Further cost savings are not easy, because Dutch banks are already extensively digitised compared to their European peers. There is nevertheless room for further cost-cutting, as evidenced by Dutch banks' cost/income ratio, which at 57% is around the European average (FSC, 2020).

The business models of pension funds and insurers are changing due to low interest rates. The vulnerabilities of the current pension system have been increasingly laid bare in recent years. Last year's Pension Accord between the government and the social partners offers the prospect of a more future-proof pension system. This Accord must therefore be implemented expeditiously, despite the challenges posed by the transition to a new contract, since the pension funds' financial position has deteriorated and funding ratios have fallen below 100%. Business models across the whole insurance sector also need to be adapted to the low interest rate environment and portfolio contraction. Policyholders' long-term interests must also be safeguarded, and when determining their capital and dividend policies insurers must take account of the development of their financial position based on economic reality, as the use of the ultimate forward rate (UFR) means that low interest rates are only partly reflected in the statutory solvency ratios (see also Vulnerabilities of pension funds and insurers).

When the economic situation normalises there must be a strategy for exiting the exceptionally accommodative monetary policy. At present, ECB policy is largely focused on the response to the coronavirus crisis, as the central bank does everything within its mandate to prevent financial fragmentation in the euro area. While there are compelling reasons for pursuing this policy in times of crisis, it further increases dependence on central bank financing. In the longer term it is undesirable for governments and banks to remain dependent on the central bank to finance their debts. The longer the exceptionally accommodative monetary policy continues, the greater are the risks to financial stability and the more difficult it becomes to tighten the policy in the future, especially with public sector debt now set to rise sharply (see also Sustainability of public sector and private sector debt in Europe). An exit strategy is therefore an important first step towards normalisation.

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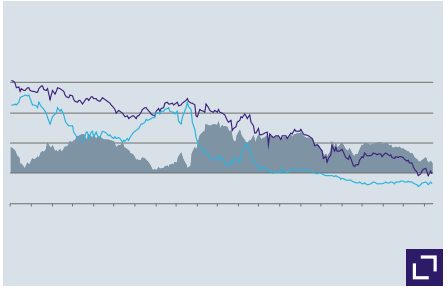
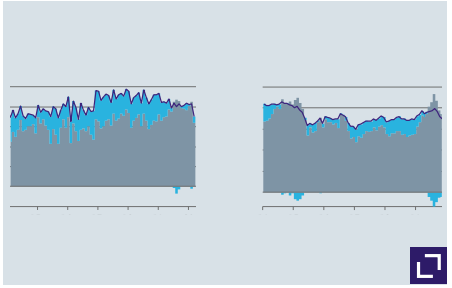
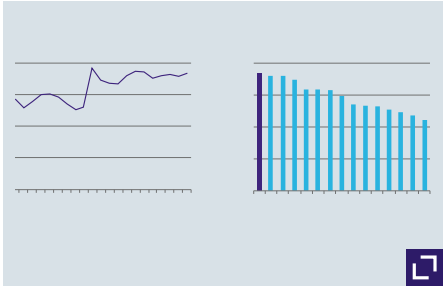
Persistently low interest rates: Figures



The yield curve is very flat
See figure 18 →



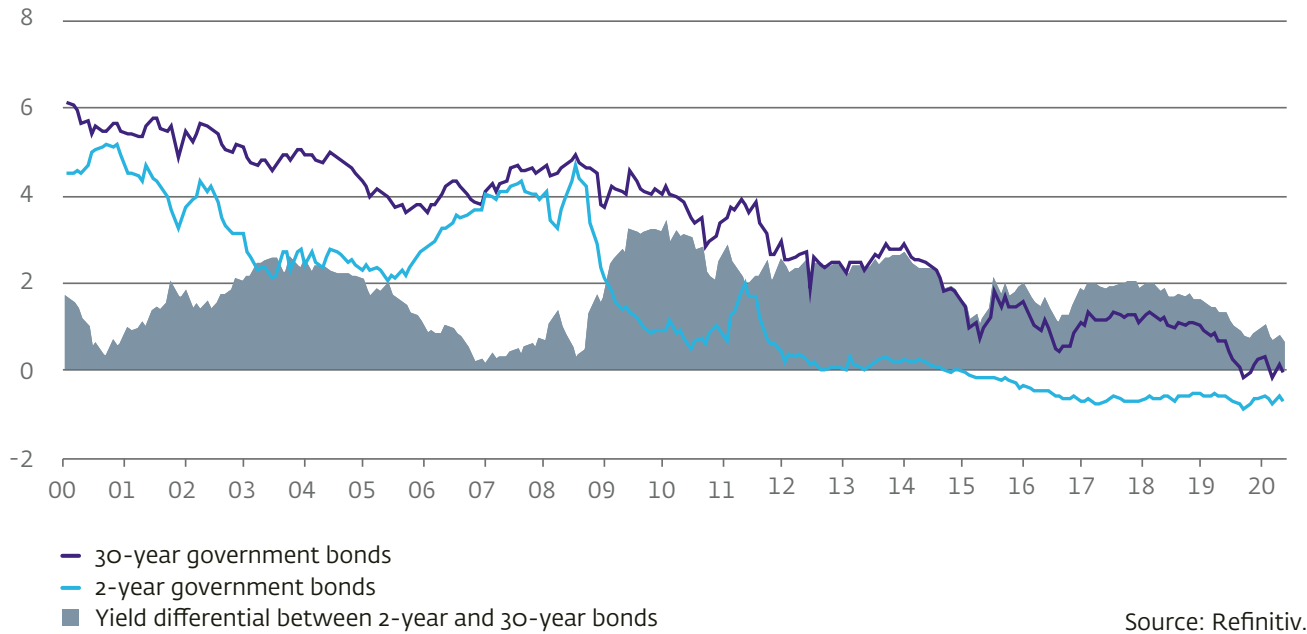
Higher lending margin offsets lower borrowing margin for corporate loans, but no longer for mortgage loans
See figure 20 →



Dutch banks strongly depend on net interest income
See figure 19 →

Figure 18 The yield curve is very flat

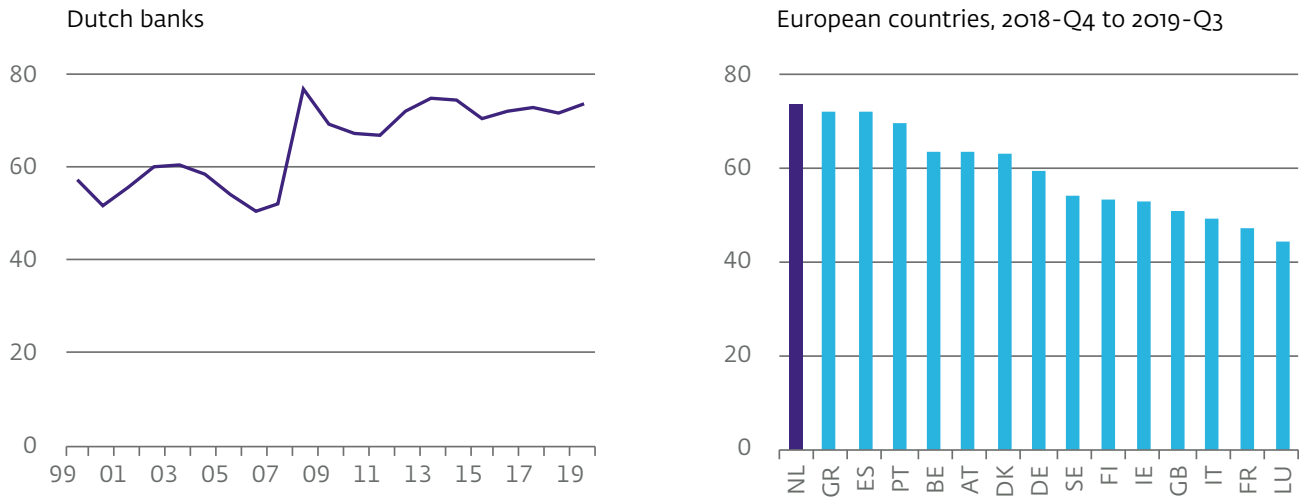
Percentages



Source: Refinitiv.

Figure 19 Dutch banks strongly depend on net interest income

Net interest income as a percentage of total income



Sources: DNB and ECB.

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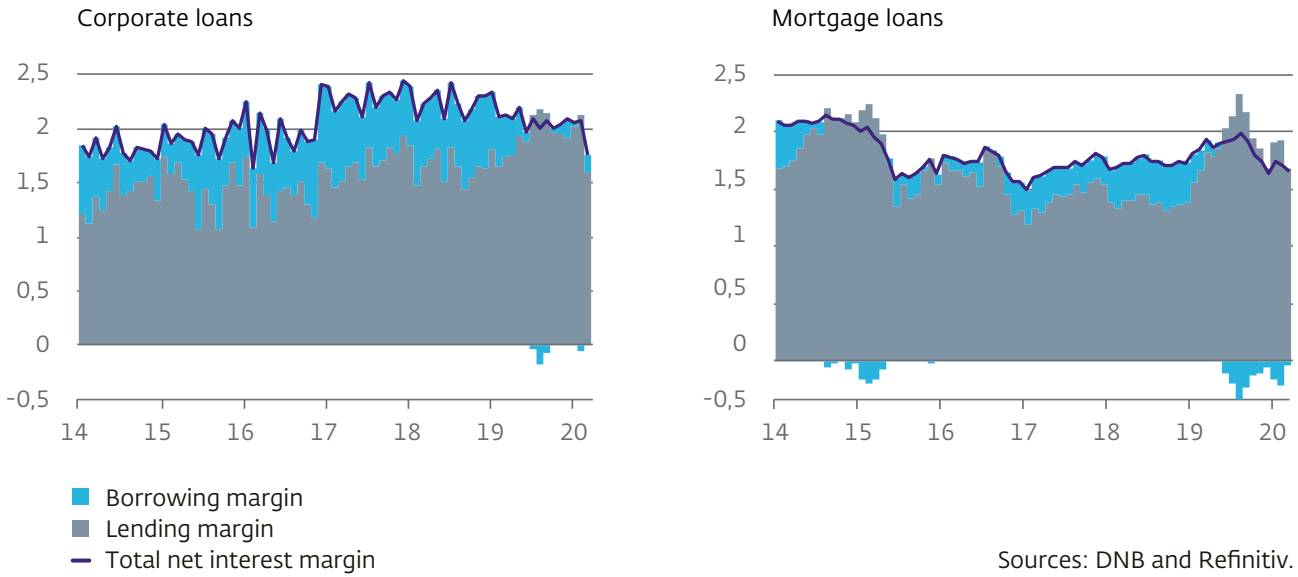
Figure 20 Higher lending margin offsets lower borrowing margin for corporate loans, but no longer for mortgage loans

Percentages



Sources: DNB and Refinitiv.

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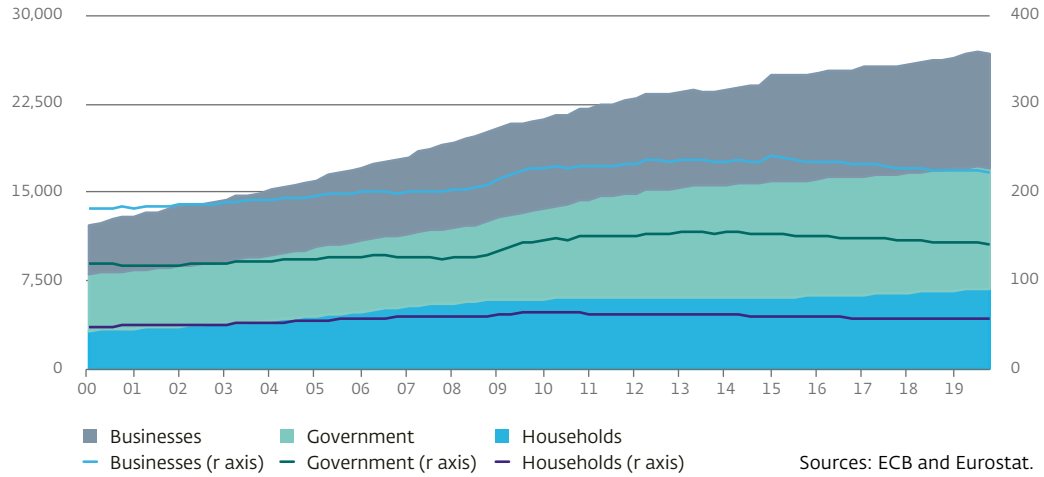
Sustainability of public sector and private sector debt in Europe

- Both public sector and private sector debt remain high in Europe (see Figure 21). As a result of the coronavirus crisis, the debts of many governments, businesses and households will increase, putting further pressure on the sustainability of debt.
- Flexibility in European budgetary rules is necessary at present to cope with the consequences of the coronavirus pandemic. Measures taken by the ECB, the European Commission and national governments can ward off financing problems in the immediate term. In the longer term, a more sustainable debt position is desirable and it is important to have a clear strategy for exiting the support measures.
- Dutch public sector debt has a solid starting position, but private sector debt in particular is high.

Figure 21 Euro area public-sector and private-sector debts hardly reduced

EUR billions; percentage of GDP



Sources: ECB and Eurostat.

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Sustainability of public sector and private sector debt in Europe: Background

The coronavirus crisis will increase the debt of many governments, businesses and households. Governments in Europe have introduced extensive support measures to mitigate the impact of the coronavirus outbreak and the subsequent government measures to keep the virus under control. This fiscal support leads to an increase in sovereign debt, even in countries with existing high debt levels. Businesses and households that have been economically impacted by the coronavirus crisis will also see their debts rise.

The persistently low interest rates in recent years have provided an incentive to take on further debt. With financing costs for households, businesses and governments having been low for a long time, borrowing to finance expenditure remains attractive, particularly since the protracted period of exceptionally low interest rates has habituated borrowers and fuelled their appetite for cheap debt. Partly for this reason there has been little if any reduction in debt in recent years. The coronavirus crisis has also halted the debt reduction momentum for many governments, businesses and households.

Public sector debt

The budgetary rules for EU countries have been suspended for the time being in response to the coronavirus crisis. The Stability and Growth Pact (SGP) includes various requirements to ensure the sustainability of Member States' public finances. These rules can be relaxed if the euro area or the European Union as a whole goes into a deep recession. The finance ministers in the European Union made use of this possibility in March. Member States no longer need to limit their budget deficit to 3% and their sovereign debt can exceed 60% of GDP, giving them more scope to increase spending.

The aim of the government support measures is to limit the impact on the economy. They are intended among other things to compensate sectors affected by containment measures, to ensure that businesses can continue paying their staff and to provide additional credit facilities for businesses. Businesses in difficulty can defer their tax payments, for example, and many EU Member States are providing guarantees to maintain bank lending to business.

In April the European Council also agreed a joint crisis response, including activation of the European Stabilisation Mechanism. The European measures help fund Member States' spending on measures to combat the coronavirus crisis. As well as activation of the ESM, this first European package includes a short-time working fund and a fund for business loans from the European Investment Bank (EIB).

Precisely a number of countries with high sovereign debt have been hit relatively hard by the coronavirus crisis. Spain, Italy and

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Sustainability of public sector and private sector debt in Europe: Background

France in particular have been severely affected by the coronavirus outbreak. These countries are starting out from a vulnerable position with sovereign debt of 98%, 137% and 101% of GDP respectively. The coronavirus crisis will substantially increase sovereign debt and budget deficits in most euro area countries and put further pressure on the sustainability of some countries' debt. Moreover, in the wake of the financial crisis and the European sovereign debt crisis, there has been barely any reduction in euro area public sector debt. Between 2008 and 2013 the overall debt ratio rose by an average of almost 4.5 percentage points of GDP per year. From its peak in 2014, the debt ratio has shown a limited decrease of almost 8 percentage points, whereas euro area public sector debt continued to increase in nominal terms in the years after 2014 (see Figure 22). Debt levels are consequently well above pre-financial crisis levels. In particular, countries with relatively high sovereign debt have only reduced it to a limited extent (see Figure 23).

Debt dynamics have become less fragile in recent years, but the vulnerability in many countries is increasing again due to the coronavirus crisis. Accommodative financial conditions and low interest rates have made it easier to finance euro area sovereign debt in recent years. For example, average capital market interest rates in the euro area fell from 4.5% during the debt crisis to an average of 0.4% in 2019. Low interest rates have also prompted many countries to issue bonds with relatively long maturities, increasing the average residual maturity of outstanding sovereign debt to almost eight years. This reduces the refinancing risk and makes governments less vulnerable to interest rate rises. For the medium and long term, the sustainability of debt is determined in particular by factors such as its level and structure, interest expenses, economic growth and the rate of population ageing. Analyses by the European Commission show that Belgium, France, Italy, Luxembourg, Portugal and Spain in particular have fragile debt dynamics in the medium to long term. The consequences of the coronavirus outbreak are further exacerbating the fragility of debt dynamics in many countries. The IMF estimates that the government debt ratio in the euro area as a whole will rise by 13 percentage points in 2020, while in seven countries the debt ratio will exceed 100% of GDP.

The adjusted ECB policy in the Pandemic Emergency Purchase Programme increases the dependence on central bank financing. Previously there was a 33% issuer-share limit, allowing the ECB to purchase up to one-third of a country's sovereign debt, but this limit has been abandoned in the PEPP. The combination of expected new debt issuance and the abandonment of the issuer-share limits has greatly increased the ECB's eligible universe for purchases. This response to the coronavirus crisis has given markets a strong signal that the ECB will intervene when necessary, but in the longer

Sustainability of public sector and private sector debt in Europe: Background

term it is undesirable for governments to depend heavily on the central bank to finance their sovereign debt.

Private sector debt

Household and business debt has fallen slightly in recent years, but is set to rise again as a result of the coronavirus crisis. In the euro area as a whole, household debt fell from a peak of 64% of GDP in 2010 to 58% at the end of 2019. The debt of non-financial corporations has fallen from 147% to 138% since the peak at the beginning of 2016. In many cases, however, the downward trend that began in recent years will be halted by the effects of the global coronavirus outbreak.

For businesses in particular, the coronavirus crisis has greatly increased the refinancing risk. Risk premiums on corporate debt in Europe have increased sharply in response to the pandemic (see Figure 24). Businesses are being hit by an increase in financing costs much faster than households, as corporate debt on average has shorter terms or fixed-interest periods. For example, 47% of bank loans to euro area businesses have an initial term of less than one year (see Figure 25). In the case of households the figure is just 4%. In the Netherlands, more than 50% of outstanding bank lending to non-financial corporations is due to expire or reach the end of its fixed-interest period within one year, whereas in the case of households over 80% of outstanding bank loans have at least one more year of fixed interest (FSC, 2020). In addition, many companies in affected sectors face rating downgrades by credit agencies, which will increase their financing costs.

Dutch non-financial corporations have relatively high debt. At the end of 2019, Dutch business debt amounted to 132% of GDP. Belgium, Cyprus, France, Ireland and Luxembourg also have corporate debt ratios above the euro area average, which is 81% of GDP. The underlying composition of the debt varies. In the Netherlands, corporate debt mainly comprises loans. Dutch SMEs in particular rely on bank lending, whereas large companies often also have access to other sources of finance, such as corporate bond issuance. Despite high debts and low interest rates, the Netherlands saw no increase in vulnerable businesses before the coronavirus crisis. Our research based on microdata from businesses shows that the number of businesses not earning enough to meet debt interest payments (zombie companies) is low and has not risen in recent years. This will change as a result of the coronavirus crisis, however.

Dutch households are also heavily indebted, making them vulnerable to loss of income and falling house prices. With a debt ratio of 101% of GDP, the Netherlands has by far the highest household debt in the euro area.

Sustainability of public sector and private sector debt in Europe: Background

The debt dynamics of Dutch households have become less fragile in the past year, however. Between 2013 and 2018, around EUR 65 billion of total outstanding mortgage debt was repaid voluntarily and when taking out mortgage loans households have increasingly opted for a fixed-interest period of ten years or more in recent years. The longer the fixed interest period, the better a household is protected against rising interest rates. If interest rates rise by 1 percentage point, 85% of homeowners face an increase of less than EUR 100 in net monthly mortgage costs. Moreover, if interest rates rise, it will be seven years before the average homeowner sees an actual increase in the mortgage interest payable (FSC, 2020). Although this makes households less vulnerable to a rise in interest rates, high debts will make them vulnerable if the coronavirus crisis leads to a loss of income, unemployment or falling house prices (see also Downturn in the housing market).

More information

- The European Commission's Debt Sustainability Monitor provides an overview of debt sustainability problems in EU Member States in the short, medium and long term.

Sustainability of public sector and private sector debt in Europe: Policy

Temporary flexibility in budgetary rules is necessary in order to cope with the effects of the coronavirus pandemic. It is good that EU Member States have temporarily been given more headroom to take appropriate steps to limit the impact of the coronavirus crisis on the economy and prevent permanent damage. Fiscal and monetary policy can thus reinforce each other. In the Netherlands too, the fiscal impact on public finances will be substantial, but the starting position is solid. Without a larger contribution from budgetary policy, the adjustment burden during the economic downturn will be borne to a large extent by households and businesses.

A strong joint European policy response could reduce the risk of a resurgence of the European sovereign debt crisis. Countries in the euro area vary considerably in the extent to which they are affected by the crisis and the degree to which governments, businesses and households can absorb this external shock. At the same time, the strong interdependence between countries underlines the need for a joint, coordinated European approach to minimise permanent damage to the euro area economy, to keep debt manageable and to prevent the crisis from causing further divergence within EMU. In the first place the EUR 540 billion emergency package agreed by the European Council in April must be operational as soon as possible. Further, agreement must be reached on coordinated European policies in the recovery phase. A recovery fund or joint financial instruments could play a useful role in this.

Public sector debt should be scaled down very gradually in due course. Governments are currently absorbing much of the impact of the coronavirus crisis, enabling costs to be spread over time and over several generations, as is appropriate for such a severe external shock. In essence, governments are acting as insurers of the tail risk. As this crisis will have a substantial impact on the buffers that businesses and households have built up, the reduction of sovereign debt in due course should take place very gradually. The great uncertainty surrounding the economic consequences of the coronavirus crisis also calls for a cautious approach to drastic fiscal measures and maximum scope for the automatic stabilisers to operate freely in the years ahead. Governments can increase the sustainability of their debt by strengthening the growth potential of their economy. In some countries, this will require significantly greater efforts than those undertaken in recent years. Within the euro area, an important role as part of this challenge could be played by a simplified Stability and Growth Pact that places more emphasis on debt reduction. The rules are currently complex, for example because there are many exemption clauses and budgetary policies are measured according to different criteria.

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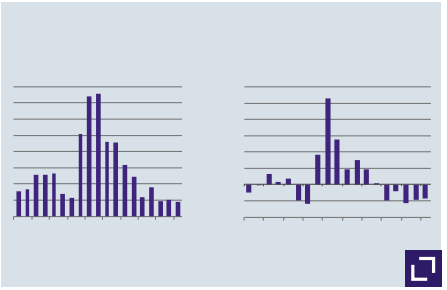
Sustainability of public sector and private sector debt in Europe: Policy

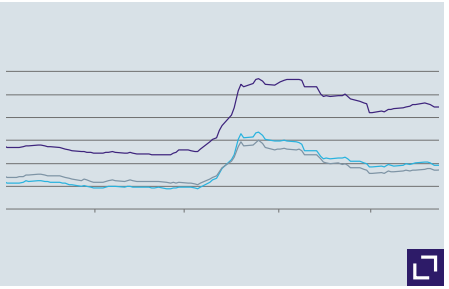
Increasing dependence on monetary policy must be avoided. Monetary policy is increasingly entering uncharted territory, with the risk that it will become increasingly difficult to tighten it again in the future. This is especially so as, despite a period of economic growth, there has been no monetary normalisation in recent years. The substantial monetary policy response has given markets a strong signal that the ECB will intervene when necessary and stands ready to use all available instruments within its mandate.

At the same time, however, the risks to financial stability are growing as the expansionary monetary policy continues and becomes increasingly unconventional (see also Persistently low interest rates – policy). The new Pandemic Emergency Purchase Programme increases the risk of dependence on central bank financing, as the issuer-share limits have been abandoned, greatly expanding the universe of sovereign debt eligible for purchase.

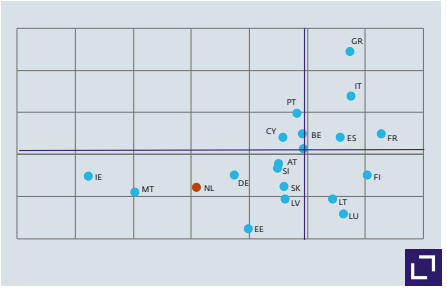
Sustainability of public sector and private sector debt in Europe: Figures



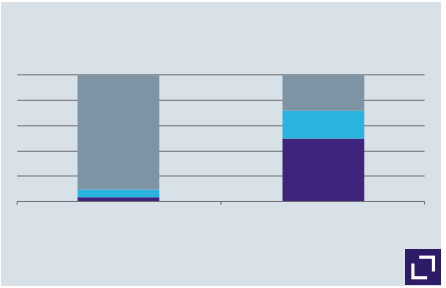
Euro area government debts have increased further since the credit crisis
See figure 22 →



Investors demand substantially higher returns on European corporate debt instruments due to the coronavirus crisis
See figure 24 →



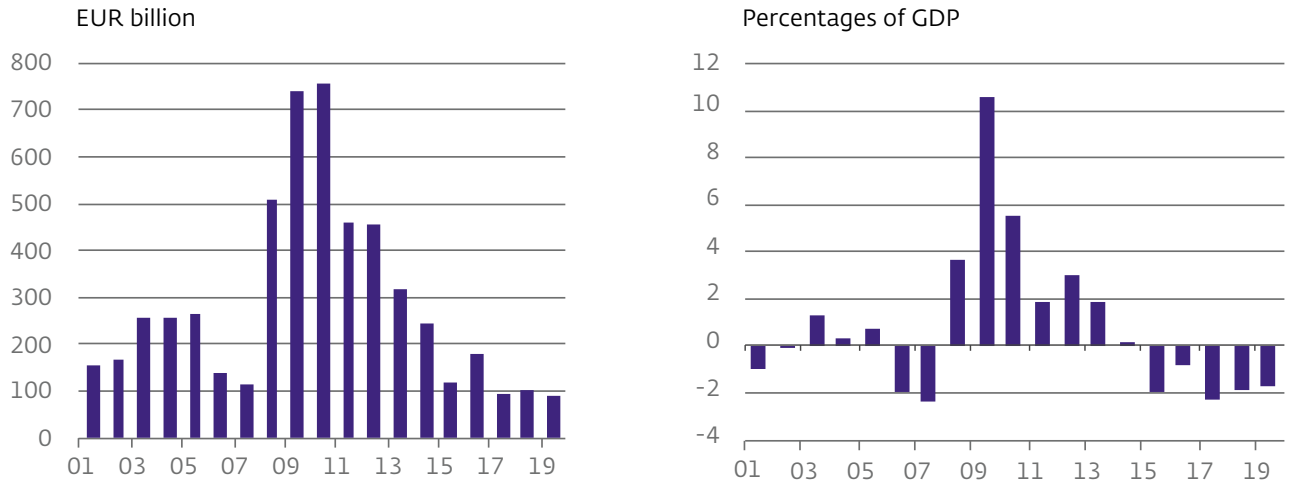
Highly indebted countries have reduced debts relatively moderately
See figure 23 →



Euro area businesses are more sensitive to refinancing risk than households
See figure 25 →

Figure 22 Euro area government debts have increased further since the credit crisis

Annual change in government debt



Source: ECB.

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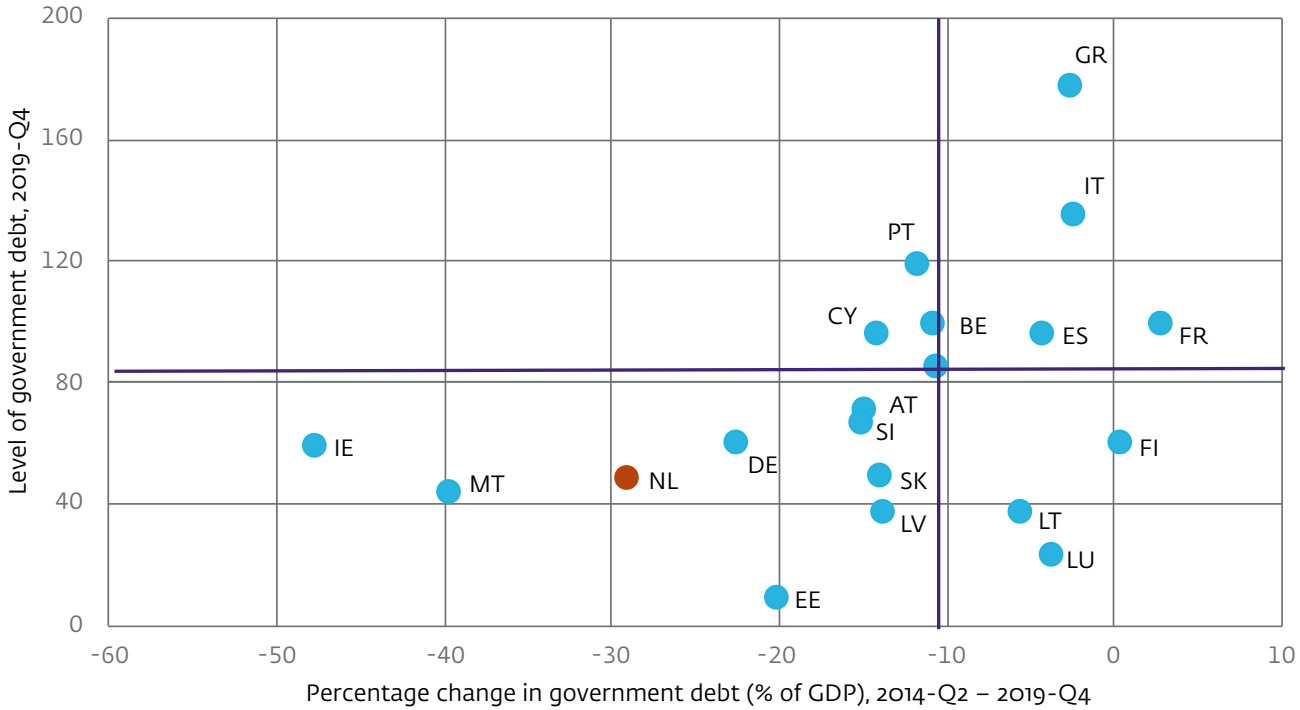
Figure 23 Highly indebted countries have reduced debts relatively moderately

Percentages; percentages of GDP

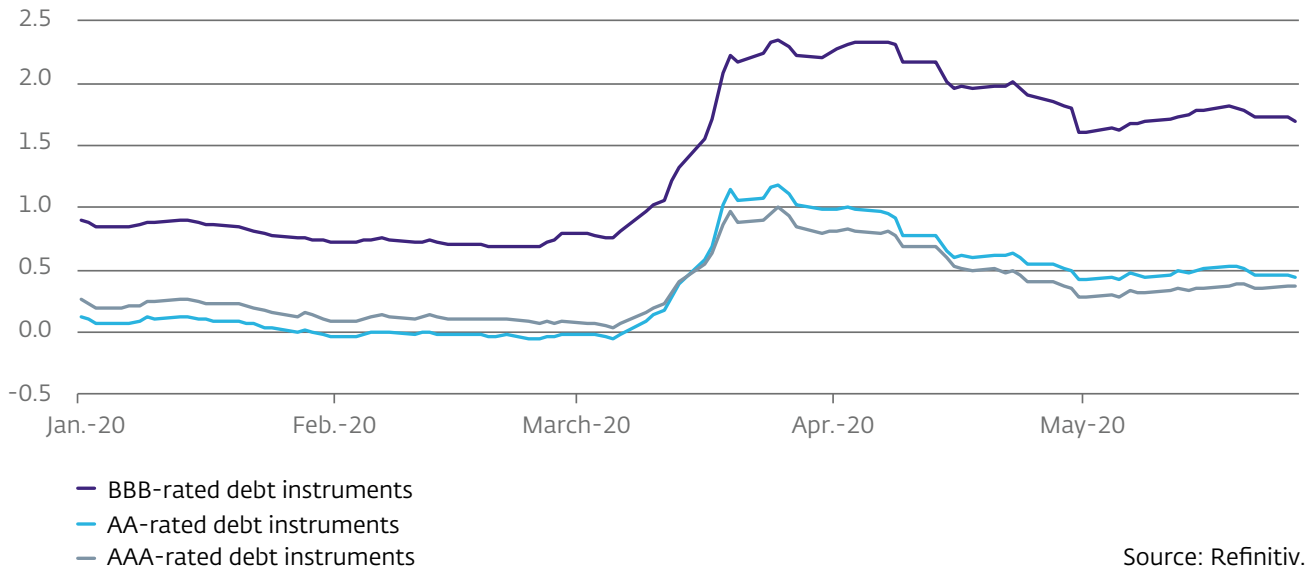


Source: ECB.

Note: The blue line represents the euro area average.

Figure 24 Investors demand substantially higher returns on European corporate debt instruments due to the coronavirus crisis

Percentages



Source: Refinitiv.

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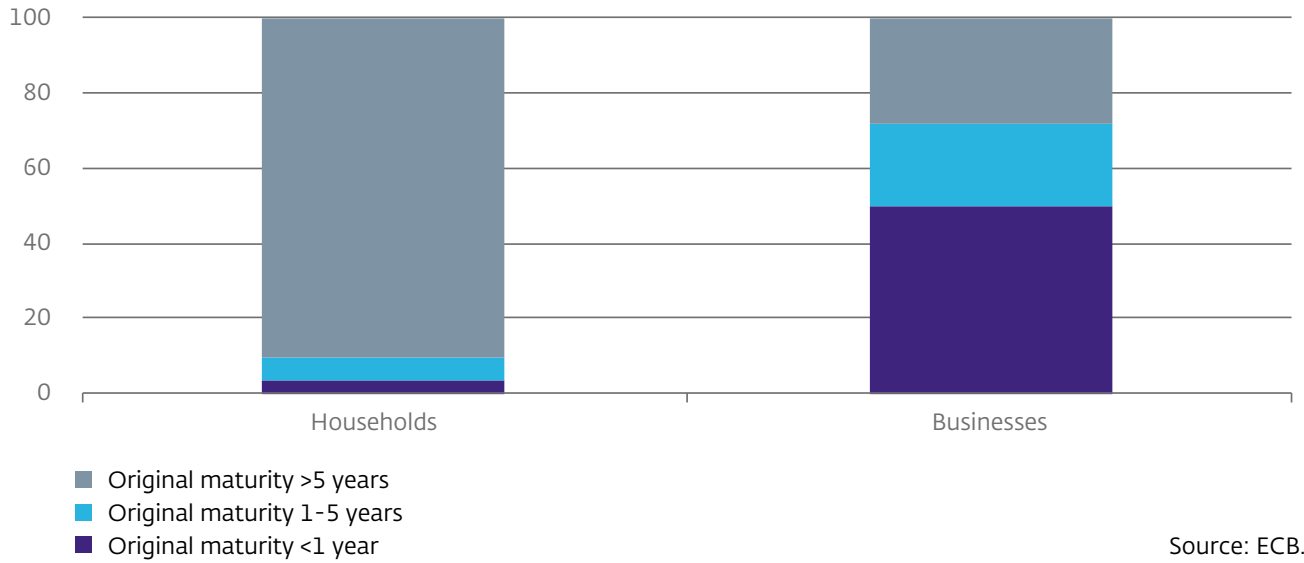
Figure 25 Euro area businesses are more sensitive to refinancing risk than households

Percentage shares, March 2020



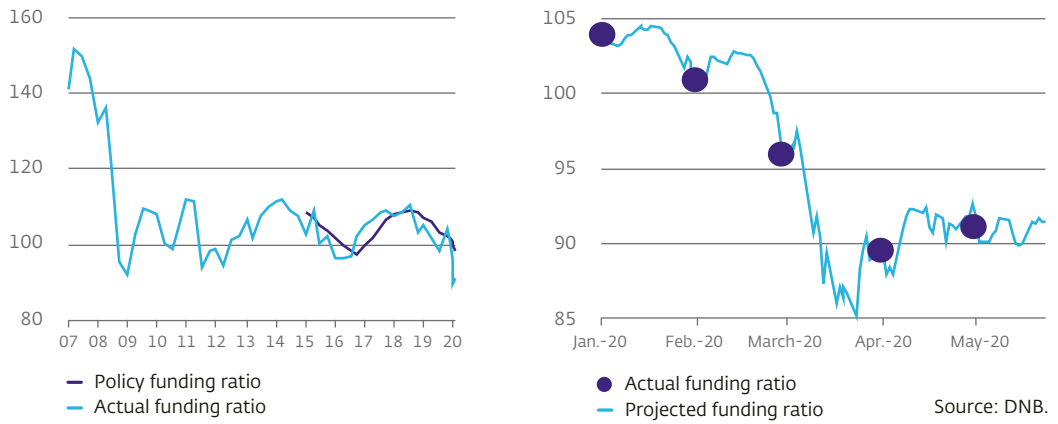
Source: ECB.

Vulnerabilities of pension funds and insurers

- The financial market developments following the coronavirus pandemic have caused a major shock, particularly for pension funds. Funding ratios have fallen further, from a starting position without buffers (see Figure 26).
- The financial position of pension funds and insurers has been under pressure from persistently low interest rates for a long time.
- The pension system needs to be overhauled. Last year's Pension Accord between the government and the social partners offers the prospect of a more future-proof pension system.
- The insurers' business model is also vulnerable. Although there are no concerns as yet about the impact of the coronavirus crisis on insurers' statutory solvency ratios, the economic position of life insurers in particular remains vulnerable.

Figure 26 Average funding ratio of Dutch pension funds has fallen further due to the coronavirus crisis

Percentages



Source: DNB.

Note: The day-to-day funding ratio trend shown is based on an estimation model that calculates funding ratios using current data on interest rates and asset prices.

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Vulnerabilities of pension funds and insurers: Background

Pension funds

The financial market developments resulting from the coronavirus crisis have piled further pressure on the financial position of pension funds. At the beginning of January, their average funding ratio was still 104%, but the downturn in sentiment in the financial markets caused it to fall by almost 15 percentage points to 89% in the first three months of the year. The fall in the funding ratio was driven particularly by plummeting share prices and rising risk premiums.

The pension funds' financial position has been vulnerable for a long time, partly because of the persistently low interest rates. As a result, most pension funds had no buffer to absorb shocks prior to the coronavirus crisis. The protracted low interest rates have a major impact on pension funds because of their long-term liabilities, which are discounted at ever lower interest rates and have therefore increased sharply. The impact of many years of declining interest rates on liabilities has only been partly offset by increases in the value of investments.

Although the Dutch pension system is held in high regard internationally, it is not sustainable in the longer term. Compulsory pension accrual through employers ensures that a large part of the population builds up pensions. The replacement rate, the level of pension in relation to earnings, is therefore higher in the Netherlands than in most other countries. However, the vulnerabilities of the current system, with firm commitments to pay benefits into the distant future, have been increasingly laid bare. The low interest rate makes the financing of nominal commitments in the future considerably more expensive, and partly for that reason members' expectations of a secure and stable pension have not been fulfilled in recent years.

The Pension Accord concluded in June 2019 provides the basis for a new pension contract. In the Pension Accord it was agreed to abolish the uniform system (whereby each participant in a scheme pays the same contribution rate and receives the same pension accrual percentage) and switch to a different pension contract with a bespoke investment policy. This brings the extent to which funds take investment risks more closely into line with the risks that participants are willing and able to bear. The pension system can be made less interest-sensitive by factoring in the way in which interest rate fluctuations are allocated to participants when implementing the Pension Accord. The aim is to improve the transparency of the system and implement a more bespoke investment policy while preserving the advantages of collectivity and risk sharing.

Vulnerabilities of pension funds and insurers: Background

Insurers

The coronavirus pandemic is also affecting the insurance sector. The share prices of most financial institutions have been hit harder than average by the coronavirus crisis and the same applies to insurers (see Figure 27). At the low point in mid-March, the value of European insurers had fallen by more than 40% on average since the start of the year. Many European insurers have responded to the call from EIOPA to suspend dividend payments. Insurers in the Netherlands have also deferred dividend payments. EIOPA's recommendation is in line with our call on banks and insurers not to use buffers to pay dividends or repurchase shares for the time being.

As yet there are no concerns about insurers' statutory solvency ratios as a result of the coronavirus crisis. Since Dutch insurers invest with less risk than pension funds, the coronavirus crisis is having less impact on their financial position. The value of certain low-risk investments has actually risen due to a flight to quality in financial markets, and insurers are benefiting from the volatility adjustment compensation for losses caused by increasing spreads. The impact of the coronavirus crisis on non-life insurers is less clear-cut than in the case of life insurers. Many policies exclude cover for pandemic risks, but this varies greatly depending on the product. The trend in damage claims due to the coronavirus crisis will become clearer in the period ahead. Past observations are certainly not a good predictor. This is illustrated by the decline in car insurance claims due to the sharp decrease in road traffic. A segment of the insurance market that has been hit hard by the coronavirus crisis is the credit insurance market, which is largely at a standstill. The coronavirus crisis increases the probability of default, so credit insurers have lowered the credit insurance limits and are reluctant to insure companies in affected sectors. Most Dutch businesses are insured with institutions elsewhere in the EU, which are not subject to our supervision. As the imposition of tighter limits could have a major impact on business, the Dutch government has responded by guaranteeing EUR 12 billion of credit insurance.

The financial position of life insurance companies in particular remains vulnerable. The economic reality of low interest rates is only partly reflected in the statutory solvency ratios according to the Solvency II framework. Protracted low interest rates entail the risk that the solvency of insurers based on market valuation, without applying the ultimate forward rate (UFR) and the volatility adjustment in Solvency II, will come under such pressure that insurers in difficulty have little scope to transfer liabilities or mitigate balance sheet risks without cutting their policyholders. The difference between the statutory solvency position and a solvency position based on market valuation is particularly problematic if there is a liquidation

Vulnerabilities of pension funds and insurers: Background

or a transfer of insurance policies, since in these cases market valuation will be decisive. This risk applies particularly to insurers with long-term liabilities, such as life and funeral services insurers. Without sufficient returns above the risk-free market interest rate, life insurers see annual decreases in their Solvency II own funds. The UFR effect is reflected in the statutory solvency ratio after a time lag, as liabilities to policyholders gradually come closer. In order to maintain their capital buffers, insurers must therefore earn back the UFR effect, but that is difficult when interest rates are low or negative.

Insurers also have to contend with challenging market conditions that hamper their future earning capacity. Due to falling demand for life insurance products, the situation is particularly difficult for life insurers. When interest rates are low, new life policies can only be sold profitably if premiums are relatively high. Products such as annuities and pension and endowment insurances have become much more expensive due to low interest rates and rising life expectancy. As a result, these products have become steadily less attractive to customers. The reduction of tax relief for life insurance products (the introduction of tax-relieved bank saving and the abolition of interest deductibility for savings-based mortgage loans) has also put pressure on the traditional earnings model. The number of new life insurance policies issued has therefore fallen steadily in recent years.

Since the financial crisis insurers have taken measures to make the sector more future-proof, but further changes need to be made to their business models. As a result of mergers and acquisitions, insurers are now better prepared for a further contraction of the sector (see Figure 28). Non-traditional operators such as private equity funds are also increasingly involved. Insurers are also trying to make their business model more future-proof by adjusting the product range, for example by focusing more on banking activities (tax-relieved bank saving and mortgage loans). Persistently low interest rates will prompt insurers to continue cutting their more traditional product offerings. Life insurers have already become more cautious about issuing return guarantees and their focus is gradually shifting to products where investment risks are borne by the policyholder. No pick-up is expected in the Dutch unit-linked insurance market, however, due to the loss of confidence resulting from the investment insurance misselling affair.

Vulnerabilities of pension funds and insurers: Policy

Pension funds

With the financial position of pension funds under further pressure, the need for an overhaul of the pension system has become more pressing. Although the impact of the coronavirus crisis in terms of possible cuts will not be evident until the end of this calendar year, this development illustrates that the current system, with nominal commitments into the distant future, is unsustainable. The Netherlands has a large funded pension system, which makes an important contribution to retirement provision, but the vulnerabilities of the current system have been increasingly laid bare in recent years. Developments in recent months have merely confirmed that the current system is not sufficiently future-proof.

Last year's Pension Accord between the government and the social partners offers the prospect of a more future-proof pension system. In order to ensure the long-term sustainability of the system, it is important that all parties involved work together expeditiously to implement and transform the agreements into a concrete approach leading to a new pension contract, an approach to the transition and the associated laws and regulations. Low interest rates make the implementation of this Pension Accord challenging. On the one hand, low interest rates make it easier to abolish the uniform system, while on the other hand funds have no buffers to mitigate transition effects when switching to a new system. The implementation of the Accord calls for a balanced and transparent assessment of interests, avoiding disproportionate impacts on certain groups of participants.

Insurers

Life insurers in particular need to adapt their operational management to the diminishing portfolio. Insurers face difficult strategic choices, and the appropriate solution varies depending on the insurer. If an insurer considers that its current or expected scale is insufficient, it can explore avenues for consolidation, consider running off its business or transferring closed portfolios to specialist operators. In order to continue safeguarding the interests of policyholders in the longer term, it is important that when determining their capital and dividend policies insurers take account of the development of their financial position based on economic market parameters.

Appropriate valuation of insurers' liabilities remains important. This year, EIOPA is advising the European Commission on the revision of the Solvency II framework, including an examination of the Long Term Guarantee (LTG) measures, which are important for valuing long-term liabilities. In order to identify vulnerabilities in good time, it is important to move towards a more realistic valuation of long-term liabilities that is more in line with the reality of the

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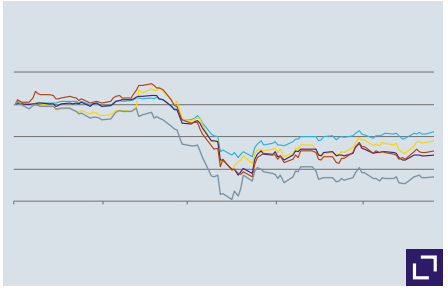
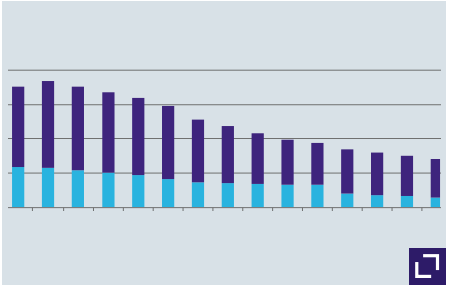
Vulnerabilities of pension funds and insurers: Policy

low-interest environment, without increasing capital requirements. It would be undesirable to bring forward relief measures from the Solvency II evaluation in response to the coronavirus crisis. This would make it difficult to strike a balanced approach and achieve the necessary improvements in the legal framework.

Vulnerabilities of pension funds and insurers: Figures



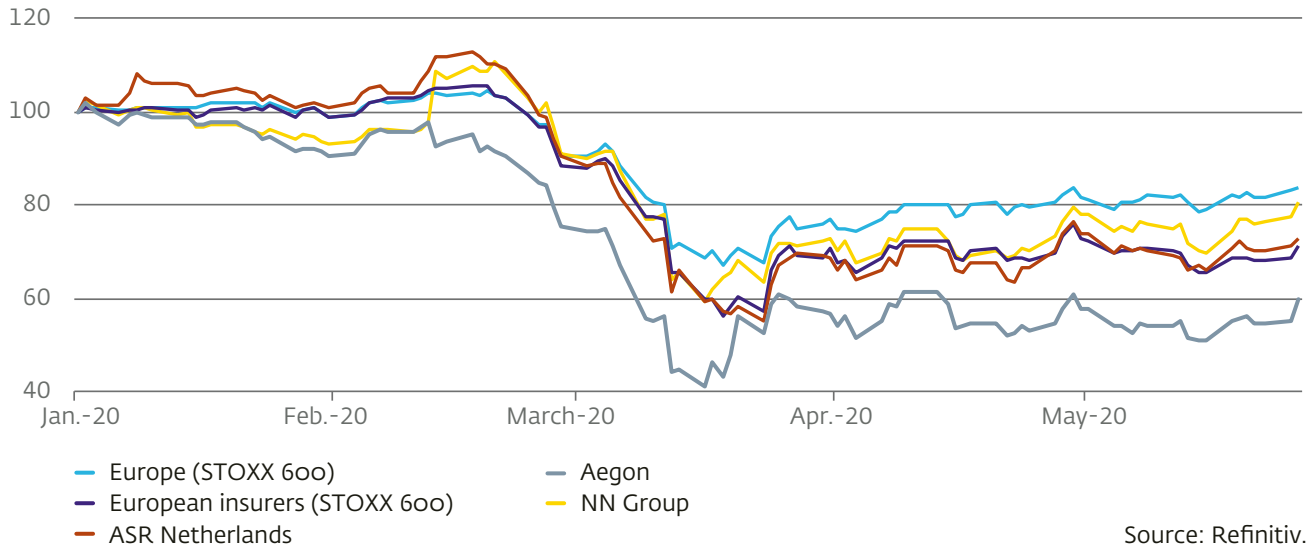
Coronavirus crisis deals relatively hard blow to insurers' share prices
See figure 27 →



Number of Dutch-based supervised insurers has steadily declined over the past years
See figure 28 →

Figure 27 Coronavirus crisis deals relatively hard blow to insurers' share prices

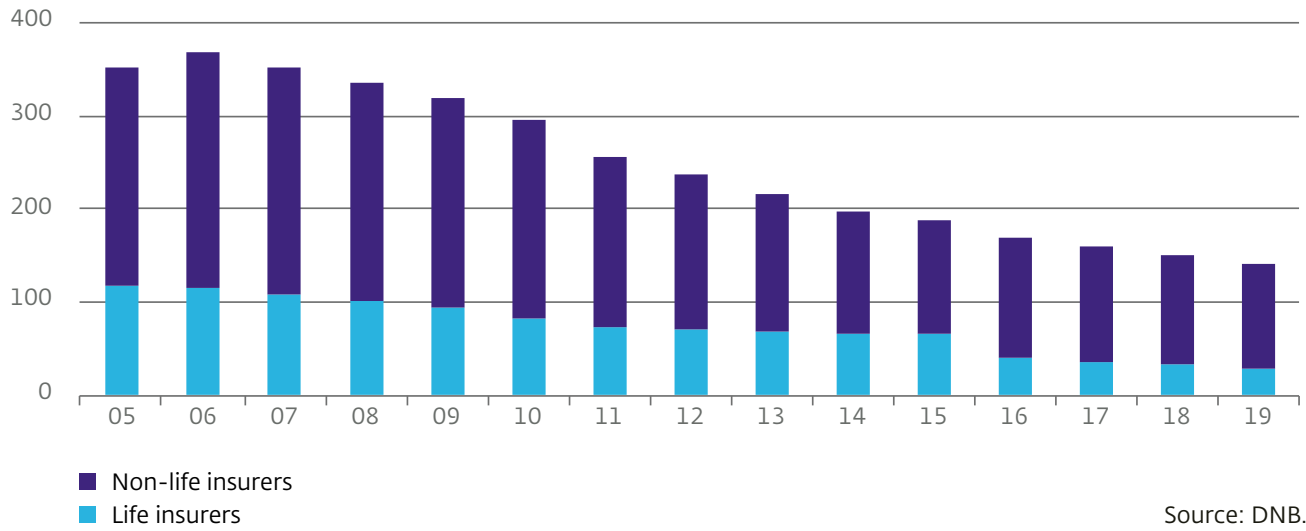
Index 1 January 2020=100



Source: Refinitiv.

Figure 28 Number of Dutch-based supervised insurers has steadily declined over the past years

Numbers



Source: DNB.

Downturn in real estate markets

Commercial real estate market

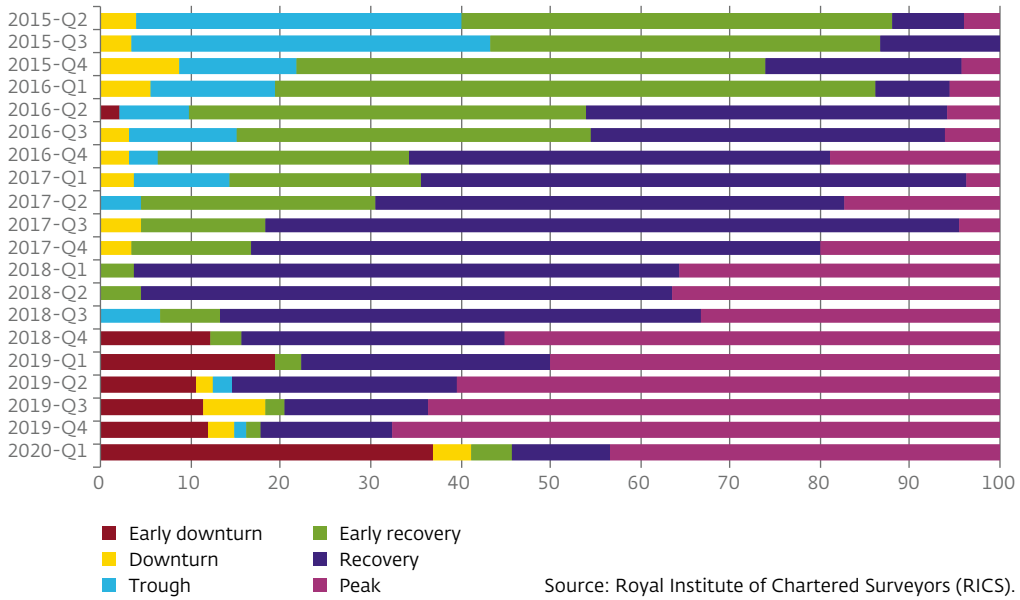
Housing market

Downturn in the commercial real estate market

- The economic shock caused by the coronavirus crisis is also having an impact on the commercial real estate market. Property owners are being affected by lost rental income and lower earning potential. If the recession is protracted and businesses occupying the real estate get into difficulty, a strong price correction in commercial real estate prices cannot be ruled out, partly in view of the fact that the market appeared to peak before the coronavirus crisis and the structural outlook was already less favourable.
- Our pandemic stress test points to a significant increase in the proportion of defaults on commercial real estate loans in a severe stress test scenario. However, as the risk characteristics of the banks' commercial real estate portfolios have improved in recent years, loan losses will remain fairly limited, especially relative to the total losses incurred by banks in such a severe stress test scenario.
- More and higher-quality data on the continuity of rental income, prices, investments, financing and energy labels will provide a clearer view of the risks in the commercial real estate market.

Figure 29 The coronavirus crisis has further eroded confidence among commercial real estate investors

Percentage of respondents



Source: Royal Institute of Chartered Surveyors (RICS).

Downturn in the commercial real estate market: Background

The economic recession that will result from the coronavirus crisis may lead to a rapid drop in demand for real estate and falling prices. The commercial real estate market is highly cyclical. History shows that commercial real estate often plays a major role in financial crises; when there is an economic downturn, real estate prices fall and financing problems increase. With a cyclical downturn in prospect, mainly due to the global economic impact of the coronavirus outbreak, demand for retail and hospitality real estate, for example, may fall rapidly. Real estate prices may fall sharply. Expectations of future rental income play a major role here: if rental potential decreases, commercial real estate becomes less attractive and prices fall. Price falls may be accelerated by reluctance among real estate financiers to grant new loans. Furthermore, international capital flows have increasingly synchronised trends in commercial real estate prices worldwide (see BIS, 2020). A decrease in real estate prices is therefore likely to occur simultaneously in multiple countries.

Even before the advent of the coronavirus crisis, investors felt that the market had peaked and the structural outlook was unfavourable. After many years in which investment volumes repeatedly hit record highs, investments in commercial real estate declined from 2019. This trend was already under way before the coronavirus arrived and reflects both weakening economic growth and low returns. As commercial real estate prices increased again for several years, returns fell to all-time lows. In particular, prices of offices and rental homes have risen sharply in recent years, while retail prices have lagged behind (see Figure 30). A survey of real estate investors shows that in 2019 a majority already believed the commercial real estate market had peaked. The coronavirus crisis has further eroded confidence among real estate investors: the percentage of respondents believing the real estate cycle is in the downward phase rose from 15% to 41% in the first quarter of 2020 (see Figure 29). Moreover, the structural outlook for the retail and office markets was already unfavourable. For example, online sales are increasing steadily, so less retail space is required. Also, the increasing prevalence of homeworking means there is less need for office space. The coronavirus crisis may further reinforce these trends. The lockdown, for example, has prompted many businesses and employees to invest in facilities for efficient homeworking. Sustainability also plays an important role in the commercial real estate sector. By 2023, all offices larger than 100m² must have at least a C energy label. Properties that do not meet this requirement by the deadline may no longer be used as office buildings. This will slow down demand for non-sustainable real estate.

Risk outline
Risk map
Pandemic stress test

Downturn in the commercial real estate market: Background

The coronavirus crisis affects property owners through lost rental payments and lower earning potential. Many businesses have seen revenues fall as a result of measures to prevent the further spread of the coronavirus. This is particularly true in the hospitality industry and other sectors forced to close to the public. The government has taken measures to support these businesses. In addition, private landlords in particular have been agreeing full or partial rental holidays with tenants. These may reduce private landlords' losses in the long term if they enable tenants to retain sufficient liquidity to make it through the coronavirus crisis. Expectations of future rental income have fallen sharply as a result of the coronavirus crisis. Real estate investors expect retail rents in prime locations to fall by 6% and those of retail real estate in other locations by 12%. While investors expect a marginal rise in rental income from prime office and industrial real estate, they expect rental income from these types of real estate in non-prime locations to fall by 2-3%. This loss of earning potential also affects the part of the portfolio for which rental income continues to be received.

Any losses on the commercial real estate portfolio directly impact the balance sheet of real estate investors, such as Dutch pension funds. Pension funds have around EUR 143 billion invested in commercial real estate, including EUR 126 billion through property funds. Losses on this portfolio have a direct impact on the funding ratio. Insurers also invest in commercial real estate. Their exposures total around EUR 13 billion. The impact of losses in indirect real estate investments (through property funds) on the solvency ratios is cushioned by the Solvency II regime.

Our pandemic stress test shows that a 'severe' stress test scenario could also lead to losses in Dutch banks' commercial real estate portfolios. Dutch and foreign banks are important financiers of commercial real estate: a survey shows that banks are the primary source of finance for 66% of real estate investors. The three large Dutch banks' commercial real estate portfolios together amount to EUR 84 billion. These are loans that finance purchases of commercial real estate (income-producing real estate). The risk characteristics of this portfolio have improved in recent years. For example, individual loan data for this portfolio show that the average LTV of the outstanding loans fell from around 68% at the end of 2016 to around 55% at the end of 2019, partly as a result of price rises. The LTVs of new loans have also fallen, to around 57%. Moreover, the number of defaults has decreased. Our pandemic stress test points to a sharp increase in the number of defaults in the 'severe' stress test scenario. However, partly because of the improvement in the risk characteristics of the commercial real estate portfolio, banks' loan losses remain relatively limited, especially

Downturn in the commercial real estate market: Background

relative to the total losses that banks will incur in this stress test scenario. The banks' total loan losses on the commercial real estate portfolio in the 'severe' stress test scenario amount to EUR 1.5 billion. Banks are also indirectly exposed to commercial real estate through corporate loans secured on real estate. These exposures currently amount to EUR 160 billion (6.7% of the balance sheet). Arrears in this portfolio will mainly arise due to declining profitability of businesses and be less related to the quality of the collateral. No adequate historical data are available on the potential scale of losses in this portfolio.

More information

- The autumn 2018 FSR considers the structural risks in the commercial real estate market in greater detail.
- The BIS has investigated the underlying causes of price developments in the global housing and commercial real estate market.

Downturn in the commercial real estate market: Policy

More and higher-quality data on the continuity of rental income, prices, investments, financing and energy labels will provide a clearer view of the risks in the commercial real estate market. As developments in the commercial real estate sector can have a major impact on financial stability, it is important that robust data are available on this market. For example, in order to determine the impact of the coronavirus crisis on the commercial real estate market, it is important to have insight into the continuity of rental income: the drying up of rental income puts pressure on real estate prices. The European Systemic Risk Board (ESRB) recommended filling gaps in real estate market data in the EU in 2016.

We have insight into banks' real estate portfolios down to a granular level. To gain more insight into the real estate portfolios of non-banks, we work with the Royal Institution of Chartered Surveyors (RICS). We also worked recently with Statistics Netherlands and the Land Registry to set up a national price index for commercial real estate. The beta version of this price index is now available (see Figure 30).

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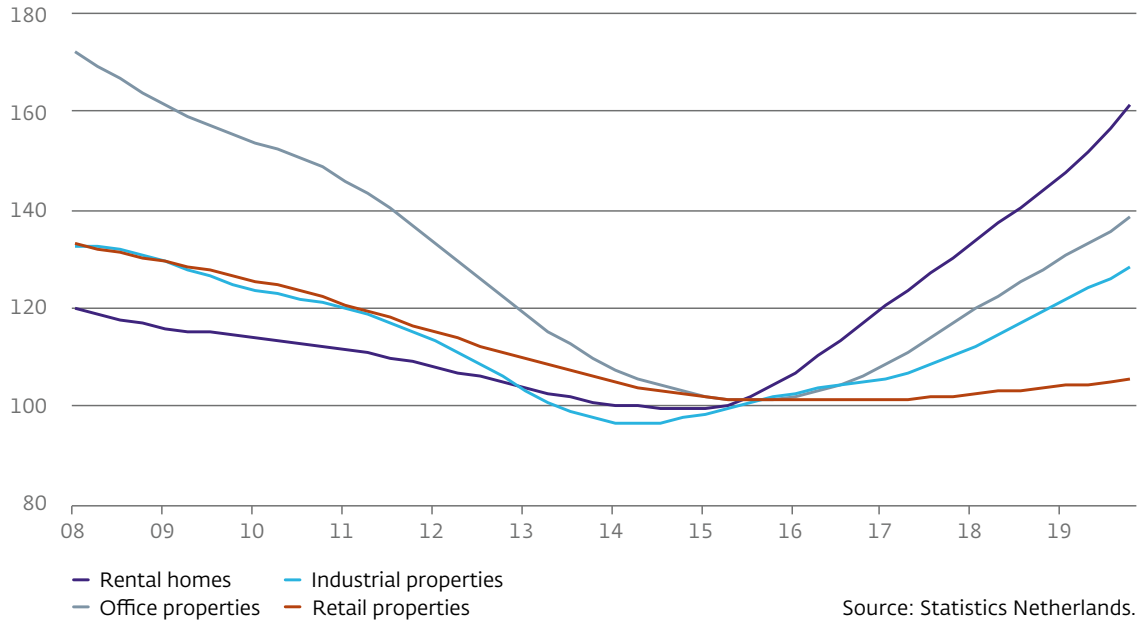
Downturn in the commercial real estate market: Figures

Figure 30 Prices of office properties and rental homes have risen sharply in recent years, while price increase of retail properties lagged behind

Price index for commercial real estate, 2015=100 (trend lines)



Source: Statistics Netherlands.

Notes: Statistics Netherlands is developing a nationwide price index for commercial real estate in tandem with the Dutch Land Registry and DNB. The index is a beta version. The hedonic index takes account of property characteristics such as location, year of construction and floor area. It has a relatively wide coverage and includes portfolio sales. Trend lines were computed to distinguish trends from incidental fluctuations.

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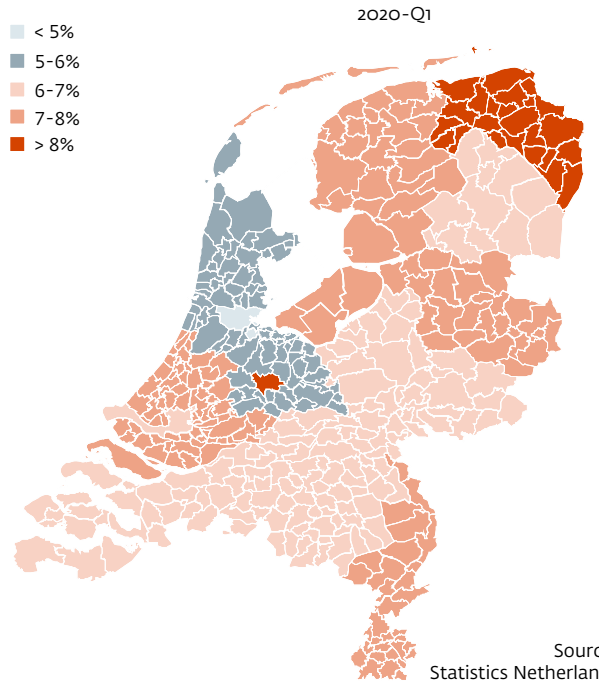
Downturn in the housing market

- The housing market remains tight. In the first quarter of 2020, almost 30% fewer homes were on the market than a year earlier and prices continued to rise significantly (see Figure 31). Market operators suggest that as yet the coronavirus crisis has not brought the housing market to a halt, with viewings, valuations and sales continuing. Mortgage interest rates remain historically low.
- The impact of the coronavirus crisis will only become visible over time and depend on the depth and duration of the economic recession. The crisis may lead to lower demand through falling consumer confidence and higher unemployment, causing the housing market to lose momentum. At the same time, it is also having an impact on the construction sector, making it even more difficult to build sufficient new homes. Given the pre-existing bottlenecks in the housing market, the coronavirus crisis must be prevented from bringing the construction of new houses to a halt.
- High debt levels make households vulnerable. This is particularly true of households with insecure incomes, such as self-employed and flex workers. However, since LTV limits have now been set and mortgage interest is only deductible if repayments are made, fewer households will go into negative equity in the event of a new house price correction than was the case during the credit crisis.
- Due to the dramatic impact of the coronavirus crisis, we have postponed the introduction of a minimum limit on the risk weighting of mortgage loans. A decision on when the measure can come into force will be taken later this year.

Figure 31 House prices still rose sharply in the first quarter of 2020

Percentage changes (year-on-year)



Source: Statistics Netherlands.

Downturn in the housing market: Background

The housing market remains tight. In the first quarter of 2020 almost 30% fewer homes were on the market than a year earlier. Homes were on the market for an average of 41 days, three days fewer than a year earlier. House prices are continuing to rise for the time being. They rose by 6.6% (year-on-year) in the first quarter. It is notable, however, that house prices in Amsterdam, which had previously seen the fastest rise, rose more slowly, by 4.6% (see Figure 31). Price trends in large cities are often ahead of the rest of the country (see also BIS, 2020).

Market operators suggest that the housing market is certainly not at a standstill at the moment. Housing market activity declined in the first two weeks following the introduction of coronavirus measures in the Netherlands, but quickly recovered. In the last two weeks of March, 12% fewer homes were sold than a year earlier, after which the number of sales increased by 4% in the first week of April compared to the previous week. Estate agents, valuers and notaries have also adapted their way of working so that valuations and contract signings can take place safely. House sales are therefore continuing as normal for the time being. This is partly due to tightness in the housing market: some people see new opportunities to enter the housing market in the current situation. The supply of housing remains very limited, with the number of homes for sale in the first quarter of 2020 at a twenty-year low, although more homes are now being put on the market than before the coronavirus crisis.

The impact of the coronavirus crisis will only become visible over time and depend on the depth and duration of the economic recession. The housing market may be affected in different ways. For example, the coronavirus crisis may lead to lower demand through falling consumer confidence and higher unemployment, causing the housing market to lose momentum. At the same time, the coronavirus crisis is also having an impact on the construction sector, making it even more difficult to build sufficient new homes. These channels are explained in more detail below.

The downturn in sentiment may change the dynamics of the housing market. Consumer confidence is very important for the housing market. In April it fell at the fastest pace ever. This downturn in sentiment could mean, for example, that people will want to sell their home before buying a new one, leading to a fall in the number of transactions. A survey conducted at the end of March shows that households are currently very divided as to whether they would postpone the purchase of a home in this situation: 42% agree, 44% disagree. The other respondents gave neutral answers.[1]

1 The survey was presented to the members of the LISS panel of CentERdata, which is representative of the Dutch population aged 16 and over. 5,453 of the 6,817 respondents completed the survey in full (an 80% response rate). The questionnaire was open from 20 through 31 March.

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Downturn in the housing market: Background

Demand for housing remains stable for the time being, but may decrease in the future if unemployment rises. The coronavirus crisis will inevitably lead to a recession, but the government measures will ensure that particularly people in permanent jobs are able to stay in them for the time being, supporting demand for owner-occupied homes. There is growing uncertainty about employment, however. In addition, temporary, self-employed and stand-by workers may work less. In the event of a protracted coronavirus crisis and a deep recession, unemployment may rise further, disposable household income may fall and demand for homes may decrease. During the credit crisis too the effects on the housing market were not immediately evident: the credit crisis began in 2008, but the housing market did not bottom out until 2013.

Mortgage interest rates remain very low at the moment, so financing conditions are still favourable. The average mortgage rate on new loans decreased by around 50 basis points to 1.92% between April 2019 and the end of February 2020. Many lenders raised their mortgage rates again just after the start of the lockdown in mid-March. There are now alternating rises and falls in interest rates. At the end of April the average mortgage rate on new loans was even lower than at the end of February, at 1.88%. Although it is not impossible that interest rates will rise in the period ahead due to risk premiums, the mortgage rate is expected to remain low in historical terms (see Figure 32).

Housing shortages are likely to persist, as the coronavirus crisis makes it difficult to build sufficient new homes. The government delivered on its housing ambition in 2019 with the realisation of around 77,000 new homes during the year. That was partly due to the large number of building permits issued in 2017 and 2018. Even before the coronavirus struck, however, the number of new building permits began to fall, partly due to the nitrogen emissions issue (see Figure 33). This will make it difficult to build enough homes in the years ahead, a task that will be further complicated by the current coronavirus crisis. Some new permit applications are being delayed, for example, and delays in the construction chain seem inevitable. Many foreign workers in the construction industry have returned home in the recent past. The measures put in place to curb any further spread of the coronavirus are also affecting working methods on building sites.

In a 'severe' stress test scenario, in which GDP in 2020 contracts by more than estimated and some economic recovery materialises in 2021 and 2022, house prices fall sharply. In the 'severe' stress test scenario used for the pandemic stress test (see A pandemic stress test for the Dutch banking sector), house prices are about 12% lower at the end of 2022 than

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Downturn in the housing market: Background

at the end of 2019. By way of comparison, the cumulative decrease in house prices between 2008 and 2013 was around 20%.

In the event of a house price correction, fewer households will go into negative equity than in the previous crisis. Since LTV limits have now been set and mortgage interest is only deductible if repayments are made, fewer households will go into negative equity in the event of another house price correction of the same size than was the case during the credit crisis. In the 'severe' stress test scenario the proportion of mortgage loans in negative equity would rise from less than 4% now to a maximum of 10% at the end of 2022 (see Figure 34). During the credit crisis the proportion of mortgage loans in negative equity reached 36%. This led to lower consumption, deepening the crisis. The Netherlands Bureau for Economic Policy Analysis (CPB) calculated that consumption in 2014 would have been 4% higher if the households that were in negative equity during the crisis had not limited their consumption. Since fewer households will be in negative equity in the event of a new house price correction, the negative economic effects will also be less pronounced.

High debt relative to income makes Dutch households vulnerable. Both first-time buyers and existing homeowners are borrowing more relative to their income. The proportion of homebuyers borrowing close to the maximum relative to income has been rising steadily for many years (see Figure 35). Moreover, the lending rules are being interpreted more loosely. Until recently, for example, self-employed people found it increasingly easy to obtain a mortgage based on uncertain income, and mortgage loans were granted on the basis of a letter of intent or the labour market outlook. The current situation clearly shows the risks that this entails. In some cases households are being given an opportunity to suspend their monthly mortgage payments if they get into financial difficulty due to the coronavirus crisis. This scheme is being used particularly by self-employed and flex workers who have seen their income fall as a result of the coronavirus crisis. The arrears will have to be made up later. In the event of a protracted coronavirus crisis, however, this will not be possible for everyone.

The pandemic stress test shows loan losses in banks' mortgage portfolios remaining fairly limited in the 2020-2022 period in the 'severe' stress test scenario. The pandemic stress test shows that banks' mortgage loan losses may increase but will remain fairly limited due to the good payment behaviour of Dutch borrowers, income safety nets such as unemployment benefit and factors limiting banks' losses, such as the National Mortgage Guarantee (NHG) scheme and the collateral value of the home. In 2019, 0.76% of the mortgage loans granted by the five largest bank mortgage lenders were in default.

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Downturn in the housing market: Background

In the 'severe' stress test scenario this proportion rises to 3.32% in 2022.[2] In this scenario the total loan losses in the Dutch mortgage portfolios of the five largest bank mortgage lenders amount to EUR 2.1 billion over a three-year horizon. Losses in mortgage portfolios are not therefore the main source of losses in this stress test scenario.

In the current situation, too, the risk weights banks apply to their mortgage loan portfolios do not accurately reflect the systemic risks in the housing market. Almost all banks use internal models to assess the riskiness of their outstanding mortgage loans. On that basis, they assign risk weights to 96% of the combined stock of mortgage loans on their balance sheets. Risk weights determine how much capital banks must maintain to absorb potential losses. The risk weights for Dutch mortgage loans are among the lowest in the EU. The average risk weight that banks apply has decreased from 14% to 9% since 2015, partly due to the increase in the value of collateral and the decrease in the number of defaults. Risk weights may increase again as a result of the coronavirus crisis. We consider that the risk weights that banks currently apply are not sufficiently prudent, as they do not adequately reflect the increased systemic risks in the housing market (see autumn 2019 FSR).

Central banks in other countries are also concerned about the housing market. House prices increasingly move in the same direction worldwide (see BIS, 2020). In many countries they have risen sharply in recent years, in some cases even reaching record highs. Prices are now also high relative to incomes in many places, fuelling concern among central banks about the consequences of a possible house price correction. Often, however, house prices can be explained to a large extent by fundamentals such as low interest rates, higher incomes and population growth.

More information

- The BIS has investigated the underlying causes of price trends in the global residential and commercial real estate market.
- In 2019 we published a book on the housing market in the major cities.

2 The figures represent gross default ratios (total defaults/exposure at default). The stress test assumes that mortgage loans that are in default do not recover. This is in line with the EBA stress test methodology. For details see A pandemic stress test for the Dutch banking sector.

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Downturn in the housing market: Policy

Due to the far-reaching impact of the coronavirus crisis we consider it inappropriate to raise banks' capital requirements at present and have therefore postponed the introduction of a minimum limit for the risk weighting of mortgage loans. In the autumn 2019 FSR, we announced that banks using internal models should apply a minimum limit to the risk weighting of mortgage loans from the autumn of 2020. However, the coronavirus outbreak has profound consequences for the Dutch economy, which are also affecting the banking sector. In order to minimise the economic damage, it is crucial that the banking sector continues to function properly. Imposing the minimum limit on the risk weighting of mortgage loans would require banks to hold more capital. We are now postponing this measure, freeing up EUR 3 billion of capital. This will allow banks to continue lending to the real economy amid increasing losses. We will decide on the effective date later in 2020.

The coronavirus crisis underlines the importance of households having sufficient buffers. Dutch households have relatively high debts, making them vulnerable to economic shocks such as the coronavirus crisis. This is particularly true of households with insecure incomes, such as self-employed and flex workers. Households' shock resilience can be increased by taking further measures. For example, it is important that the method used to set the LTI (loan-to-income) limit is designed in such a way that all households are adequately protected from overindebtedness. In addition, a further reduction in the LTV (loan-to-value) limit would mean that households do not go into negative equity so quickly if house prices fall. This would further reduce the negative effects of a house price correction on the economy. Finally, the tax treatment of owner-occupied homes should be brought more into line with other types of assets. This would also help to narrow the gap between buying and renting. The deductibility of mortgage interest means households can afford to pay more for owner-occupied homes than for non-subsidised rental homes. Reducing this discrepancy would make it more attractive to build rental homes in the non-subsidised sector and thus help reduce the shortage in this sector.

The construction of new-build homes must be increased. To maintain stability in the housing market, the number of new homes built must match the increase in the number of households. During the financial crisis the number of new homes built per year fell sharply, exacerbating the crisis. The construction sector was so badly affected that it had difficulty rebounding after the crisis (see CPB, 2020). Production capacity thus lagged behind even after the crisis, whereas the number of households continued to grow. This contributed to the housing shortage. The supply of housing is too small especially in the mid-market rental segment in the large cities, meaning that supply must be expanded,

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Downturn in the housing market: Policy

preferably under direction from central government. This is because municipalities and housing corporations are not always given the right incentives to provide the right type of housing in the right places (DNB, 2019). The government must now to try to reverse the decline in the number of new building permits, which had already begun before the coronavirus outbreak. Steps must be taken to prevent the coronavirus crisis from causing a further reduction in the number of permits and new homes built. This will contribute to a more stable housing market and prevent the coronavirus crisis from triggering a fresh crisis in the construction industry, which would have negative economic effects. Given the existing housing shortage, the building of additional homes will not result in vacancies, so additional building activity will not immediately lead to additional price falls if the housing market turns around. The government recognises the importance of continued construction activity and announced a package of measures in May aimed at maintaining construction activity during the coronavirus crisis.

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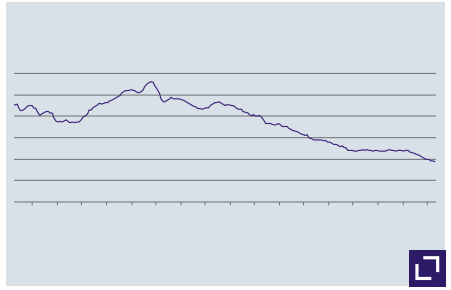
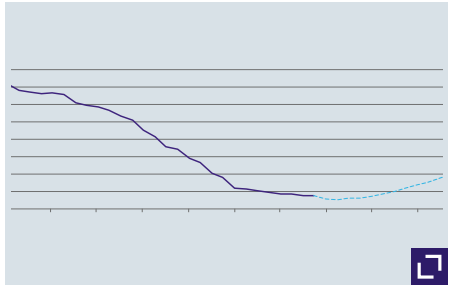
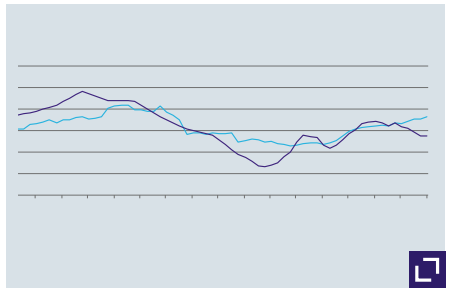
Downturn in the housing market: Figures



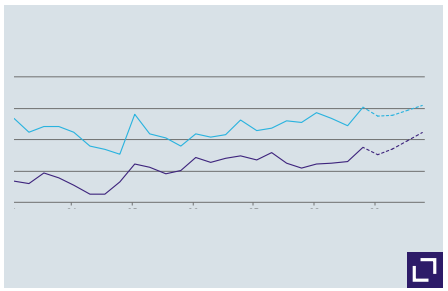
Mortgage interest rates remain low from a historical perspective
See figure 32 →



In the event of a house price correction, fewer households will go into negative equity than in the previous crisis
See figure 34 →



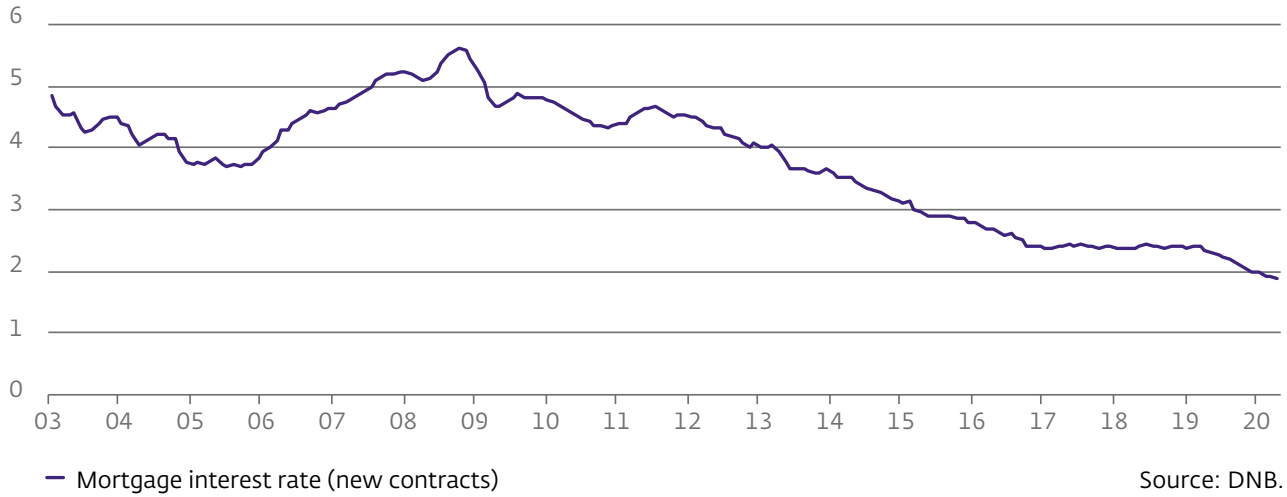
The number of newbuild building permits has fallen since early 2019
See figure 33 →



Proportion of homebuyers borrowing close to the maximum relative to income has been rising
See figure 35 →

Figure 32 Mortgage interest rates remain low from a historical perspective

Percentages



Source: DNB.

Note: Average interest rate on new contracts, including renegotiated contracts.

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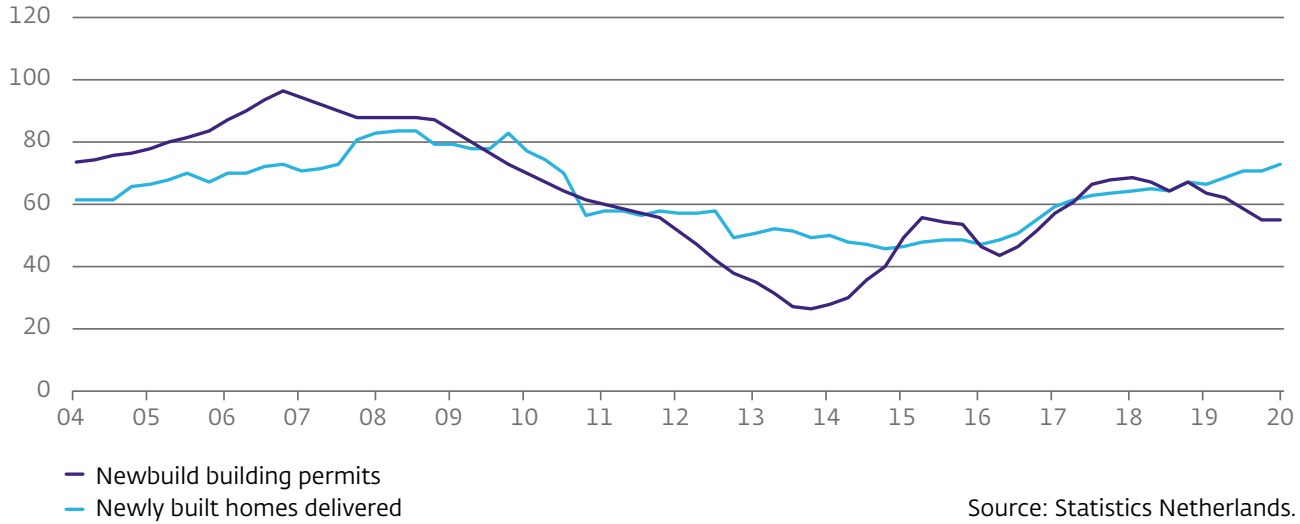
Figure 33 The number of newbuild building permits has fallen since early 2019

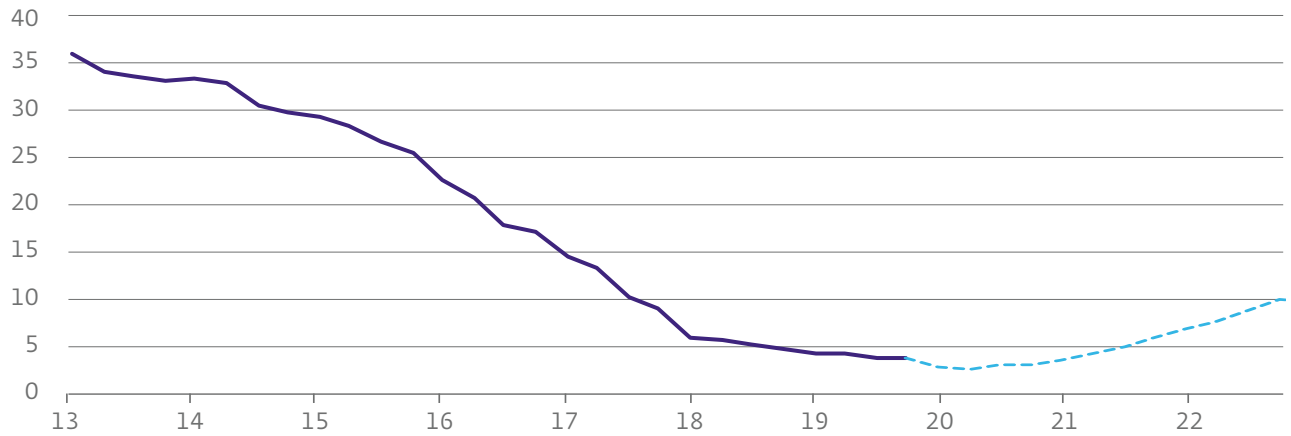
Thousands; moving annual total



Source: Statistics Netherlands.

Figure 34 In the event of a house price correction, fewer households will go into negative equity than in the previous crisis

Percentages



Source: DNB loan level data.

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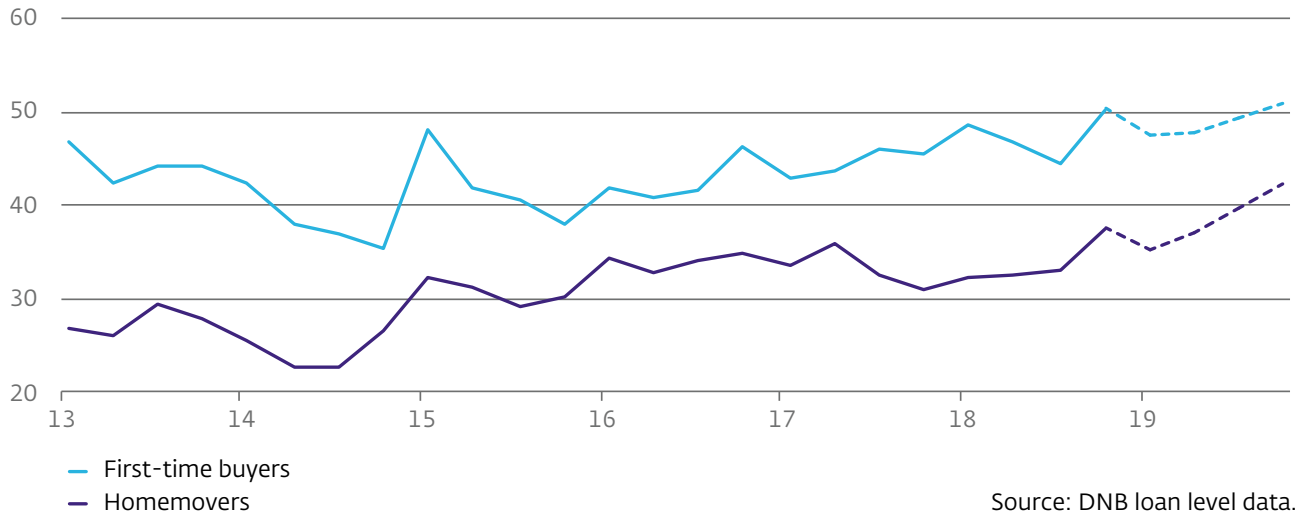
Pandemic stress test

Figure 35 Proportion of homebuyers borrowing close to the maximum relative to income has been rising

Percentage of new production with LTIs exceeding 90% of the maximum



Source: DNB loan level data.

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A pandemic stress test for the Dutch banking sector: Introduction

The coronavirus pandemic is affecting the capital position of Dutch banks due to increasing loan losses and declining income. The impact of the financial and economic shocks will depend to a large extent on the duration and depth of the crisis. Given the great uncertainty concerning both dimensions of the crisis, the results of two stress test scenarios in which tail risks materialise are presented here. In a 'severe' stress test scenario the loan losses amount to EUR 23 billion and the average CET1 ratio of Dutch banks falls by 5.5 percentage points by the end of 2022.[3] This corresponds to an average fall in the leverage ratio of 0.7 percentage points. The good news is that the relatively high capital ratios enable banks to absorb such losses without significant consequences for lending. This is no longer the case in a 'perfect storm' scenario, in which the economy does not recover until 2022. In this stress test scenario, loan losses could in theory mount to EUR 39 billion. Banks will want to scale back lending to businesses and households to limit their losses and prevent their capital ratios from getting uncomfortably close to the minimum requirements. The banks would then no longer be able to fulfil their role in financial intermediation, causing further economic damage.

We assess the possible impact of the coronavirus pandemic on the capital position of Dutch banks on the basis of two stress test scenarios. These do not predict the most likely outcomes but are based on tail risks. This makes it possible to identify potential vulnerabilities among banks from the perspective of financial stability. Due to the great uncertainty, we have chosen to develop two stress test scenarios, 'severe' and 'perfect storm'. The 'severe' stress test scenario is identical to the 'severe' scenario published in the June 2020 edition of Economic Developments and Outlook. The difference between the two stress test scenarios is that the 'severe' scenario assumes a moderate recovery in GDP growth from 2021, while in the second scenario GDP falls even further during 2021 and does not stabilise until 2022. This second stress test scenario thus represents what could be called a perfect storm – a situation in which all developments turn out much worse than expected, both in public health terms and in financial and economic terms. The stress test specifies no minimum capital ratio that banks must meet in the stress test scenarios, and only the average results for the Dutch banking sector are shown. The results for individual banks may differ from this average result.

3 We included the six significant Dutch banks that are subject to European supervision (ABN AMRO, ING Bank, Rabobank, Volksbank, BNG Bank and NWB Bank) in the stress test.

A pandemic stress test for the Dutch banking sector: Introduction

In the stress test scenarios the severity and the duration of the coronavirus pandemic are the main drivers of the economic downturn. Virologists are currently still unclear about many aspects of the coronavirus. Despite the recent moves to ease the lockdown, we may have to live with the virus for a long time to come. It is not inconceivable that the pandemic will continue for at least another year. This would also be in line with previous experience of pandemics such as the Spanish flu, which broke out in the spring of 1918 and became more severe later that year. In some countries, including the Netherlands, the influenza virus stayed until 1920. Although the circumstances now are markedly different and medical care has greatly improved, a pandemic lasting another year would entail large financial and economic shocks. Due to the shock to the economy, loss of confidence and delays in production chains, its economic consequences would continue beyond the end of the medical crisis.

In the 'severe' stress test scenario the average CET1 ratio of Dutch banks may fall by 5.5 percentage points. The analysis based on the Cassandra[4] stress test model indicates that this decrease is due particularly to mounting loan losses and rising credit risks. Although profitability is under pressure, it still contributes positively to the development of the CET1 ratio because of positive net interest income (NII) and net fee and commission income (NFCI). Loan losses have a negative CET1 impact of 3.4 percentage points in the 'severe' stress test scenario, which corresponds to loan losses of EUR 23 billion. The capital position also weakens due to an increase in the risk exposure amount (2.9 percentage points) and losses due to market risks (1.2 percentage points). In the 'perfect storm' scenario loan losses could theoretically amount to EUR 39 billion. In that case banks would have to scale back their lending to businesses and households in order to limit losses in a timely manner.

Existing government guarantees for bank loans and loan moratoria are included in the calculation of the stress test scenarios. We also assume a static balance sheet and abstract from possible funding problems. We estimate the relationship between the economic situation and loan losses in the stress test model, including the effects of existing government guarantee schemes such as BMKB, GO and NHG[5]. By assuming a static balance sheet,

4 Cassandra is the top-down stress test model we use. For details see Daniëls, T., Duijm, P., Liedorp, F. and Mokas, D. (2017), A top-down stress testing framework for the Dutch banking sector, DNB Occasional Studies 2017 No. 3.

5 We have not been able to incorporate the recent widening of the scope of some of these government guarantees (e.g. BMKB-C, see www.rvo.nl), as they have not yet been confirmed for the whole of the period under consideration. However, given the limited use made of the expanded guarantee schemes so far, this only gives rise to a limited overestimate of loan losses. At the end of May, around 10% of lending since the beginning of March had been granted under expanded guarantee schemes (NVB Corona Monitor 29 May 2020, www.nvb.nl)

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we implicitly take into account moratoria[6] and assume in principle that no deleveraging takes place. Automatic stabilisers (e.g. unemployment benefits) also operate, and we take account taken of government measures that have already been announced, such as the NOW scheme.[7] Our analysis does not include a potential expansion or extension of these measures. Lastly, we assume that banks' financing structures remain unchanged during the stress test horizon and that no liquidity stress arises due to the current accommodative monetary policy in the euro area.

This chapter is arranged as follows. First there is a description of the impact of a pandemic on the macrofinancial sphere. That is followed by a description of the macroeconomic context of the two stress test scenarios, after which the results are described. The final section presents a conclusion and considers implications for financial intermediation if tail risks materialise and banks find they have to restrict lending.

6 Where a stress test is based on a static balance sheet, loans maturing during the stress test scenario horizon are presumed to be replaced by loans of the same maturity and quality. This is de facto the same as deferring repayments.
7 https://business.gov.nl/subsidy/corona-crisis-temporary-emergency-measure-now/

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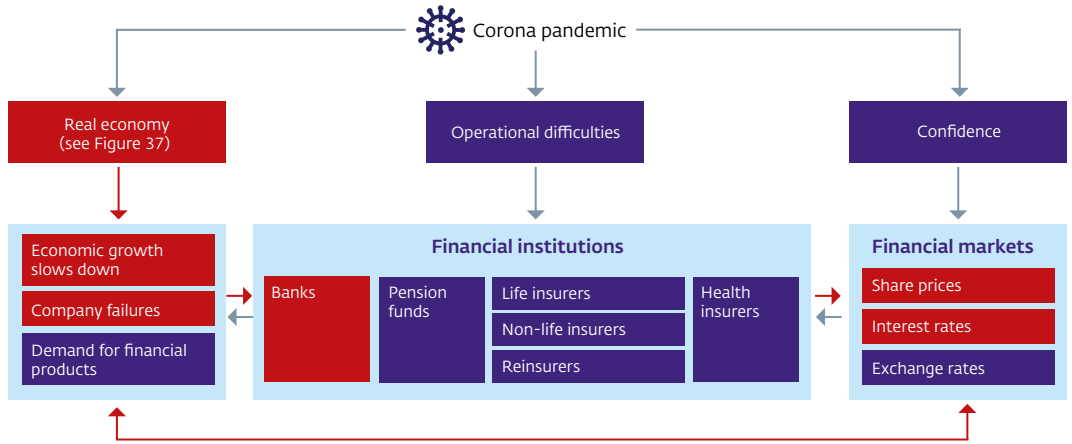
A pandemic stress test for the Dutch banking sector: How does a pandemic affect the macrofinancial sphere?

A pandemic affects both the financial sphere and the real economy. Our description of these channels is based on two previous DNB publications.[8] Figure 36 summarises the channels through which the coronavirus pandemic affects the financial sphere. The first channel is confidence. The fall in confidence was particularly evident in the first phase of the pandemic. Stock markets fell around the world, volatility increased and risk premiums rose. From mid-March, banks also had to contend with the second, operational dimension. Most work had to be done from home, and many employees also had to arrange care for their children or parents. The third channel concerns the various effects on the real economy, shown in red in Figure 36. Decelerating growth, rising unemployment and increasing uncertainty led to an increase in credit risks and declining income from the banks' perspective.

Figure 36 Impact of the corona pandemic in the financial sphere, notably on banks



This chapter focuses on the impact of the coronavirus pandemic on Dutch banks through the macroeconomy. This means that we focus in particular on the elements marked in red in Figure 36: how does the deteriorating macroeconomic environment (the real economy and financial markets) affect banks' capital positions? Here we consider what are termed

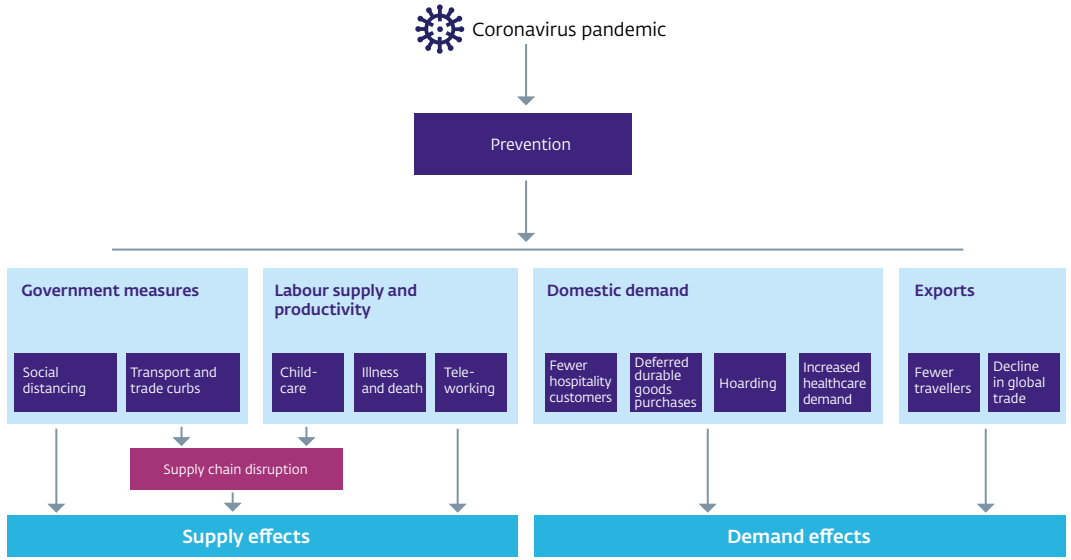
8 These are: DNB (2006a). Influenza pandemic: potential threat to economy and financial system. Quarterly report, March, pp. 55-65. And: DNB (2006b). Flu pandemic: consequences for the economy and the financial institutions. Financial Stability Report, September, pp. 19-20.

A pandemic stress test for the Dutch banking sector: How does a pandemic affect the macrofinancial sphere?

first-round effects. This means any deleveraging by banks in response to the deteriorating economy is disregarded in the first instance. This assumption will be examined more closely in the discussion of the results of the 'perfect storm' scenario. In addition, we do not examine the effects of the pandemic on other financial institutions.

The effects on the real economy are linked to both supply and demand effects. Figure 37 illustrates this. The loss of demand is due in part to the postponement of durable goods purchases by consumers and the reduced ability to spend on things like restaurants, culture and entertainment. Businesses are also less inclined to invest due to the deteriorating economic outlook. The drop in international trade also causes a fall in Dutch exports. On the other hand, there may be an increase in demand for medical care, and for food and ICT products to facilitate homeworking. The supply side disruptions result primarily from decreasing productivity due to illness and the switch to homeworking. Supply side measures that inhibit social interactions and disruptions to global production chains also play an important role.

Figure 37 How the coronavirus pandemic affects the real economy



A pandemic stress test for the Dutch banking sector: Macroeconomic calibration

The stress test scenarios assume that stringent measures in the fight against the coronavirus will be necessary at least until mid-2021. This is not a prediction, but an assumption to serve as a basis for the stress test scenarios. This assumption could imply, for example, that no vaccine is found for the coronavirus for the time being, so strict social distancing remains necessary. Experts argue that a pandemic lasting at least another year is not inconceivable. A key difference between the two stress test scenarios is that the 'perfect storm' scenario is even gloomier with regard to a possible resurgence of the virus, the additional economic damage and the adaptability of the economy. The 'perfect storm' scenario would only materialise if all these dimensions proved to be unfavourable.

A pandemic lasting a further year would entail exceptionally large financial and economic shocks. The financial and economic effects are already evident in the wake of the coronavirus pandemic. For example, global trade has fallen sharply and consumer and producer confidence indicators have plunged since mid-March. We have used the DELFI macroeconometric model to ensure consistent calibration of the financial and economic context for the stress test.[9]

DELFI is used to quantify movements in the macroeconomic variables for both stress test scenarios. Details of the calibration for the 'severe' stress test scenario are described in our Economic Developments and Outlook June 2020 publication. An important difference as compared to the 'severe' scenario is that the 'perfect storm' scenario is based on a global L-shaped GDP trend, which has been calibrated using the NiGEM model. This L-shaped pattern is based on an assumption that the period of social distancing lasts until mid-2021, with additional macrofinancial stress, for example due to higher risk premiums. Because of all these factors we have also decided that the 'perfect storm' scenario would include a severe recession in the first half of 2020, but that scenario differs in that the recession lasts longer. In the 'severe' stress test scenario, global trade recovers in 2021, for example, but in the 'perfect storm' scenario there is no recovery in that period. With this specific development the 'perfect storm' stress test shows a typical example of tail risks.

The two stress test scenarios are intended to highlight vulnerabilities in the financial sphere if tail risks materialise. It should be emphasised that the intention is not to predict the economic effects of the coronavirus. In addition, given the uncertainty, no probability can be associated with the two stress test scenarios. They are both based on exceptionally adverse but nonetheless plausible developments relating to the coronavirus, with the 'perfect storm' stress test scenario exploring

9 See Berben et al. (2018), DELFI 2.0, DNB's Macroeconomic Policy Model of the Netherlands. DNB Occasional Study 5.

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more extreme tail risks. It was decided to calibrate two stress test scenarios to reflect the great uncertainty. The use of DELFI helps to make the stress test scenarios internally consistent, which is necessary to generate valid assumptions for the Cassandra top-down stress test model.

Both stress test scenarios include a significant contraction of Dutch GDP in 2020 due to the coronavirus outbreak. In the 'severe' scenario GDP contracts by 11.8% in 2020 and then grows by 2.2% and 4.6% in 2021 and 2022 respectively. In the 'perfect storm' scenario GDP contracts by 10.2% in 2020 and 4.2% in 2021. Limited growth, of 1.4%, does not return until 2022. Unemployment in the 'severe' scenario reaches 5.0% in 2020, rises to 9.2% in 2021 and then falls to 8.0% in 2022. In the 'perfect storm' scenario, unemployment reaches 5.0% in 2020 and then rises to 10.2% in 2021 and 11.4% in 2022.

The two stress test scenarios have different GDP trajectories, with the 'severe' trajectory most closely resembling a V shape and the 'perfect storm' trajectory most closely resembling an L shape. Figure 38 shows GDP in the 'severe' scenario (light blue line) and the 'perfect storm' scenario (purple line) over the 2020-2022 period relative to GDP in 2019. GDP is almost 6% lower at the end of 2022 than in 2019 in the 'severe' scenario and as much as 13% lower than in 2019 in the 'perfect storm' scenario. The GDP trajectory assumed in recent stress tests conducted by the Bank of England and Sweden's Riksbank are also shown by way of comparison.[10] The Bank of England used one scenario, whereas the Riksbank used two scenarios. The contraction in the 'severe' scenario in 2020 lies between the contraction in the Bank of England's scenario and the contraction in the Riksbank's B scenario. The GDP trajectory over the stress test horizon in the 'severe' scenario resembles the V shape used by the Bank of England and the Riksbank, but those scenarios assume a stronger recovery in 2021 and 2022. The GDP trajectory in the 'perfect storm' stress test scenario is more or less L-shaped. At 10.2%, the initial GDP contraction in the 'perfect storm' scenario lies between the Riksbank's B scenario and the 'severe' stress test scenario. The 'perfect storm' scenario turns out to be relatively severe compared to the other four scenarios mainly because of the length of the recession, reflecting the idea of exploring more extreme tail risks with this scenario. It illustrates how a prolonged contraction affects the Dutch banking sector despite an initially somewhat less severe shock in 2020.

10 See Bank of England Interim Financial Stability Report May 2020 and Riksbank Financial Stability Report 2020:1. In common with our own stress tests, these stress tests were conducted on a top-down basis, i.e. they are based on stress test models of the central banks themselves.

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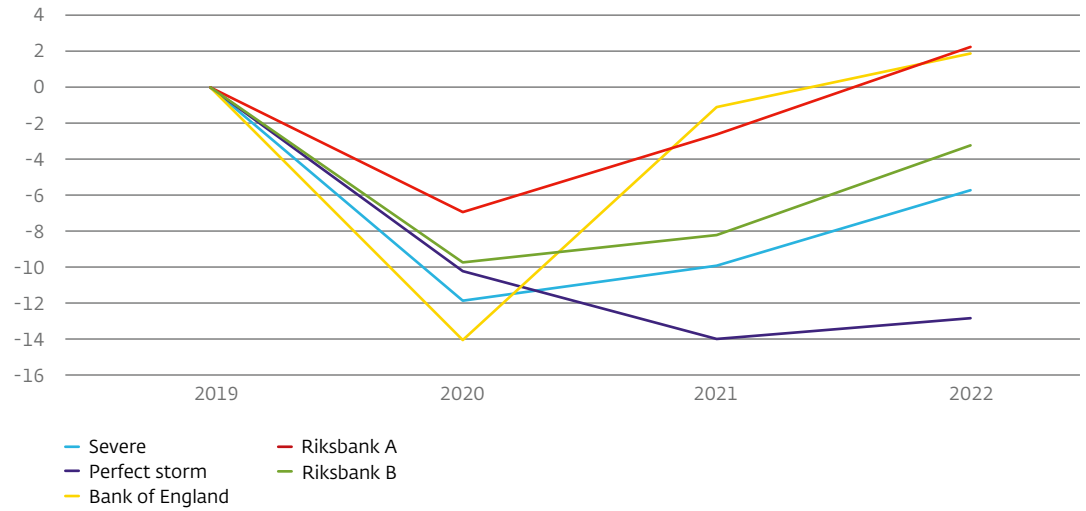
A pandemic stress test for the Dutch banking sector: Macroeconomic calibration

Figure 38 GDP level relative to 2019 (as a percentage) in recent stress tests



Note: GDP data relate to the Netherlands ('severe' and 'perfect storm'), the United Kingdom (Bank of England) and Sweden (Riksbank A and Riksbank B).

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A pandemic stress test for the Dutch banking sector: Stress test results

We then used the Cassandra top-down stress test model to calculate the impact on the capital position of the Dutch banking sector. Cassandra is the model DNB regularly uses to perform top-down stress tests.[11] We used it, for example, to analyse the risks of a disruptive energy transition.[12] Cassandra can be used to quantify the effects on various determinants of the capital position, such as loan losses or risk weights. The calculations were made for the consolidated bank balance sheet.

The results show that in the 'severe' stress test scenario the average CET1 ratio falls by 5.5 percentage points by the end of 2022, which corresponds to an average decrease of the leverage ratios of 0.7 percentage points.[13] Figure 39 shows that the main cause of this decrease in the CET1 ratio is loan losses as well as an increase in credit risks (risk exposure amounts), with losses due to the materialisation of market risks playing a smaller role. In addition, the main sources of Dutch banks' profitability, net interest income and net fee and commission income (NFCI), contribute positively, albeit to a more limited extent than before the coronavirus crisis. Lastly, it must be noted that we have assumed that banks will pay no dividends at any point in the stress test scenario and that any generated deferred tax assets will not count as CET1 capital.[14]

To estimate the impact on profitability, we use inter alia estimated models for net interest income and net fee and commission income (NFCI). With these econometric models we can estimate these two income streams based on the macroeconomic conditions in the stress test. According to the estimated models, net interest income decreases primarily due to the deteriorating economic situation. In the stress test, short-term interest rates remain more or less constant, so there is only limited pressure on these funding costs. The contribution from NFCI is under pressure due to deteriorating stock market developments and the economic downturn.

Profitability is also under pressure from an increase in operational risks. Operational risks increase because of the exceptional challenges involved in organising business processes remotely. Examples include disruption to critical processes and cyber risks. In order to assess the operational risks, we have used the results of the

11 Daniëls, T., Duijm, P., Liedorp, F. and Mokas, D. (2017), A top-down stress testing framework for the Dutch banking sector, DNB Occasional Studies 2017 No. 3.
12 Vermeulen, R., Schets, E., Lohuis, M., Kölbl, B., Jansen, D., Heeringa, W., 2018. An energy transition risk stress test for the financial system of the Netherlands. DNB Occasional Studies No 16-7.
13 Note that the leverage ratio is calculated on the basis of Tier 1 capital rather than CET1 capital.
14 For details, see also sections 485-488 of the EBA 2020 Stress Test Methodological Note. The assumption in this stress test is therefore that any deferred tax assets will be charged against future profits and do not result from temporary differences.

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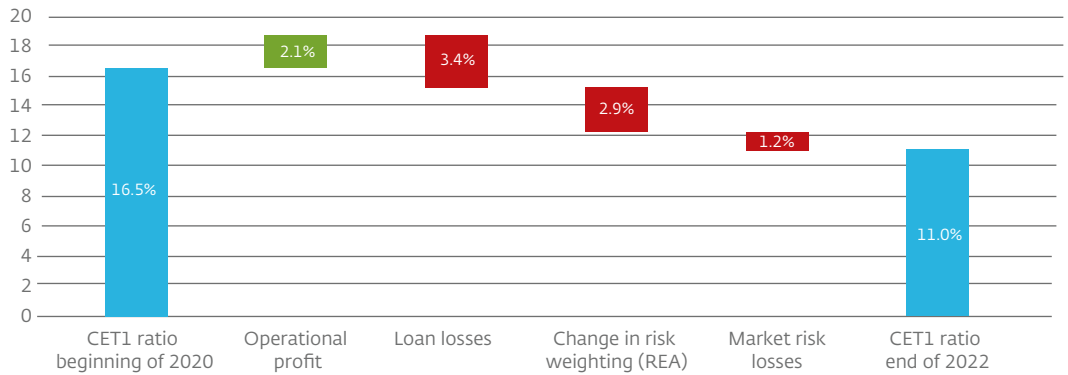
Figure 39 CET1 ratio developments in the 'severe' scenario



Source: DNB calculations.

Operational profit represents profit before loan and market risk losses.
Risk exposure amount (REA) changes relate to changes caused by increased loan, market and operational risks.

EBA 2018 stress test as a starting point, with a specific focus on the above risks. Taking all this into account, the profit and loss account (for credit and market risk losses) makes a positive contribution of 2.1 percentage points to the development of the CET1 ratio.

The economic downturn results in a sharp rise in loan losses. Loan losses are modelled in accordance with IFRS 9 accounting rules, which means additional provisions are required as soon as loans represent increased risk. These loans then migrate from Stage 1 to Stage 2.[15] This affects banks because provisions for lifetime losses have to be recognised for Stage 2 loans, with the future development of the economy being taken into account in both stress test scenarios. The actual write-offs may materialise in 2021, 2022 or subsequent years. When calculating the results, no account is taken of mitigating implementation paths, and the results are presented as fully loaded. On this basis loan losses may amount to EUR 23 billion. Loan losses are thus the main cause of the deterioration of the CET1 ratio, reducing it by 3.4 percentage points.

15 This stress test does not take account of any changes in the interpretation of IFRS 9 accounting rules, as discussed for example by Andrea Enria (see letter "IFRS 9 in the context of the coronavirus (COVID-19) pandemic", 1 April 2020). It is important to note that IFRS 9 accounting rules do not affect the final loan losses, only those applying when a bank has to recognise them.

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Loan losses are concentrated in loans to businesses, whereas they are still fairly limited in the mortgage portfolio in 2020-2022. Roughly two-thirds of the loan losses are concentrated in loans to businesses. This includes the corporate, corporate SME and retail SME loan portfolios. The fairly limited mortgage losses are due to the good payment behaviour of Dutch borrowers, income safety nets such as unemployment benefits and various factors limiting losses for banks (e.g. the collateral value of the home and NHG). Households do nevertheless adjust their other consumption expenditure, and the macro input accounts for this. It also takes some time for the housing market to bottom out. After the 2007-2008 credit crisis, the low point in the housing market was not reached until 2013. Losses on mortgage loans may therefore continue to mount in the years after 2022.

In addition to loan losses, credit risks also rise sharply, which is reflected in rising risk exposure amounts (REA). The formulas set out in the Basel regulations for banks are used to determine the REA. Credit risks rise sharply in the stress test scenarios because the probability of default on existing loans and the expected loss given default increase, resulting in a rise in the REA. The REA for credit risks increases by 20%. Principally these rising credit risks and to a lesser extent rising market and operational risks reduce the average CET1 ratio by 2.9 percentage points.

On average, the contribution from increasing market risks is not the largest in the Dutch banking sector, but it is sufficiently relevant to be included in the overall picture. For example, market risk in the EBA 2018 stress test still had an average CET1 impact of 1.2 percentage points for the four Dutch banks participating in this stress test.[16] In the current situation, market risks (such as possible problems with counterparties or derivative positions) can play a particularly important role. To determine the losses resulting from the materialisation of these risks, we take the impact of market risk in the 2018 EBA stress test as our starting point for the current stress test. It was decided to use the same impact as in the EBA 2018 stress test.

The loan losses in the 'perfect storm' stress test scenario could in theory amount to EUR 39 billion, but banks will intervene earlier to prevent that. In this analysis a theoretical loss of EUR 39 billion would be roughly equivalent to one-third of the available CET1 capital. In such a scenario banks would have to scale back their lending to businesses and households and sharply reduce their operating costs to limit impending losses and prevent their capital ratios

16 ABN AMRO, ING Bank, Rabobank and BNG Bank participated in the EBA 2018 stress test. For more information see: https://eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2018

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moving uncomfortably close to the minimum requirements. The banks would then no longer be able to fulfil their role in financial intermediation, causing further economic damage. With such an increase in loan losses the assumption of a static balance sheet is no longer realistic. Hence it is not useful to indicate other factors that could affect the capital position.[17]

17 If the assumption of a static balance sheet no longer appears realistic, assumptions will have to be made with regard to the precise method of balance sheet reduction. This is outside the scope of the Cassandra stress test model.

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A pandemic stress test for the Dutch banking sector: Conclusions

The coronavirus pandemic will affect the capital position of Dutch banks if tail risks materialise. The CET1 ratio of the Dutch banking sector may fall by an average of 5.5 percentage points in a 'severe' stress test scenario. As far as the composition of this impact is concerned, we see that these decreases in the CET1 ratio are caused primarily by mounting loan losses, an increase in the risk exposure amount and pressure on profitability. The materialisation of market risks also causes a further decline in capital ratios. In a 'perfect storm' stress test scenario in which economic recovery fails to materialise in 2021, loan losses may rise to a level that jeopardises banks' financial intermediation role. In such a scenario banks will seek to reduce costs and shrink the size of their balance sheet in order to limit losses. However, that would restrict lending, which would be undesirable from an economic perspective.

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