

Financial Stability Report

Autumn 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.



Current developments

The financial sector has so far proven resilient to the impact of the coronavirus (COVID-19) crisis. Banks are sufficiently shock-resistant and can continue to fulfil their lending role. The second wave of infections, however, is leading to renewed uncertainty. The longer this continues, the greater will be the potential impact on financial institutions. It remains of the utmost importance to prevent the economic crisis from spreading to the financial sector. We are therefore maintaining the adjusted buffer requirements for banks, so that lending to firms and households remains intact and damage to the economy is kept to a minimum.

International developments

While the global economy continues to suffer the severe impact of the first wave of coronavirus infections, many countries are seeing a resurgence of the infection rate. The containment measures initially introduced to curb the further spread of the coronavirus have mostly been reversed, but the resurgence of the virus in many countries shows that restrictions will remain necessary for some time to come. The production of goods and services has resumed particularly in countries hit by the pandemic at an early stage, but the remaining restrictions, the loss of confidence among producers and consumers and falling incomes are leading to a decrease in spending and a fall in investment.

The global financial system has so far proven resilient to the effects of the coronavirus crisis, but

the vulnerabilities are set to increase over the longer term. The coronavirus crisis originated outside the financial sector, and spillovers to financial institutions have so far remained limited. That is in part down to large-scale intervention by governments, central banks and supervisory authorities, including the provision of ample liquidity for firms and banks. The strengthening of the supervisory framework in recent years also means that their starting position is considerably better than before the credit crisis. At the same time the crisis has exposed and exacerbated the existing macrofinancial vulnerabilities. Private sector debt has risen further and many countries are seeing their public finances deteriorate as a result of fiscal support packages. Debt sustainability risks will consequently rise in the medium term. Other intrinsic financial stability risks are also increasing (see "[Risk map](#)").

The economic contraction due to the coronavirus

crisis is of historic proportions, with considerable differences between countries. The euro area economy contracted by 14.4% in the second quarter of 2020 compared with the same quarter in 2019. There are major underlying differences among countries. Within the EU, Spain (-22.1%), France (-19%), Italy (-17.3%) and Portugal (-16.5%) have been hit particularly hard. The Dutch economy contracted by 9.3%. As well as the scale of the virus outbreak, factors include the extent of containment measures, economic vulnerability to the pandemic and the size of fiscal support packages. The extent to which countries are affected by a second wave may accentuate the differences. An unbalanced recovery, in which certain euro area economies recover faster and better than others, may also widen the structural divergence within the euro area. The EU agreement on a recovery fund may play a major role in preventing this from happening (see also "[Policy](#)"). The rest of the global economy has also been hit hard. The US economy contracted by 9.5% in the second quarter. The pandemic is causing an exceptionally severe economic shock in emerging economies. Emerging countries in Asia and Latin America in particular were affected in the spring by historically high capital outflows and heavy pressure on their currencies. Although a recovery has set in since then, these countries remain vulnerable





to the consequences of the pandemic. The IMF has played an important role in absorbing the initial impacts of the crisis on these countries.

The second wave of infections is leading to renewed uncertainty. While the economic impact of the first phase of the pandemic is still unclear, uncertainty about the damage to the economy is growing with the resurgence of the virus in many countries. New restrictive measures are therefore necessary and confidence among consumers and producers is being hit once again. Only when the virus is under control can an accurate assessment be made of the eventual damage to the economy and the impact on financial stability. The extent to which the pandemic will lead to structural economic effects, for example on consumer behaviour and spending, also remains highly uncertain.

As temporary government measures are scaled back and bank moratoria expire, the economic impact of the coronavirus will be felt increasingly and the number of bankruptcies is set to rise. Governments around the world have introduced various support measures in response to the pandemic to prevent liquidity problems among businesses from causing unnecessary business failures and job losses, and hence lasting damage to the economy. When governments start to unwind this support in the future and banks stop granting payment holidays, the economic impact

will be felt more strongly, as defaults among firms and households are expected to rise sharply. The support measures are providing businesses with the necessary liquidity for now, but where firms are unviable this is ultimately not sustainable. The broad scope of the measures means that unhealthy businesses are also kept alive, which may ultimately lead to 'zombification'. The current historically low level of bankruptcies in many European countries is striking. The extent to which the coronavirus crisis leads to structural changes in the economy may put pressure on the viability of certain business models and require a reallocation of capital and labour.

The likelihood of a no-deal Brexit has increased. While economic developments are currently being driven primarily by the coronavirus crisis, the uncertainty surrounding future relations between the United Kingdom (UK) and the European Union (EU) still poses a significant risk. New legislation enabling the UK government to amend the previously signed withdrawal agreement unilaterally have strained relations between the UK and the EU. This has increased the likelihood of failure to strike a deal before the transition period expires at the end of 2020. Financial institutions have nevertheless had time to prepare for Brexit. We have noticed in our supervisory activities that many institutions have taken preparatory measures. The European Commission

and ESMA have recently also granted temporary equivalence for UK-based central counterparties (CCPs), which means financial institutions in the EU can continue to use essential UK clearing and settlement services for the time being. That eliminates a major risk to financial market stability, at least in the short term. No decisions on equivalence are expected in other areas in the near future. Financial institutions and consumers must therefore expect (much) less access to UK-based financial service providers from 2021 and must continue to prepare accordingly.

The UK's departure from the single market remains a source of uncertainty, and the damage of a possible no-deal Brexit comes on top of already difficult economic conditions. A no-deal scenario may give rise to losses for institutions with substantial investments in the UK, or parties exposed to sectors affected by higher trade tariffs, quotas or stricter rules. Volatility in financial markets may also increase suddenly, although investors have increasingly been hedging against the consequences of a no-deal Brexit (particularly a fall in the value of the pound sterling). Calculations by DNB and the ECB indicate that a no-deal Brexit will cut the growth of the Dutch economy by around 0.7 percentage points in the first year and 0.6 in the second year. The short-term impact of a no-deal Brexit is therefore much less severe than the damage from the coronavirus crisis, but the





economy is less equipped to absorb a Brexit shock at this precise time. The lack of a deal may also result in a slower post-crisis recovery and falling productivity in the longer term.

The revival of the (trade) conflict between the US and China and the US presidential elections are also giving rise to uncertainty. The two major powers concluded the so-called Phase One agreement at the beginning of this year. The agreement appeared to improve relations between the US and China, even though they retained a large proportion of the import duties between them. The pandemic has nevertheless added a new dimension to the geopolitical tensions between the superpowers. The disagreement on the origin of the coronavirus has caused mutual trust to plummet to a new low. The conflict surrounding the Chinese technology company Huawei, the US ban on the Chinese apps WeChat and TikTok and the situation in Hong Kong have also caused a flare-up of tensions between the two countries. The presidential elections in the US in early November lead to an increase in policy uncertainty as well, partly because the possibility of a chaotic election process cannot be ruled out.

Financial markets

Financial conditions have recovered since the spring, partly due to massive central bank interventions.

The policy response from central banks and governments has led to a turnaround in market sentiment since mid-March. Investors have resumed their search for yield amid persistently low interest rates. The stock market losses in February and March have been largely or even completely reversed. Despite the continued economic uncertainty, the S&P500 in the US rose to a record high at the beginning of September. There are major differences between sectors, however. The rise has been driven particularly by tech companies. Markets for debt issuance have also seen a strong revival, with large volumes being recorded and risk premiums at pre-coronavirus crisis levels even in the case of riskier bonds.

The financial market turbulence has exposed problems in money-market and other investment funds. Money-market funds play a crucial role in providing short-term liquidity. The high demand for cash in March meant that professional investors sought en masse to sell their investments in certain money-market funds. US money-market funds saw more than a tenth of their assets flow out in March. Other investment funds were also hit by a large

outflow in the spring, exacerbating the downward adjustment in financial markets. In these sectors too, the policy response by central banks sharply reduced the liquidity problems, but it has not provided a structural solution. The vulnerabilities in non-bank financial intermediation and the need for macroprudential policy are accordingly high on the agendas of international bodies such as the Financial Stability Board (FSB). In the Netherlands the outflow from investment funds remained limited, particularly due to the large proportion of relatively stable pension assets in the sector (AFM, 2020).

The divergence between financial markets and the real economy increases the risk of new, disorderly market corrections. Although the coronavirus crisis is far from under control, financial markets have recovered strongly since the spring. The rise in stock markets, particularly in the United States, is in stark contrast to the vulnerabilities and deteriorated outlook among businesses and is driven strongly by the low long-term risk-free interest rate and very low risk premiums. The upturn in financial markets is thus heavily dependent on interventions by central banks and governments. The financial markets seem to be assuming that they will be willing and will have the scope to take further stimulus measures, acting as an insurer for downside scenarios. This entails the risk of





new, disorderly market corrections, for example if there is decreasing willingness and scope to take further stimulus measures or if the economic impact is greater than the financial markets have priced in (see also [IMF, 2020](#)).

Financial-market recovery is fragile, with sentiment dominated by uncertainty about the further development of the pandemic. Stock market volatility remains considerably higher than before the coronavirus crisis. While asset prices have staged a substantial recovery since the shock in March, it is still accompanied by increased volatility and policy uncertainty (see [Figure 1](#)). Investor sentiment is fluctuating sharply, dependent as it is on trends in the number of infections, news on the production of a vaccine and the extent and duration of the stimulus measures. By contrast, the intervention by central banks and their forward guidance on future policy has reduced bond market volatility to a historic low.

Domestic developments

The economic contraction in the Netherlands is unprecedented, but so far not as large as feared. Second-quarter GDP contracted by 9.3% compared with a year earlier. The contraction was thus somewhat smaller than in the baseline scenario estimate we [published](#) in June. This is because the containment

measures were eased sooner after the first phase than we had assumed. In addition, strong price rises are still being recorded in the housing market.

While the impact of the first wave of infections on the economy is largely yet to materialise, uncertainty is increasing further as a result of the second wave of infections. The impact of the economic shock on employment and businesses is not yet fully visible. The support measures play an important role in this regard. Despite the sharp economic contraction, the number of bankruptcies has so far been lower in 2020 than in the same period in 2019 ([Statistics Netherlands, 2020](#)). The unemployment rate rose by 1.7 percentage points between March and August to 4.6%. As the government continues to scale back the support measures, the number of bankruptcies may increase substantially and unemployment may continue to rise. Uncertainty continues to grow due to the rising number of infections, and new containment measures are exacerbating the impact on the economy.

Financial institutions

The financial sector has so far proven resilient to the impact of the coronavirus crisis. This crisis originated outside the financial sector. Although it began as a public health crisis, it soon became clear that the coronavirus would have a major impact on the economy. The extent to which the financial sector will

be affected remains uncertain, but so far financial institutions have been able to continue fulfilling their role.

Banks are well capitalised and lending levels have remained stable. The capitalisation of the banking sector has improved significantly in recent years, so banks are now better able to absorb the impact of the crisis without having to shut off the flow of lending to households and businesses. Total bank lending to businesses has remained stable since the coronavirus outbreak. There are nevertheless major differences between sectors, and new lending has fallen back after rising in the spring. Banks report that they have tightened their credit standards for both mortgages and corporate loans. The banks' moratoria and government support packages, which include tax holidays and wage support, have so far met a large part of firms' liquidity needs. As these schemes are scaled back, bank lending is expected to become increasingly important (see also "[Lending in troubled times](#)").

In the future, however, banks may be hit by rising business failures and credit losses. At the same time banks are expecting defaults on loans to businesses in severely affected sectors in the future. The net increase in provisions in the first two quarters of 2020 was more than five and a half times higher than the average over the past three years. As a result of the support





measures and the moratoria, coupled with uncertainty on the impact of the coronavirus, banks no longer have full visibility on debtors' repayment capacity. In a positive scenario the crisis may be limited to a substantial economic shock, but the longer the crisis and uncertainty about the course of the pandemic persist, the greater will be the potential impact on banks. In the spring we presented the results of a [pandemic stress test](#) for Dutch banks. The stress test showed that banks' capital ratios were sufficiently high to absorb the losses in a relatively severe pandemic scenario, without a significant impact on lending. At the same time it showed that a perfect storm scenario, with worse-than-expected developments on the medical and financial and economic front, would likely have a major impact on lending. The current developments provide no grounds to expect such scenarios at this stage (see [Box 1](#)).

In the insurance sector the financial position of life insurers in particular remains vulnerable. The coronavirus crisis has so far had only a limited direct impact on insurers, but their solvency has been under increasing pressure from persistently low interest rates for a considerable time. Life insurers' earning capacity and traditional business models are under severe pressure from the low-interest rate environment and declining premium income. Some progress has been

made in future-proofing the sector through cost-cutting, consolidation and product rationalisation, but it remains highly vulnerable. We resumed our assessment of dividend proposals in July, but caution is still required in the light of the coronavirus crisis and persistently low interest rates.

Pension funds also remain financially vulnerable. The financial position of pension funds has been under pressure from persistently low interest rates for a long time, and it is being further eroded by the coronavirus crisis. At the beginning of January 2020 pension funds still had funding ratios averaging 104%, whereas at the end of September they averaged 95%. At the depth of the coronavirus crisis in March the average funding ratio fell as low as 85%. It has recovered partially since then as a result of rising equity prices (see [Figure 2](#)). The exceptional economic situation resulting from the coronavirus crisis has led minister Wouter Koolmees to extend the 2019 exemption scheme for pension benefit curtailments by one year. The Ministry of Social Affairs and Employment is currently entering into new agreements on a statutory convergence path setting out how financial deficits should be dealt with, with a view to the transition to the new pension system in the years 2022-2026.

The agreement between the government and social partners on a new pension system is a major step towards a more future-proof system.

The Netherlands has a large fully-funded pension system, which makes an important contribution to old-age provision, but the vulnerabilities of the current system have been increasingly laid bare in recent years. After lengthy negotiations the government and social partners reached an agreement on a new pension system during the past summer. In the new contract the uniform system is abolished and all members pay non-age-related contributions. The new pension contract also has no pension rights and consequently no actuarial interest rate to value such rights. Although certain features of the agreement have yet to be determined, it represents a major advance in the reform of the pension system.

Operational risks

The coronavirus crisis is leading to an increase in operational risks that may make heavy demands on financial institutions' business continuity plans.

The coronavirus outbreak has led to changes in working conditions and the activation of pandemic protocols. Amid tight time constraints the coronavirus measures have forced institutions to switch to large-scale homeworking for a protracted period. This increases the opportunities for cyberattackers to



Box 1 A pandemic stress test for the Dutch banking sector: where do we stand?

In the [Spring 2020 FSR](#) we published the results of a pandemic stress test. In this stress test we examined the possible consequences for Dutch banks' capital position on the basis of various scenarios for the duration and scale of the coronavirus crisis. At the end of July, the ECB published a vulnerability analysis for the euro area banking sector, which showed similar findings. This box discusses the results of our pandemic stress test in relation to the current developments.

First, the capital position of the Dutch banking system has so far remained stable. The latest data (for the second quarter) indicate an average CET1 ratio of 16.6%, similar to the starting position in the pandemic stress test. This suggests that banks will remain sufficiently shock-resilient, even if the pandemic develops along the lines of the severe stress test scenario. Operating profit as a percentage of assets (before credit losses) also remains fairly steady compared with the fourth quarter of 2019 at around 0.8%.

Second, the first effects of the pandemic are visible in the banks' financial position. Asset quality has deteriorated slightly. The percentage of non-performing loans (NPLs), for example, has increased

slightly, and the number of loans with increased credit risk has risen. In the IFRS 9 accounting methodology these loans with increased risk (compared to the time at which they were issued) fall in the so-called Stage 2 category. In the second quarter of 2020 the percentage of loans in this category rose to over 8.5%, more than three percentage points up from the end of 2019. Provisions have also increased, because banks expect an increase in defaults.

Third, the economic impact so far has been less severe than in the stress test scenarios. Recent projections also give no cause to expect such scenarios. Lending is therefore not expected to fall substantially. At the same time, the pandemic stress test shows that the decline in

the CET1 ratio and further credit losses could occur mainly in 2021 and 2022. The extent depends greatly on the duration and scale of the coronavirus crisis. Moreover, the number of bankruptcies is expected to rise as the support measures are scaled back.

All in all, continued monitoring of developments remains important, particularly with the rate of infections now rising again. That concerns the pandemic itself, but also the economic situation in the Netherlands and abroad and its implications for bank balance sheets and other parts of the financial system. If the situation so requires, we will carry out another pandemic stress test to investigate the possible impact on the banking system at that time.

Table 1 Capital, assets and profitability of Dutch banks

		2020Q2	2019Q4
Capital	CET1 ratio	16.6%	16.5%
Asset quality	Non-performing loans ratio (gross)	1.9%	1.8%
	Stage 2 ratio (IFRS 9)	8.6%	4.9%
Profitability	Net operating profit/assets	0.8%	0.9%
	New provisions/Net operating profit	26.7%	9.1%





penetrate systems as well as the potential impact of disruptions to digital processes and systems. Our perception is that the number of cyberattacks after the coronavirus outbreak increased only slightly in absolute terms. It is mainly the nature of the attacks that has changed. Various criminal groups are using the coronavirus as a theme for fraudulent emails and websites aimed at capturing personal information. The trend towards outsourcing of digital business processes is also continuing, making financial institutions more vulnerable to cyberattacks targeted at their service providers. In the worst case a cyberattack can threaten financial stability, if critical functions such as payments and securities transactions are unavailable for protracted periods, major financial losses occur and confidence in the financial sector is undermined. That is particularly true if incidents arise simultaneously, successively or in combination with other incidents. For example, a large-scale cyberincident during the coronavirus crisis may lead to a faster loss of confidence (see "[Cyber risks in the coronavirus era](#)").

The Dutch financial sector has so far been able to mitigate the increased operational risks effectively.

Vital financial infrastructure, such as payment and securities systems, has performed well under crisis conditions. Financial institutions have also been spared any significant disruptions. They nevertheless report that homeworking is impacting lead times for system

and product development. This impact will increase further the longer the current situation persists. IT solutions also had to be rolled out rapidly, so it may be that not all controls were properly implemented. This may entail risks over the longer term.

Real estate markets

Further falls in real estate prices are expected particularly in the hospitality, retail and office markets. According to the Statistics Netherlands price index, the prices of retail real estate fell by around 14% in the second quarter compared to the previous quarter, and office prices by around 2%. Due to the slump in tourism and business travel, Dutch hotels' occupancy rate fell below 10% in April and May. Even after the borders were gradually reopened, the number of tourists and business travellers was well down: in August the occupancy rate was 44%. Restaurants, cafés and retail stores have also been severely affected by the coronavirus crisis. In addition, there is currently less need for office space, because people are working from home where possible. A [survey](#) conducted by the Netherlands Institute for Transport Policy Analysis shows that a substantial proportion of the Dutch population expect to work from home more frequently in the future. Forecasts for future rental income and future commercial real estate values have accordingly fallen sharply (see [Figure 3](#)). There is also great uncertainty about the effects of the coronavirus crisis

on real estate prices. Valuers base their valuations primarily on comparable market transactions that took place before the coronavirus crisis, because the number of comparable market transactions in the current illiquid market is too low. In addition, there are often no up-to-date cash flow forecasts available that include lower revenues and occupancy rates. Since valuations are consequently more uncertain, valuers are now often including a disclaimer in their valuation.

A fall in commercial real estate prices is affecting real estate investors in particular, such as pension funds and insurers. Pension funds have around EUR 108 billion invested in commercial real estate. In addition to direct exposures and mortgage loans this also includes investments in listed real estate funds, which have recently seen significant falls in value. Losses on commercial real estate investments have a direct impact on funding ratios. A further price fall of 10%, for example, would reduce funding ratios by an average of 1 percentage point. Insurers' exposures amounted to approximately EUR 26 billion. At this stage no major losses have been incurred on these portfolios. This may change, however, if the government's support measures are scaled back. A positive point in this regard is that a substantial part of the real estate investments by insurers and pension funds are in rental homes, which are less susceptible to the impact of the coronavirus crisis.





The impact of the coronavirus crisis on real estate is also affecting Dutch banks, through loans and the value of collateral.

Banks have granted a total of EUR 167 billion of corporate loans secured by real estate. Loan level data show that the proportion of defaults on loans secured by retail property increased slightly in the first half of this year. The government's support measures and the moratoria granted by banks are probably having a dampening effect. The number of defaults may therefore rise further once these expire. Eventually banks may also be affected by a lower valuation of collateral, because loan-to-value (LTV) ratios, and hence the expected losses on defaults, will rise as a result.

Remarkably, the housing market remains overheated at present.

House prices rose by 7.5% in the second quarter (y-o-y) and the number of housing transactions increased. Houses are also on the market for less time: whereas in recent years it took around 40 days to sell a property, in the second quarter it took 28 days. In more than half of the house purchases the buyer paid more than the asking price. There are some signs that the market is cooling in the four major cities, however. The total number of transactions fell and the number of houses on the market increased. Nonetheless, the housing market remains very tight in the major cities.

The consequences of the coronavirus crisis will increasingly affect the housing market, particularly if the crisis is long drawn out.

Demand for homes remains stable for the moment, partly because mortgage interest rates remain low. Nevertheless, demand for homes may decline in the future if unemployment increases further and households' disposable income falls. On the other hand, the coronavirus crisis will also affect supply if it physically hampers the operation of the construction sector and the development of newbuild projects proves more difficult amid declining confidence among homebuyers. Homes are likely to remain in short supply.

Households' borrowing behaviour remains risky, particularly in the light of rising unemployment and falling incomes.

Both first-time buyers and homemovers are borrowing more relative to their income. The proportion of households borrowing at almost the maximum level is continuing to increase (see [Figure 4](#)). The current situation clearly shows the risks that this entails. Households with high debt burdens and low levels of liquid assets may soon find themselves in difficulty if the coronavirus crisis leads to a loss of income, unemployment or falling house prices. A recent [stress test](#) by CPB and the AFM shows that over 100,000 households would be in financial difficulty within six months after a loss of income, including 73,000 in just three months. Self-employed

workers are particularly vulnerable. In order to prevent payment problems, 22,000 homeowners with mortgages have so far been granted a payment holiday by their bank. A positive point is that homeowners have become less vulnerable to negative equity since the previous crisis. Various measures taken since 2013, such as tightening the loan-to-value (LTV) limit and restricting mortgage interest deductions, have contributed to this. As a result of the sharp rise in house prices, the number of underwater mortgages, where the mortgage debt exceeds the value of the collateral, has fallen sharply in recent years.

Policy

It remains of the utmost importance to prevent the economic crisis from spreading to the financial sector.

The extensive support measures by governments, central banks and supervisory authorities have mitigated the impact of the coronavirus crisis on firms and households so far and helped enable the financial sector to dampen that impact, rather than amplify it. Another important factor is that the financial sector starts from a substantially better position than before the credit crisis. At the same time uncertainty remains high, particularly with the number of infections now rising again. In that light the support measures remain an important factor in preventing the financial sector from getting into difficulty. The most





decisive factor, however, remains the course of the coronavirus pandemic itself. The main priority is therefore to curb the spread of the virus as far as possible so that day-to-day life and economic activity are impeded as little as possible.

Caution needs to be exercised when scaling back crisis measures, particularly in the light of the recent developments. The extraordinary fiscal, monetary and prudential measures associated with the coronavirus crisis are of a temporary nature. It is important that the measures are wound down in a gradual and predictable way to prevent cliff-edge effects. Unwinding support measures too early and too fast could cause major damage to the economy and risks to the financial sector if it is met by a wave of defaults and bankruptcies.

Fiscal policy

The Dutch government's third support package takes account of the major uncertainties surrounding the development of the virus outbreak and the economy. The support will continue until 1 July 2021 but will be gradually cut back. By leaving the measures in place for a longer period, the government is reducing the economic uncertainties faced by firms and households. The cost of winding support measures down too early would currently outweigh the potential cost of leaving them in place for too long. Our analyses show that many firms are depending on the current

emergency packages in order to survive the coronavirus crisis. The downside of the support packages and the persistently low interest rates is that financially unhealthy firms may also be kept alive, impeding the reallocation of capital and labour to productive companies. The importance of these structural economic adjustments will therefore increase the longer the crisis continues and fundamental changes occur in consumer patterns.

The European recovery fund can make a major contribution to a broadly based and lasting economic recovery in Europe. Some severely affected countries were in a difficult position to start with, creating a risk that these governments will have to make cuts before the economy has had a chance to recover, further deepening the downturn. The recovery fund agreed in July, for a total of EUR 750 billion, including EUR 390 billion of grants, may relieve pressure on growth-enhancing investments in vulnerable countries, thereby contributing to a broadly based economic recovery in Europe.

The uncertainty surrounding the economic impact of the coronavirus crisis also calls for automatic stabilisers to operate freely for the time being and for any cuts to be avoided at this stage. Public debt should only be reduced gradually once the economic situation has normalised. Governments can increase

the sustainability of their debt by strengthening the adaptability and growth potential of the economy.

Monetary policy

The European Central Bank (ECB) has intervened on a massive scale to cushion the economic impact of the coronavirus crisis. Banks can use Targeted Longer-Term Refinancing Operations (TLTROs) to obtain temporary additional funding on particularly favourable terms, provided they maintain their levels of lending to firms and households (excluding mortgages). The collateral requirements for ECB loans have also been temporarily eased, so banks can more readily access the additional loans being made available. The Pandemic Emergency Purchase Programme (PEPP) has also been introduced, enabling additional debt securities to be purchased on a flexible basis, mainly from governments and firms. These ECB measures have played a part in stabilising the funding markets, maintaining favourable funding conditions and making it easier for banks to continue lending to firms and households. The scale of the monetary operations has grown substantially as a result of these measures.

Although there are good reasons for large-scale interventions by the ECB in a crisis such as this, the long-term maintenance of an exceptionally accommodative monetary policy also increases the risks. The accommodative financial conditions



reduce the incentive to pay down debt, and high debt levels make governments and companies vulnerable to new shocks. The low interest rates may also encourage investors and financial institutions to take additional risk as part of their search for yield, increasing the likelihood of asset bubbles forming. There is also a risk of propping up firms that will not survive in the long term (see also '[Lending in troubled times](#)'). It will be increasingly difficult to tighten monetary policy in the future, particularly with public debt now set to rise sharply due to the coronavirus crisis. Once the acute phase of the crisis has passed, formulating the exit strategy will be an important first step towards monetary policy normalisation.

Prudential policy

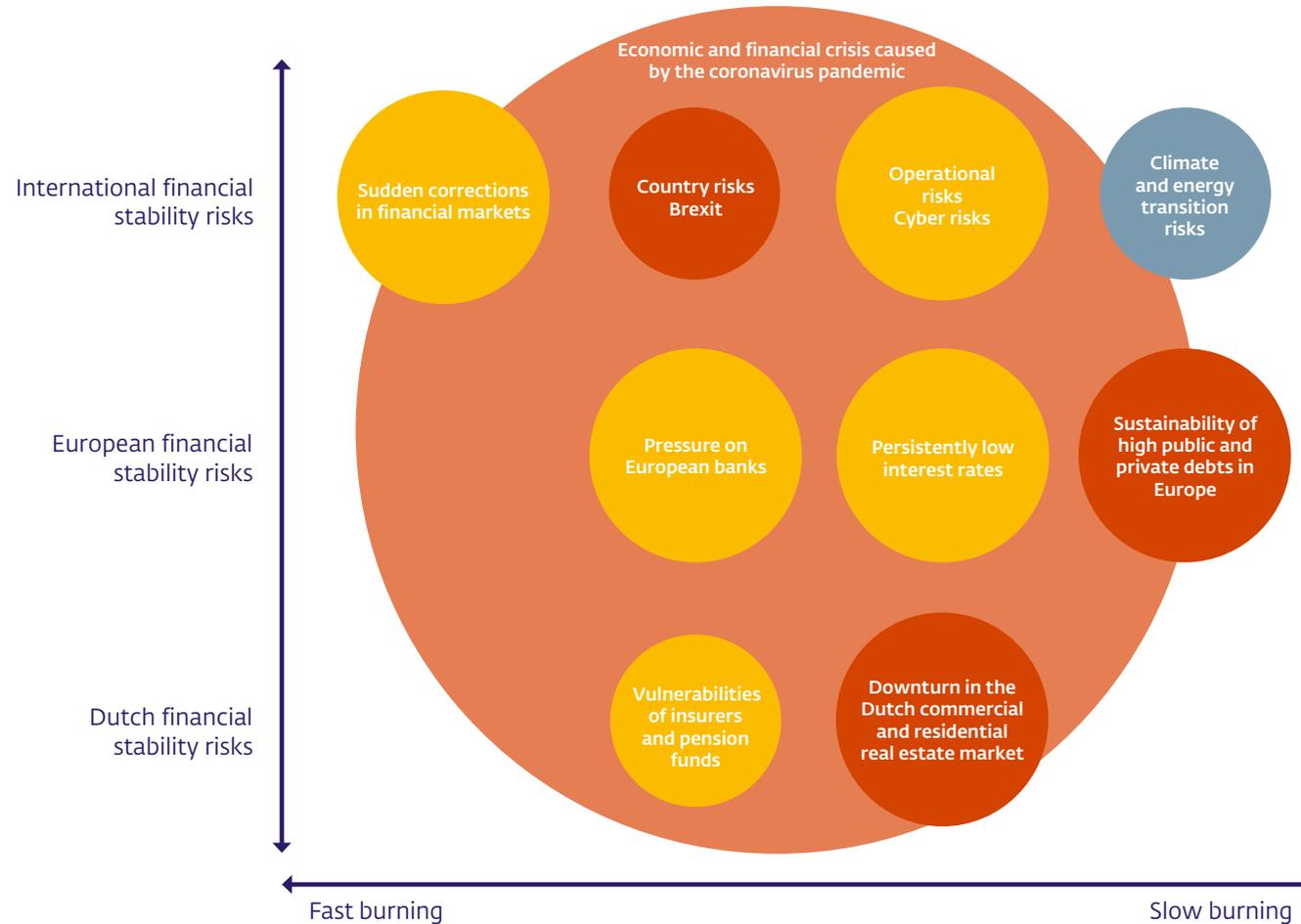
Supervisory authorities are giving banks more leeway to continue lending. Capital buffers are intended to absorb losses in times of crisis and to enable banks to continue to provide financial services, including lending. DNB and the ECB have therefore given banks leeway to use their capital and liquidity buffers. Temporary [relief](#) has also been granted for

the leverage ratio. In addition, we have adjusted the buffer requirements for the major banks and postponed the introduction of a floor for mortgage loan risk weighting. Banks can draw on their buffers where necessary (see also '[Lending in troubled times](#)'). Our website contains an [up-to-date summary](#) of all coronavirus-related measures for banks, insurers and pension funds.

Maintaining levels of lending is important, but a substantial deterioration of bank balance sheets must also be avoided. Introducing moratoria and granting new loans exposes banks to increased credit risks amid the current uncertainty. Banks must therefore avoid imprudent risks and continue to make proper risk assessments to determine whether a business will be sufficiently creditworthy in the future. In order to support banks' shock-resistance the ECB has extended its recommendation to banks not to pay dividends or buy back their own shares until 1 January 2021. It is also calling on banks to take an extremely measured approach to variable pay.

In view of the current uncertainty, we are maintaining the adjusted buffer requirements for banks. Crisis measures, such as the adjustment of banks' buffer requirements, can encourage lending in the short term. They entail risks in the long term, however. Healthy financial institutions are very important in supporting a strong post-crisis recovery. In time, we will therefore in due course unwind the measures currently in place. In common with the ECB, we have already unwound a large part of the operational reliefs. Returning to business as usual in terms of supervisory reporting, data requests, on-site inspections and stress tests is essential for effective oversight. In view of the current uncertainty, however, we see no grounds at this stage to introduce the floor for mortgage loan risk weighting or to activate the countercyclical buffer (see "[Lending in troubled times](#)").

Risk map



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). The interactive risk map included in the *Spring 2020 Financial Stability Report* provides detailed information for each risk. Compared with the Spring risk map, we have changed the circle at the top left to "Sudden corrections in financial markets". After the low point in March sentiment in financial markets turned around and financial conditions improved. We have therefore changed colour to yellow. However, there is a growing decoupling between financial markets and the real economy, so further sudden corrections cannot be ruled out. We have enlarged the "Operational risks" circle. It now also refers explicitly to cyber risks. The coronavirus crisis leads to an increase in operational risks that may affect business continuity, including cyber risks. We have changed the colour of the "Pressure on European banks", "Persistently low interest rates" and "Vulnerabilities of insurers and pension funds" circles to yellow. There has been no further major rise in these risks since the previous FSR publication (June). Finally, we have changed the colour of the "Downturn in the Dutch commercial and residential real estate markets" circle to red. We are seeing the first signs of a downturn in the commercial real estate market. The housing market remains overheated for the time being.



Figures

Continued high volatility
and policy uncertainty
[View figure 1 →](#)

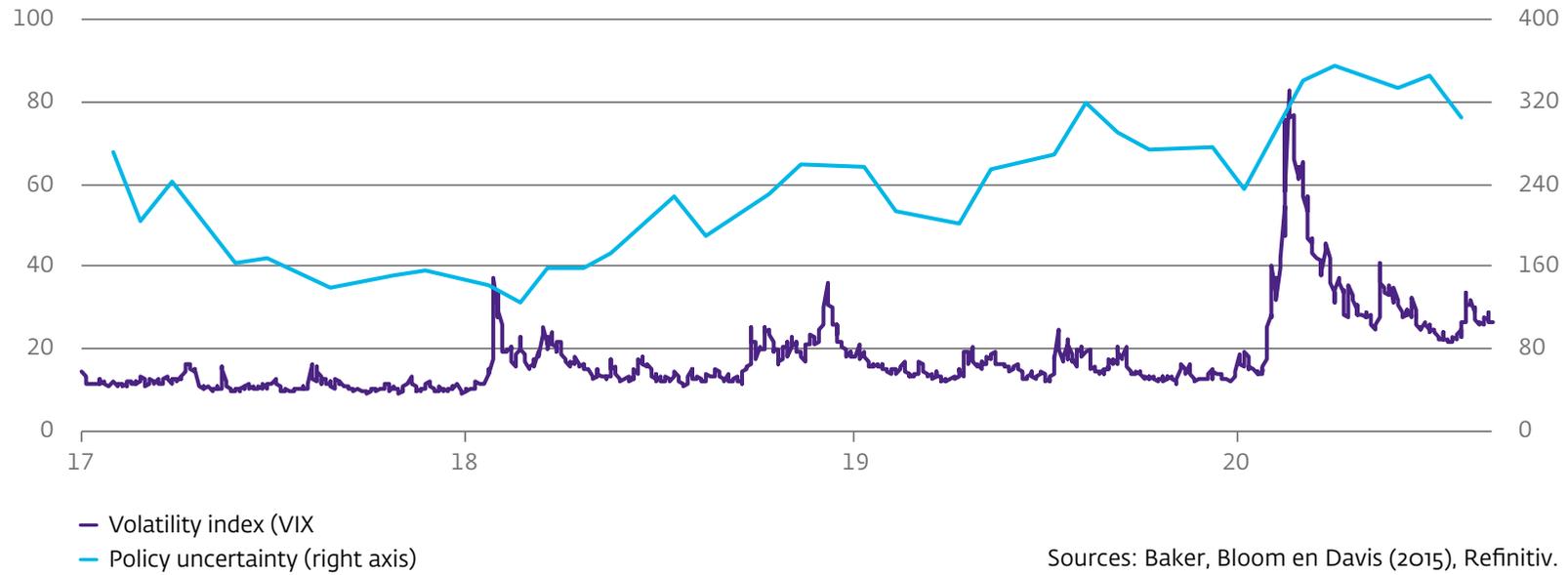
Expectations of future rental
income and capital values of
commercial real estate have
fallen sharply
[View figure 3 →](#)

Partial recovery of the
funding ratio
[View figure 2 →](#)

Homebuyers are increasingly
borrowing close to the maximum
relative to income
[View figure 4 →](#)

Figure 1 Continued high volatility and policy uncertainty

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Sources: Baker, Bloom en Davis (2015), Refinitiv.

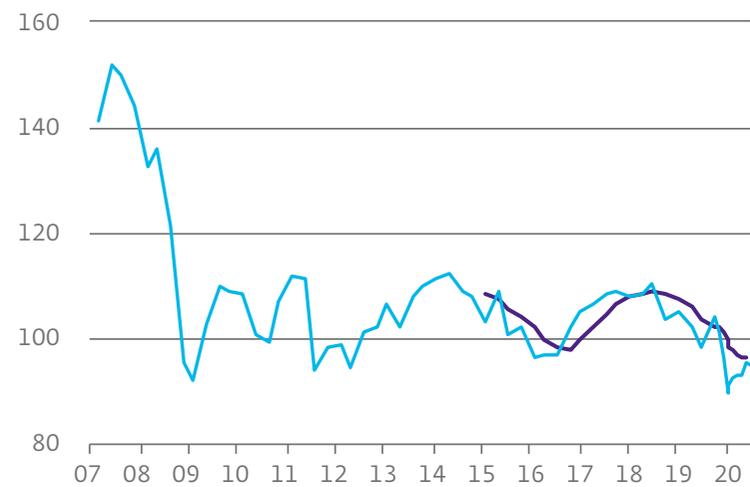
Note: Policy uncertainty is gauged by the Economic Policy Uncertainty Index, compiled by Baker, Bloom and Davis (2015). It measures the level of policy uncertainty by the frequency with which specific word combinations appear in major newspapers.





Figure 2 Partial recovery of the funding ratio

Percentages



- Policy funding ratio
- Funding ratio based on market information



- Projected funding ratio
 - Funding ratio based on market information
- Source: DNB.



Figure 3 Expectations of future rental income and capital values of commercial real estate have fallen sharply

Expectation in percentages



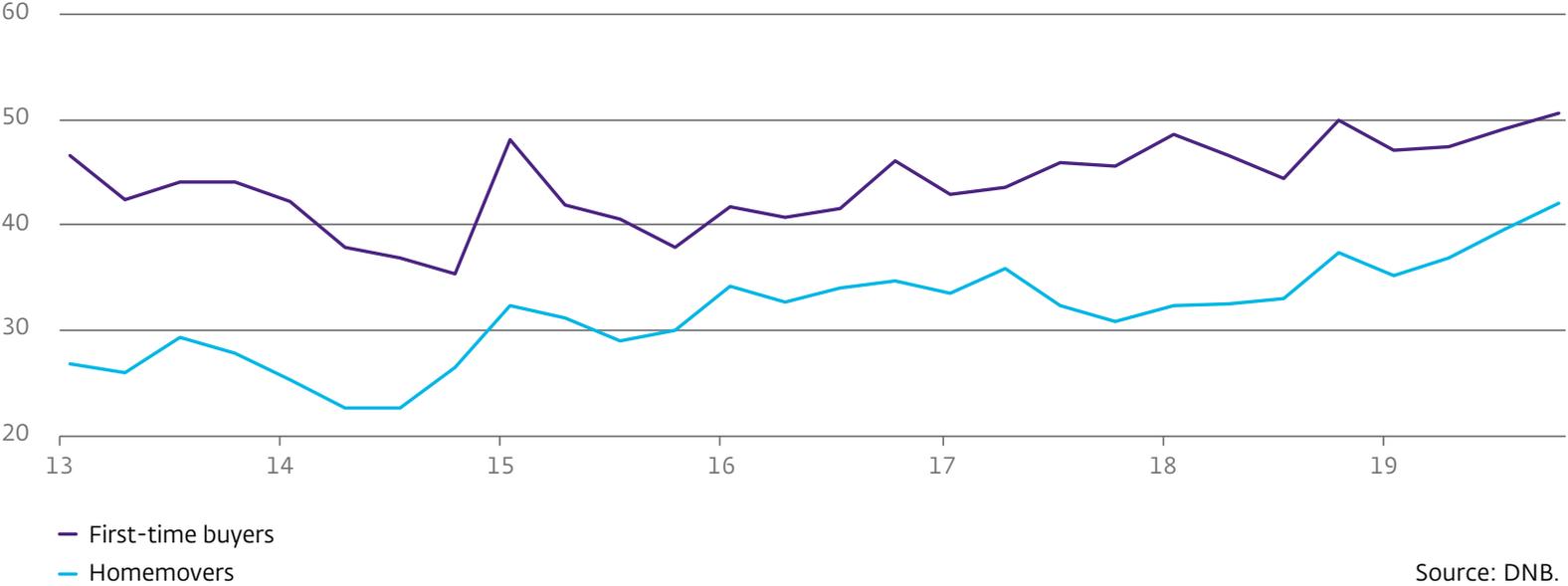
Source: Royal Institution of Chartered Surveyors.





Figure 4 Homebuyers are increasingly borrowing close to the maximum relative to income

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



Source: DNB.



Lending in troubled times

Banks are well capitalised and the level of lending has so far remained stable during this crisis. At the same time credit risks are increasing sharply due to the current uncertainty. Government support measures and bank moratoria have been an important source of liquidity for businesses up to now. Defaults and bankruptcies will probably rise sharply when these measures are wound down or cut back. It is key to post-crisis recovery that bank balance sheets remain healthy. Temporary crisis measures must not therefore become permanent. In view of the current uncertainty, however, we see no grounds for the time being to introduce the previously announced floor for mortgage loan risk weighting or to activate the countercyclical buffer.

It is important that firms and households retain access to credit. In this way it is possible to prevent essentially healthy firms from getting into difficulty and causing unnecessary long-term damage to the economy. Measures taken by governments, supervisory authorities and central banks in response to the coronavirus outbreak are therefore aimed at encouraging banks to lend to businesses. The ECB substantially expanded the borrowing facilities to safeguard monetary transmission through bank lending and introduced a new asset purchase programme. We adjusted the buffer requirements for the major banks and postponed the introduction of a floor for mortgage loan risk weighting, which we had announced in October 2019. The ECB and the European Banking Authority (EBA) have also allowed flexible

compliance with supervisory requirements. The Dutch government's expansion of the various guarantee schemes for corporate loans is also aimed at promoting lending and preventing essentially healthy businesses from getting into difficulty. The same applies to the granting of moratoria by banks.

At the same time lending now entails greater risks and uncertainty. The uncertain impact of the coronavirus crisis makes it difficult for banks to determine debtors' repayment capacity and make lending decisions. In this phase of the crisis it is important that continued lending does not lead to a deterioration of bank balance sheets. A healthy banking sector is key to post-crisis recovery.

This chapter describes recent developments in lending to firms and households and the implications for financial stability. First it explores how bank lending has developed in the form of corporate loans and mortgage loans in the recent past, across various segments, maturities and sectors. It then analyses the consequences of these developments for bank balance sheets and the financial system. The final section presents policy recommendations.

Developments in lending

The coronavirus crisis is affecting both the demand and supply sides of lending. Firms have lost income but still have to cover a large proportion of their costs, so they need short-term liquidity to meet their liabilities. At the same time firms are cutting back production and are less willing to invest due to the uncertain economic outlook, which is dampening demand for credit. The government's support measures, including wage support and tax deferrals, and moratoria granted by banks have so far met a large part of firms' liquidity needs. On the supply side lending entails higher risks and uncertainty for lenders, because it has become more difficult to determine debtors' repayment capacity. Banks report that they have

tightened their credit standards for new corporate loan applications (DNB, 2020).

Corporate loans

High demand for liquidity in the spring led to a short-term increase in the granting of new loans.

Aided by public support measures, the volume of *new* bank loans (excluding revolving credit facilities) reached a record of EUR 13.8 billion in March. In February EUR 10.1 billion of new loans was granted and in March last year EUR 9.8 billion (see [Figure 5](#)). This jump in lending reflects rising demand for loans among companies in acute need of extra liquidity. While the virus continued to spread around the world, the granting of new corporate loans fell sharply in April and May. New loans totalling EUR 11.6 billion were granted in July, the same amount as in July of the previous year. The bulk of the increase in new loans in March and the subsequent fall was attributable to large loans with maturities of less than three months. Large firms had an additional short-term need for liquidity to cope with the exceptional uncertainty, partly as a precautionary measure. The *total* volume of Dutch banks' outstanding loans¹ to non-financial corporations fell slightly after the jump in March (see [Figure 6](#)). Total lending increased, however, compared to the same period last

year. The growth of bank lending in the Netherlands lagged behind that of the euro area as a whole. France, Italy and Spain had higher credit growth in the second quarter, possibly in part due to a stricter lockdown and hence a greater need for liquidity among firms.

The decrease in new loans to large businesses was accompanied by a sharp rise in corporate bond issuance. The outstanding amount of corporate bonds has risen by 14.2% since the coronavirus outbreak, from EUR 142 billion at the end of February to a record EUR 161 billion at the end of July. Dutch non-financial corporations raised EUR 37 billion in the period from March to June this year, against EUR 25 billion in the same period last year (see [Figure 5](#)). The sharp rise in financing costs in response to the coronavirus outbreak was temporary, and bonds are once again an attractive source of finance, partly due to central bank intervention. Dutch corporate bond issuance has tripled since the financial crisis. Market funding is thus an increasingly important financing source for Dutch firms. The number of firms tapping the bond market remains limited, however, because only larger companies have access to the capital market. Since March this year a total of 31 non-financial corporations have entered the market, almost all with an investment grade rating.

Meanwhile, large companies built up financial reserves. The volume of corporate bank deposits has risen substantially since the beginning of the coronavirus outbreak from EUR 173 billion at the end of February to EUR 195 billion at the end of July. Listed companies' half-year financial statements for mid-2020 also show that they have 39% more cash than six months earlier. The AEX companies as a whole saw revenues fall by a quarter compared to a year earlier and recorded total net losses of EUR 12 billion, but at the same time they cut costs by scrapping dividend pay-outs, investment projects and share buybacks. The growth in corporate deposits highlights the fact that part of the finance was raised on a precautionary basis and that large firms have sufficient liquidity at this stage.

Whereas large companies' demand for bank finance fell, new loans for relatively small amounts have increased since the coronavirus outbreak. New loans of less than EUR 0.25 million, however, make up only a small part of the total new loans (see [Figure 5](#)), but these loans are an important financing source for Dutch small and medium-sized enterprises (SMEs). Banks granted EUR 566 million of small loans in March, after which growth continued to EUR 713 million in May. In the period from March to July, a total of over

¹ Excluding notional cash pooling. Notional cash pooling is a technique used to optimise the liquidity management of accounts – usually a firm's various bank accounts – which typically also involves interest set-off between the different accounts.



20% more small loans were granted than in the same period last year, mainly with short maturities. The increased demand for credit among SMEs is mainly due to higher spending on inventories, working capital and the restructuring of existing loans (DNB, 2020). After a slight rise in March, interest rates on new small loans have remained historically low (see Figure 7). Despite the rise in small loans, SMEs' access to credit remains an issue, at a time when Dutch SMEs are also structurally less reliant on bank loans than elsewhere in the euro area (see for example CPB, 2019).

Up until now there has been little uptake of loans under the government's guarantee schemes. In order to stimulate lending to businesses, the government has expanded its guarantee schemes, including the coronavirus facility under the SME Credit Guarantee Scheme (BMKB-C), the Credit Guarantee Scheme for Agriculture (BL-C), the Corporate Financing Guarantee (GO-C) and the Small Credit Guarantee Scheme for SMEs (KKC). Depending on the scheme, the government guarantees up to 95%, so banks take less risk when granting new loans. EUR 1.7 billion of financing was provided under the guarantee schemes up to the beginning of October (NVB Corona monitor), the bulk of which was to the hard-hit sectors of culture and sport, hospitality, trade and manufacturing. The guarantee schemes appear to be having a positive effect on the volume of new loans, particularly in those

sectors. The use of the guarantee schemes has been fairly limited up until now. Credit granted under the guarantee schemes represents 7% of total bank financing during this period and 10% of the budget made available. Possible causes of this limited use are operational bottlenecks in the acceptance process, high interest rates and partial backing by the guarantees. For example, Dutch guarantee schemes require banks to bear a higher percentage of risk than schemes in some other countries. On the other hand, it may be explained by the fact that demand for liquidity is being met by other support measures.

Banks have granted moratoria to businesses in order to prevent payment problems. Banks are giving their customers some financial breathing space through payment holidays. Up to the beginning of September banks granted payment holidays to over 129,000 businesses amounting to a total of EUR 3 billion (NVB Corona monitor). Dutch banks have granted relatively few moratoria compared to European competitors. The moratoria are an important source of liquidity and have dampened demand for new loans.

Residential mortgages and consumer credit Mortgage lending remains stable for now. Banks' total outstanding mortgage lending has remained almost constant in the past few years. At the end of the second quarter total mortgages

outstanding amounted to EUR 534 billion, compared to EUR 528 billion in the same quarter a year earlier. In the second quarter the number of mortgage loan applications rose by 40% from a year ago. There was a particularly strong rise in mortgage switches and second mortgages (+88%), but the number of applications for home purchases also rose (+15%). Banks report that due to the coronavirus crisis they are applying stricter criteria for mortgages and expect to tighten them yet further. Despite a short-term rise in mortgage rates in March, interest rates remain low from a historical perspective.

Since the outbreak of the coronavirus crisis the volume of consumer credit has fallen sharply. Total outstanding consumer credit to households fell from EUR 14.6 billion at the end of February to EUR 13.3 billion at the end of June. Compared with June 2019, consumer credit fell by 13%. Substantial falls have been recorded particularly in credit cards and personal loans. This development is associated with a historical decline in consumer confidence and private consumption, which was 11.8% lower in the second quarter than in the same period in 2019. The decrease in consumption contributed to a substantial increase in Dutch households' savings during the recent period. Savings increased by EUR 9.4 billion in May, the biggest increase since records began in 1998.

Implications for financial stability

Dutch banks have direct exposure to the most affected sectors.

The containment measures are affecting certain sectors more than others. The culture and sport, trade, hospitality, transport and business service sectors saw double-digit falls in output in the second quarter (CBS, 2020). Total outstanding corporate lending to these sectors in the second quarter represents 27% of banks' corporate loans portfolio. Banks also lend substantially to the manufacturing sector, where production contracted by 7.6% in the second quarter. This sector makes up 9% of the credit portfolio. The most affected sectors comprise a relatively large number of small companies that were already vulnerable before the coronavirus crisis (CPB, 2020).

The capitalisation of the banking sector remains strong for now. Banks are now better able to absorb the impact of the crisis without shutting off flow of lending. This is because the capitalisation of the banking sector improved strongly in the years prior to the current crisis, and the cause of the crisis lies outside the financial system. In the credit crisis, which originated within the financial sector itself, banks were required to reduce their risks, so lending stagnated, setting up a negative feedback loop with the real economy. Since then the resilience of the Dutch banking sector has improved greatly. Dutch banks'

average capital ratio (CET1) rose from 14.4% at the beginning of 2015 to 17% at the end of 2019. The data for the first half of 2020 show no material change in the capital and leverage ratios (see Figure 8). An analysis by the ECB shows that for now the capitalisation of euro area banks can withstand the financial stress resulting from the coronavirus pandemic. In a scenario of further deterioration, with a deep recession and a slow recovery, the capital ratio could nevertheless be substantially eroded. These European results are in line with the results of our own pandemic stress test.

The Dutch government's direct support is not only helping businesses but is also mitigating banks' corporate loan losses. In response to the coronavirus crisis the Dutch government has introduced various schemes to prevent liquidity problems among businesses from causing unnecessary business failures and job losses, and hence lasting damage to the economy. Examples are the Temporary Emergency Bridging Measure for Work Retention (NOW), Reimbursement for Entrepreneurs in Affected Sectors (TOGS) and Reimbursement of Fixed Costs (TVL). These measures have so far been effective in curbing the increase in the number of firms in financial difficulty. They thus also indirectly support banks' balance sheets.

As the support measures and moratoria expire, however, the number of bankruptcies may rise sharply and banks' credit losses are expected to increase. Although the measures are intended to carry firms in good financial health through the coronavirus crisis, they are also propping up firms that cannot survive in the longer term. Remarkably, despite the substantial economic contraction, the number of bankruptcies in 2020 has so far been lower than in the same period in 2019 and now even stands at an all-time low (Statistics Netherlands, 2020). When the government begins to scale back the support measures and banks no longer grant any payment holidays, the 'cliff effect' may materialise and the number of defaults may increase.

Banks have therefore increased their loan loss provisions. Banks are factoring in the fact that many firms will not be able to repay their loans in the period ahead. Figure 9 shows the development of additions to provisions in the Dutch banking sector as a whole. The net increase in provisions in the first two quarters of 2020 was over five and a half times greater than the average over the previous three years. It should be noted that part of the increase in provisions is not directly due to the coronavirus crisis but to individual stressed accounts. Banks expect to have to increase their provisions further in the remainder of 2020.



The coronavirus crisis is putting more pressure on banks' profitability and business models. Persistently low interest rates have been clouding banks' profit outlook for quite some time. Dutch banks' return on equity has now fallen to just over 4%, whereas at the end of 2017 it still exceeded 9%. The difference between interest rates on new loans to households and businesses and interest rates on savings and deposits has tended to narrow in recent years, putting downward pressure on banks' interest income. Dutch banks are heavily dependent on interest income and they have seen a large increase in deposits in the recent past. With the probability of default in some segments increasing sharply as a result of the coronavirus crisis, banks have been forced to raise their provisions. With structurally low profitability it will be more difficult to set aside provisions or, when necessary, restore buffers in the future. The poor performance of bank shares also highlights investors' growing concerns about banks' profitability.

Pension funds and insurers may also be affected by serious debt sustainability problems. While banks are by far the most important lenders to Dutch firms and households, the role of pension funds and insurers has increased in recent years. They currently fund around a fifth of new mortgage lending. Institutional investors are also sensitive to an increase in debt sustainability problems in business due to their investments in

corporate bonds and private loans. If the coronavirus crisis leads to an increase in corporate defaults or rating downgrades, the value of these investments will decrease, with a negative impact on solvency.

The macrofinancial vulnerabilities that already existed before the coronavirus crisis are set to increase in the medium to long term. Private and public debt was already high and will increase further as a result of the current crisis now that the momentum for debt reduction has faded. High private debt is particularly vulnerable in the Netherlands. Both non-financial corporations and households in the Netherlands already had fairly high levels of debt relative to GDP before the coronavirus crisis. Although Dutch firms' leverage is not particularly high on average, corporate debt at the end of 2019 amounted to 132% of GDP, compared with a euro area average of 81%. With a debt-to-GDP ratio of 101%, the Netherlands has by far the highest household debt in the euro area.

Policy

Continuing lending is important, but at the same time this crisis must not lead to a substantial deterioration of bank balance sheets. Introducing moratoria and granting new loans exposes banks to increased credit risks amid the current uncertainty. Banks must therefore continue to make proper risk

assessments to determine whether a business is sufficiently creditworthy in the future. The coronavirus crisis complicates this, because the extent to which this crisis will lead to permanent changes in consumer behaviour and how society will return to 'normal' remains unclear. The support measures and the moratoria granted by banks may obscure the visibility on weak debtors and hence the visibility on the quality of bank balance sheets. Banks can use the room for manoeuvre allowed under international standards to apply prudential and accounting rules flexibly. At the same time underlying problems in firms must be adequately and promptly identified.

Banks can draw down their buffers where necessary. Bank buffers are intended to absorb losses in times of crisis and to enable banks to continue to provide financial services, including lending. In this severe economic crisis it is inevitable that banks will also be affected and suffer losses. They have not needed to draw down the buffers so far, but if the economic crisis continues, they may have to do so in order to continue lending to healthy businesses.

Temporary crisis measures must not become permanent. Crisis measures, such as the adjustment of banks' buffer requirements, may encourage lending in the short term but entail risks in the long term. Healthy financial institutions are key to supporting vigorous





post-crisis recovery. In time, we will therefore unwind the measures currently in place. In order to determine the appropriate time, we will assess the economic situation, banks' health and interaction with government measures and measures taken by supervisory authorities in other countries. The ECB and DNB have already unwound a large part of the operational reliefs. The return to business as usual in terms of supervisory reporting, data requests, on-site inspections and stress tests is essential for effective oversight.

In view of the current uncertainty we see no grounds at this stage to introduce the floor for mortgage loan risk weighting or to activate the countercyclical buffer (CCyB). The economic outlook remains uncertain, and the full impact of the coronavirus crisis on bank balance sheets is still uncertain as well. We will not take a decision on the floor for mortgage loan risk weighting until mid-2021 at the earliest, so this measure will not come into force before the end of 2021. Once conditions have normalised and the impact of the coronavirus outbreak on the banking sector is behind us, we will gradually increase the CCyB to a neutral level of 2%. In view of the fundamental uncertainty, we will in any case not take a decision to activate this buffer before the end of 2021. After we publish the decision to activate the CCyB, banks will have one year to meet the buffer

requirement. Moreover, the introduction of a floor for risk weighting and the activation of the CCyB will not take place simultaneously or in rapid succession.

We also intend to adjust the mechanism for systemic buffer requirements. This is necessary to align more closely with the new capital requirements directive (CRD V) without creating an additional capital requirement. CRD V amends the rules on the Other Systemically Important Institutions (O-SII) buffer and the Systemic Risk Buffer (SRB). Currently only the higher of these two buffers applies to a bank, but under CRD V they will be aggregated. We want to reduce the SRB to 0% and to amend the O-SII buffer so that capital requirements remain constant. For the three major banks the following O-SII buffers then apply: ING Bank 2.5%, Rabobank 2% and ABN AMRO Bank 1.5%. For Volksbank and BNG the O-SII buffer remains at 1%. We will formalise this decision after the notification process with the relevant European institutions has been completed and as soon as the relevant provisions of CRD V have been implemented in Dutch laws and regulations.

Banks are being called upon to cancel dividends. The ECB has issued a [recommendation](#) that significant banks supervised by the ECB pay no dividends until 1 January 2021, refrain from share buybacks and take an extremely measured approach to variable pay.

We support this ECB recommendation and also consider it applicable to less significant credit institutions that we directly supervise. The ECB will evaluate this measure later this year.

Guarantee schemes should be continued due to the ongoing uncertainty. It remains important that banks provide liquidity for viable companies that need it. Bank lending is expected to become an important source of liquidity when support measures are scaled back. Government guarantees can support credit provision because the government will be in a better position than banks themselves to absorb the macro risks associated with the uncertainty of the pandemic. It is important to investigate the causes of the low uptake of guaranteed loans in order to gauge the effectiveness of guarantees. Any operational bottlenecks must be dealt with. As the crisis persists, additional guarantees for new corporate loans will be less effective, because the disadvantages in such a scenario will increase. It will be increasingly likely that businesses will eventually stop repaying their loans. With guarantees for new corporate loans there is then an increasing risk of misallocation of capital and higher costs for the government.

Setting up a credit register could improve corporate lending in the Netherlands. The coronavirus crisis illustrates that a good credit infrastructure is extremely





important to enable firms and lenders to weather an economic downturn. A credit register can help collect data on corporate loans and make it available to banks and other lenders. Better information on businesses' creditworthiness makes the credit market more accessible to new providers and more attractive for investors to invest in marketable corporate loans. A credit register can improve access to credit particularly for SMEs. Most euro area countries have had a credit register for some time, and various organisations (CPB, OECD and IMF) have emphasised its added value for the Netherlands.





Figures

The bulk of corporate finance
comprises large short-term loans
and bonds
[View figure 5 →](#)

Capitalisation of the Dutch
banking sector remains stable
[View figure 8 →](#)

Corporate lending remains stable
[View figure 6 →](#)

Dutch banks add billions in
provisions
[View figure 9 →](#)

Bank interest on new loans
remains low
[View figure 7 →](#)





Figure 5 The bulk of corporate finance comprises large short-term loans and bonds

EUR billions of new loans

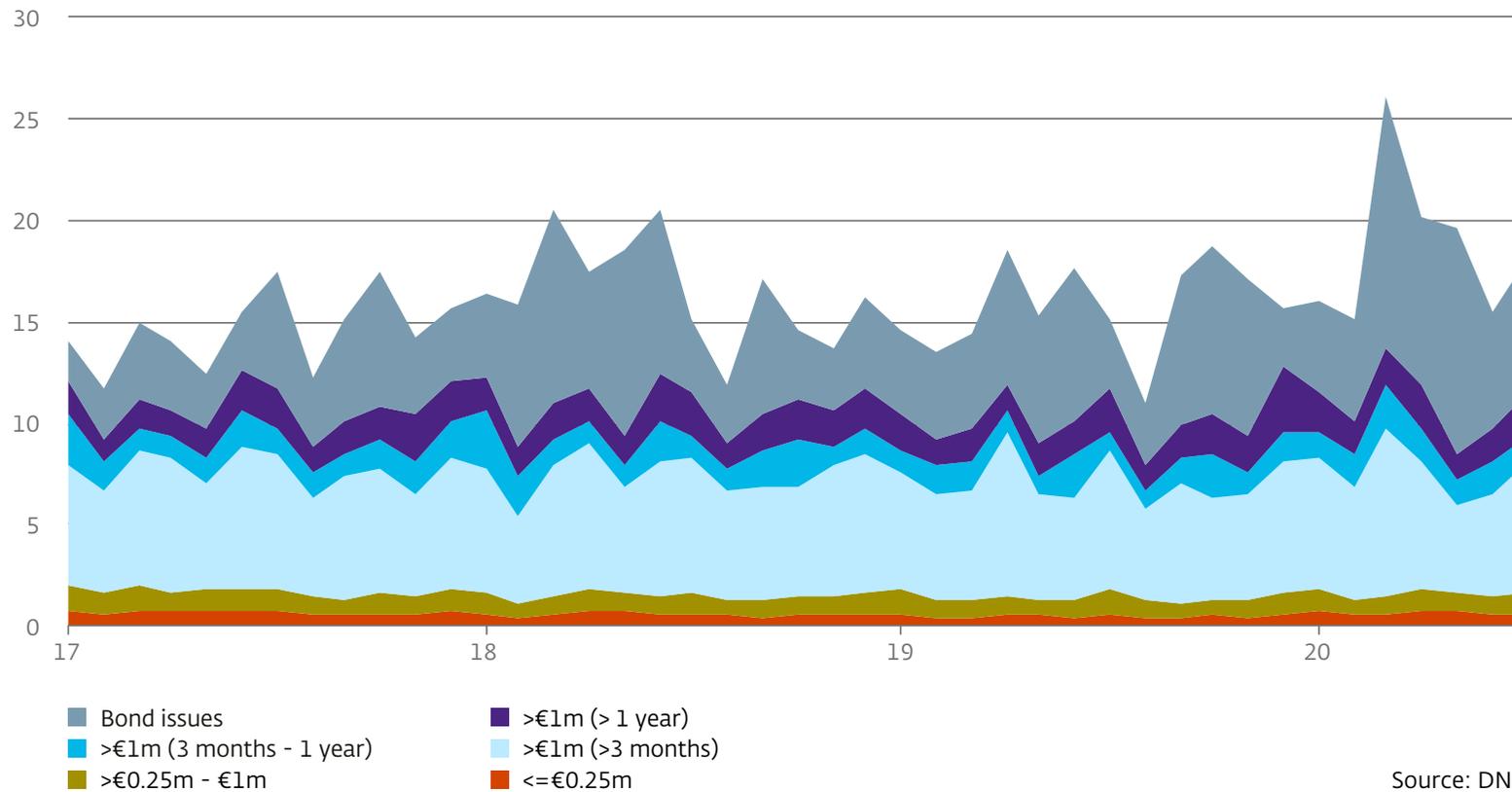
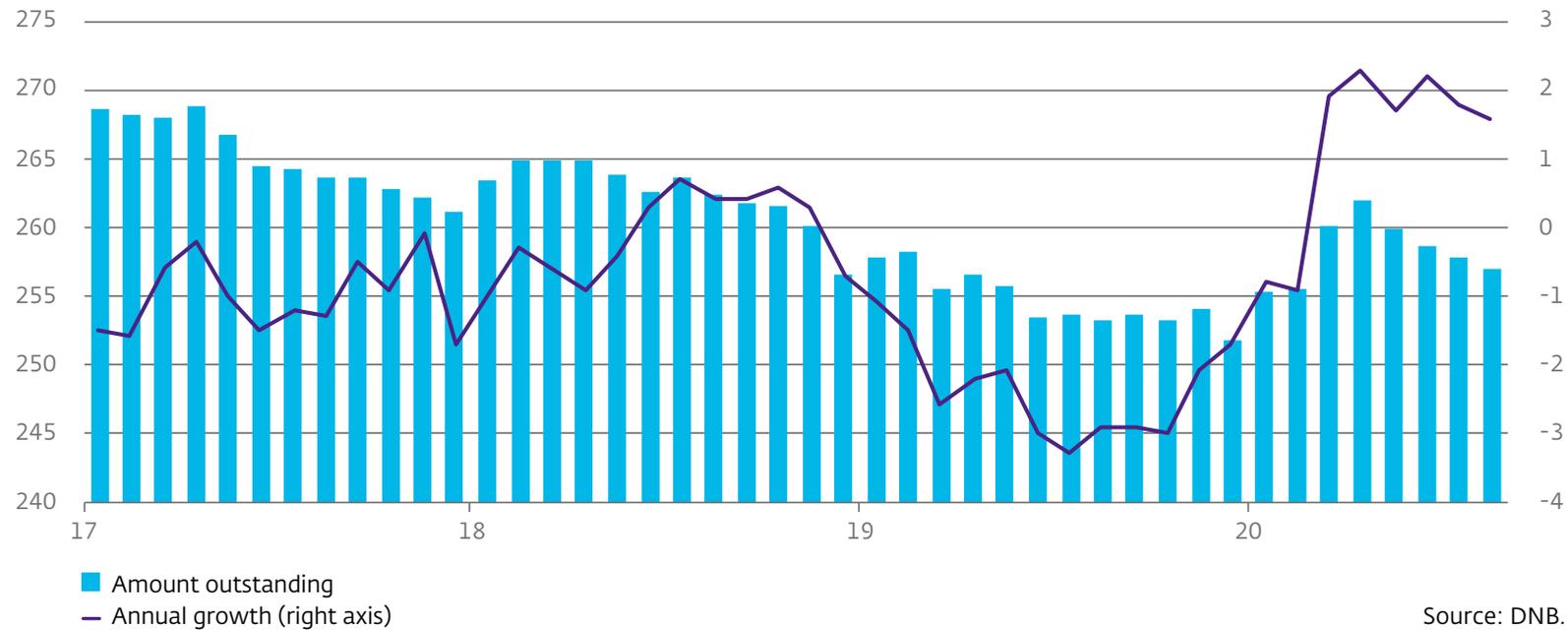




Figure 6 Corporate bank lending remains stable

EUR billions; year-on-year percentage changes



Source: DNB.

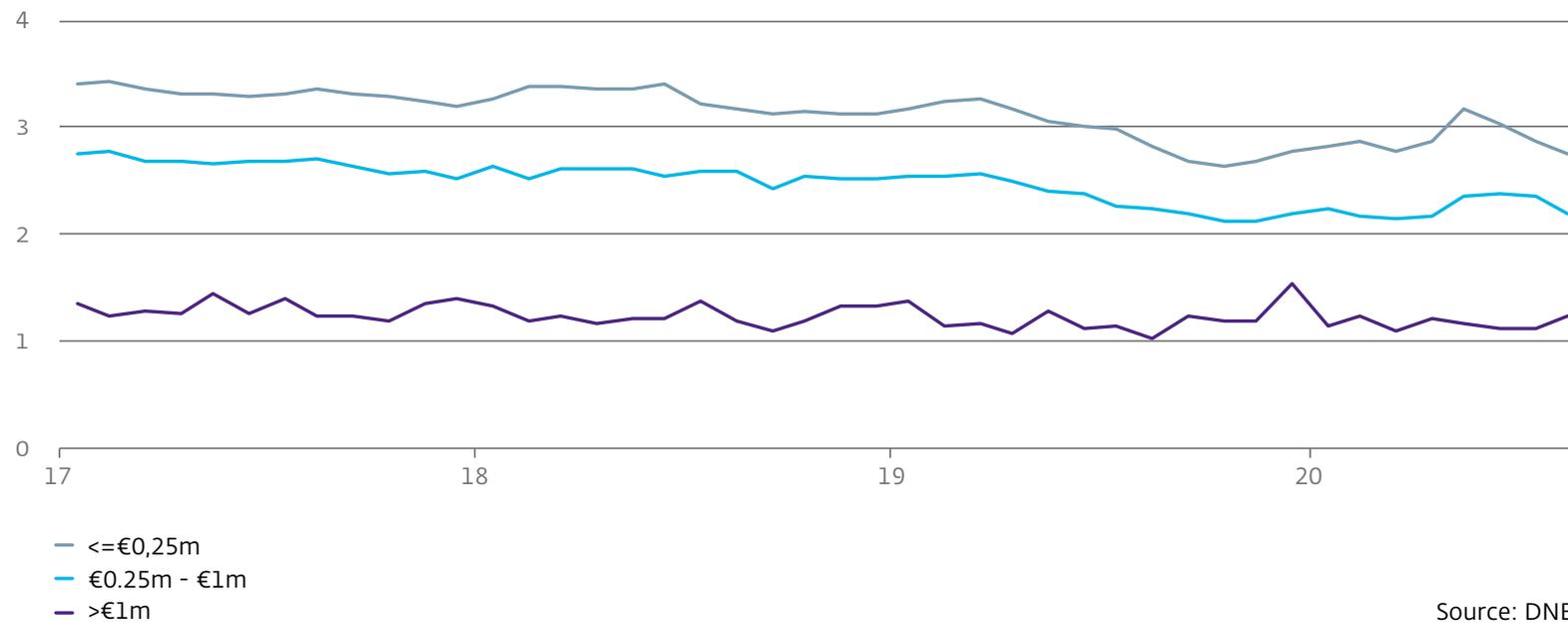
Note: Lending excluding notional cash pooling positions.





Figure 7 Bank interest on new loans remains low

Percentages

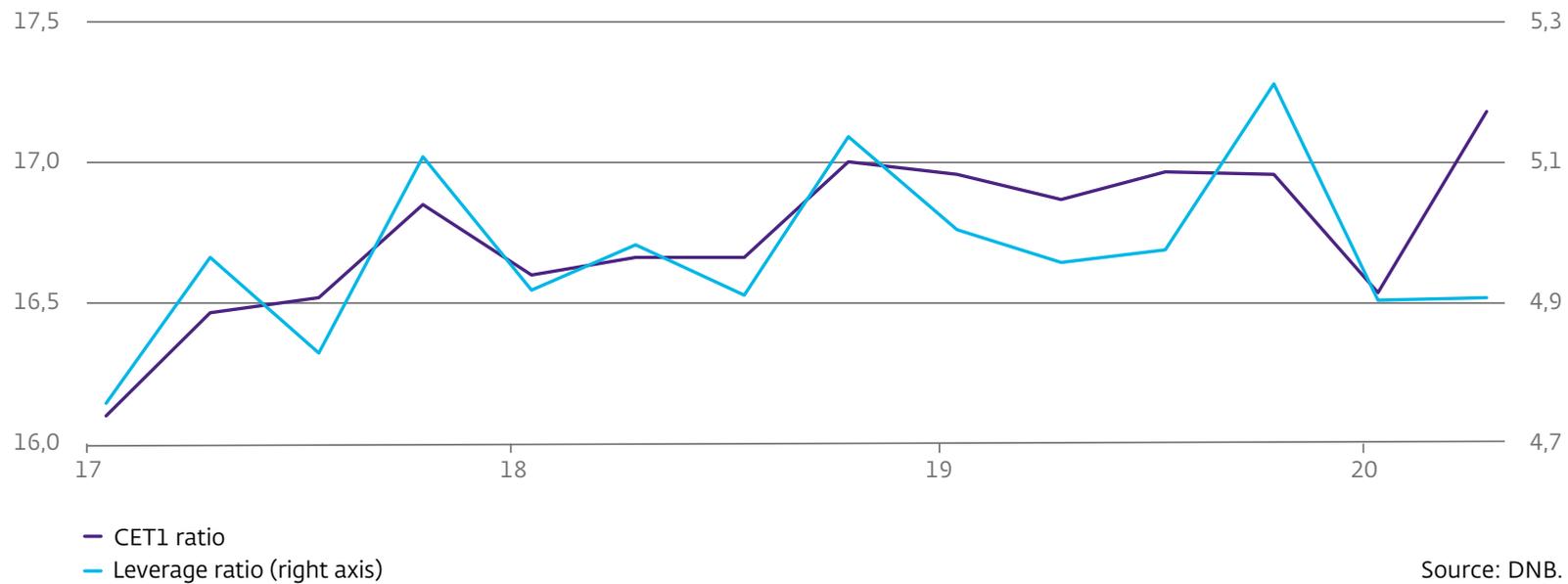


Source: DNB.



Figure 8 Capitalisation of the Dutch banking sector remains stable

Percentages



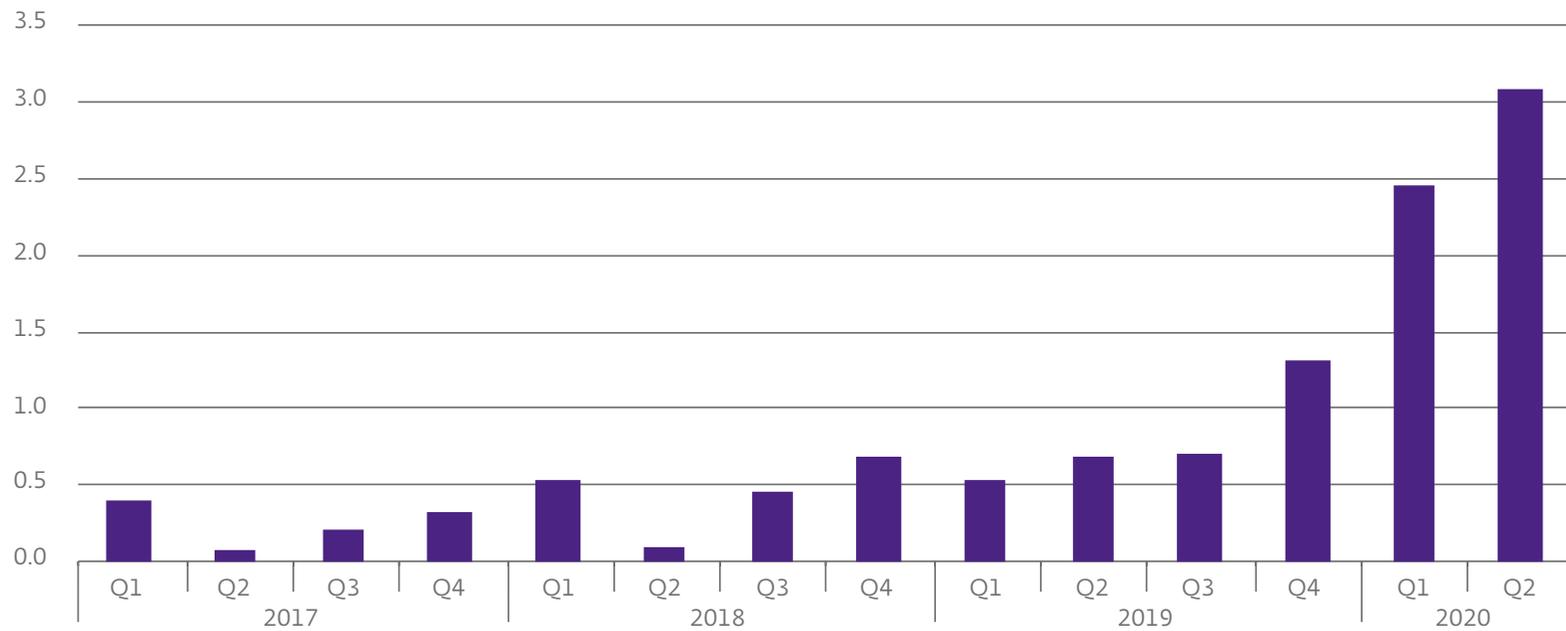
Source: DNB.





Figure 9 Dutch banks add billions in provisions

Net additions in EUR billion



Source: DNB.



Cyber risks in the coronavirus era

Large-scale remote working increases the potential for cyberattackers to penetrate systems, as well as the potential impact of disruptions. The trend towards outsourcing of digital business processes is also continuing, making financial institutions more vulnerable to cyberattacks targeted at their service providers. The Dutch financial sector has so far been able to absorb these increased operational risks effectively. There is a real probability that attackers will ultimately succeed in penetrating a financial institution, however. This could have major consequences for financial stability, particularly if cyberattacks occur simultaneously, in succession or in combination with other incidents. Therefore, it is not sufficient to focus only on the prevention of cyberattacks. Close monitoring, rapid detection and appropriate crisis response are crucial.

Developments in the threat assessment

Cyberattacks pose a constant threat to the financial sector. Financial institutions, their service providers and other vital sectors are increasingly being targeted in cyberattacks. The cyberthreat has increased systematically in recent years and is moving upstream in the financial chain. Nowadays, financial institutions and their service providers are experiencing precisely directed attacks on carefully selected targets within the organisation ([Box 2](#)). There is a real probability that attackers will ultimately succeed in penetrating a

financial institution. Research by [the ECB](#) shows that 28% of significant banks in Europe were victims of at least one successful cyberattack in 2018. Given the permanent nature of cyberthreats, a future cyberattack in the Netherlands causing a (temporary) loss of financial services and social disruption cannot be ruled out, even if no such attack has yet materialised.²

Box 2 Examples of cyberincidents

There is still only a limited amount of reliable public data available on cyberincidents in the financial sector.³ One reason for this is the lack of a clear means of identifying and recording cyberattacks. Furthermore, information on the number of successful attacks could be of use to cyberattackers, so it is treated with caution. Financial institutions are obliged to report cyberincidents to DNB if these could affect day-to-day business operations or have an impact on other financial institutions or society as a whole. These supervisory reports are confidential and cannot therefore be published. There are nevertheless a number of public examples of cyberincidents that have occurred in financial institutions around the world.

[Read more →](#)

² See also NCTV (2020), Cybersecuritybeeld Nederland 2020.

³ For a database of publicly known cyberattacks on financial institutions, see the [Carnegie](#) website.





■ In **2016** cyberattackers successfully infected the central bank of Bangladesh with malicious software. USD 81 million was transferred to foreign accounts through the messaging system that is used to transfer international payments.

■ In **2017** an American credit reference agency was affected by a data breach. Cyberattackers consequently gained access to the social security numbers, credit card details, dates of birth and addresses of over 143 million customers.

■ In **2018** a bank in India was the target of a cyberattack in which a total of USD 13.5 million was stolen in 28 countries. An attack on the ATM network gave hackers access to customer information they could use to forge bank cards and then withdraw cash.

■ In **2018** a number of Dutch banks and government institutions were the target of DDoS attacks, leaving them temporarily unavailable to customers due to faults.

■ In **2018** hackers used malware as a smokescreen in a cyberattack on a bank in Chile. As a result, more than 9,000 computers were down, and hackers were able to siphon off USD 10 million through fraudulent bank transfers. The internal systems were unserviceable for a long period, leading to restricted service for customers.

■ In **2020** another Chilean bank was the victim of ransomware. After 12,000 computers had been infected, it was decided to shut down all systems to prevent any further spread. That meant over 400 branches had to be closed temporarily.

■ In **2020** various third parties associated with Dutch financial institutions were victims of ransomware attacks.



Cyberattackers have various motives for attacking financial institutions (see Figure 10). Organised cybercriminals are usually after financial gain. For example, they try to extort money from organisations using ransomware. DDoS attacks are also used for extortion, or as a smokescreen in a tiered attack strategy. Organised cybercriminals increasingly have the necessary resources to carry out complex and sustained attacks on financial institutions. The potential proceeds of these attacks are larger, as are the risks to financial stability. In addition to organised criminals, there are 'script kiddies', young people who start hacking in their parents' basement out of curiosity. With cybercriminal service providers using online marketplaces to sell attack technologies and information on vulnerabilities in software and systems (cybercrime-as-a-service)⁴, complex attack methods are available rapidly to a wider audience, including these 'script kiddies'. There are also 'hacktivists', groups that engage in hacking for ideological reasons. Finally, states also carry out cyberattacks. Their motives may be financial gain, but often they are more political. Malicious states use cyberattacks, for example, in order to obtain strategic and secret information or deliberately disrupt operational systems. This could include the sabotaging of vital processes, economic espionage and undermining public trust in institutions.

⁴ CSBN (2020).

The coronavirus crisis has given renewed impetus to cyberthreats. The coronavirus outbreak has led to changes in working conditions and the activation of pandemic protocols to guarantee the continuity of critical business processes. Amid tight time constraints the pandemic measures have forced institutions to switch to large-scale homeworking for a protracted period. A [survey](#) we conducted in March and April 2020 shows that operational and IT risks have increased as a result. Dependence on the internet for homeworking makes the threat of DDoS attacks on vital infrastructure or hacking and extortion attempts even more relevant. In addition, homeworking generally requires more capacity in order to guarantee the availability of business networks. As a result, the network capacity required to detect and process malicious activities has come under pressure. The risk of digital intrusion is also increasing as a result of workarounds. Homeworking blurs the boundary between work and private life, increasing the likelihood that employees will disregard basic digital hygiene and, for example, send sensitive business information to personal email addresses or unprotected hardware. Our perception is that the number of cyberattacks aimed at the financial sector increased only slightly in absolute terms after the coronavirus outbreak. It is mainly the nature of the attacks that has changed.

The coronavirus crisis shows that cyberattackers react rapidly to the latest events. Various criminal groups are using the coronavirus as a theme for fraudulent emails and websites aimed at capturing personal information.

The Dutch financial sector has so far been able to absorb the increased operational risks effectively.

Vital financial infrastructure, such as payment and securities systems, has performed well under crisis conditions. No significant disruptions have occurred. Financial institutions nevertheless report that homeworking is impacting lead times for system and product development. This impact will increase further the longer the current situation persists. IT solutions also had to be rolled out rapidly, so it may be that not all controls were properly implemented. This may entail risks over the longer term.

Cyberthreats: a risk to financial stability

The financial sector fulfils a number of tasks that are essential for the operation of the economy and society. Examples are cash and electronic payments in retail stores, remote payments, high-value interbank transfers and securities transactions. A protracted outage or failure of these tasks could cause serious social disruption and damage to the economy.

The institutions responsible for these tasks are part of the Dutch Financial Core Infrastructure (FCI).⁵ We oversee FCI institutions in tandem with the Dutch Authority for the Financial Markets. A tripartite crisis management body (TCO) has also been set up in collaboration with the sector. This becomes operational in the event of actual or imminent major disruption of payment or securities systems. The TCO comprises DNB, the AFM and the Dutch Ministry of Finance. The disruption or failure of financial institutions that do not directly form part of the FCI, but nonetheless play an important role in the financial system, may also have major consequences. We therefore focus systematically on the cyber resilience of banks, insurers, pension funds and payment institutions as part of our supervision mandate. We examine, for example, the extent to which these institutions have the basic measures in place to maintain information security. We also publish guidance on how institutions can protect themselves against cybercrime. For example, we have published a [Q&A](#) and a [good practice guide](#) on information security, in which we lay down precise criteria for appropriate risk management and board members' expertise in information security and cybersecurity. We also encourage financial institutions to use an IT auditor to conduct an additional quality audit of their controls.

⁵ See the DNB [Financial Core Infrastructure Factsheet](#)

Box 3 TIBER: How do the hacking tests work?

After the Financial Stability Committee recommended testing the practical resilience of Dutch financial institutions in 2015, we set up the Threat Intelligence-Based Ethical Red Teaming (TIBER) programme jointly with the institutions in the financial core infrastructure in 2016. We have now conducted over 20 TIBER tests and extended the programme to include a number of insurers and pension providers. In May 2018 the programme was replicated in the EU (TIBER-EU framework, published by the ECB). In the TIBER programme the participating institutions hire specialist firms to carry out controlled attacks on the critical systems of the participating financial institutions based on the most up-to-date threat intelligence. Experts from the financial sector, the intelligence services, the police and the National Cyber Security Centre work together to ensure the availability of up-to-

date intelligence on cyberthreats. The TIBER tests are carried out on live systems, the principle being that actual disruptions must be prevented at all costs. In practice, the participating institutions also perform crisis management drills based on the same test scenarios. The learning experience is key, and the participating institutions share the lessons learned and good practices among themselves in order to maximise their learning experience. The TIBER-NL programme ensures that tests meet the highest quality standards and participating institutions can exchange sensitive information about the tests in a controlled and standardised way. The TIBER framework was designed in such a way that other critical sectors could also use it. An initial pilot using the TIBER framework in the energy sector took place successfully.

TIBER hacking tests show that cyberattacks can lead to financial stability risks. We test the cyber resilience of financial institutions on the basis of the Threat Intelligence-Based Ethical Red Teaming (TIBER) programme (see [Box 3](#)). These tests show generally

high levels of cyber resilience. At the same time they show that sophisticated attackers could potentially cause a lot of damage to institutions that are essential for financial stability. If they had been genuine attacks rather than controlled tests, they would in some cases



have caused failures of vital functions, losses of highly confidential information, financial losses or market manipulation. Despite the efforts of financial institutions to protect themselves against cyberattacks, the TIBER tests show that cybersecurity is never perfect. A lot of effort, imagination and cooperation is required to keep pace with cyberattackers. After all, malicious attackers are constantly evolving and adapting. The TIBER tests help the participating financial institutions to determine in which areas further investments are needed most.

Cyberattacks can spread rapidly through the financial system. The financial sector is heavily dependent on digital services, processes and systems. As well as many opportunities, this also gives rise to vulnerabilities to human and technical failure and to malicious operators. The contagion risk in cyber-incidents is exacerbated by financial and operational interdependencies among financial institutions and markets. These include dependencies on key payment and securities systems, which often operate globally and around the clock. Cyberattacks are also easily scalable, for example if prevalent vulnerabilities in frequently used software or hardware are exploited. Cyber risk therefore rapidly crosses sectoral and geographic boundaries. Even if the financial sector is not the direct target of a cyberattack, dependencies

throughout the service chain can cause collateral damage to vital financial functions or infrastructure.

The trend towards outsourcing of digital business processes makes financial institutions more vulnerable to disruptions of their service providers' operations.

There is growing dependence on third parties to carry out digital business processes. This provides opportunities to improve operational management. By outsourcing digital business processes to specialist technology firms that can carry out certain tasks, such as cybersecurity, better and at a lower cost, it is possible to raise the quality, efficiency and cost-effectiveness of financial institutions. Outsourcing will give rise to concentration risks, however, if a small number of digital service providers work for a large number of financial institutions. This is the case, for example, with IT service providers, telecom providers and cloud solution providers (see [Figure 11](#)). A vulnerability in a single service provider can immediately affect multiple financial institutions in such a situation. Cybercriminals and state actors know this and seek to gain access to financial institutions' systems by using these third parties as a springboard. Various service providers of large Dutch institutions have recently been the target of successful cyberattacks. Institutions were also impacted by a vulnerability in software frequently used for remote

working in the early part of this year. They had to take down this software temporarily, putting a halt to remote working. The impact would have been even greater if this vulnerability had remained undetected until the current coronavirus crisis.

Cyberattacks can lead to systemic risks if they undermine confidence in the financial sector (see also [Box 4](#)).

Previous financial crises show that confidence in the financial sector is essential for financial stability. A cyberincident can undermine confidence in the financial sector and lead to major financial losses if, for example, financial institutions' data are or appear to be irrecoverably destroyed, encrypted or altered ([ESRB, 2020](#)). This could include deleting bank account balances in one or more important financial institutions or altering data so that the displayed balance information is incorrect. The loss of confidence could then provoke bank runs and cause liquidity problems. The point at which confidence in the financial sector is undermined depends on the duration of the attack, the extent and speed of the spread of the attack through the financial system and the context in which it takes place. In a period of market turbulence, such as the coronavirus crisis, operational disruptions can amplify the negative effect on confidence and market liquidity.



Box 4 Scenario: when confidence is the target

The scenario below illustrates how a sophisticated cyberattack can undermine confidence in financial institutions. The scenario is fictitious. Any similarity to existing organisations or events is coincidental. This scenario also takes no account of the use of existing structures for crisis consultation and management.

Description of events

The Netherlands is caught up in a political conflict with a country that has an offensive cyberprogramme. Diplomatic relations are frosty. A sophisticated group of cyberattackers, with links to the government of the country in question, tries to use the conflict as a covert means of sowing unrest in Dutch society.

The attackers gain access to the network of a European ICT infrastructure vendor using a purchased 'zero day' vulnerability for which no patch is yet available. The vendor has a number of Dutch

financial institutions among its customers. The attackers use this third party as a springboard for a covert attempt to penetrate the network of a major Dutch bank.

They then place ransomware in the bank's network, disabling a number of critical systems, including the payment systems for private customers. Customers are then temporarily unable to conduct any card or online transactions and the bank is unable to access part of its business-critical data. The bank's customer services department is overwhelmed with questions from concerned customers when it becomes clear that the disruption cannot be remedied immediately. The integrity of the bank's data can no longer be verified. Other financial institutions are consequently forced to sever their links with the bank.

As a smokescreen the attackers publish data stolen from the bank's network and demand large ransoms

in Bitcoin. The attack therefore appears to have been perpetrated by a criminal group. The published data are combined with large volumes of falsified data that give the impression that other banks have also suffered cyberattacks. Conflicting messages on social media fuel social unrest. Banks not directly involved in the incident see customers starting to withdraw money from their accounts as a precaution. The share prices of Dutch banks plummet.

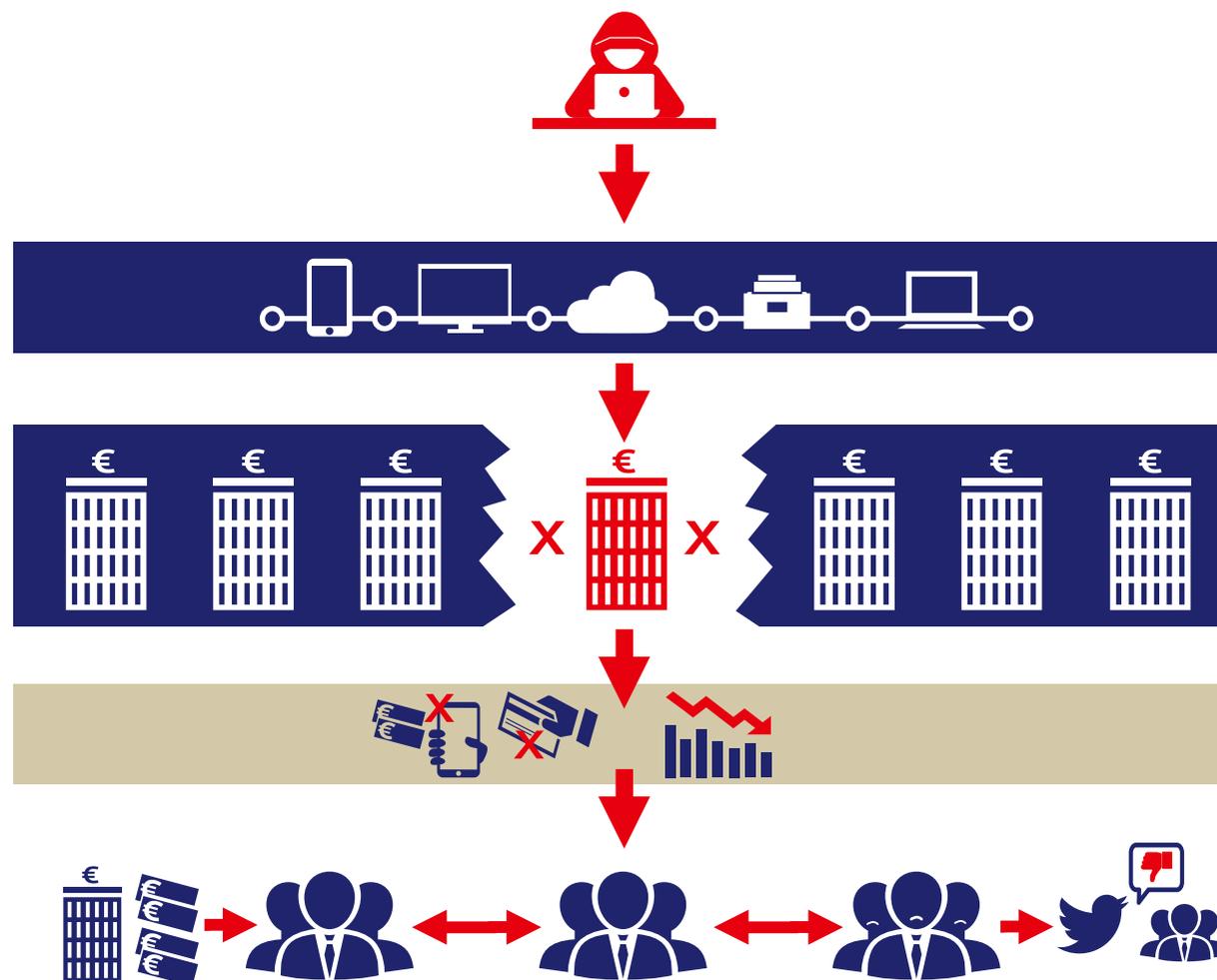
After a few days – without the affected bank paying the ransom – the cyberattackers provide the encryption key. Hardly any country will benefit in the long term if the international financial system is irreparably damaged. A clear signal has been sent, however, and the damage, both financial and reputational, is considerable.

Not every cyberincident, however, poses a risk to financial stability: rapid detection and an appropriate response can prevent a cyberincident from spreading through the financial system.

It is no longer sufficient to focus solely on preventing cyberattacks. There is a real probability that sophisticated attackers will ultimately succeed in penetrating a financial institution. This underlines the importance of close monitoring and rapid detection of activity in an institution's network.

Policy

Financial institutions need to continue investing in their digital resilience and use multi-layered cyberdefence systems. The basis of cyber resilience lies in determining and complying with internal standards for information security and cybersecurity. Generally, financial institutions have the right tools to block, detect and disable malware. Nevertheless, they sometimes overlook the need to phase out legacy software. Backlogs can also occur in the elimination of vulnerabilities. Our research, for example, shows that 28% of patches designed to address critical vulnerabilities are not applied within two days. Institutions also need to continue investing in layered defence. Mission-critical internal applications or systems, often referred to as crown jewels, require an





additional layer of protection. Network segmentation is also important. Where possible a separation should be built into a financial institution's network to limit the impact of a successful cyberattack.

In addition to defence, resilience is also important: if a financial institution is hit by a cyberattack, it is important that its systems are restored as soon as possible. Good preparation is essential to ensure an adequate response to a cyberattack. The speed with which cyberincidents can spread means there is not enough time between the discovery of the cyberattack and the formulation of the response. It is therefore important that institutions develop and maintain an IT continuity plan to limit the impact of a disruption and enable information security functions to continue during cyberattacks. Institutions must have a formal policy for incident management, including an escalation procedure and escalation criteria. Institutions can also set up a Computer Emergency Response Team (CERT), made up of specialist IT professionals, that can act swiftly in the event of a cyberattack. Such a team can help reduce the damage and facilitate a rapid restoration of service. In a recently published [consultation document](#) the FSB provides an overview of effective tools that help ensure an effective response to and recovery from cyberincidents.

Financial institutions remain ultimately responsible for the information security and cybersecurity of outsourced activities, and they must be aware of concentration risks. We also focus on outsourcing as part of our ongoing examinations of information security and cybersecurity. This shows that not all institutions have yet properly mapped out their critical or important outsourcing chains. It is important that institutions have a clear view of relevant sub-outsourcing arrangements and solid contractual agreements with service providers in order to carry out adequate control and monitoring. We urge critical institutions to specify in all contracts with service providers that hacking tests will be carried out, including tests of the service providers in the chain. For maximum effect these tests should be conducted throughout the chain, thereby replicating a more realistic situation. Institutions must also be aware of concentration risks that may arise due to the fact that most of them use the same service providers. For example, institutions can ask service providers critical questions about continuity plans and the impact of disasters on service delivery. At the same time institutions using the same service providers can jointly agree minimum expectations with regard to cybersecurity measures. Work is also under way at European level on the introduction

of a new supervisory framework for ICT providers, such as cloud computing services.

Cooperation between financial institutions and other vital sectors, both nationally and internationally, increases collective cyber resilience. Exchanging information about digital attacks and finding ways to detect them enables threats to be countered more effectively and increases cyber resilience. In terms of information, institutions often have access to only a piece of the puzzle. Information exchanges with other operators could provide a fuller picture, enabling institutions to tighten their own control measures. It is important to extend the scope of information exchange beyond operators in the financial sector. International cooperation is important in view of the cross-border nature of cyber risk. Examples of international cooperation can be found in supervision. European supervision teams, under the direction of the ECB, conduct on-site cyber risk inspections at major European banks. In addition, the TIBER programme we developed has been replicated in the form of TIBER-EU. TIBER-EU gives the authorities guidance on setting up a TIBER programme and harmonises the conduct of tests within the EU. In the Netherlands TIBER-NL will be continued in the 2022-2026 period following a positive evaluation of





the 30 participating critical institutions. At the end of this year a subprogramme will begin involving TIBER tests on critical institutions that fall within the supervisory remit of the AFM. This will be carried out under the AFM's auspices, with DNB and the AFM TIBER-NL teams working very closely together. TIBER-NL could also be developed further to include not only testing of individual institutions but also capitalise on the collaborative structure to launch controlled attacks on concentration points in the chain. These hacking tests can be followed by crisis drills that go beyond the limits of the hacking test, for example by simulating the failure of critical services.





Figures

Cyberattackers and their
motivation

[View figure 10 →](#)

Highly concentrated market
for cloud service

[View figure 11 →](#)



Figure 10 Cyberattackers and their motivation

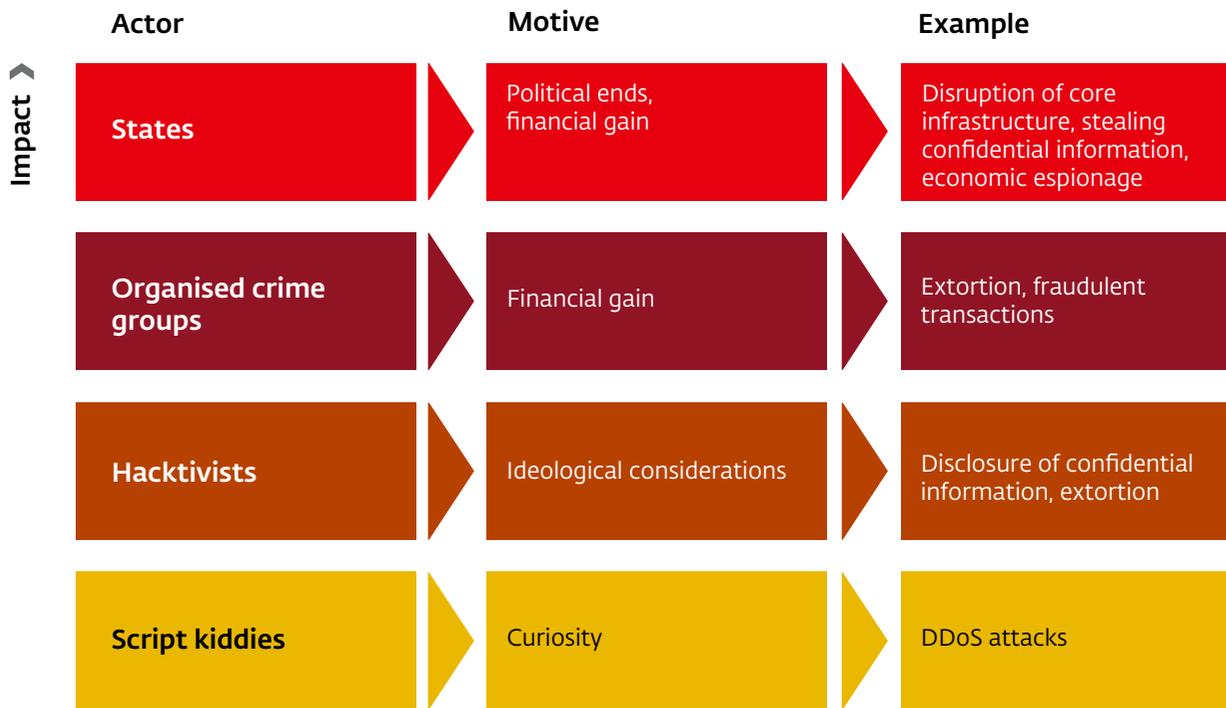
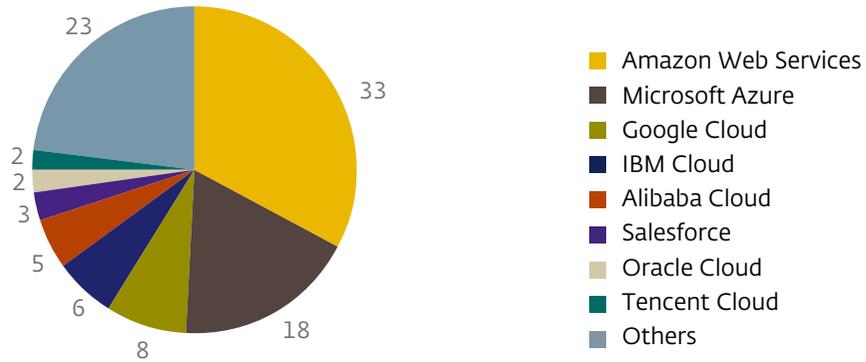


Figure 11 Highly concentrated market for cloud services

Percentages



Source: Financial Stability Board,
Synergy Research Group

Note: The chart shows each firm's share in the market for cloud infrastructure as a service (IaaS) across all industries in the fourth quarter of 2019.



Risk analysis amid uncertainty

The current macroeconomic and financial situation is highly uncertain. In order to be well prepared for various developments in the future, we use a range of scenarios to provide an analytical framework for risk monitoring and policy. The aim is to promptly identify and mitigate severe shocks that could seriously threaten economic growth and financial stability in the short term – so-called tail risks. This work also includes insights from the recently introduced growth-at-risk methodology.

Scenario analysis

Uncertain outlook

The impact of the coronavirus crisis is expected to remain uncertain for a long time. The pandemic is first and foremost a public health crisis, but it also has a major impact on the economy and the financial sector due to the measures necessary to prevent the further spread of the virus. Similar virus outbreaks have occurred in the past, but these were often long ago and occurred in different circumstances. Developments at that time do not therefore provide a good basis for historical comparison and use in current economic models. Finally, how the crisis will develop depends on factors that are difficult to predict, such as the development of the virus, the behaviour of firms and consumers and the impact of the socially distanced economy on society.

Fundamental uncertainties require a broad strategy that takes account of a range of future developments. Shortly after the first outbreak of the pandemic, policymakers were mainly focused on mitigating the negative effects at that time. Given the resurgence of the virus since the summer, the challenge is to identify new problems in good time and consider relevant policy issues at an early stage. Scenario analysis may be helpful in this regard.

Outlining the various scenarios provides a basis for assessing the risks and the potential to mitigate them. From a policy perspective it is important to monitor the developments constantly on the basis of a broad set of quantitative indicators and a qualitative risk assessment. This analysis can then be linked to the effectiveness of possible new measures or criteria for reversing previous steps. That monitoring can also be used to understand when a transition to a new phase

appears to be taking place. Our pandemic stress test, for example, assessed the consequences of severe and very severe (perfect storm) economic shocks on banks' capital position and thus shows when banks risk running into problems.

Scenarios

Scenarios describe a range of possible developments and their effects on the economy and the financial sector. A difference as compared to forecasts is that these are ad hoc analyses that illustrate different aspects of the coronavirus crisis. The various results are not mutually exclusive; they overlap and highlight distinctions in terms of the scale and perspective of the current crisis and its likely development.

The starting point is that the current crisis is primarily a substantial economic shock. After an exceptionally sharp fall in economic activity in the second quarter, a relatively strong recovery in economic activity took place in the subsequent months. This side of the scenario analysis spectrum assumes that this recovery will continue, even with the number of infections rising again, and that a protracted global shock will also be avoided. In this case the measures in the financial sector are aimed at limiting



the economic impact by providing banks with sufficient liquidity and supporting lending to the real economy (see the chapter entitled “[Lending in troubled times](#)”). Risks to the financial sector arise primarily because underlying vulnerabilities in the financial system, such as high corporate and government debt, are reinforced.

If the economic crisis is protracted, this may ultimately cause difficulty for the financial sector.

The [pandemic stress test](#) we conducted in the spring shows the effects on the Dutch banking sector if very severe economic scenarios were to materialise. This could occur among other things if there is a particularly fierce resurgence of the virus and strict lockdown measures consequently have to be reimposed. This will lead to a W- or L-shaped economic growth trajectory. In a situation like this the financial sector can come under pressure, as the economy starts from a weaker position because firms and households have not yet recovered sufficiently from the first phase, causing the new economic shock to resonate more strongly. Risks to financial stability can arise because financial institutions get into difficulty due to an increase in loans that have to be written off or restructured. This may be exacerbated by restrictions on lending by the financial sector, large fluctuations in the market value of financial assets and a possible correction in the residential and commercial real estate markets.

In the event of a further escalation, problems may ultimately arise in the financial system as a whole.

If the resurgence of the virus is not brought effectively under control, strict containment measures will be necessary again. Growth will consequently remain low for a longer period and the economy will not be able to adapt sufficiently. Governments will also be less able to mitigate the negative economic effects because they have less room to manoeuvre in terms of policy. In that situation long-term financial stress may arise, with negative consequences for the global economy in general and the euro area in particular.

Uncertainties and system-wide problems in the financial sector are more difficult to incorporate in existing economic models.

These models are often focused on the most likely growth trajectory and assume linear relationships. Although they can show a dispersion around the expected growth, they do not directly explain how financial vulnerabilities will materialise. A relatively new analytical approach to quantify the impact of such tail risks are growth-at-risk models. These models have received growing attention recently and they are now being used by the IMF among others. While these growth-at-risk models have not been developed specifically for the current coronavirus crisis, they do provide a useful starting point because they focus explicitly on non-linearity in

the quantification of tail risks. In the present context of mounting uncertainties, it is important to map such non-linear relationships.

Growth-at-risk

A growth-at-risk framework provides an estimate of the size of a strong downward shock to economic growth that could occur in an extreme case.

The model is based on a combination of financial conditions and macroprudential vulnerabilities. The financial conditions are a benchmark indicating the extent to which households, firms and governments are able to raise money. Accommodative financial conditions exist, for example, when interest rates are low, market volatility is limited and credit standards are fairly loose. [Figure 12](#) shows that the current financial conditions in the Netherlands are relatively accommodative in historical terms, with the downward trend resulting from low interest rates. Our internal analyses clearly show a positive empirical relationship between accommodative financial conditions and growth for the Dutch economy, at least in the short term.

Over the long term, accommodative conditions can also contribute to the build-up of financial vulnerabilities. Among other things, accommodative financial conditions change the incentive to repay debt.

←

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Although Dutch businesses and households have reduced their levels of debt in recent years, these remain high as a percentage of GDP by international standards. Debt accumulation is an important indicator of the risks of problems arising in the financial system. Accommodative conditions also distort price formation in financial markets, increasing the likelihood of asset price bubbles. Financial stability issues can arise when an asset price bubble bursts, especially if it was driven by credit growth and there is high leverage. Accommodative conditions could prompt financial institutions to take additional risks to achieve their desired returns. The aim of a growth-at-risk model is to provide a simplified illustration of the impact of a change in financial conditions to downward risks in GDP growth.

Sting in the tail: the impact of negative shocks
The model focuses on changes in financial conditions and the impact of severe shocks to economic growth in exceptional circumstances.

The framework offers a means of quantifying negative shocks with a small probability – the so-called tail risks. For this purpose the model uses various statistical techniques to estimate the distribution of future economic growth based on the prevailing financial conditions. The aim is not so much to show the most likely result, as normally happens in the case

of an economic forecast, but to identify cases in which economic growth would be particularly low.

We have developed an initial version of a growth-at-risk model that could be used in the Dutch context.

Research into growth-at-risk has so far focused mainly on the United States. Adrian et al. (2019) show that downside growth risks in particular are associated with fluctuations in financial conditions. It cannot be assumed that the same relationships will necessarily apply in the Netherlands. Dutch firms and consumers are less dependent on market finance, for example, which may mitigate the impact of fluctuations in financial conditions. As a small, open economy, the Netherlands is also more sensitive to developments in international trade. Based on an empirical analysis we have therefore adapted the model to the Dutch situation, based on related literature and the approach used by the IMF in its monitoring of systemic risks around the world. An important criterion for the development of vulnerabilities in the literature is growth in lending, as well as growth in house prices. The model is then used to estimate the correlation between a long-run version of the financial conditions and the negative tail of the growth distribution. This model shows that a tightening of financial conditions leads to higher systemic risks. This correlation is particularly strong in the short term.

The outbreak of the pandemic at the beginning of this year was associated with a sharp increase in tail risks. Figure 13 shows a quantification of the tail risks with regard to economic growth during the first phase of the pandemic. On the basis of an initial growth-at-risk analysis (see Box 5), the line shows where the maximum level of GDP growth would be in one year's time in the worst 5% of cases. This is not intended to be an estimate of the basic trajectory, but an illustration of the downside growth risks in an exceptional situation. An advantage of this chart is that it can be updated daily, so it can be used in the monitoring of financial stability. This analysis in March showed how the increased market volatility impacted the financial conditions and hence the tail risks of a major downward economic shock. Figure 13 shows that in mid-March the estimate would have been that in the worst 5% of cases economic growth four quarters ahead would not be above -12%. The line also shows that the risks around growth – to the extent that they result from financial conditions – have also decreased substantially again since April 2020, because the extensive measures taken by central banks, governments and supervisory authorities restored calm to the financial markets.

Box 5 A growth-at-risk analysis for the Netherlands

Figure 13 presents one of the results of a GaR model that we are currently developing for the Dutch context. This Box provides more detailed background on the design of the GaR analysis. In this analysis the work of [Adrian et al. \(2019\)](#) provides an important guide. The authors show that future growth risks in the United States are highly dependent on the current macrofinancial conditions. Following the example of their paper, the GaR method is being used increasingly by various central banks and the [IMF](#).

The GaR analysis consists of three steps. The first step is selecting the relevant macrofinancial indicators for the growth risks in a country. Various choices can be made. Figure 13, for example, emphasises stock market volatility. Market volatility is always an important variable in monitoring for financial stability. Volatility has also been high in recent months, particularly in the first phase of the coronavirus crisis. We have also assessed versions of the model in which we use an index for financial conditions that we previously developed. The set of dependent variables can be further expanded in

future work. For example, criteria for developments in the housing market or lending could also be included in the GaR analysis.

In the second step of the GaR analysis we use quantile regression to study the relationship between current conditions (such as market volatility) and the distribution of future GDP growth. With a quantile regression we can estimate this relationship for each point in the growth distribution. It is then also possible to investigate what happens in situations with relatively low growth, in which tail risks manifest themselves. This would not be possible with a traditional linear regression, because it would only take account of the average effect. In our quantile regressions the dependent variable in each case is the GDP growth four quarters ahead. The sample period runs from 1979 through to the final quarter of 2019. Like [Adrian et al. \(2019\)](#) we also add the most recent growth figure to the regression in each case as an explanatory variable. This growth figure is in itself usually a good predictor of future growth.

The third step in the GaR analysis is the most complex. On the basis of the quantile regressions, a distribution is derived for the future GDP growth by means of a statistical transformation. When this distribution has been derived, the expected development of GDP growth can then be assessed from different perspectives. A GaR analysis always emphasises what happens in situations with particularly low growth. In practice this frequently amounts to assessing how the fifth percentile of the growth distribution develops. This fifth percentile is the maximum level of economic growth in the worst 5% of cases. This fifth percentile is also shown in [Figure 13](#) for the GaR analysis in which we emphasised market volatility. [Figure 13](#) was derived by using the GaR tools to produce a calculation for every day since the beginning of 2020. For each day the stock market volatility in the previous seven trading days was considered, and it was translated using the GaR model into the fifth percentile of the GDP growth four quarters ahead. In that way it is possible to estimate the tail risks of Dutch GDP growth at the beginning of 2021.

The use of growth-at-risk can be complementary to existing analysis frameworks in practice. Growth-at-risk can provide useful insight into tail risks and thus contribute to our scenario analysis and in particular the risk of a transition to system-wide problems. At the same time growth-at-risk has a number of limitations. It has been set up as a small-scale model, with the advantage that it can be used rapidly and flexibly. The logical downside of this is that the model does not capture many elements. Other analytical frameworks will still be necessary to fully understand the structure and impact of financial vulnerabilities. The focus on financial conditions and vulnerabilities is also interesting, but that very focus likely disregards other relevant economic mechanisms. The coronavirus crisis originated outside the financial sector, and its impacts are wider than just changes in financial conditions or vulnerabilities. Economic models with a broader perspective are therefore necessary to obtain a comprehensive picture of the effect on growth, particularly in this specific case. Examples of these are macroeconomic models, which provide a broader and more detailed perspective and allow detailed modelling of a wide range of factors that ultimately determine GDP growth.⁶

Growth-at-risk can also help in assessing the suitability of various stress scenarios. Financial vulnerabilities are detected with a stress test by calculating various developments that have a highly adverse but still plausible, impact on the economy. Calculations are then made to gauge the impact of these shocks on the financial system, for example by calculating the effects on banks' capital positions. A growth-at-risk approach can help in assessing whether the basic assumptions in a stress test are both sufficiently adverse and sufficiently plausible, since the model indicates the extent to which GDP growth could turn negative, as well as the probability of this occurring. For example, a proposed stress scenario in which GDP growth is not in the tail of the growth distribution will be considered less suitable for further analysis. In practice this will not be an exact science, particularly in the current situation of continued elevated uncertainty.

Policy

The forthcoming period will continue to be characterised by uncertainty. The financial sector has withstood the first phase relatively well. The scenario

analysis and underlying indicators show that at this stage the coronavirus crisis is primarily a substantial economic shock. It is important to continue taking account of new developments that could ultimately also affect the financial sector. Currently this mainly involves monitoring the resurgence of the virus and the possible impact on financial stability. A flexible and alert response will again be necessary if stability risks threaten to materialise.

The continued monitoring of developments based on possible scenarios provides a basis for risk analysis and policy decisions. The measures taken until now, such as lowering prudential buffers, extending liquidity facilities and applying flexibility in terms of regulation are highly appropriate for the current situation of a severe economic crisis. The government's support measures are making an important contribution in cushioning the shock. If the situation deteriorates significantly, other measures will need to be considered in good time. Conversely, careful monitoring of the economic situation could play a part in enabling relief measures to be unwound eventually at the right time and in a logical sequence based on an appropriate and gradual timeframe.

⁶ For example, we use the DELFI model for growth estimates and scenario analysis. See also Berben, Kearney and Vermeulen (2018) DELFI 2.0, DNB's Macroeconomic Policy Model of the Netherlands. DNB Occasional Study 5.



An initial application of the growth-at-risk concept to the Netherlands shows that this methodology can provide useful additional information to supplement the scenario analysis. The model shows in particular how a deterioration in financial conditions in the short term can lead to negative tail risks in the outlook for economic growth. These insights can be important particularly if the situation deteriorates unexpectedly in the period ahead. A growth-at-risk model may then provide a timely indicator of the development of systemic risks and possible vulnerabilities with regard to financial stability.





Figures

Financial conditions in the
Netherlands since 2000
[View figure 12 →](#)

Estimation of tail risks
[View figure 13 →](#)



Figure 12 Financial conditions in the Netherlands since 2000

Standard deviations



Source: DNB.

Note: The financial conditions index is an indicator that combines various financial series, measuring the financial situation in terms of deviations from a long-term average. A below-zero indicator value suggests relatively accommodative financial conditions.



Figure 13 Estimation of tail risks

Percentages



Source: DNB.



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