

ASSESSMENT OF RISKS TO THE FRENCH FINANCIAL SYSTEM

DECEMBER 2021



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Overview

The ongoing economic recovery has mitigated short-term risks to the financial sector, notably as corporate positions have stabilised. But medium-term vulnerabilities are becoming more acute with the upswing in the financial cycle, against a backdrop of persistent uncertainty.

The global economy is continuing a sustained recovery, especially in Europe and France, on the back of stimulus plans and successful vaccination campaigns. Brisk economic growth is paving the way for fiscal and monetary support measures to be rolled back gradually, although uncertainty persists as to the future path of the pandemic and its economic fallout.

In connection with the sharp rebound in demand and amid supply constraints, energy prices and supply challenges have fuelled stronger-than-expected inflationary pressures, which are not expected at this stage to last in the euro area. While inflation expectations currently remain well anchored to the medium-term target of 2%, if they were to become unanchored to the upside, market interest rates would be pushed upwards, causing financial conditions to worsen. At present, however, financial conditions are still extremely supportive in both volume and price terms: bank credit continues to grow at a sustained pace at low lending rates, while bond spreads versus the safest issuers are holding at record low levels. Coupled with rising values for financial and property assets, these credit trends are helping to fuel the continued upswing in the French financial cycle.¹

Credit and asset price dynamics are displaying similar trends across Europe. In particular, the price of credit risk for European companies has fallen back below the level recorded before the March 2020 crisis. Some stockmarket indicators, meanwhile, are signalling persistent exuberance, exposing risk-asset markets to a sudden correction that could potentially destabilize non-bank financial intermediaries that use leverage and spread to other market segments.

Uncertainties about the financial position of non-financial corporations (NFCs) eased in the second half of 2021, even if they could resurface with the ongoing uncertainty about the health situation. NFC aggregate net debt has held steady in recent months. Compared with pre-crisis levels, the sharp increase in corporate cash over 2020, which has been preserved in 2021, was paralleled by a similarly-sized increase in NFCs' gross debt over the same period. As a result, uncertainties about banks' credit quality exposures have also eased, enabling credit institutions to write back provisions. Yet vigilance is still needed, owing to macroeconomic uncertainties, high levels of debt, and the wide diversity in financial positions across different sectors and even between companies in the same sector.

As activity picks up and unemployment comes down, the overall financial position of households looks to be heading in the right direction, as reflected in the reduced number of households in financial difficulty. Stronger credit standards for home loans, in terms of the debt-service-to-income ratio and the credit period, based on recommendations issued by the *Haut Conseil de Stabilité Financière* (HCSF – High Council for Financial Stability) in December 2019, have also helped to improve the sustainability of household debt, which is mainly tied up in housing loans. That being said, high household debt levels continue to be a macrofinancial vulnerability, because it curtails the ability of households to maintain their consumption and investment levels in the event of a new macroeconomic shock to their income.

A thematic chapter of this report considers post-Covid trends in the residential property sector. While strong growth in house prices might raise fears of a self-sustaining loop, fuelling increased home lending and hence a rise in household debt levels, the evidence indicates that: (i) price trends are not uniform nationwide, with prices

¹ The financial cycle, which is quantified in a variety of ways, provides a combined measure of credit and asset price dynamics (particularly property and stockmarket prices). See <https://bloctnotesdeleco.banque-france.fr/en/blog-entry/four-seasons-financial-cycle-and-countercyclical-capital-buffer>

outside urban areas experiencing a catch-up effect and (ii) households are not heavily exposed to property risk, i.e. a decline in the price of financed assets, because of the French home financing model, whereby loans are granted as a function of household income, rather than based on the value of the asset. Accordingly, debt sustainability is ensured not by the value of the asset, but by an assessment of the borrower's income at the moment when the loan is granted. Moreover, since virtually all loans are at fixed rates, borrowers are additionally insulated against higher interest rates. While credit quality associated with residential property financing represents a small risk for credit institutions, the low interest rate environment, coupled with stiff competition on this segment, benefits households while squeezing bank margins.

Sovereign debt also hit record levels during the pandemic owing to the massive fiscal support provided to the economy. In France, sovereign debt has increased steadily for over 40 years, curtailing room for manoeuvre in the public finances and making the sovereign issuer more vulnerable to a deterioration in financial conditions. However, French government debt is held by a diverse group of resident and non-resident investors. Furthermore, the current financing terms applicable to this debt are extremely favourable and are considerably lower than both the growth rate of the economy and the cost of servicing maturing debt. However, reducing France's public debt ratio over time, in particular through better control of expenditures, is necessary for maintaining medium-term financial stability.

Banks and insurers remain robust and their profitability is improving, although business models still represent a medium-term challenge.

French banks consolidated their solvency and liquidity positions at high levels in the second half of 2021. The economic recovery made it possible to bring down the cost of risk, and provisions were reversed, boosting banks' profits and sending their share prices higher. Despite the increase, credit institutions' market valuations remain well below book values, pointing to the structural profitability challenges connected with the low interest rate environment and the digital transition.

At more than twice the minimum requirement, solvency levels also remain high among insurers. However, the low interest rate environment could affect insurers' coverage of capital requirements by exerting downward pressure on their financial income. With the equivalent of three full years' worth of revaluation in reserves, however, insurers are in a position to cope with a gradual increase in market interest rates and the emergence of new participants.

Elsewhere, concerns persist about the over-reliance of European Union (EU) financial firms on United Kingdom (UK) central counterparties (CCPs), with the systemic importance of these CCPs for certain euro market segments creating a risk to financial stability. To avoid a short term cliff-edge effect, the European Commission said that in early 2022 it will extend its equivalence decision, thus maintaining access to UK CCPs in the short term, but it considered inadequate a status quo in the medium term. Keeping in mind the aim to reduce the European Union's dependence on clearing services offered from British CCPs, the Commission stresses the need to continue working on the mechanisms that will pave the way to scale back exposure to UK CCPs and grow attractive clearing services in the EU.

The financial system must continue adapting to cope with increasing digitalisation, and to cyber-risk.

Digital innovation is developing quickly and taking various shapes in the financial services sector. Beyond the challenge for established intermediaries of adapting their IT systems and business models, this trend could potentially increase the exposure of all participants to cyber-attacks. These attacks already represent a significant economic cost as well as a potential threat to financial stability. Awareness about this is growing. More than ever, swift action is needed to set up arrangements that will support a coordinated response by all stakeholders. On the






prevention side, financial supervisors are working on cyber-security with the authorities responsible for the supervision and security of information, at domestic and European levels, including through crisis management test exercises.




The development of decentralised finance and growth in crypto-assets and stablecoins markets are also driving the gradual digitalisation of the financial system. The multiple risks associated with these developments, which range from money laundering and terrorist financing to major volatility and exposure to cyber-risk, call for regulatory action to be taken. Europe's draft Markets in Crypto-Assets (MiCA) Regulation represents a first attempt to provide a framework for these transactions and must be pursued. Central banks are also looking into an operational response to it, by developing central bank digital currencies (CBDCs), which could play a part in safeguarding monetary sovereignty in this new environment. With this in mind, in July 2021 the European Central Bank (ECB) launched the investigation phase of a digital euro project. A specific thematic chapter examines these new trends in depth.

Climate change and the carbon transition represent risks to financial stability

It is vital to make the transition to carbon neutrality, a point highlighted by the most recent report by the Intergovernmental Panel on Climate Change (IPCC) in August. This transition could, however, be a source of potential financial risk, depending on how it is approached. The unprecedented nature of the transition and uncertainty surrounding the process continue to make it difficult to accurately assess the scale of these risks. As the critical threshold of 1.5°C warming draws nearer and with commitments proliferating, notably in the private sector, all the evidence suggests that the transition and/or the perception of climate change impacts are set to accelerate sharply in the coming years. Participants' decisions are still fairly uncoordinated and could exacerbate macro shocks. Efforts are needed to harmonise and standardise approaches to monitoring financial risks. This will help to clarify expectations and improve the credibility and circulation of information.

Matrix of risks to the financial system in December 2021

	Vulnerabilities	Resilience	Risk assessment
1. Elevated market valuations	<ul style="list-style-type: none"> Elevated valuations of risky financial assets Equity market valuations dependent on low interest rate environment Use of leverage by investment funds Differing residential property trends could lead to pockets of overvaluation 	<ul style="list-style-type: none"> Financial institutions display sound liquidity positions European and international policy works to strengthen the existing regulatory framework for open ended investment funds 	
2. Macrofinancial consequences of high debt	<ul style="list-style-type: none"> Impact of inflation expectations on interest rates and spreads High gross debt among companies, widely varying cash positions Government debt ratios high and divergent in the euro area 	<ul style="list-style-type: none"> Monetary policy vigilance Sound macroeconomic recovery Macroprudential measures to limit bank exposure to highly leveraged participants Solvency remains high and sound among banks and insurers 	
3. Weak bank profitability and investment returns of insurance companies	<ul style="list-style-type: none"> Prolonged low interest rate environment set to persist, impacting bank profitability Decrease of the average return of assets of insurers 	<ul style="list-style-type: none"> Bank access to favourable Eurosystem refinancing conditions, coupled with the tiering mechanism, which limits some effects of negative interest rates Financial institutions reporting excellent earnings in the short term 	
4. Digital transformation and cyber-risks	<ul style="list-style-type: none"> Digital transformation of financial participants necessitating adjustments to business models Increased digital surface area creates more exposure to cyber-attacks 	<ul style="list-style-type: none"> Initiatives to make the financial system more resilient to cyber-attacks (crisis exercises, regulatory work) 	
5. Exposure to climate change	<ul style="list-style-type: none"> Risk that the financial sector could be weakened by an insufficient or delayed response to the accelerated transition to a carbon-neutral economy 	<ul style="list-style-type: none"> International coordination of climate initiatives for the financial sector Climate stress testing exercises 	

Horizon (from short to long term)
 Very high risk
 High risk
 Moderate risk

The colour represents the level of risk based on an expert assessment reflecting the probability that the risk will materialise and its potential systemic impact. The arrow indicates how risk is expected to develop over the next six months.

Measures taken by authorities

Authorities kept economic support measures in place in 2021, while making adjustments to reflect improving economic and health conditions:

- France continued to provide fiscal support for the economic recovery through the EUR 100 billion “France Relance” stimulus plan, EUR 70 billion of which is to be disbursed by the end of 2021. The plan includes EUR 39.4 billion in grants under the Next Generation EU package, [EUR 5.1 billion](#) of which was disbursed in August 2021 as pre-financing for 2021.² French President Emmanuel Macron also announced a five-year EUR 30 billion investment plan, dubbed “France 2030”, which will focus on the sectors of the future, with a view to fostering innovation and growth. EUR 3.5 billion will be spent in 2022. Euro area monetary policy remains accommodative as it seeks to support the rebound in activity.
- The emergency monetary measures implemented in the face of the COVID-19 crisis should gradually be reduced, even if monetary policy will continue to provide support in a flexible manner: the European Central Bank (ECB) announced in December 2021 the slowdown in the purchase rate of the Pandemic emergency purchase programme (PEPP) in the first quarter of 2022 compared to what was achieved in the last quarter of 2021, and the end of net purchases in March 2022. The ECB has indicated that the PEPP could be reactivated, if necessary, to counter negative shocks related to the pandemic. This formalization of the end of net purchases of the PEPP is also accompanied by a temporary increase in the rate of net purchases of the Asset Purchase Program (APP) to 40 billion euros monthly in Q2 2022, and 30 billion euros in Q3 2022 before returning to a monthly rate of 20 billion euros from Q4 2022. The Governing Council plans to end net purchases shortly before starting to hike key ECB interest rates. Finally, the ECB expects the special conditions that applied to TLTRO III to end by June 2022.

In this setting, authorities are monitoring the solvability of non-financial participants. Following its meeting on 14 September 2021, the HCSF decided to convert the recommendation on credit standards for home loans, issued in [December 2019](#) and adjusted in [January 2020](#), into a legally binding standard. The standard, which was formalised by a decision³ signed by the Minister for the Economy and Finances,⁴ applies to loans issued on or after 1 January 2022 and maintains the debt-service-to-income ratio (35%) and credit period (25 years) criteria from the previous recommendation. Some flexibility is still allowed, with up to 20% of quarterly loan production eligible for an exemption.⁵ This measure is designed to prevent excessive household debt, while preserving the French model of home-ownership financing, against a backdrop of continued rapid growth in new residential property lending. This standard supplements the standard introduced in May 2018, according to which the exposure of systemically important banks to the most heavily indebted major companies resident in France may not exceed 5% of capital.⁶ In addition, at its meeting on the 14th of December 2021, the HCSF discussed its strategy to increase the counter-cyclical bank capital buffer rate. It anticipates that after the exceptional circumstances that prompted its release in March 2020, continued positive economic and financial conditions could justify its normalization to its pre-crisis level at its next meeting.

Sources of vulnerability identified in the non-bank financial intermediation sector are also being addressed through regulatory work aimed at enhancing the resilience of money market funds. The Banque de France took part in discussions within the Financial Stability Board, which led to the release in mid-October 2021 of [an initial public report on money market funds](#). The report sets out regulatory options that may be adopted by members based on the characteristics of their economies, including the introduction of additional liquidity requirements. In Europe, a revision of the Money Market Fund Regulation (MMFR) is scheduled for 2022, with a view to mitigating the liquidity risk highlighted by the episode of March 2020. The European Systemic Risk Board (ESRB) and the ECB called in [July](#) and [November 2021](#) for MMF regulatory requirements to be strengthened.

² Subsequent disbursements will be based on implementation of investments and reforms set out in France's national recovery and resilience plan.

³ [Decision n°D-HCSF-2021-7 of the 29 September 2021](#)

⁴ The Minister for the Economy and Finances chairs the HCSF.

⁵ 20% of new loan production over the quarter may be exempted from the criteria. At least 80% of this flexibility is reserved for buyers acquiring a primary residence, with at least 30% reserved for first-time buyers.

⁶ The HCSF's decision on the large exposures of systemically important institutions was extended in July 2021 until June 2023.

The prolonged low interest rate environment continues to be a major focus, particularly given its impact on banking sector profitability. With a view to mitigate the cost of negative interest rate when excess reserves of credit institutions on the books of central bank, the ECB has maintained since October 2019 a tiering mechanism that allows a portion of excess reserves held by banks with central banks to be exempt from negative interest rates. This mechanism, which banks have made full use of, has helped to curb some of the effects of negative rates on bank profitability.⁷ This measure is an example of how monetary policy is doing more to take financial stability issues into account. This stance was upheld by the ECB in its 2021 strategic review, which identified financial stability as a pre-requisite for price stability.

Prudential authorities meanwhile are working hard to encourage financial participants to ready themselves to deal with more structural risks linked to the digital transition and cyber-threats:

- **To prevent the risks associated with cyber-threats, the Banque de France and the ACPR are taking part in domestic and international crisis exercises.** In June 2021, marketwide robustness group, for which the Banque de France acts as national coordinator, successfully carried out a cyber-crisis simulation involving over 800 participants and 24 entities from the Paris financial community.⁸ These exercises help to improve coordination between different participants in the financial system, with a view to preventing the system from being weakened in the event of a cyber-crisis. Meanwhile, Europe is in the process of drafting a Digital Operational Resilience Act (DORA) that is designed to enhance the financial system's cyber-resilience by harmonising crisis management rules across Europe.
- **In the area of digital assets**, in 2020, the European Commission issued a proposal for a MiCA Regulation, which is currently being adopted and which seeks to set up a regulatory framework for crypto-asset markets that safeguards financial stability while fostering innovation. Regulatory work is being coordinated internationally through a number of bodies, including the FSB, FATF, CPMI-IOSCO and BCBS⁹. For example, in June 2021 the Basel Committee on Banking Supervision (BCBS) published [a consultation](#) on the prudential treatment of crypto-asset exposures. On the operational side, the ECB Governing Council decided in July 2021 to launch the investigation phase for a digital euro project, which is due to last 24 months.

On climate change, the Banque de France supports the ambitious action plan adopted by the ECB Governing Council during the 2021 strategic review. Climate-related factors will be integrated into monetary policy assessments and the monetary policy operational framework. In addition, in November 2021 the Banque de France and the ACPR reaffirmed their support for promoting sustainable finance and achieving the goals of the Paris Agreement by publishing a pledge setting out their commitments. Climate change will be integrated into financial stability work and microprudential supervision as well as within the Banque de France's internal management.¹⁰ Also, in October 2021, the ACPR and the AMF published their second report on compliance with climate commitments by members of the financial community. The report provides initial estimates of the fossil-fuel exposures of French banks and insurers. At the same time, the EU is developing a taxonomy of financial assets according to their environmental impact. These various measures are in addition to work being done at international level, in particular by the NGFS¹¹ and BCBS.

⁷ For a detailed analysis of the tiering mechanism, see Banque de France Eco Notepads, [Post No. 208](#).

⁸ The marketwide robustness group, which is chaired by the Banque de France, comprises the main French banking groups, the French Banking Federation, market infrastructures, payment systems operators, SHFDS Bercy (Department of the Senior Official for Defence and Security, Ministry of the Economy and Finances), the Treasury, the Autorité de contrôle prudentiel et de résolution (ACPR – Prudential Supervision and Resolution Authority), the Autorité des marchés financiers (AMF – Financial Markets Authority) and the Agence nationale de la sécurité des systèmes d'information (ANSSI – National Cybersecurity Agency).

⁹ FSB, Financial Stability Board ; FATF, Financial Action Task Force ; CPMI-IOSCO, Committee on Payments and Market Infrastructures – International Organization of Securities Commissions ; BCBS, Basel Committee on Banking Supervision (Comité de Bâle sur le contrôle bancaire).

¹⁰ The Banque de France has pledged to implement best practices with regards to ensuring the alignment of its non-monetary policy portfolios with the objectives of the Paris Agreement, roll out training programmes to enhance its staff's understanding of climate-related issues, and reach carbon neutrality by 2050.

¹¹ Network of Central Banks and Supervisors for Greening the Financial System

1. Cross-cutting analysis of vulnerabilities

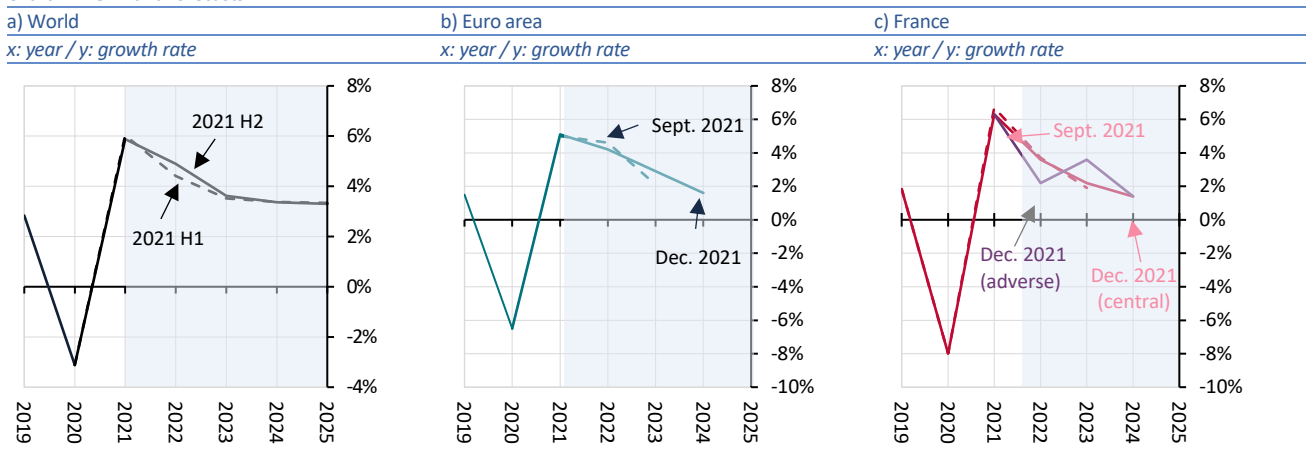
1.1 The economic recovery is being accompanied by price pressures, while supportive financing conditions are boosting market valuations

The strength of the macro recovery will depend on health and inflation risks

While uncertainty persists over the health situation, recovering economies are paving the way for a rollback of support measures

The global economy continues to recover at a sustained pace, but a resurgence in the epidemic could derail this trend in 2022. After contracting by an estimated 3.1% in 2020, the global economy is forecast by the IMF to rebound, expanding by 5.9% in 2021 and 4.9% in 2022 (cf. Chart 1.1.a). The macroeconomic pick-up, which is broadly in line with the forecasts from the first half of 2021, does however mask considerable disparities between sectors and countries. Several emerging countries, including China¹², recently recorded a mild slowdown in the pace of growth, as revealed by the latest survey data. The resurgence in the pandemic in the final weeks of 2021, with the arrival of a fifth wave that is renewing uncertainty over Covid's economic impact, could temper the strong growth expected for 2022.

Chart 1.1: GDP and forecasts



Source: (a) World Economic Outlook, IMF (b) ECB (c) Banque de France

Europe is also recovering strongly, notably on the back of stimulus plans and successful vaccination campaigns.

According to the ECB's [macroeconomic projections published in December 2021](#), a growth of 5.1% in 2021 and 4.2% in 2022 should be observed, even if the projection for 2022 has been slightly revised downward since September because of tighter constraints on supply chains, as well as new restrictions linked to the pandemic (cf. Chart 1.1.b). In France, economic activity has been rebounding sharply since the second quarter of 2021 and the GDP should reach 3.6% in 2022 and 2.2% in 2023 in the central scenario of [Banque de France macroeconomic projections published in December](#). The economic outlook should remain bright in 2022, buoyed by continued measures to underpin the recovery and by the consumption of excess household savings. However, if the epidemic situation were to worsen, this could clearly weigh on activity in early 2022, before a marked rebound in the aftermath: GDP should only reach 2.2% in 2022, but 3.6% in 2023 (cf. Chart 1.1.c, December 2021, adverse scenario).

Brisk economic growth is paving the way for a rollback of fiscal and monetary support measures. Banque de France forecasts a fiscal deficit of 4.9% in 2022, from 7.1% in 2021 and down from 9.2% in 2020, which will take government debt to 113.6% of GDP as of end 2021, or 15 percentage points higher than at the end of 2019. Government spending, which has massively supported household and business incomes during the crisis, is set to

¹² Latest data of the Purchasing Managers' Index (PMI) in China show a slight contraction of the activity in November (49.9, when 50 stands for stability of the activity)

be cut back in 2022, while additionally benefiting from European financing for the stimulus plan. On the monetary front, the Governing Council of the ECB said in December that exceptional measures that was developed to counter the negative effect of the pandemic are to be gradually withdrawn, keeping possible to react to any negative shock coming from a resurgence of the pandemic.

Considerable uncertainty remains about the future path of the pandemic and its fallout. The persistently high level of uncertainty is a key risk factor for the growth outlook. Restrictions on activity that might be associated with a resurgence in the pandemic would also be likely to stifle the recovery, including by prolonging sector-specific supply and hiring difficulties. These factors could limit the rebound in demand and disrupt supply chains, further stoking price pressures. The Banque de France's survey of business conditions in December 2021, that took place after the discovery of the variant Omicron and the raise of the fifth epidemic wave in Europe, found that firms were particularly concerned about their ability to respond to strong demand. More than half of CEOs (57%) reported supply issues (mainly in the sectors of manufacturing, and especially for automotive constructors and in building), or for hiring (51%).

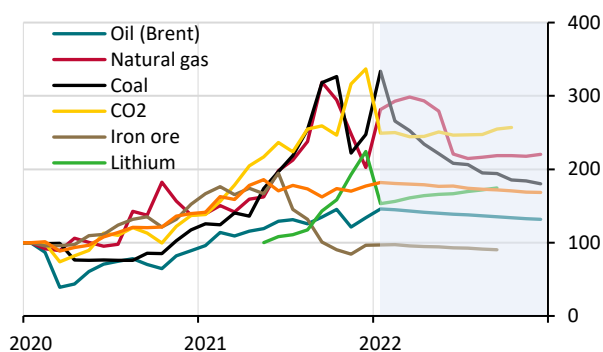
There are also sources of economic uncertainty that are not directly related to the pandemic. In particular, the Chinese real estate sector raised concerns in the global financial markets in the fall of 2021, in particular because of the difficulties of the Evergrande Company in servicing its debt. This type of shock can have a broader financial impact on credit in an economy with very high corporate debt levels. The impact in terms of direct and indirect exposure of French financial intermediaries vis-à-vis Chinese players, financial and non-financial, is moderate, due to the limited opening of the Chinese capital account, and is not directly a concern in terms of financial stability. However, if these developments were to lead to a significant slowdown in economic activity in China, macroeconomic effects would be felt for the European and French economy via a slowdown in Chinese demand¹³.

Inflationary pressures are not expected to last, but extremely favourable financial conditions are driving France's financial cycle to high levels

Chart 1.2: Commodity markets

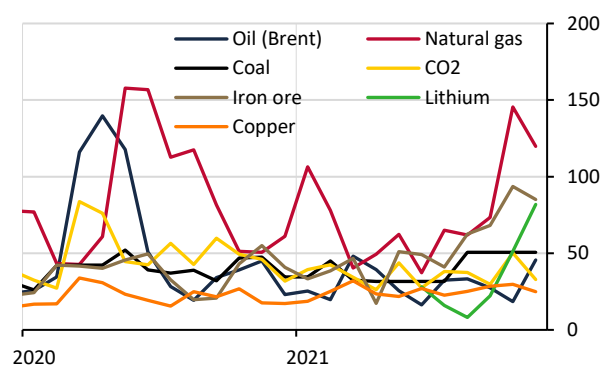
a) Prices and expectations

x: year / y: 1 January 2020 = 100



b) Realised volatility over 30 days of the 1 month contract

x: year / y: base points



Notes: The greyed area shows investor expectations as estimated by futures markets for each commodity at different horizons. Most recent value : 31/12/2021

Source: Bloomberg.

Since the second quarter of 2021, energy prices and supply pressures have fuelled stronger-than-expected inflationary pressures. However, these pressures are not expected to last. Euro area inflation reached 4.9% year-on-year in November and is expected to head even higher at the end of the year before easing in 2022. The temporary nature of these price developments is attributable to several factors. First, inflation statistics for the second half of 2021 reflect a base effect (since indicators are generally calculated on a year-on-year basis), insofar as prices fell across the board in 2020 with the contraction in global demand. The second factor is the surge in energy prices (cf. Chart 1.2a). Futures markets, however, indicate that prices are expected to head lower, while

¹³ See also the Bundesbank Financial Stability Review, box on pages 25 and 26

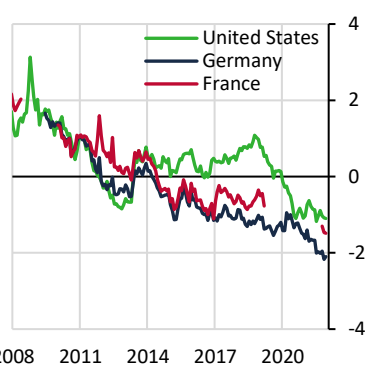
continuing to exceed pre-crisis levels. Realized volatility has rebounded sharply and adds to the dimension of uncertainty (cf. Chart 1.2b). In addition, the recovery in international trade has been disrupted by logistical problems affecting container transportation and pushing shipping costs sharply upwards¹⁴. In France, a full 45% of companies say that their production is affected by supply issues, a level not seen since the series began in 1991.¹⁵ Supply/demand imbalances could continue over the coming quarters as inventories are rebuilt and companies regain their production capacity.¹⁶

Higher and persistent inflation, especially if passed on to wages, would affect expectations, driving up market interest rates, which would cause financial conditions to worsen. Nominal interest rates reflect a “real” interest rate resulting from the overall equilibrium between savings, investment and trend growth, plus a premium corresponding to expected inflation.¹⁷ A significant increase in inflation could therefore cause a shock to market interest rates. Real interest rates are currently negative in the United States, Germany and France (cf. Chart 1.3) and are continuing to trend downwards. Conversely, five-year inflation expectations in five years’ time have bounced back sharply since the 2020 March shock and are now close to 2.0% in the euro area, i.e. the ECB’s price stability target, and 2.5% in the United States (cf. Chart 1.4). In the United States, senior figures at the Federal Reserve recently signalled their concerns about the path of inflation, and the Fed should accelerate the normalisation of monetary policy and hike rates several times in 2022 (cf. Chart 1.5). A swift increase in policy rates by the US central bank could have negative repercussions for international financial conditions and capital flows around the world, especially in emerging countries.

However, the effect of US interest rates on euro area long rates is not systematic, the correlation between US and European bond markets would suggest a potential decoupling of economies (cf. June 2021 Risk Assessment, Box 2.1). The Eurosystem’s use of various monetary policy instruments, including forward guidance, explains much of this decorrelation. The Governing Council expects the key ECB interest rates to remain at their present or lower levels until it sees inflation reaching 2% well ahead of the end of its projection horizon and durably for the rest of the projection horizon, and it judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term.. This may also imply a transitory period in which inflation is moderately above target. On average, however, market participants expected as of end December that short rates to go slightly up in 2022, while medium-term inflation should be close to its target.

Chart 1.3: 10Y real interest rates

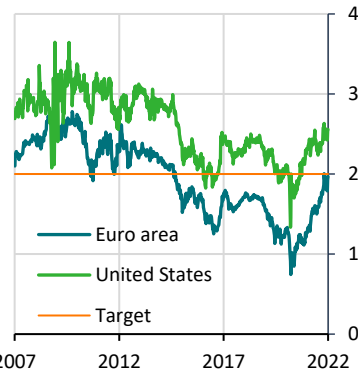
x: year / y: % rate



Source: Bloomberg

Chart 1.4: Medium-term inflation expectations (5Y inflation swap in five years)

x: year / y: % rate

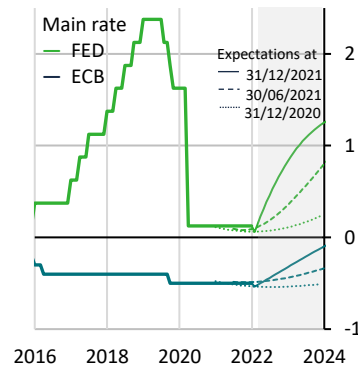


Note: the euro area and the United States both have 2% inflation targets

Source: Bloomberg

Chart 1.5: Central bank policy rates and implied trajectory based on OIS

x: year / y: % rate



Source: Bloomberg, calculations Banque de France

¹⁴ The reference benchmark index, the Baltic Dry Index, fell from 1,366 at the start of January 2021 to 3,352 on December 7, 2021 (+ 145%) after peaking at 5,650 on October 7, 2021. This index is expressed in points, with a reference value of 1000 points on January 4, 1985

¹⁵ Insee survey in October 2021: demand remains strong in manufacturing, but supply issues are spreading

¹⁶ <https://blocnotesdeleco.banque-france.fr/en/blog-entry/rise-french-inflation-temporary>

¹⁷ According to the Fisher equation: $i \approx r + \pi$ where i is the nominal rate, r the real rate and π the rate of inflation. If the real rate does not change, a movement in inflation expectations will cause a shock to nominal interest rates.

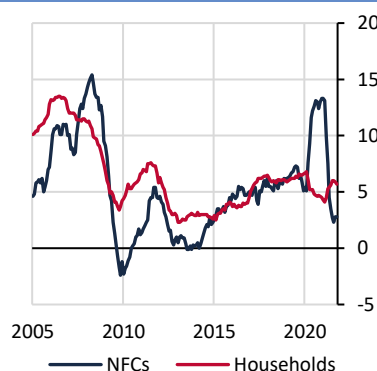
At the end of 2021, financial conditions remain extremely favourable, with a sustained increase in volumes of loans at low rates of interest, notably to the household segment, following on from strong growth in 2020. The loan and securities portfolios of France's six main banking groups continue to show pronounced growth: at end-September 2021, gross outstandings came to EUR 6,126 billion, an increase of 6.6% compared with September 2020. Between September 2019 and 2020, gross credit outstandings increased by 14%, driven by credit provision at the height of the crisis, while the increase between September 2018 and 2019 was 5.3%. Provision of credit to French households increased markedly, rising by 5.9% year-on-year to EUR 1,417 billion at end-September 2021, while claims on NFCs grew by a more modest 2.8% year-on-year to EUR 1,211 billion, including EUR 832 billion in investment loans and EUR 312 billion in cash loans at end-September 2021, reflecting more muted demand (cf. Chart 1.6).

In France, non-financial companies and households are vastly indebted at fixed rates. In fact, more than 90% of French households' outstanding loans are at a fixed rate when non-financial companies are almost 80% indebted with a fixed rate (around 65% of loans, when the securities are almost exclusively at fixed rates)¹⁸, and would not be directly affected by a rise in interest rates vis-à-vis their debt already contracted, even if part of it will mature soon. If this increase were to be more structural, these players could however have less appetite to maintain or increase their debt. Other indirect effects could then affect them as well, such as the impact of a rise in interest rates on activity.

House prices have followed the growth in home loans, continuing to rise as the French financial cycle accelerates. The Covid crisis took place against the backdrop of a structural upward trend in residential property transactions. However, it spurred very disparate developments in house prices, depending on geographical location and asset type (cf. Chart 1.7). Overall, though, home prices are up 7.5% year-on-year, seasonally adjusted. A thematic chapter takes a more in-depth look at developments and sustainability on the residential property market. This growth, coupled with rising equity markets, is driving France's financial cycle upwards¹⁹ (cf. Chart 1.8). These developments are not unique to France. Other economies in Europe, including Germany, are exhibiting similar trends.

Chart 1.6: Annual growth rate of outstanding loans to NFCs and households

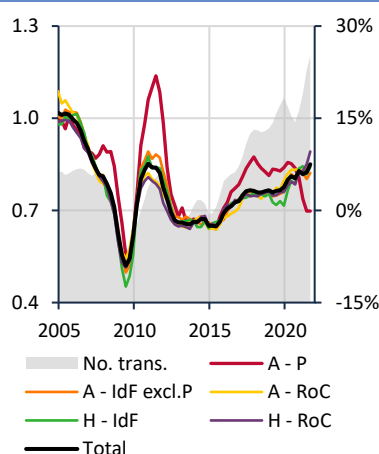
x: year / y: EUR billion



Note: NFC = non-financial corporations
Source: Banque de France (webstat)

Chart 1.7: Transactions and house prices (yoy, seasonally adjusted)

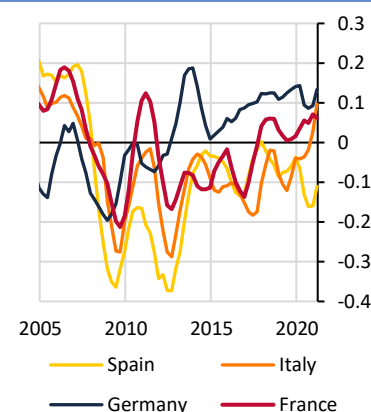
x: year / y (left: millions) (right: %)



Note: No. trans. = number of transactions, A = apartments, H = houses, P = Paris, IdF = île de France region, RoC = rest of country
Source: Insee, Notary Index

Chart 1.8: Financial cycle, Europe

x: year / y: %



Note: see footnote 19 for a definition of the financial cycle
Source: Banque de France

In contrast, the commercial property market was hurt by the Covid crisis, but in disparate ways. In France, the price dips identified in Chapter 5 of the December 2020 Assessment of Risks were recouped in the first half of 2021, with a 1.7% increase. However, the overall increase concealed disparities across segments: the prices of

¹⁸ These estimates do not take into account any derivative positions that companies may have contracted.

¹⁹ The financial cycle is measured here as the equally weighted average of four variables: real quarterly growth of total credit, house prices and equity prices, and the quarterly percentage point change in real sovereign yields. See Schuler, Hiebert, Peltonen (2015) – "Characterising the financial cycle - a multivariate and time-varying approach".

commercial properties, which are especially sensitive to business conditions, tumbled by 5% between Q2 2020 and Q2 2021, while industrial property prices gained 15%. The stockmarket prices of listed real estate companies, which are primarily invested in commercial property, are not back up to their pre-crisis levels, after surrendering 28.9% between 17/02/2020 and 31/12/2021. Moreover, local trends in the office segment appear to be affected by the prospects of more remote working arrangements.

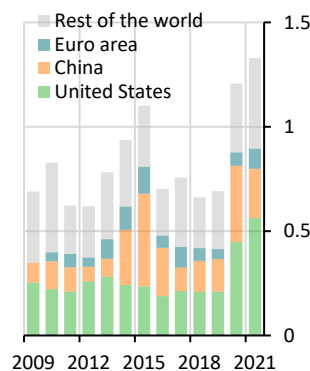
The surge in financial asset prices increases the risk of their overvaluation

Equity markets continue to appreciate

The rally on equity markets that followed the spring 2020 crisis continued, aided by the reopening of economies and unprecedented monetary and fiscal policy support. In 2021, the CAC 40 index was up 29% year to date, compared with 22% for the Stoxx 600 and 27% for the S&P 500, far exceeding pre-crisis levels. In this supportive climate, valuation indicators have been rising strongly since the start of the year, and initial public offering hit all-time high in 2021 (cf. Chart 1.9). These inflows take place when cyclically adjusted price/earnings (CAPE) ratios²⁰ have exceeded 2008 levels, in both France and the United States, and in the US they are nearing the peaks recorded just before the dot.com bubble burst (38 in September 2021 compared with 44 at the end of 1999; cf. Chart 1.10). Risk premiums, i.e. the share of expected equity returns over the risk-free rate, which previously offered a way to qualify this overvaluation finding, hit a ten-year low in France in the second half of 2021 (cf. Chart 1.11), suggesting excess optimism among equity market investors, even in a low interest rate environment. A rise in market interest rates has a mechanical effect on lowering these valuations, as investors value companies by discounting their expected future earnings with the interest rate of a risk-free asset over the same duration. Investors appear to be growing more aware of this excess of optimism, although expected volatility has reverted to relatively low levels (cf. Chart 1.12). The indicator of CAC40 skew, which is based on the price of hedges by options against extreme risk, has averaged 6 year to date, compared with a reading of 4.2 over the 2010–2019 period.

Chart 1.9: IPOs worldwide

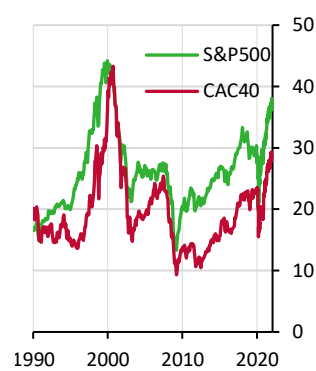
x: year / y: USD billion



Source: Bloomberg, Banque de France calculations

Chart 1.10: CAPE ratio

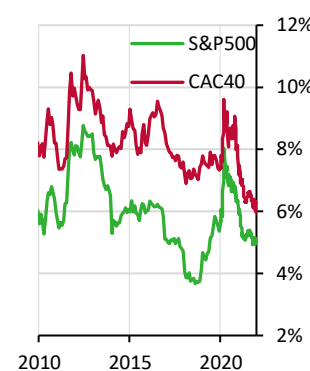
x: year / y: CAPE ratio



Note: CAPE = cyclically adjusted price/earnings ratio. The indicator represents index prices divided by (real) earnings smoothed over ten years. Most recent value: end-December 2021.
Sources: Datastream, Robert Shiller website, Banque de France calculations

Chart 1.11: Risk premiums

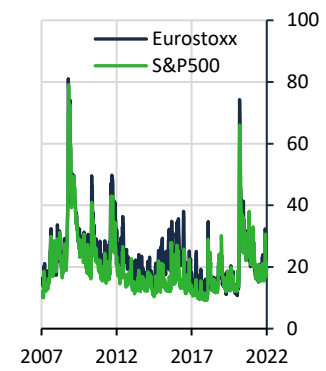
x: year / y: %



Note: most recent value: end-December 2021
Sources: Datastream, Robert Shiller website, IMF-WEO, Banque de France calculations

Chart 1.12: Expected volatility

x: year / y: basis points



Most recent value: 31/12/2021.
Source: Bloomberg

Box 1.1: Transmission of a market shock to the financial system

A downturn in the equity market, if it were abrupt, could put some non-bank players in difficulty, especially investment funds that use leverage. Within investment funds, the hedge funds category is the one that uses more leverage. The median leverage of hedge funds domiciled in the EU stood at 124% of their net asset

²⁰ The CAPE is a indicator through the cycle. An increase shows that the risk of a stockmarket correction is rising.

value at the end of 2020 (but 251% for the 25% of the most leveraged funds). The debt raised by European hedge funds reached 300 billion at the end of 2020, mainly through repo transactions (securities lending against cash): the leverage thus obtained by loans (collateralized or not) is called financial leverage, by distinction with the leverage obtained through derivatives, called synthetic leverage. The search for yield may have pushed some of these funds to take excessive risk through leverage in a context of rising valuations. In the event of a market downturn or a sharp increase in volatility in certain segments of the equity markets, leveraged funds exposed to these markets may be required to quickly unwind large positions (to limit their losses or face margin calls.), and find themselves unable to pay their margin calls or refinance their debt to their bank counterparties.

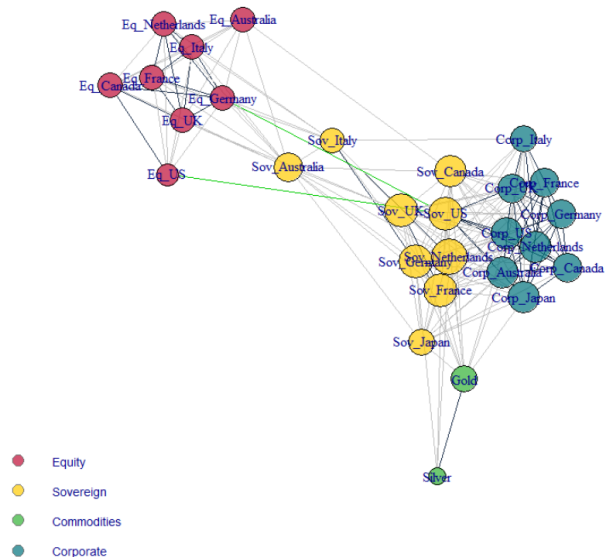
The consequences of Archegos' default at the end of March 2021 are a prime example of this mechanism.

This American family office had used synthetic leverage²¹ via derivatives negotiated with several large international banks to take highly concentrated positions in certain equities. When the prices of these stocks turned around, the fund was unable to pay margin calls on derivative positions, and two of the counterpart banks suffered a loss of \$ 7 billion. This isolated incident did not have a systemic consequence, but illustrates the mechanism of the spread of risks linked to leverage, both between financial players and across borders.

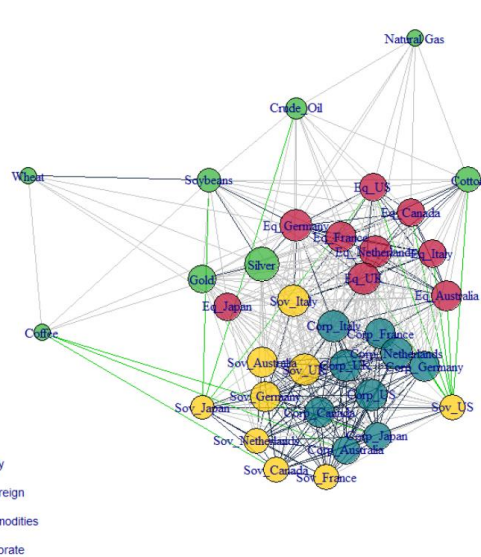
However, it should be noted that the use of leverage by investment funds in Europe is highly regulated', and UCITS (including money market funds in particular) can only use leverage in a limited manner. In early 2019, the AMF published a study on the characteristics of alternative investment funds managed by French management companies. The French financial system can nevertheless be exposed to foreign funds that are less regulated and / or with high leverage. The bankruptcy of Archegos raises the question of the transparency of the exposures and interconnections of non-bank leveraged players with the rest of the financial system, in particular through the extension of regulatory obligations to family offices and other insufficiently regulated players.

Chart 1.13: Market spillover between different asset classes during a crisis

1.13a: Network of interconnections during normal times



1.13b: Network of interconnections during the Covid-19 crisis



Guide: Each node represents an asset; its closeness to other nodes depends on the number of significant bilateral links to other assets (statistically significant correlations at a 0.001 level and whose intensity exceeds 0.3 in absolute terms); size depends on the total number of associated links. A node is displayed only if it has at least two significant links to other assets. The black and grey lines indicate whether the correlation is positive (above or below 0.6 respectively). The green lines indicate negative correlations.

Notes: Daily price changes between 2017 and 2021. The period of widespread stress began on 28 February and extended (intermittently) until 27 April 2020. In normal times, two groups can be distinguished: bonds (sovereign and corporate) and precious metals (gold and silver) on the one hand, and equities on the other. Financial markets saw an increase in the average correlation level during the crisis. The spillover effect primarily impacted equities and IG-rated corporate bonds. Conversely, sovereign bonds acted as safe havens for investors.

Sources: Refinitiv Datastream; Banque de France calculations

²¹ With approximately \$10 billion in equity, Archegos had exposure in investment of \$ 50 billion, or an approximate leverage of 500%

These high valuations could drive spillover between distinct market segments in the event of a major reversal. Such market dynamics are problematic for portfolio risk management and contribute to financial instability. These effects, coupled with asset impairment, are especially likely to affect financial stability through the procyclical behaviour of leveraged financial participants as described in box 1.1. Since market calls on their positions could rise significantly, leveraged financial participants are more likely to liquidate assets, which has the procyclical effect of extending impairment to a broader spectrum of market segments. In normal times, asset classes are relatively independent of each other, which offers options for diversification (cf. Chart 1.13). By contrast, the market stress caused by the Covid-19 crisis resulted in a sharp increase in interdependencies between asset classes, illustrated by the impairment seen in many market segments, thereby lessening the potential for diversification. Return correlations have since recovered characteristics that are similar to those that prevailed before the bout of stress in March 2020.

This contagion can also come from other market segments subject to high volatility, notably energy. The volatility of the energy markets in Europe, in the context of a sharp rise in the price of natural gas since the autumn, presents risks in terms of management of the exposures of producers, their creditors, players in the derivatives market, and ultimately central clearing houses. The margin call models have, however, worked in this market segment without having to modify the existing models until now, and financial intermediaries have relatively little direct exposure (29% of the total position in the Dutch gas market, which is the benchmark in Europe). Overall, the risks associated with rising energy prices are primarily macroeconomic in nature, and even if bankruptcy of some players remains possible, the stakes for financial stability appear limited at this point²².

Box 1.2: Financial stability issues related to CCPs located in the United Kingdom

In regards of its deep dependence on central counterparties (CCPs) located in the United Kingdom, in particular for clearing interest rate and credit derivatives, the European Union is exposed to a financial stability risk. Following the Brexit, in order to address the risk that European players will suddenly lose their access to British CCPs, the European Commission has recognized the equivalence of British law on CCPs until June 2022, before British CCPs are subject temporary recognition by ESMA (LCH Ltd, ICEU - both considered to be systemic - and LME), which should provide time to carry out a more in-depth assessment of the risks they pose to the European Union, as planned by EMIR.

A full assessment was carried out in 2021, with a consultation of the ESRB and the central banks involved with this issue, including the Eurosystem. It concluded on the systemicity of a service of LCH Ltd and of two services of ICEU, pointing out the risks linked to the high concentration of exposures of European members and the risks of regulatory divergence between the United Kingdom and the European Union, including in the event of a crisis. However, the evaluation considers that, especially given the unfinished development of substitutable offers on the continent, non-recognition would be too costly for European industry for the time being. It therefore recommends that the European Commission implement alternative measures, in particular micro and macro-prudential measures, aimed at encouraging European players to reduce their exposure to British CCPs and to strengthen the European framework for the supervision of both European CCPs and those located in third countries.

In this context, the European Commission announced in November 2021 the extension of the temporary equivalence decision beyond June 30, 2022. This temporary extension will ensure continuity of access to British CCPs for European players, while allowing the implementation of exposure reduction measures, which therefore appears to be a priority. She also called for strengthening the attractiveness and liquidity of the European clearing sector and for adapting the European supervision framework.

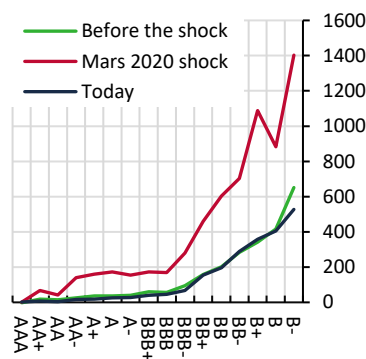
²² See also [Bank of England Financial Stability Review December 2021](#), page 53

Credit spreads hit a record low, compressing the measure of risk

In late 2021, the credit risk premia for European companies was below the level seen before the crisis of March 2020, with record narrow spreads on NFC bonds, and raises the question of a potential deviation of valuations from fundamentals. Chart 1.14 compares spreads for each corporate bond credit rating across three periods: immediately before the Covid-19 crisis (first week of February 2020), at the height of the crisis (fourth week of March 2020) and (iii) after the crisis (third week of October 2021). Before the crisis, a one-notch downgrade was associated with an average increase in the credit spread of 16 basis points (bps) in the Investment Grade (IG) segment and 99 bps in the High Yield (HY) segment. During the crisis, investors assessed the credit risk of European companies at a higher level, with the spread-rating curve to steepen. Charts 1.15 and 1.16 show the spread-rating distribution of countries and sectors during the crisis up to today (October 2021, this distribution are roughly similar from March 2021). Investors required a risk premium for the sectors that were hardest hit by the health crisis. This effect may be attributed to investor concerns in a setting of declining demand, financial turmoil and extreme uncertainty. Conversely, in 2021, sector spreads became realigned with credit ratings.

Chart 1.14: Credit spreads and credit ratings of European companies

x: ratings / y: basis points

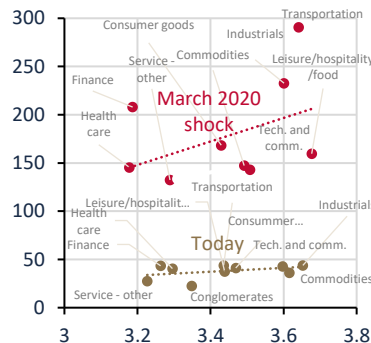


Note: issuer ratings from a sample of over 2,500 bonds. There are fewer observations for securities with a rating of below BB, which explains why the curve is less smooth. Before the shock: first week of February 2020, March 2020 shock: fourth week of March 2020, today: third week of October.

Sources: Refinitiv Eikon, Banque de France calculations

Chart 1.15: Sector distribution of corporate IG spreads

x: ratings (numerical scale) / y: basis points

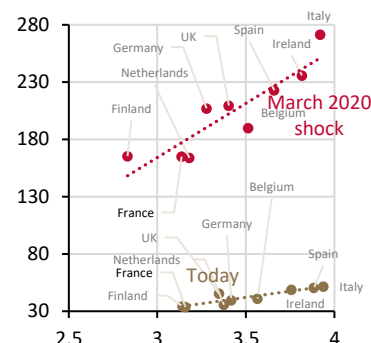


Note: IG = Investment Grade. Ratings are converted to a numerical scale: each credit rating is assigned a number from 1 (AAA) to 7 (CCC). For example, a score of 2 indicates an average rating of AA, a score of 3 means an average rating of A, a score of 4 denotes an average rating of BBB, and so forth. After the shock: week of 18 October 2021

Sources: Refinitiv Eikon, Banque de France calculations

Chart 1.16: Geographical distribution of corporate IG spreads

x: ratings (numerical scale) / y: basis points



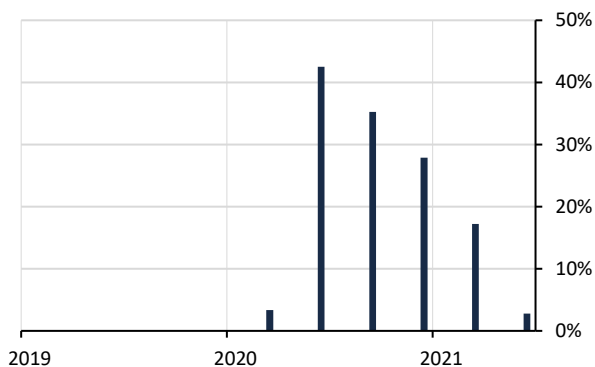
Note: IG = Investment Grade. Ratings are converted to a numerical scale: the higher score, the lower the credit rating. For example, a score of 2 indicates an average rating of AA, a score of 3 means an average rating of A, a score of 4 denotes an average rating of BBB, and so forth. After the shock: week of 18 October 2021

Sources: Refinitiv Eikon, Banque de France calculations

Spreads on short-term paper issued by companies remain low despite the reduced footprint of central banks on the market

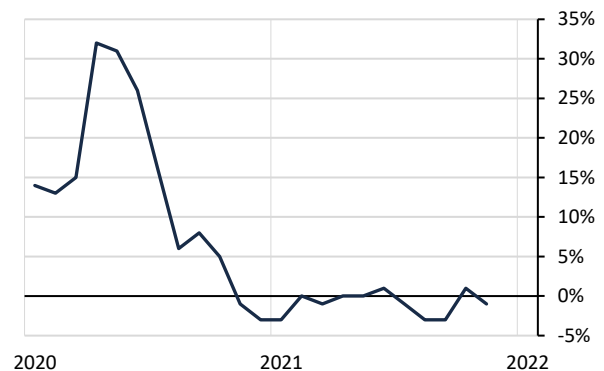
The decrease in the Eurosystem's holdings of commercial papers (as securities matured) did not put spreads under strain. The triggering of stress on the commercial paper market had required an intervention by the Eurosystem, which held 40% of the market through its purchase programmes at the height of the crisis (cf. Chart 1.17). As calm returned, the Eurosystem was able to scale back its holdings to 5% in June 2021. After doubling during the crisis from 15 bps to 32 bps, the median spread at issuance of commercial paper (all issuers) entered negative territory vs. the EONIA swap rate at end-2020 and remained there overall throughout 2021, despite the central bank's reduced market footprint (cf. Chart 1.18).

Chart 1.17: Eurosystem quarterly holdings of commercial papers
x: year / y: percentage of total held



Sources: Banque de France (quarterly financial accounts) Most recent bar: June 2021

Chart 1.18: Commercial paper median spread at issuance
x: year / y: yield spread vs. EONIA swap rate



Sources: Banque de France, most recent value: August 2021

1.2 Short-term risks have eased, but high debt levels continue to fuel medium-term vulnerabilities

Government support for businesses shown to be effective, but unable to prevent the disparate impacts of the crisis

Stable aggregate net NFC debt masks significant disparities across sectors and between companies

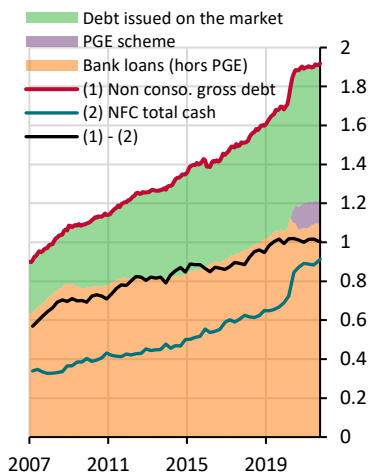
The most recent available data show that the non-consolidated gross debt of French NFCs stabilised at a high level in late October 2021, reaching EUR 1,911 billion, up 0.5% on end-April 2021, following a pronounced increase in 2020).²³ The stability observed in 2021 was noted in bank loans (0.9% increase between April and October 2021, despite a decline of about EUR 20 billion in outstanding loans under the state-guaranteed loan (PGE) scheme) as well as in issuance of debt securities (0.8% increase between April and October).

Aggregate net debt levels have been steady since the outbreak of the crisis, owing to the simultaneous increase in gross debt and available cash. However, there are significant disparities across sectors and between companies. After increasing at the same time as gross debt, corporate cash holdings also remained mostly steady in 2021. As a result, the net debt (gross debt – cash) of French NFCs remained at the end of 2021 at just above EUR 1,000 billion, almost exactly the same as at the end of 2019 (cf. Chart 1.19). This assessment is corroborated by the [Bpifrance-Rexecode September SME barometer](#), which showed that the state-guaranteed loans taken out by VSEs and SMEs largely reflected precautionary concerns. However, the overall stability masks widely varying situations. Analyses from the company scoring campaign, which continued in the third quarter of 2021 with assessments of balance sheets closed for the most part on 31/12/2020 and through to 30 March 2021, support the preliminary message conveyed in the June 2021 Assessment, namely that a minority of companies were financially weakened by the crisis (cf. Chart 1.20): 14% of firms recorded an increase in gross debt and a decrease in cash. Of these 14%, one-half were already struggling before the crisis (scores of 6 to P) or had a sound balance sheet (scores of 3++ to 4+). Accordingly, between 6% and 7% of companies saw their position worsen significantly during the crisis and are being monitored closely.²⁴ The exposure of the French financial system to these weakened companies is being closely watched. So far, it has not translated into non-performing exposures for French banks (cf. Chart 1.21). Note that according to the most recent monthly survey of business conditions, covering the period to early December 2021, balances of opinion on cash positions remain above their historical average and improved between October and November in industry.

²³ For the record, non-consolidated gross debt increased by 12.4% between end-2019 and end-2020.

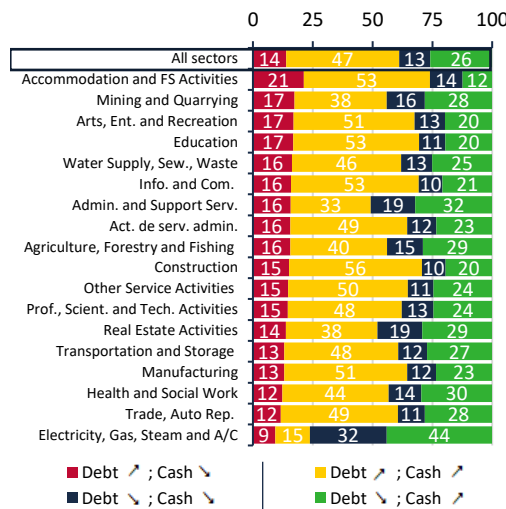
²⁴ The information here confirms the analysis conducted on a narrower sample presented in the previous assessment.

Chart 1.19: French corporate debt
x: year / y: EUR trillion



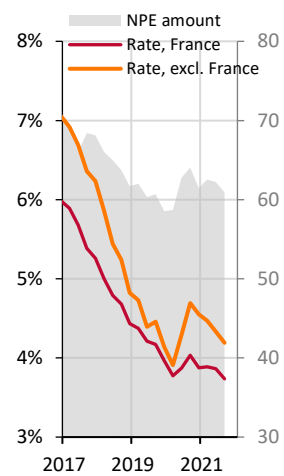
Note: NFC = non-financial corporations, Cons. = consolidated, PGE = state-guaranteed loans. Total cash including bank deposits and securities held in money market funds. Most recent value: September 2021.
Source: Banque de France (webstat)

Chart 1.20: Change in debt and cash positions, by sector, between 2019 and 2020
x: % / y: sectors



Note: FS = food services, Ent. = entertainment, Sew. = sewerage, Rem. = remediation, Info. = information, Com. = communication, Fin. = Financial, Ins. = insurance, Serv. = services, Admin. = administrative, Prof. = professional, Scient. = scientific, Tech. = technical, Rep. = repair, Auto. = motor vehicles and motorcycles. Analysis of the first 244,143 balance sheets closed between end-June 2020 and early 2021 and received at end-August 2021.
Source: Banque de France

Chart 1.21: Bank non-performing exposures, NFCs
x: year / y (left: %) (right: EUR billion)

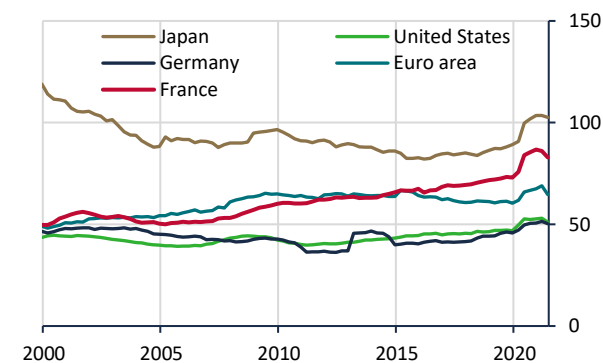


Note: NFC = non-financial corporations, Scope = six largest French banks, NPE = non-performing exposures, most recent value: September 2021.
Source: ACPR

The outstanding consolidated debt of French NFCs remains relatively high when considered in a cross-country comparison. In France, consolidated gross debt hit 82.8% of GDP in the second quarter of 2021, compared with an average of 64.7% in the euro area (cf. Chart 1.22). In France, NFC debt levels are higher than those in the United States, Germany, Italy and Spain, but lower than in Japan. Furthermore, the gross debt of French NFCs increased by more during the crisis than in other major European countries (ten percentage points of GDP, compared with a euro area average of seven points and four points in Germany).

Although the number of the most heavily indebted companies did not increase, their financial ratios worsened. Based on exposures at end-June 2021 and NFC financial ratios assessed using accounting data from December 2020, no breaches of the large exposures limit set for heavily indebted companies within the meaning of Article 458 of CRR2, which was activated by the HCSF on 1 July 2018 and extended to 1 July 2023, were recorded for France's six largest banks, namely BNPP, GCA, SG, BPCE, GCM and LBP. However, a growing number of exposures are drawing closer to the binding thresholds, owing to the deterioration in NFC financial ratios in 2020 and the switch to a narrower definition of eligible capital with the entry into force of CRR2 on 30 June 2021 (i.e. Tier 1 only in CRR2, compared with Tier 1 + Tier 2 up to one-third of Tier 1 in CRR).

Chart 1.22: Consolidated corporate debt ratios, gross
x: quarter / y: % of GDP



Source: Banque de France (webstat), most recent value: June 2021

Support mechanisms helped to mitigate the impact of the crisis on French companies

Support mechanisms helped to prevent a wave of corporate failures during the crisis. Micro-companies and SMEs saw a drastic decline in failure rates compared with historical levels during the crisis. Conversely, support mechanisms had less of an impact on the (low) failure rates among mid-caps and large companies (cf. Chart 1.23). The decline in the number of failures was more pronounced in France than in other European countries, probably due to the scale of the support mechanisms put in place. In parallel, start-ups in France increased by 4% in 2020, but fell in other major European countries.²⁵

Not all categories of companies benefited from the support mechanisms to the same degree, and the withdrawal of support measures could hurt a sub-set of weak firms.

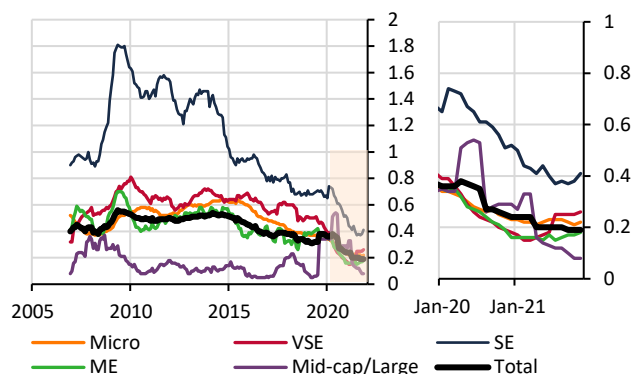
The final report published in July 2021 by the committee set up to monitor and assess financial relief measures for companies dealing with the Covid-19 epidemic highlighted the fact that very small enterprises (VSEs) made full use of the support mechanisms targeting them. Illustrating this point, VSEs used 99% of the total solidarity fund created to support them during the first wave and 63% during the second. More generally, the report also confirmed that support measures primarily aided the companies hardest hit by the crisis. However, uptake of support mechanisms by companies identified before the crisis as “zombies” according to the OECD definition²⁶ did not exceed the share of the economy represented by these firms.

Deterioration in credit risk and refinancing constraints

The increase in the overall debt of NFCs makes them more vulnerable to a potential tightening of credit standards. Although companies showed resilience in terms of their overall financial position during the health crisis, credit rating agencies downgraded numerous French NFCs. Over the period from March 2020 to August 2021, there were 378 credit rating downgrades covering outstanding securities worth over EUR 200 billion, as contrasted with just 71 upgrades (EUR 35 billion). This trend reversed during the period from end-May to end-August 2021, which saw no major downgrades, but 78 upgrades covering outstanding securities worth around EUR 18 billion (cf. Chart 1.24). While IG-rated companies accounted for approximately 84% of total outstanding credit in the form of securities prior to the crisis, this share had fallen to 79% by August 2021. The small deterioration conceals a more worrying development, however, namely the substantial increase in the share of BBB-rated securities, which surged from 29% to 44% of total outstanding debt securities (cf. Chart 1.25). Even if the differences in situation can be significant within this category (between BBB+ and BBB-), the BBB rating category is an important marker, as it is the final rating designation before securities are downgraded to speculative (high-yield) grade, a change that causes the investor base to shrink drastically.

An analysis of the residual maturity of the outstanding debt securities of French NFCs shows a refinancing peak in 2026 (cf. Chart 1.26). While repayment amounts are no higher next year than the historical average (2015–2020), they are poised to increase considerably over the next two to seven years, making companies more sensitive to future market conditions. This could notably be the case in the event of an upside interest rate shock.

Chart 1.23: Economic impact of failures in terms of drawn credit
x: time / y: % (12-month cumulative total)



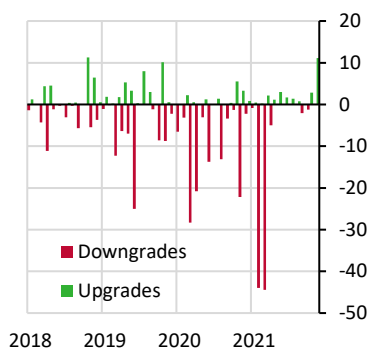
Note: The right-hand chart shows a close-up of the greyed area. Most recent value: November 2021. Micro for micro firms, VSE for Very Small Enterprises, SE for Small Enterprises, ME for Median Enterprises
Source: Banque de France (webstat)

²⁵ Final report by the committee set up to monitor and assess financial relief measures for companies dealing with the Covid-19 epidemic, July 2021.

²⁶ Zombies firms are defined as firms aged ≥10 years and with an interest coverage ratio <1 over three consecutive years.

Chart 1.24: Rating changes, French NFCs

x: year / y: EUR billion

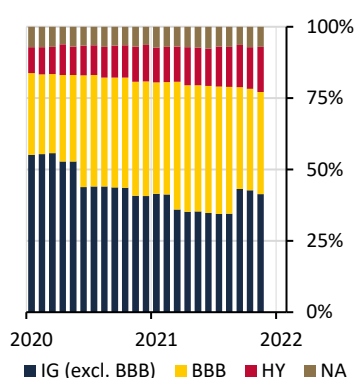


Most recent value: November 2021

Source: ECB (CSDB), Banque de France calculations

Chart 1.25: Outstanding NFC market debt, by rating, France

x: year / y: %

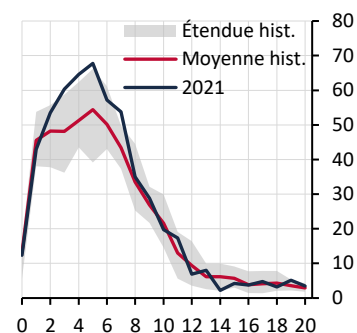


Note: IG = investment grade, BBB being the lowest rating designation before high yield (HY) grade. NA = unrated. Most recent value: November 2021

Source: ECB (CSDB), Banque de France calculations

Chart 1.26: Outstanding NFC debt securities, by residual maturity

x: time horizon / y: EUR billion



Note: This chart compares the structure of NFC debt maturing in the next 20 years in 2021 with the average and the spread between 2015 and 2020. Hist. = historical. 2021 curve based on data to end-September 2021

Source: ECB (CSDB), Banque de France calculations

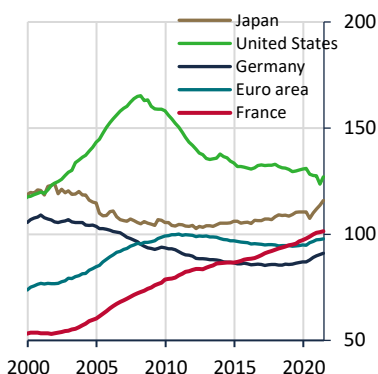
Although household debt increased, the health crisis primarily led to substantial growth in household savings

After rising strongly over 2020, the household debt-to-gross-disposable-income ratio is tending to stabilise at a high level. Gross debt was equivalent to 101.4% of gross disposable income in the second quarter of 2021 compared with 100.6% in Q4 2020 and 97.9% in the first quarter of 2020. French households continue to carry more debt than those in other major European countries (97.9% of gross disposable income at end-June 2021 in the euro area, cf. Chart 1.27) but much less than US households (127.1% of gross disposable income in Q2 2021). Furthermore, debt service stabilised at a high level (6.5% of income) in Q4 2020. The growth in debt exacerbates several pre-identified vulnerabilities. Substantial debt could affect the ability of some households to absorb future economic shocks. Other things being equal, it also reduces the marginal capacity to consume, which may curb the contribution of household demand to the economic rebound.

Households remain in a broadly healthy financial position despite the crisis. Backed by support mechanisms, the macroeconomic recovery is enabling the labour market to get back to levels observed just prior to the crisis. In parallel, with the collapse in household consumption due to mounting uncertainty, bank deposits are seeing record growth (5.1% between end-December 2019 and October 2021 as compared with a 9.4% increase in 2020; cf. Chart 1.28). At the same time, lending to resident individuals continues to grow strongly, expanding by 4.9% between end-December 2019 and end-October compared with 5.4% in 2020). Over the first ten months of 2021, households saved EUR 117.3 billion (net financial investment flows – net debt flows), compared with EUR 184 billion in 2020 and EUR 68 billion in 2019 (over the same period). The Banque de France estimates that excess household financial saving linked to the crisis (observed saving flows - extension of the pre-Covid trend) amounted to EUR 157 billion between the first quarter of 2020 and the second quarter of 2021. As a result, the stock of household savings increased sharply, rising from 15.1% of gross disposable income in 2019 to 21.4% in 2020. Given the large share of home loans, the vast majority of which are at fixed interest rates, in household debt, households should not be directly sensitive to a potential interest rate shock. However, a hike in interest rate could limit demand for credit, although it is at a very high level at the end of 2021.

Chart 1.27: Household debt as a proportion of gross disposable income

x: year / y: %

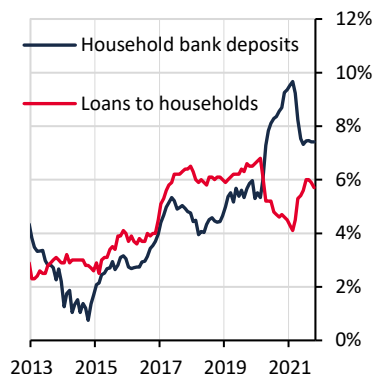


Note: most recent value: June 2021

Sources: Banque de France (webstat)

Chart 1.28: Growth rate of deposits and loans to households

x: year / y: 12M growth rate

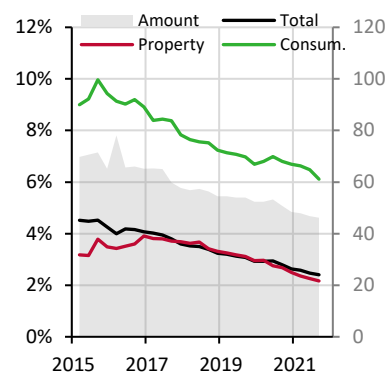


Note: most recent value: October 2021

Sources: Banque de France (webstat)

Chart 1.29: NPLs to households, by loan type

x: year / y: % (left); amount in billions (right)



Note: NPL = non-performing loan.

Source: ACPR. Most recent value: September 2021

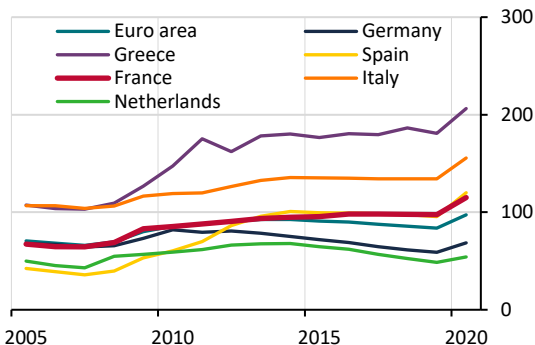
The number of financially vulnerable households is decreasing. By way of illustration, over the first eleven months of 2021, the number of excess debt cases submitted to the Banque de France was down by 15.8% compared with the same period in 2019, at 111,665 compared with 132,626, in a continuation of the trend observed in 2020. The number of people entered in the payment and credit incident databases also fell sharply compared with 2019. Furthermore, the decline in the percentage of household non-performing loans on the balance sheets of French banks (household NPL rate of 2.4% in September 2021, compared with 2.8% in September 2020 and 3.1% in September 2019, cf. Chart 1.29), stems from the twin effects of a decrease in the stock of NPLs and an increase in total outstanding loans, reflecting the relatively healthy financial position of households. The difference between home loans and consumer loans illustrates the riskier nature of the latter, which have a structurally higher NPL rate (just over 6.0%, compared with less than 2.4% for home loans).

Public support for private participants was provided at the cost of increased government debt, and reducing France's public debt ratio over time, in particular through better control of expenditures, is necessary for maintaining medium-term financial stability

Used to support business and household incomes, sovereign debt hit record levels during the pandemic. In France, as elsewhere in the euro area, government debt/GDP ratios have surged – by approximately 15 percentage points of GDP, taking debt levels to 50-year highs – owing to the exceptional fiscal measures deployed to support activity. However, government debt ratios continue to vary widely within the euro area, reflecting the policies pursued in recent decades: France, for example, went into the health crisis with a higher government debt ratio (100% of GDP in 2019) than the average in the euro area (84% in 2019) and especially Germany (60% in 2019).

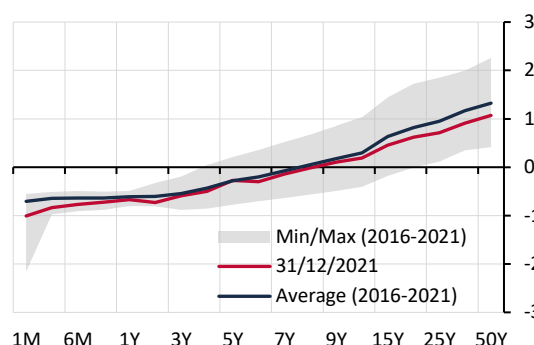
In France, sovereign debt has risen steadily for over 40 years, in contrast with developments in other European countries, including Germany. Government debt has risen from 30% of GDP in the early 1980s to close to 115% today (cf. Chart 1.30). The increase in French debt is mainly the consequence of persistently high primary government deficits, i.e. excluding interest. Assuming that GDP grows in line with potential and government spending grows annually by approximately 1.1% in real terms, which is close to the trend in the decade prior to 2020, government debt should stay close to its current level over the next ten years (cf. Box 1.3).

Chart 1.30: Government debt (as defined by the Maastricht Treaty) as a share of GDP
x: year / y: %



Sources: Eurostat

Chart 1.31: French market yield curve
x: maturity / y: yield as a %

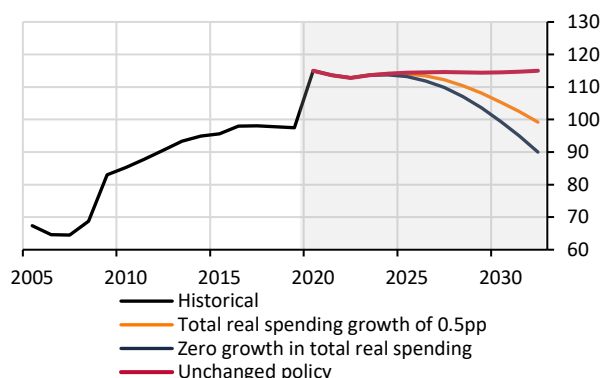


Note: M = month, Y = year, Av. = average. Calculations performed using data at a monthly frequency.
Source: Bloomberg, Banque de France calculations

Box 1.3: Long-term trajectory of government debt

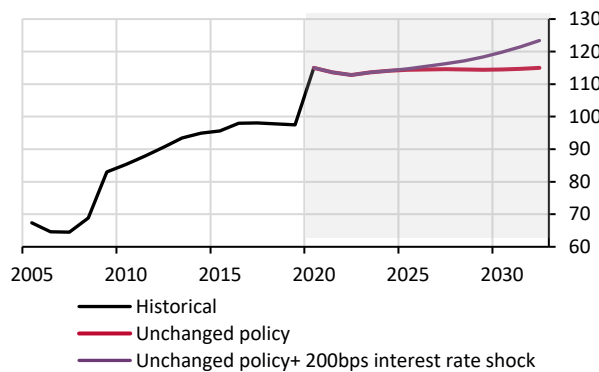
Simulations may be used to illustrate the potential longer-term trajectory of government debt depending on a set of underlying assumptions. Such scenarios are subject to significant uncertainties and depend in particular on the starting point of the debt and the underlying macroeconomic and fiscal assumptions. Assuming unchanged fiscal policies from 2023, and also assuming potential GDP growth of approximately 1.1% and an identical rate of growth for real government spending (1.1%), which is close to the trend over the last decade, and hence a government deficit of between 2% and 3% of GDP, Banque de France simulations show that the government debt trajectory should stabilise at a high level over the next ten years (around 115% of GDP in 2032, cf. Chart 1.32a, black curve).

Chart 1.32a: Debt trajectories based on the change in total government spending
x: year / y: debt/GDP ratio (%)



Note: all three scenarios assume GDP growth of 1.1%.
Source: Insee until 2020, Banque de France projections for 2021 and 2022, Banque de France simulations (DSA method) from 2023 onwards

Chart 1.32b: Debt trajectories based on interest rate movements
x: year / y: debt/GDP ratio (%)



Source: Insee until 2020, Banque de France projections for 2021 and 2022, Banque de France simulations (DSA method) from 2023 onwards

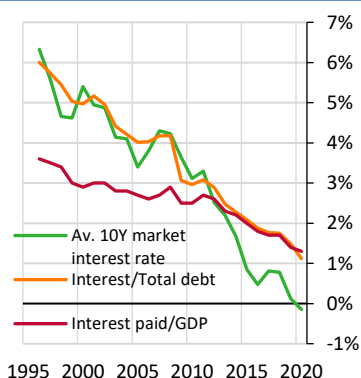
Conversely, zero growth in spending in real terms over ten years, assuming constant taxation, would see debt shrink to 90% of GDP in 2032 (cf. Chart 1.32a, red curve). A smaller effort, with real spending growth of around 0.5% per year for ten years, would also put the debt on a downward trajectory, but only to around 100% of GDP by 2032 (cf. Chart 1.32a, blue curve).

To ensure the long-term sustainability of government debt, it will be necessary to establish a trajectory of sustainable control of real government spending, putting the debt/GDP ratio on a gradual but credible and sustainable downward path, while keeping short-term flexibility to act should countercyclical measures be truly needed. Such a path is all the more necessary because in the event of a major and lasting interest rate shock, assuming an unchanged fiscal policy, the sovereign-debt-to-GDP ratio would increase. Ensuring this sustainability is especially critical because financing conditions are favourable right now, but they could change in the future. In a scenario featuring an immediate and lasting 200 bps shock over the next ten years, the debt-to-GDP ratio could continue to go up, other things being equal (cf. Chart 1.32b)

The impact of the recent surge in inflation on the trajectory of public debt depends on several factors, in particular the nature of the inflationary shock (imported or domestic prices) and the characteristics of its transmission in the economy as well as of the reaction of monetary policy, but also of financial markets. Inflation is in any case not a permanent solution to reducing the current high levels of public debt, which can only be achieved through sound fiscal policies over time.

Government debt financing conditions remain extremely favourable. Despite the increase in debt, interest rates on French sovereign debt have decreased significantly over recent years, while remaining relatively steady since April 2021: they are in negative territory across all short- and medium-term maturities (cf. Chart 1.31). Accordingly, the average interest rate on outstanding French debt,²⁷ which recently fell below 1.5%, is set to automatically continue its downward trajectory over the coming years (cf. Chart 1.33). The sustainability of government debt depends primarily on the difference between two factors: the nominal interest rate and the nominal growth rate (“r-g”), and the change in the primary balance. Where r-g is negative, i.e. nominal GDP growth is higher in the medium term than the nominal interest rate paid on government debt, the spontaneous trajectory of the government debt ratio excluding new deficits remains favourable and allows the debt ratio to decrease. While the amounts of debt that will need to be refinanced over the coming decade are higher on average than before, no atypical short-term refinancing peak is observable (cf. Chart 1.34). Further, the fact that debt maturities are well spaced over time helps to mitigate the impact of a purely temporary interest rate shock on the government’s refinancing capacity and cost; similarly, the average maturity of negotiable debt has increased since 2020 to exceed eight years, which limits the effects of a temporary interest rate shock. Finally, demand during auctions of French debt remains historically high (cf. Chart 1.35), indicating that French debt remains attractive despite low interest rates and the recent debt trajectory.

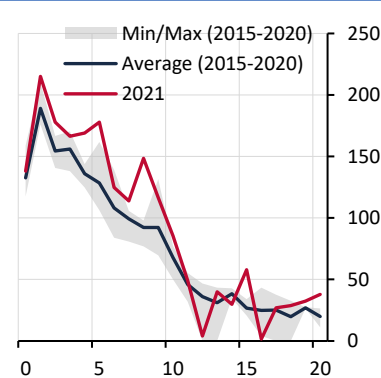
Chart 1.33: Interest paid on public debt
x: time horizon / y: EUR billion



Note: As the public debt increases in volume and exceeded 100% in 2020, the interest paid in relation to the GDP exceeds in 2020 the apparent rate (interest/total debt)

Source: Eurostat, Banque de France calculations

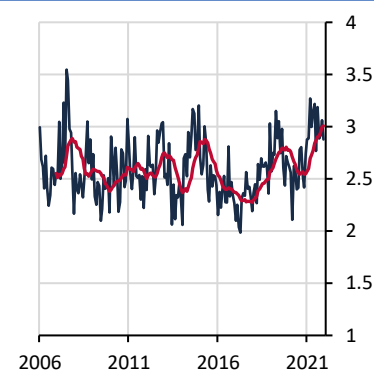
Chart 1.34: Outstanding French sovereign debt reaching maturity
x: year / y: ratio



Notes: This chart compares the structure of sovereign debt maturing in the next 20 years in 2021 with the average between 2015 and 2020. 2021 curve based on data to end-September 2021

Sources: ECB (CSDB), Banque de France calculations

Chart 1.35: Bid-to-cover ratio during primary issuance
x: year / y: %



Note: A reading of 3 indicates that demand for securities during the primary auction exceeded the paper available by a factor of three. Most recent value: end-December 2021

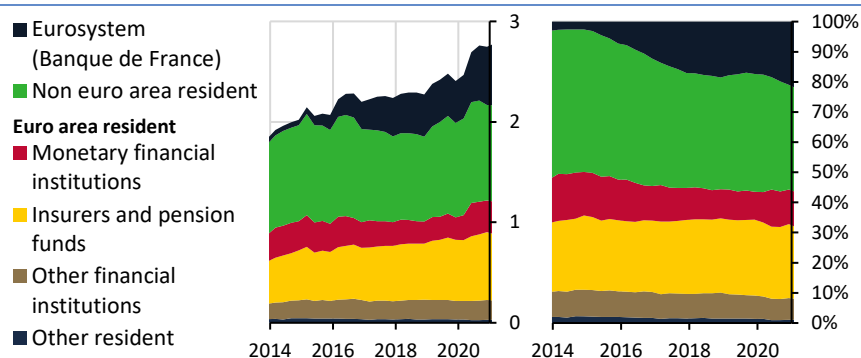
Source: Banque de France

²⁷ The average interest rate is calculated as the ratio of the interest burden to the stock of nominal debt.

The highly diversified holding structure of French government debt limits the state's refinancing risks. At end-June 2021, French government debt totalled close to EUR 2,800 billion. This debt is held by numerous participants (cf. Chart 1.36). The Eurosystem holds about one-fifth (up from 3% in 2013), while insurers and pension funds resident in the euro area hold one-quarter. Monetary financial institutions resident in the euro area (banks and money market funds) hold just over 10% of the total. The debt holdings of resident banks have fallen over time, shrinking from more than 20% in the 1990s to less than 7% today (cf. Chart 1.37). Consequently, the risk that a bank/sovereign nexus could be activated, whereby a deterioration in the position of one has harmful repercussions for the other, remains limited in France.²⁸ The share of non-residents (non-euro area) has decreased in recent years but still stands at around 35% of the total, illustrating the international appeal of French debt.

Chart 1.36: Holdings of French government debt

x: year / y: amount in EUR trillion and as a %



Notes: Holdings of government debt (including central government and various general government entities including social security and local authorities) by type of agent. The Eurosystem's holdings are proxied by considering only the Banque de France. Detail for certain categories: (i) Other financial intermediaries: financial participants other than monetary financial institutions, insurers and pension funds. These are chiefly non-money market CIS; (i) Other residents: participants in the real economy (general government, non-financial corporations and households). Most recent value: June 2021. Sources: ECB (SHS and SDW)

Chart 1.37: Resident banks' holdings of negotiable government debt

x: year / y: ratio



Note: most recent value: December 2019
Source: Bruegel

1.3 Banks and insurers continue to enjoy solid positions, but face more structural profitability challenges

The health crisis presented a resilience test, which both sectors passed with improved solvency levels

The economic rebound is supporting banking sector performances

French banks reported sharply increased profits over the first nine months of 2021, including relative to financial years prior to 2020. Net income of France's four main banks²⁹ (EUR 22.5 billion) doubled compared with the first nine months of 2020, and above 26.1% from the first nine months of 2019. Net banking income (NBI) increased by 10.3% compared with the first nine months of 2020 and reached EUR 100.2 billion, and by +5.9% from the first nine months of 2019. NBI growth (EUR 9.3 billion) stemmed primarily from:

- i. corporate and investment banking (EUR 2.8 billion increase) in particular thanks to strong market activity performances;

²⁸ Note that domestic sovereign bonds account for just 2% of the total assets of French banks.

²⁹ BNP Paribas, Crédit Agricole Group, Société Générale, Banque Populaire – Caisse d'Épargne

- ii. retail banking and specialised services (EUR 2.6 billion increase), which were buoyed by improved net interest margin and higher fees and commissions, plus
- iii. insurance, asset management, and private banking (EUR 1.6 billion increase).

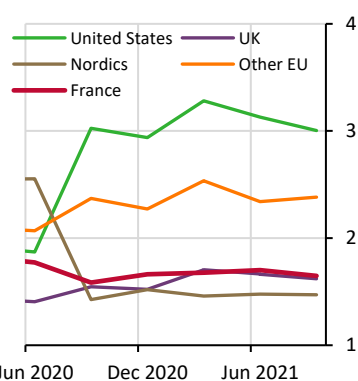
Overheads also rose, but less swiftly compared with NBI, enabling the cost-to-income ratio to improve by 4 points to 65.9%.

After more than doubling in 2020, the cost of risk reverted to pre-crisis levels (EUR 5.6 billion at end-September 2021 vs. EUR 5.3 billion at end-September 2019). The decrease in the cost of risk was associated with an improvement in the credit quality of European firms, which eased back below the level seen before the crisis in March 2020, as reflected in record narrow spreads for bonds issued by NFCs. For now, exposures of French banks to non-performing exposures (NPEs) across all French, European and international NFCs are more or less stable, edging down from 3.9% of total assets in December 2019 to 3.7% in September 2021. However, NPE ratios continue to go up in sectors that have been identified as vulnerable, including accommodation and food services. Consequently, banks booked provisions essentially to supplement coverage of IFRS 9 Stage 3 outstandings (impaired assets), whose gross outstanding amount increased by 7% over 2020 before decreasing by 3.5% over the first nine months of 2021 to reach EUR 58.7 billion. As a result, the average coverage ratio for this category of outstandings rose by 0.2 pp to 53.1% in September 2021.

If the return on equity (RoE) of the France's four main banks increased by 3.9 points to 7.7% over the first nine months of 2021, it nevertheless remains lower than that of American banks (13.9%) but also Nordic (10.5%) and British (9.4%). This persistent weakness of the RoE of French banks compared to their American competitors first of all reflects the weakness of their income: despite its clear increase compared to 2020, the NBI of French banks remains at a significantly lower level than American banks (cf. Chart 1.38). French banks are also suffering from high operating costs in relation to their income, as shown by the level of their cost-to-income ratio³⁰ (cf. Chart 1.39): even if the latter marked a notable improvement in 2021, it remains much higher than that of Nordic banks or other European banks, underlining still significant room for improvement. In the end, French banks still show a modest return on assets (RoA) compared to their American competitors (cf. Chart 1.40): at the end of September 2021, it was almost three times lower (0.37% vs 1.03%; cf. Chart 1.40). French banks only partially succeed in bridging this RoA gap with higher financial leverage than that of American banks (20.8 vs 13.4) and in fact have a significantly lower RoE³¹.

Chart 1.38: NBI/total assets

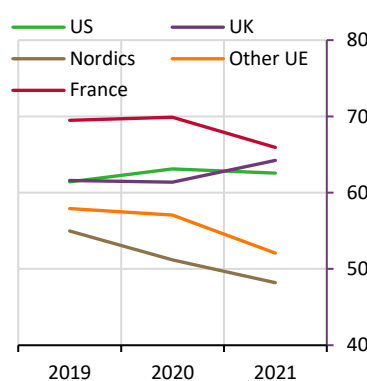
x: time / y: %



Note: Six-month annualised net banking income (NBI). Nordics for Nordic countries. Most recent value: September 2021
Source: financial reporting

Chart 1.39: Cost-to-income ratio

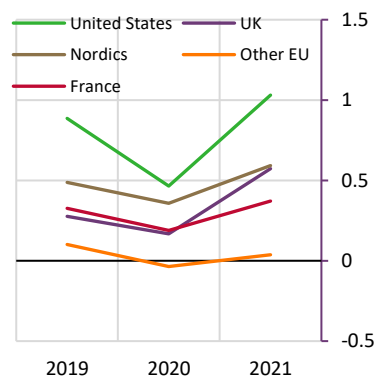
x: time / y: %



Note: each year is represented by the month of September. Nordics for Nordic countries.
Source: financial reporting

Chart 1.40: Return-on-Assets (RoA)

x: year / y: %



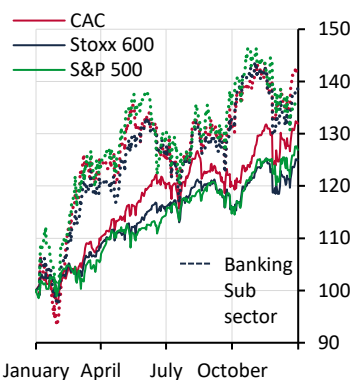
Note: each year is represented by the month of September. Nordics for Nordic countries. Source: financial reporting

³⁰ The cost / income ratio divides management costs to NBI

³¹ Remember that RoE is equal to RoA multiplied by financial leverage, i.e. the ratio between the total amount of assets and shareholders' equity

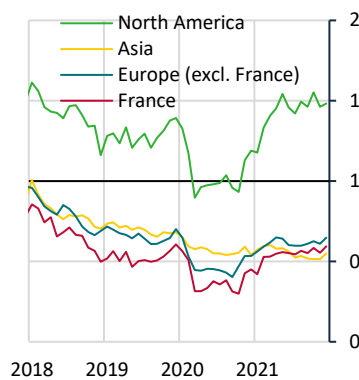
In this supportive setting, the stockmarket valuation of French banks has picked up since the start of the year (cf. Chart 1.41). Their prudential situation looks to be solid, even in the event of an interest rate shock.³² French banks demonstrated their resilience during the Europe-wide stress test.³³ However, price-to-book ratios in France and Europe remain well below the US ratio (cf. Chart 1.42), indicating that investors consider that balance sheet assets would have to be written down if they were recorded at market value. Beyond these profitability challenges, the aggregate CET1 ratio of France's four main banks continued to increase, rising by 9 bps to 14.9% in September 2021, although some banks saw their ratios decline slightly compared with the previous year, reflecting the impacts linked to regulatory effects, with CRR2's entry into force, or to internal restructuring (cf. Chart 1.43). Furthermore, between December 2020 and September 2021, the aggregate leverage ratio of France's six largest banking groups³⁴ fell by more than 40 bps to 5.2%, although this is due to the fact that one of the groups no longer applies the transitional measure allowing it to exempt central bank reserves from the calculation. Over the same period, the short-term liquidity coverage ratio (LCR) of France's major groups fell by 8 percentage points to 155%, remaining well above the 100% mark.

Chart 1.41: Trajectory of bank share prices
x: time / y: index price, January 2021 = 100



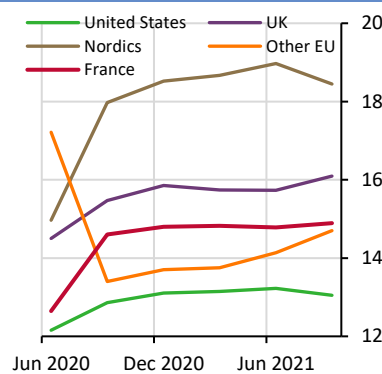
Note: Most recent value: 31/12/2021.
Source: Bloomberg

Chart 1.42: Price-to-book ratio
x: time / y: ratio



Note: Most recent value: 31/12/2021.
Source: Bloomberg

Chart 1.43: CET1 ratio
x: year / y: %



Note: Most recent value: 31/12/2021.
Source: financial reporting, ACPR calculations

Box 1.4: The challenge of estimating banks' credit risk during a time of massive government support

During the Covid-19 crisis, the internal models used by banks to determine the provisions assigned to performing loans based on expected credit losses (ECL) had to factor in an unprecedented situation. While the macroeconomic situation was deteriorating, the fiscal support measures put in place by the government enabled households to avoid a substantial decrease in income. Similarly, companies were able to maintain their cash holdings while enjoying facilitated access to bank credit through the PSE state-guaranteed loan scheme.

As a result, despite the unsupportive economic conditions, most households and companies had favourable cash positions, which were partly used for saving purposes. This had the effect of lowering the probabilities of default identified by the internal models. To remedy this situation, which could ultimately have resulted in a provisioning shortfall, banks made adjustments based on expert judgements that resulted in additional provisions determined as a function of IFRS 9 stages, while adopting prudent projections for macroeconomic variables. Banks are maintaining this course of action, proceeding with limited writebacks despite the fairly brisk economic recovery and waning uncertainty levels.

³² A thematic chapter in the June 2021 Assessment of Risks analysed the resilience of banks to an upside interest rate shock. The income earned on variable-rate assets or on new loans would benefit from higher interest rates, supporting increased NIM. But if rates were to go up, the value of fixed-rate assets would go down and credit institutions might be affected by a deterioration in the quality of adjustable-rate assets in the event of an increase in the associated solvency risk.

³³ For more details, see Box No. 3 of the HCSF 2021 annual report

³⁴ France's four main banks + Crédit Mutuel group and La Banque Postale

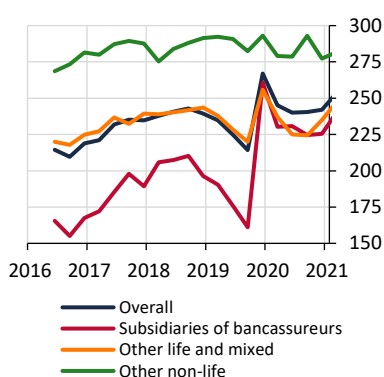
The low interest rate environment continues to put pressure on the yield of assets of the insurance sector

The prolonged low interest rate environment could also affect coverage of capital requirements In terms of solvency, underwriting profitability generated in the past has enabled institutions to build up reserves and strengthen their capital. As a result, institutions hold significant surplus capital to cover capital requirements, with an average ratio of 251% in June 2021 (cf. Chart 1.44).

The persistent low interest rate environment is putting downside pressure on insurers' financial income. Historically, holders of life insurance contracts have had a marked preference for euro-denominated products (around 80% of outstanding amounts in life insurance), which are characterised by a capital guarantee. To match these commitments, insurers prioritise safe and liquid investments, like bonds. With time, insurers are benefiting less and less from high coupons in the stock of bonds acquired several years ago. At end-June 2021, bonds with a yield at purchase of more than 3% accounted for just 33% of fixed income bonds held by insurers and almost half of these bonds mature in less than four years. Reflecting this, the average return on assets (RoA) fell from 3.5% to 2.1% between 2013 and 2020 (cf. Chart 1.45). Making the assumption that maturing bonds are reinvested in zero-rate bonds, this decline in RoA could continue at a rate of approximately 15 basis points per year.³⁵ The decrease of RoA is especially critical for firms that guarantee high revaluation rates and those whose financial income makes up for insufficient fees charged on contracts. Conversely, if interest rates were to rise suddenly, insurers would be affected due to the inertia of their obligations. They could thus be faced with the risk of massive surrenders and competition from new market entrants offering higher-earning products (cf. thematic chapter in the June 2021 Assessment of Risks).

Chart 1.44: Insurers' capital requirement coverage ratio

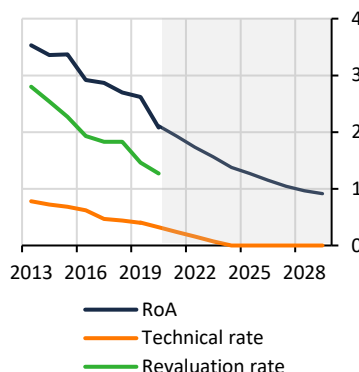
x: year / y: %



Source: ACPR

Chart 1.45: Ten-year RoA projection

x: year / y: %

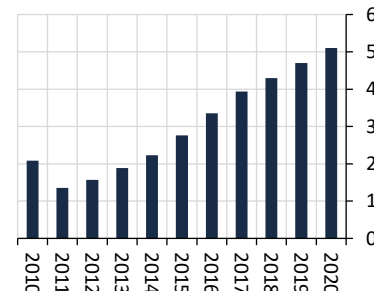


Note: RoA = Return on Assets. The model provides projections for life and mixed insurers' investment assets other than unit-linked products. Two categories are considered: (1) parametrically modelled amortising assets with fixed coupons (65% of the total, projected line by line) and (2) other assets Assumptions: (1) French 10-year government bond yield to remain at 0% over the entire period from 2021 (2) zero net inflows over the entire period (3) other assumptions are specific to each entity

Source: ACPR.

Chart 1.46: Allocations to profit-sharing reserves

x: year / y: % of premiums received in year N



Source: ACPR

French insurers hold the equivalent of three full years of revaluation in reserves, which should allow them to cope initially with an increase in interest rates and the emergence of new participants. Life insurers have adjusted their models in response to the steady decline in RoA. In the first place, they have reduced the revaluation rates applied each year to policyholders' euro-denominated products. These rates were cut by 0.18 of a point on average in 2020, reducing the return to 1.28% from 1.46% in 2019 (cf. Chart 1.45). This trend decrease has been accompanied by an increase in the profit-sharing reserves (PSRs) that life insurers use to smooth the impact of cyclical conditions on contract revaluation over time, not just during prolonged periods of falling interest rates but also when rates jump suddenly. Total reserves stood at 5.1% of outstanding amounts held by policyholders at end 2020, i.e. the equivalent of more than three full years of revaluation³⁶ (cf. Chart 1.46).

³⁵ In addition to interest rate scenarios, RoA projections also assume zero net inflows to euro-denominated instruments.

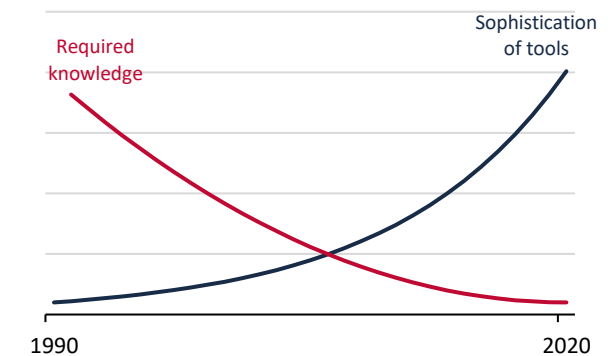
³⁶ assuming unchanged revaluation at the current rate

1.4 Cyber-risk remains a systemic threat to the financial system. Moreover the risk has become more acute since the crisis

The digital transition is increasing the sensitivity of financial participants to cyber-attacks. Recent major shifts linked to the digital transition in the financial sector can be grouped into four main categories: outsourcing of IT services to digital firms (such as cloud services), niche service provision by fintechs, the development of crypto-assets and the emergence of stablecoins. These developments, combined with the emergence of tech firms in financial and payment services, represent challenges for the financial sector, particularly banks, which are being forced to adjust their business models. A [thematic chapter takes a more in-depth look at the rise of decentralised finance](#), which is spearheading many of these innovations, including lending platforms, crypto-asset derivatives and crypto-wallets, and also discusses issues around central bank digital currencies. Besides the critical need for participants to revise their business models, which has been made more urgent by the arrival of new players, assets and infrastructure, the digital transition has also come with an increase in the systemic importance of cyber-risk.

Cyber-risk carries a highly significant economic cost. In recent years, driven by continued digitalisation of the economy and the financial system, cyber-risk has become a risk whose likelihood of occurrence is rising significantly and that could have a severe impact.³⁷ Vulnerabilities are on the rise (remote working could contribute to this) while attacks are growing more professional and sophisticated. Today's hackers possess increasingly advanced tools to carry out their attacks, drawing in more malicious actors, who previously lacked the knowledge required to take action (cf. Chart 1.47). It is extremely hard to put an exact figure on the overall cost of losses linked to cyber-crime, but a 2020 study by the Center for Strategic and International Studies (CSIS)³⁸ estimates that losses have more than doubled in the space of two years to reach approximately 1% of global GDP. The financial sector is a prime target; for example, IBM estimates that the global financial sector was the target of 23% of all cyber-attacks in 2020, more than any other sector for the fifth year running.³⁹ For the most part, incidents, whether intentional (many of them are “flash” attacks) or accidental, are identified and resolved quickly. However, malicious actors are now capable of combining several strategies, which can be discreetly deployed for several months before being detected.

Chart 1.47: Cyber-risk
x: time



Source: Carnegie Mellon University

Cyber-attacks could also threaten financial stability. For example, such attacks might target a particular institution or infrastructure, or several components of the financial system simultaneously. They might also take an indirect approach via shared (non-financial) infrastructures on which the financial system depends, such as power and telecommunications infrastructures.⁴⁰ As a result, operational interdependencies across the value chain could potentially help attacks to spread, as an infected financial institution acts as the entry point to reach the institutions to which it has ties. Furthermore, while the use of third-party IT service providers often helps to improve the resilience of individual participants, it can create a source of systemic vulnerability in the event of significant concentration with one or a handful of service providers, as illustrated by the recent attacks on IT providers used by many financial and non-financial participants. The attacks on SolarWinds in December 2020 and Kaseya in July 2021 are cases in point.

³⁷ See for example World Economic Forum, *The Global Risks Report 2021*.

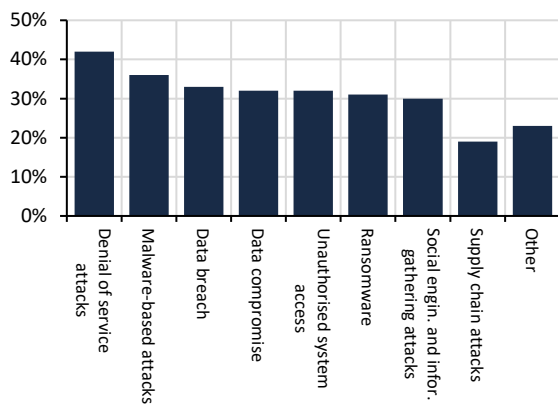
³⁸ The CSIS is a US think tank that conducts [strategic research and analyses](#) on political, economic and security issues around the world.

³⁹ X-Force Threat Intelligence Index, 2021.

⁴⁰ Institute of International Finance, *How cyber-attacks could materially impact the global financial system*, 2017.

Chart 1.48: Typology of malicious cyber incidents

x: category / y: %

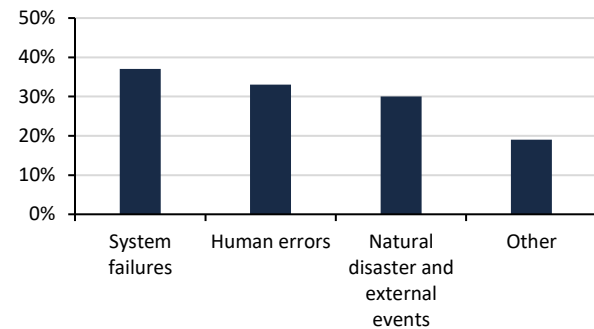


Note: Survey of 80 authorities from 23 out of 24 FSB member jurisdictions, and 29 members of the six FSB Regional Consultative Groups.

Source: Financial Stability Board

Chart 1.49: Typology of non-malicious cyber incidents

x: category / y: %



Note: Survey of 80 authorities from 23 out of 24 FSB member jurisdictions, and 29 members of the six FSB Regional Consultative Groups.

Source: Financial Stability Board

To deal with cyber-risk, measures for prevention need to be put in place, and also to ensure a swift and coordinated response in the event of an attack. On the prevention side, financial supervisors are working on cyber-security with the authorities responsible for the supervision and security of information, at domestic and European levels. They are seeking to ensure that cyber-risk is correctly addressed by financial entities and that their systems are well protected, consistent with the identified risks. As a result, in recent years, cyber-risk management has been the subject of on-site inspections at financial institutions and of regular surveys by financial authorities, resulting in market feedback that has been harnessed to include this risk gradually and steadily in the internal control and governance systems. Europe is in the process of drafting a Digital Operational Resilience Act (DORA) to harmonise cyber-risk management rules across Europe. In terms of managing IT risk, the draft legislation will require entities to map out IT assets and associated risks, and have governance arrangements that are appropriate to the management of cyber-risk. All participants will also have to implement measures to protect systems and data as well as processes to detect anomalies. In addition to rules covering the management and reporting of cyber-incidents, the regulation also include requirements for financial institutions not only in terms of conducting security tests but also in terms of managing the risks linked to IT service providers.

Looking beyond the capabilities of individual entities to prevent, respond to and recover from incidents, steps are also needed to strengthen the collective ability to respond in the event of a crisis. The large scale of cyber-shocks and the speed with which they can spread mean that these efforts are necessary, particularly at cross-border level. Key issues including establishing safe and reliable communication channels to exchange information and processes ensuring a strong response in the event of a crisis, together with harmonised reporting of cyber-incidents in a standardised format. A recent survey by the Financial Stability Board⁴¹ of a broad selection of institutions clearly shows the different types of malicious and non-malicious cyber-incident. The leading type of cyber-incident identified in the survey is malicious (Denial of Service) but non-malicious system errors continue to pose a serious risk (cf. Charts 1.48 and 1.49). Recent European initiatives include a secure technical platform for sharing information, dubbed the Cyber Information and Intelligence Sharing Initiative (CIISI-EU), which was set up in early 2020 to share information at a pan-European level on cyber-threats and incidents involving financial infrastructures. Domestic and European crisis management exercises are also vital to making headway in managing the impact of cyber-incidents. The recent crisis simulation conducted by France's marketwide robustness group and coordinated the Banque de France on 15 June is an example of such an initiative.⁴²

⁴¹ See in particular the [recent report](#) by the Financial Stability Board

⁴² [The exercise involved 24 entities from the marketwide group](#). Over 800 participants from these institutions were actively involved in this large-scale exercise. The quality of interactions demonstrated the Paris financial centre's high level of readiness, but also the significant involvement of all its members:

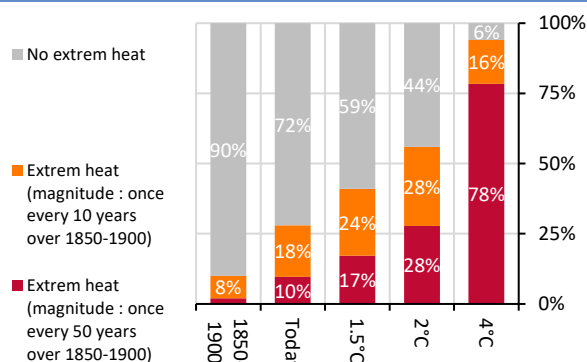
1.5 Macrofinancial risks of an insufficiently coordinated transition to carbon neutrality

The last Assessment of Risks took an in-depth look at the importance of achieving net zero by 2050 and analysed different types of transition from a long-term perspective. Recent climate and economic developments also highlight the shorter-term risks associated with an uncoordinated transition.

The latest report by the IPCC published in August made it crystal-clear that we have already entered a phase where climate change is having acute impacts and these changes are set to accelerate significantly in the coming years. Work by IPCC Working Group I shows that global warming has already reached 1.1°C and that many countries around the world are already facing rising sea levels, more frequent and more intensive heatwaves, droughts, flooding, as well as extreme events such as hurricanes (cf. Chart 1.50). For example, the Arctic ice pack has shrunk by 40% in 40 years, and marine heatwaves have doubled over the same period (cf. Chart 1.51).

Chart 1.50: Probability of a year with an extreme heat event (worldwide)

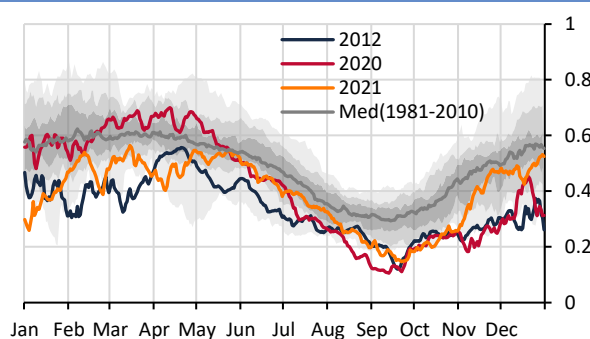
x: historical and scenarios / y: %



Note: obs. = observed
Source: IPCC, 2021

Chart 1.51: Ice coverage in Svalbard

x: month / y: thousands of km²



Note: Med. = median calculated for 1981 to 2010
Source: EUMEDSAT OSI SAF, 2021

The IPCC considers that it is still possible to keep global warming to the tolerable level of 1.5°C but stresses that every tenth of a degree matters. The report published in August updates carbon budget estimates from 2020: 400 (respectively 300) billion tonnes of CO₂ for a 66% (83%) probability of staying below 1.5°C.⁴³ With no significant change in the emissions trajectory in the short term, 1.5°C will be exceeded by 2030.

While country commitments are in line with the goals of the Paris Agreement, the uncertainty surrounding the transition is also a multidimensional risk factor for financial stability. COP26 was an opportunity to rally private-sector participants and finalise implementation of the Paris Agreement. However, the transition to a carbon-neutral economy comes with risks for financial stability. For example, the impairment of certain assets (for example, those of companies with the most exposure to climate policies) will impact the balance sheets of financial participants, potentially creating stranded assets. Loan collateral could also be impaired. These shocks could be amplified by the behaviour of the financial system, notably in the event of shock to confidence and a massive sale of certain assets.

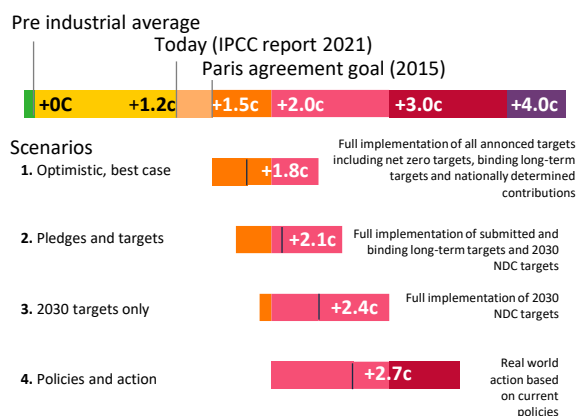
A total of 130 countries have made a commitment to achieve carbon neutrality, for the most part between 2050 and 2070, but coordination challenges remain. Implementing these commitments would make it possible to limit the temperature increase to 2.1°C (1.8°C in an optimistic scenario factoring in not only commitments made but also announcements, cf. Chart 1.52). Although inadequate thus far, the reduction in greenhouse gas emissions is under way and the goals of the Paris Agreement are starting to provide a key set of benchmarks for a large number of investment decisions.⁴⁴

⁴³ IPCC, AR6 WG1 report, SPM.

⁴⁴ A growing number of studies are highlighting the increasing importance of climate risk pricing, covering physical risks as well as transition risks since 2015.

Decisions by different players are still fairly uncoordinated, however, and could cause macro shocks. While the pace of the transition is picking up, problems encountered by agents in anchoring expectations to a transition trajectory are complicating the adjustments that are already well under way. Recent developments in energy prices illustrate the macroeconomic effects that could arise from an insufficiently coordinated transition. Some analysts stress, for example, that while the strength of the post-Covid economic recovery is playing a primary role in energy demand trends, the decline in investment, especially in terms of maintaining existing production capacity, may also have played a part on the supply side, adding to the price surge (cf. Chart 1.53).

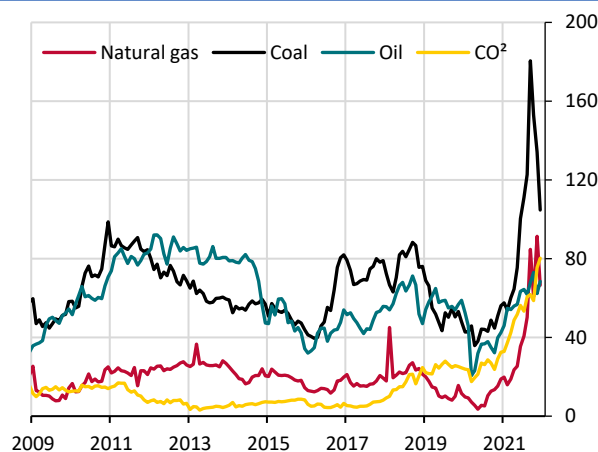
Chart 1.52: Current increase in temperature relative to the pre-industrial period and under different scenarios



Source: Climate Action Tracker, Warming Project

Chart 1.53: Energy prices in Europe

x: year / y: price



Note: the oil price is expressed in EUR per barrel (Brent, converted to EUR), the price of coal is in EUR per tonne (Amsterdam, Rotterdam and Antwerp delivery), while the price of gas is expressed in EUR/MWh (Dutch TTF Natural Gas 1-month futures)

Source: Bloomberg

Uncertainty surrounding the transition could fuel exuberant valuations. Some companies at the heart of the transition could grow strongly to the point that they achieve dominant positions, further bolstered by network effects and fuelling, in the event of success, extremely demanding valuations, but also potentially giving rise to abrupt price adjustments. At the same time, substantial investments continue to flow into ESG thematic funds, which now manage assets worth USD 3,900 billion worldwide (almost 90% domiciled in Europe). While there are fears that this environment could lead to a “green bubble”, there is some debate over this notion, which does not appear to have been systematically defined so far.

Although private sector commitments are proliferating, and French financial institutions are adopting climate targets, particularly in terms of exiting fossil fuels, risk measurement challenges persist. The unprecedented nature of the transition and uncertainties over the transition process and the assessment of its impacts make it difficult to accurately assess the scale of the associated financial risks. To give an example, the time horizons that financial participants use to weigh transition choices are exceptionally long, and these choices are based on incomplete data and methodologies that are not yet robust. Reliable and comparable data are critical to properly assessing the risks to financial stability. In their report on the climate commitments of French financial institutions, the Autorité des marchés financiers (AMF – Financial Markets Authority) and the Autorité de contrôle prudentiel et de résolution (ACPR – Prudential Supervision and Resolution Authority) called on financial institutions to do more to improve the transparency and comparability of information on their fossil-fuel exposures. Efforts are needed to harmonise and standardise approaches, especially monitoring indicators. These will help to clarify expectations and improve the credibility and circulation of information. Adoption of the taxonomy of sustainable economic activities created by the European Commission will help in this regard to propose objective criteria.

2. House prices, home loans, household debt: new post-Covid trends _____

The residential property sector is seeing cyclical trends that could pose risks for financial stability under certain conditions. First, in the household sector, the steady increase in property debt represents an initial vulnerability that is further amplified by rising prices and also potentially by an easing of credit standards. For banks, increasingly indebted households represent a bigger counterparty risk, and overvalued prices could turn into a potentially larger loss in the event of default. Persistently low interest rates, coupled with fierce competition in home lending, also mean that bank margins are being squeezed. Finally, the property sector is a source of cross-cutting exposure within the financial and non-financial system, with any imbalance tending to increase systemic risk.

While the health crisis led initially to more muted activity on the residential property market during the first lockdown in spring 2020, the subsequent recovery has been swift and vigorous. Following a sharp drop in transactions in the final three quarters of 2020 (5.7% in the existing homes segment and 18% for new homes compared with December 2019), transactions got back to pre-Covid trends by early 2021 and even exceeded them as house visits resumed and real estate agents and notary offices reopened (cf. Part 2.1):

- Sales in the existing homes segment in Q3 2021 were up by 13% compared with end-2019. In the new homes segment, signs of recovery have also been perceptible for a little while, but sales are still tracking below pre-Covid levels (-12.6% down in Q3 2021);
- Prices for existing homes were not significantly impacted by the crisis, unlike in the new homes market, where prices grew annually by 2.2% in Q2 2020, compared with 3.9% in Q4 2019. Both markets regained sustained momentum in 2021, with growth of 7.5% in the existing homes segment (Q3 2021) and 5% for new homes (Q2 2021) respectively;
- A shift in attractiveness is taking place, with house prices (9% increase in Q3 2021) growing faster than apartment prices (5.2% increase in Q3 2021);
- Production of new property loans is growing fast, increasing by 6.4% yoy in October 2021; it is also less risky, thanks to requirements adopted by the HCSF governing credit standards (debt-service-to-income, credit period).

If the property market rebound continues or becomes more pronounced, careful monitoring would be needed to ensure sustainability, in order to safeguard the French model of property ownership (Part 2.2):

- The alignment of observed house prices with respect to fundamentals seems to be subject to increased uncertainty; in this regard, new demand supports, such as the consumption of lockdown savings, may add to the uncertainty surrounding these valuations;
- The household sector in France is not heavily exposed to a price correction, provided that the assets in question are not used as collateral for credit (as they are in the Anglo-Saxon model), meaning that asset impairment does not result in an increased repayment burden. In addition, French households are also resilient to higher interest rates, since virtually all loans are at fixed rates;
- However, household debt has continued to increase, reaching 101.4% of gross disposable income, up 4.2 percentage points since the end of 2019, just before the crisis. It is set to keep going up in 2022 but sustainability looks to be assured by improved credit standards;
- Lending rates are at record lows, averaging 1.13% in October 2021, which is also helping to make the household sector more resilient, but bank margins on home loans could continue to be adversely affected by this, fuelling structural profitability issues for the banking sector.

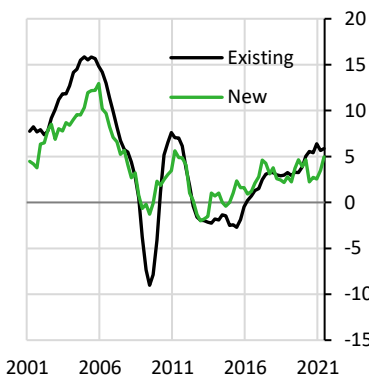
2.1 The market is getting back to positive pre-crisis trends in France and Europe

The housing market sagged temporarily in 2020

With 7.5% in the existing homes segment and 5.0% in new homes, house price growth is exceeding the annual average of 3.0% observed between 2016 and 2020 (cf. Chart 2.1). This positive trend is paired with a high and rising number of transactions on the existing homes market, which typically accounts for between 85% and 91% of total sales. The post-Covid crisis period thus saw the market quickly resume its historical trend, with deal numbers hitting a record 12-month cumulative total of 1,211,000 in August 2021 (cf. Chart 2.2). This peak in transactions was 44% higher than the last peak recorded immediately prior to the 2008 crisis. While the new homes market has also been growing briskly for several years, it nevertheless plateaued over the 2017-2019 period, with sales holding steady at the peak level observed in 2007 (12-month cumulative total of around 130,000 deals), before feeling the effects of the health crisis. Deal volumes in the new homes market remain 12% below those observed in late 2019. However, signs of recovery are emerging, with the increase in new home prices accelerating over the first two quarters of 2021, reflecting firmer demand.

Chart 2.1: Price index (year-on-year, %)

x: year / y: %

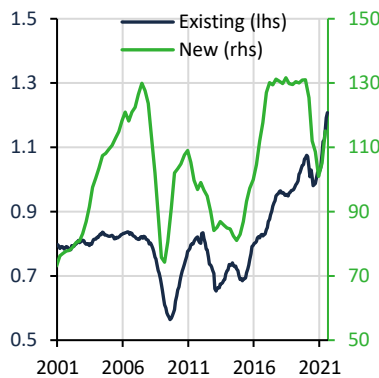


Note: most recent value: September 2021 for existing homes and June 2021 for new homes

Source: Insee

Chart 2.2: 12M cumulative volume of transactions

x: year / y (left: number of transactions in millions) (right: number in thousands)

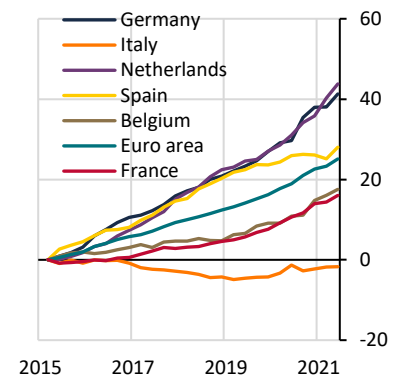


Note: most recent value: October 2021 for existing homes, and September 2021 for new homes

Source: Conseil général de l'Environnement et du Développement durable (CGEDD)

Chart 2.3: European house price index, cumulative growth since Q1 2015

x: year / y: % rate



Note: Real house price index, corresponding to the ratio of the nominal house price index to the consumers' expenditure deflator from the national accounts of each country.

Source: OECD, most recent value: June 2021.

Post-Covid crisis growth in the housing market is being seen in other European countries. At euro area level, house prices continue to grow at a sustained clip, building on the positive trends observed before the Covid crisis. After growing moderately between 2014 and 2016, putting on 2.3% on average between Q2 2014 and Q4 2015, prices accelerated between 2017 and 2019, averaging 4.5% growth, before settling at extremely elevated levels in late 2020, on a par with readings from before the 2008 crisis (5.8% increase between Q1 2020 and Q2 2021).⁴⁵ While France has kept step with the European trend, price growth between 2015 and today has been less sustained than in the Netherlands, Germany and Spain, where prices have risen by 43.8%, 41.3% and 28% respectively, compared with “just” 16% for France (cf. Chart 2.3).

⁴⁵ Source: ECB.

Traditional appeal of large cities stalls as other zones benefit

House price increases have traditionally been more pronounced in urban zones. If we divide France into three distinct geographical categories (Areas surrounding urban zones, Urban zones and Other⁴⁶ - cf. Chart 2.4), we find that Urban zones, despite making up just 9.2% of municipalities, account for 60.6% of the population; Areas surrounding urban zones make up 44.5% of municipalities but 23.3% of the population; meanwhile just 16.1% of the population lives in the remaining 46.3% of the country. An analysis of house prices using this breakdown reveals that prices were fairly flat over the 2014-2016 period⁴⁷ across all three categories (cf. Chart 2.5). From 2016, prices started growing again, but at different rates across the country. Urban zones saw a strong surge as prices advanced by 10% year-on-year between 2016 and 2019. Growth was especially sustained after 2019, as prices rose by more than 20%. In Areas surrounding urban zones, meanwhile, prices climbed by just 7% and they fell in other municipalities. The post-Covid period has challenged this pattern of relative growth in Urban zones vis-à-vis the other two categories.

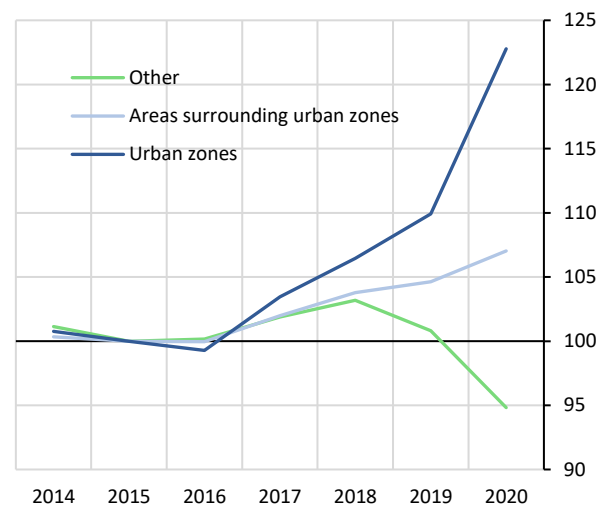
Chart 2.4: Selected geographical breakdown



Sources: Insee, DV3F

Chart 2.5: Price index

x: year / y: 2015 = 100



Sources: Insee, DV3F. Most recent value: 2020

Beginning in the second half of 2020, the upturn in activity was accompanied by a shift in attractiveness, as other areas took over from large cities.⁴⁸ Prices accelerated for individual homes, which are mainly found outside urban centres: they rose by 5.2 points from 4% to 9.2% year-on-year between March 2020 and September 2021 (cf. Chart 2.6). Meanwhile prices slowed for apartments, which are primarily in urban centres: they fell by 1.2 points from 6.4% to 5.2% year-on-year between March 2020 and September 2021. Increased demand for additional space benefited medium-sized cities around the country as well as in suburbs, where it has become easier for households to set up partly because of the remote working arrangements introduced and now permanently established in some sectors. The sharper post-Covid bounce in suburban areas compared with cities also appears to be corroborated by the distribution of credit according to this geographical breakdown (cf. Box 2.1) and the change in the number of transactions between Paris, the Île de France region and the rest of the country (cf. Chart 2.7).

⁴⁶ Specifically, Insee provides a categorisation of municipalities for its zoning of urban areas that is used to build the geographical distribution presented here. Municipalities that belong to a major urban zone with 10,000 jobs or more are classified as being part of an "Urban zone". Municipalities belonging to the area that surrounds an Urban zone are classified as being in an "Area surrounding an urban zone". Any other municipalities are classified as "Other municipalities".

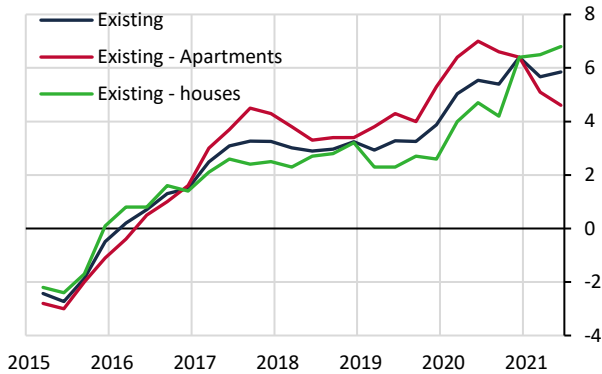
⁴⁷ To study price dynamics, we employ data from the DVF database of property and land values, using the version restated by CEREMA (DV3F). This database combines data from two French tax sources: the Computerised Database of Legal Property Data (FIDJI), which is based on all land and property transactions for consideration, and the Updated Database of Land Registry Information (MAJIC). CEREMA, a French public agency, cross-references this database with additional property and land data to obtain a property- and land-based view of transactions.

DV3F provides exhaustive information on property transactions. However, for historical reasons, the base does not record data for the Alsace and Moselle regions, which are effectively excluded from the analysis.

⁴⁸ In the United States, early research has highlighted growth in the areas surrounding large cities and at the expense of urban cores, characterising this as a doughnut effect (see Ramani and Bloom (2021)).

Chart 2.6: Price index

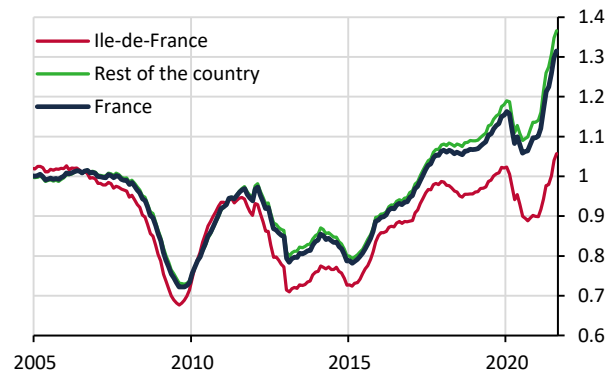
x: category / y: % year-on-year



Source: Insee, most recent value: September 2021.

Chart 2.7: 12M cumulative number of property transactions divided by the average number of transactions over the 2004Q2-2008Q1 period

x: year / y: average 2004Q2-2008Q1 = 100



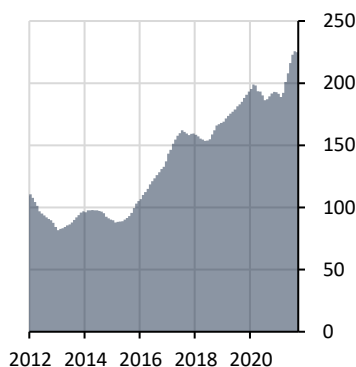
Note: Number of transactions subject to the standard transfer tax regime. Details at: <http://www.cgedd.developpement-durable.gouv.fr/nombre-de-ventes-immobilieres-a1105.html>. Most recent value: October 2021
Sources: CGEDD with data from DGFIP (MEDOC and Fidji)

Credit continues to grow strongly, but also less riskily thanks to the framework for credit standards put in place by the HCSF

In France, home lending continues to rise. The gross annual growth rate reached 6.4% in October 2021 after 6.6% in September, with production exceeding EUR 20 billion on an average monthly basis in 2021 to hit a record year-on-year high of EUR 225 billion in October 2021. At that date, total outstanding home loans reached EUR 1,200 billion. Growth is supported by the continued presence of record low property borrowing rates (cf. Chart 2.8 and 2.9). The trend in France forms part of an analogous Europe-wide pattern: home lending is growing in virtually all countries, albeit at different rates. This includes countries that had experienced major corrections, such as Spain after the 2008 crisis, and had not recorded growth of this strength in the subsequent period. Note, however, that the expected credit/price loop fuelled by rising house prices is not of the same magnitude across the board: the impact of higher prices on credit demand is potentially weakened by the fact that households have drawn on Covid savings to finance property assets. For example, in the Netherlands and Belgium, while price growth is at a five-year high, outstanding home loans are increasing, but less swiftly than before (cf. Chart 2.10).

Chart 2.8: Home loan production (excluding repurchases and renegotiations, yoy)

x: year / y: EUR billion



Note: most recent value: October 2021
Source: Banque de France

Chart 2.9: New home lending rates

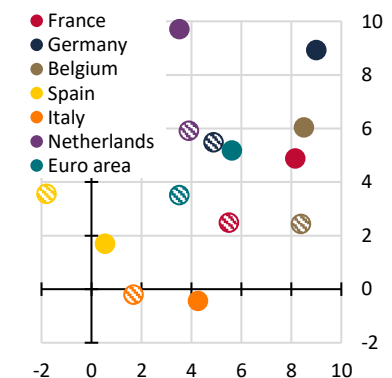
x: year / y: %



Note: most recent value: October 2021
Source: Banque de France

Chart 2.10: Growth rate of outstanding home loans and house price trends in Europe

x: growth rate of outstanding home loans as % yoy / y: real growth rate of house prices, % yoy

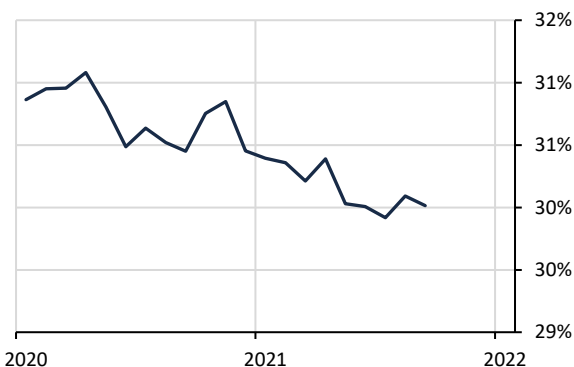


Note: The shaded circles show the average growth of outstanding home loans and real house prices over the five previous years for each country. The solid circles show the annual growth rate of house prices in June 2021 and outstanding home loans in August 2021
Source: OECD and ECB

Brisk home loan production in France is no longer taking place at the cost of weaker credit standards. The HCSF recommendation⁴⁹ on residential property lending in France took effect in December 2019. As a result, between January 2020 and September 2021, the average debt-service-to-income ratio declined by 0.8 of a point to 30%, while the share of new loans where the ratio exceeded 35% shrank by 14.8 points to 17.3%, reversing the worrying trend in place since 2014 (cf. Charts 2.11 and 2.12). Likewise, the share of loans granted with a credit period of more than 25 years decreased relatively steadily, falling from 13% to 6% of monthly production, even if the average credit period of loans actually increased by three months to 21.8 years over the same period (cf. Charts 2.15 and 2.16).

Chart 2.11: Average debt-service-to-income ratio, new home loans

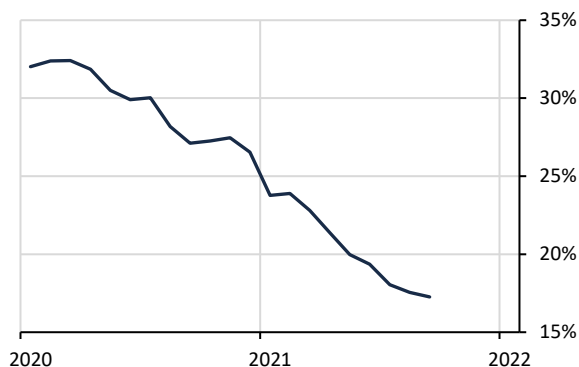
x: year / y: %



Source: CREDITHAB regulatory reporting; ACPR calculations.

Chart 2.12: Share of new home loans whose debt-service-to-income ratio exceeds 35%

x: year / y: %



Source: CREDITHAB regulatory reporting; ACPR calculations.

Box 2.1: Rising prices, credit standards and credit risk

Easing credit standards are often associated with periods of strong growth in house prices, leading to a vicious cycle. By easing credit standards, banks boost the buying capacity of borrower households, fuelling an even more pronounced increase in prices because the supply of property assets is highly price-inelastic.⁵⁰ As prices go up, households are often tempted to take on a heavier repayment burden in order to acquire property that has the qualities that they are looking for in terms of location, square footage and so on. While price trends do not impact financial stability directly, pronounced price growth, coupled with slippage in credit standards, could affect loan delinquency rates further out.

Delinquency rates for different home loan cohorts have varied considerably since the start of the 2000s. At a ten-year horizon, the default rate for the 2008 cohort is 6%, or double the rate observed for the 2004 cohort. Subsequent default rates are lower: the 2016-2017 cohorts seem to follow a similar pattern to cohorts from the early 2000s.

There are a number of possible reasons for these differences. Default rates are sensitive to economic conditions. Accordingly, the financial crisis in 2007-2008 and the euro area crisis (2010-2012) partly explain the increase in delinquency rates. Default rates also depend on the characteristics of the households making up each cohort. To the extent that some variables (borrower age, socio-economic category, number of dependent children, number of loans taken out before the home loan) are correlated with the occurrence of a default, changes in the composition of borrower cohorts may also account for differences in delinquency levels. Finally, credit standards were relaxed in the mid-2000s, when longer credit periods and higher

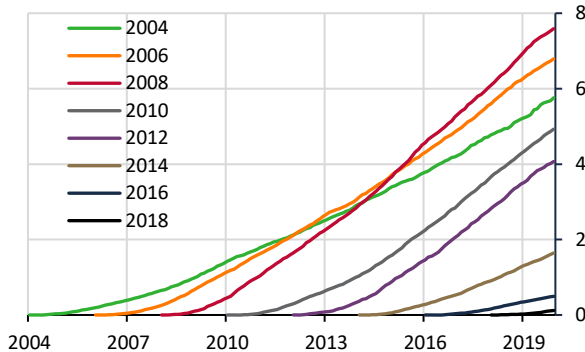
⁴⁹ The 2019 recommendation, which was amended in January 2021, and the HCSF decision in September 2021 call on banks to ensure that 80% of home loan production has a debt-service-to-income ratio of less than 35% and a maximum credit period of 25 years. For more details, see [HCSF, 2021](#)

⁵⁰ See Labonne and Welter-Nicole (2017)

household debt ratios are observed. Increases in these variables generally lead to a higher probability of default.

Chart 2.13: Delinquency rates, by cohort

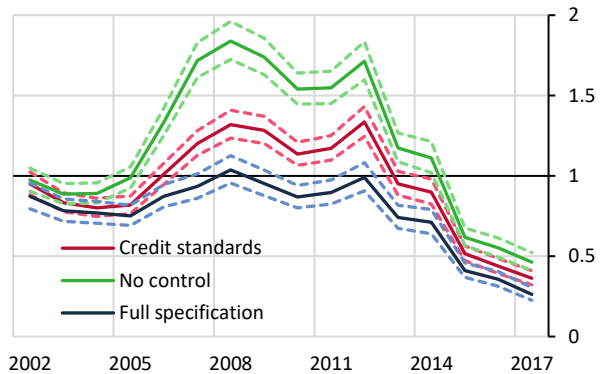
x: year / y: cumulative probability



Source: Banque de France

Chart 2.14: Cox models

x: year / y: Cox regression (cohort fixed effects), 2001 baseline



Note: the dotted lines show the minimum/maximum spread
Source: Banque de France

To understand the respective roles of these different factors, we analyse the change in the probability of default as a function of the various parameters presented above within the framework of a Cox model. Modelling that considers only the loan cohort year shows the change in delinquency rate from one cohort to the next, with the rate increasing fairly sharply between the 2005 cohort and 2008 cohort (for which the borrower's instantaneous probability of default is 1.7 times higher than that of the 2000 cohort) before holding at a relatively high level through to 2012 and then easing back until 2017 (insufficient hindsight prevents the analysis from being conducted on more recent cohorts).

By controlling for the characteristics of borrower households and credit standards, delinquency rates were broadly unchanged for the 2000 to 2013-2014 cohorts. While changes in household characteristics have played a marginal role since 2006 (with banks lending to slightly riskier households between 2005 and 2012), more than one-half of the increase in delinquency rates from 2005 stems from relaxed credit standards, assuming unchanged household characteristics.

The debt-service-to-income ratio can be lowered by means of two adjustments: (i) an increase in the down payment ratio when the loan is granted, leading to a decrease in the loan-to-value (LTV) ratio and (ii) an increase in the credit period, which, other things being equal, brings down the repayment burden. Between January 2020 and September 2021, average LTV fell by 1.6 points to 83.9% owing to an increase in down payment ratios, while the share of loans with an LTV of over 100% shrank by 6.8 points to 24.6% (cf. Charts 2.15 and 2.16). To lock in the improvement in credit standards in an environment where home loan production remains sustained and the residential property market continues to grow briskly, on 29 September the HCSF converted its recommendation on the debt-service-to-income ratio and the credit period into a binding standard. Accordingly, credit institutions are required to keep the debt-service-to-income ratio to 35% and the credit period to 25 years from 1 January 2022. They are allowed to exempt 20% of new loans from the standard, but at least 80% of the loans covered by the exemption must be intended for the purchase of primary residences and at least 30% must be for first-time buyers. The ACPR will be in charge of checking compliance with the standard and for applying the designated sanctions in the event of non-compliance by credit institutions.

Chart 2.15: Average maturity, new home loans

x: year / y: number of years



Source: CREDITHAB regulatory reporting; ACPR calculations.

Chart 2.16: Share of new home loans whose credit period exceeds 25 years

x: year / y: %



Source: CREDITHAB regulatory reporting; ACPR calculations.

Box 2.2: An initial analysis of the impact of the Covid crisis on home lending

This box proposes an initial analysis of the effects of the health crisis on the distribution of home loans in France, using the *Crédit Logement* database.⁵¹ Echoing the approach of macroeconomic studies seeking to assess the impact of the health crisis on the economy,⁵² we estimate trends econometrically, interpreting deviations as representing the economic impact of the Covid crisis.⁵³ Thus, assuming that the banks using *Crédit Logement* as a loan guarantor did not scale back loan distribution during the health crisis by more than other banks, the change in the *Crédit Logement* portfolio over recent months should provide a relatively faithful picture of the state of the French property market.

To estimate the effects of the Covid-19 crisis on credit distribution, we estimated a seasonally-adjusted log-linear econometric model for years 2010 to 2020. We use the model to simulate loan distribution across the entire 2010-2021 period. We then measure the difference between the model's predictions and the actual situation. In the pre-Covid period, this difference is interpreted as model error; over the Covid period, it represents a counterfactual economy. Using our knowledge of the recent spatial change in house prices and the initial findings of international research, we estimate the model by type of asset and type of urban zone. Chart 2.17 shows the results of the analysis. The relative decline in loan production was relatively uniform during the first lockdown. Loans destined for buy-to-let investments, primary residences and also secondary residences fell by over 70% from their long-term trend. The finding is roughly the same for loans to purchase assets in urban zones.

From late summer 2020 onwards, there is increasing divergence in loan dynamics across different asset types and geographical zones. Looking at categories of assets first, loans for the acquisition of second homes resumed their trend from October 2020 onwards. Primary residences continued to see a negative production gap in the fourth quarter of 2020, which was ultimately closed in the first quarter of 2021. Conversely, buy-to-let investment remains significantly below the observed pre-crisis trend.

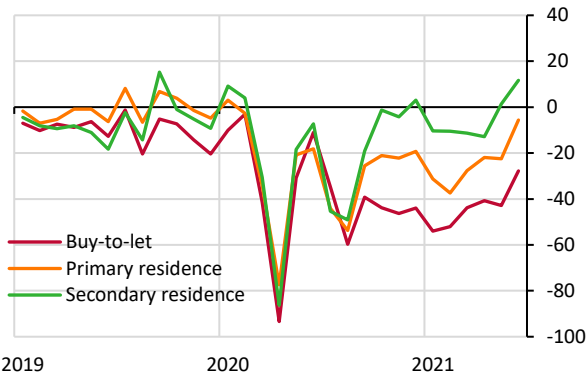
⁵¹ At 31 December 2020, loans guaranteed by *Crédit Logement* accounted for one-third of outstanding home loans granted in France (source: institution and Banque de France).

⁵² See for example the work of Raj Chetty (2021); Eyméoud, Llopis, Petrosky-Nadeau, Wasmer (2021).

⁵³ This seems to be an acceptable working hypothesis insofar as *Crédit Logement*'s market shares and data more generally have been stationary for several years.

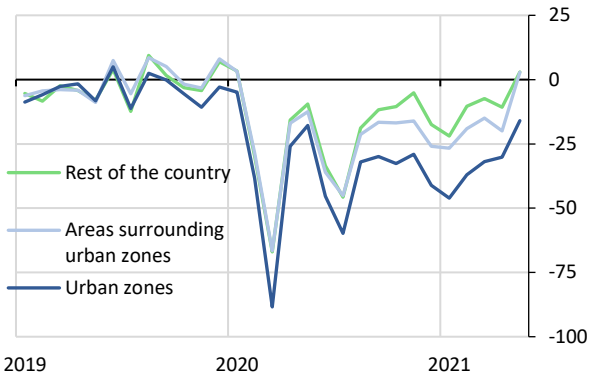
Looking at geographical zones (cf. Chart 2.18), rural areas rebounded faster after the Covid shock, getting back to pre-crisis loan distribution levels by June 2021. Areas surrounding urban zones also reverted to long-term levels during the same period. However, in urban zones, which have historically seen the fastest growth, loan numbers are well down on where they were before the crisis.

Chart 2.17: Distribution of home loans as a deviation from the long-term trend by type of asset
x: year / y: % deviation from trend



Note: Data on the LTV ratio for buy-to-let investments are available only from January 2020.
Sources: Crédit Logement.

Chart 2.18: Distribution of home loans as a deviation from the long-term trend by geographical zone
x: year / y: % deviation from trend

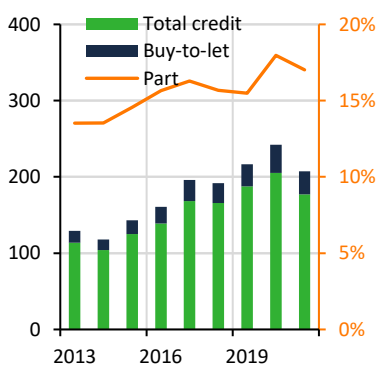


Sources: Insee and Crédit Logement

While the overall market trend is for swift growth, the buy-to-let segment is experiencing a more moderate recovery

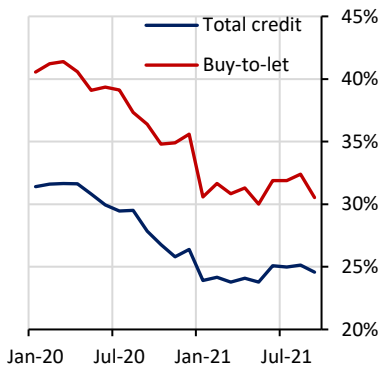
Within these overall home lending dynamics, loans for buy-to-let investments have increased since 2015 and make up a growing share of total home lending: they accounted for 17% of new home loans from January to September 2021, compared with 14% in 2014 (cf. Chart 2.19). Several factors account for this strength: the steady increase in prices led investors to view the buy-to-let segment as a safe investment, with attractive rental yields (compared with other financial assets over the period), based on financing at rock-bottom rates. The emergence of short-term rental platforms may also have supported buy-to-let investments in tourist areas. However, initial analyses of the Covid crisis appear to show that home lending for buy-to-let investments is struggling to get back to pre-crisis levels. This trend should definitely be considered in connection with the delayed rebound in the new home sector during the crisis exit phase and may prove to be temporary.

Chart 2.19: Share of buy-to-let investment in new loans, calendar-year total
x: year / y: (left: amount in EUR billion), (right: % share)



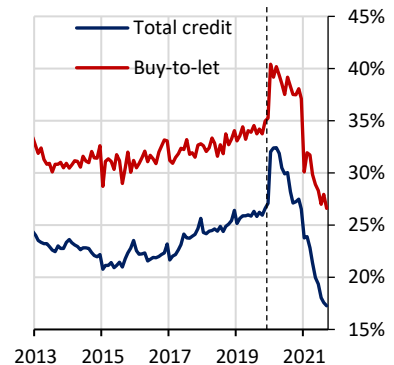
Note: The data for 2021 are cumulative from January to September.
Sources: ACPR, CREDITHAB reporting

Chart 2.20: Share of new loans with an LTV ratio of over 100%
x: time / y: %



Note: Data on the LTV ratio for buy-to-let investments are available only from January 2020.
Sources: ACPR, CREDITHAB reporting

Chart 2.21: Share of new loans with a debt-service-to-income ratio of over 35%
x: year / y: %



Note: The vertical bar shows the series break resulting from the transition to the new CREDITHAB reporting arrangements.
Sources: ACPR, CREDITHAB reporting

2.2 Are these post-crisis trends sustainable?

Household debt expected to keep increasing

Sustained growth in demand on the housing market could continue to fuel higher prices and increased household debt in the medium term. The household debt ratio has increased by 14 points since the first quarter of 2015, climbing from 87.0% to 101.4% of gross disposable income (just over the euro area average), accentuating the vulnerability of households to a negative shock. Note that home loans accounted for 82% of household debt in September 2021. The HCSF's measures will therefore help to contain the risks linked to the growth in household debt.

Under the Banque de France's macroeconomic projection model, new home lending flows depend positively on house prices and household investment and negatively on long-term real bank lending rates and household debt service (household spending connected with paying off the principal and interest of home loans as a share of income). Currently, most factors are having positive influence on credit in terms of their deviation from pre-crisis levels. House prices are high, household investment is growing vigorously, and bank lending rates are low. Conversely, debt service is having a restraining effect by dampening credit somewhat.

House prices are currently at a higher level than expected by forecasting exercises. In the Banque de France's macroeconomic projection model, house prices are determined by credit dynamics, expected household income, consumer price inflation and long-term real bank lending rates. While the target for house prices based on these factors was already high owing to the low level of interest rates, observed prices have exceeded the target since 2019, and the gap actually widened during the crisis. However, this analysis does not take account of the fact that the current house price growth could be partly due to the surplus savings set aside by households during the Covid crisis, which enabled them to build up larger down payments for their housing investment plans, so driving price growth and transactions on the housing market. This trend may continue in the coming quarters before fading as households use up their excess available savings. Furthermore, econometric estimates show that house prices are subject to considerable inertia: accordingly, the price gaps observed in relation to fundamentals since 2020 could take time to close in the coming quarters. However the case may be, these deviations from the fundamentals must be treated with caution, given the uncertainty surrounding estimates of house prices during the crisis exit phase (Box 2.3).

Box 2.3: the challenging task of assessing house prices

The growth rate of house prices has accelerated steadily since 2016, raising questions about whether the trend is sustainable. Excessive growth on the housing market is assessed with regard to structural price determinants on the supply and demand sides. Any valuation that deviates from these factors indicates that prices are possibly over- or undervalued.

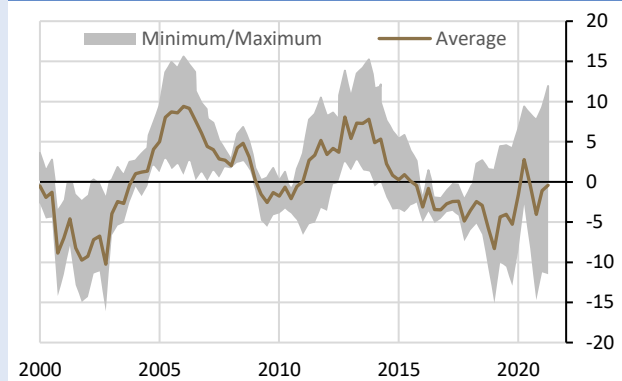
Two indicators are frequently used to make an initial estimate of price pressures: the ratio of house prices to household disposable income, and the price-to-rent ratio. The first indicator measures housing affordability, while the second measures the appeal of renting compared with buying or buying-to-let. A significant deviation in these ratios from their historical trends indicates the possible presence of market stress. In 2021 Q3, price-to-income and price-to-rent ratios were 6.6% and 15.0% respectively above their ten-year averages, consistent with current market strength.⁵⁴ However, these gaps are significantly smaller than those seen during the upswing before the 2008 crisis, when they exceeded 40% at times.

⁵⁴ The series used are provided by the OECD at: <https://data.oecd.org/price/housing-prices.htm>

More comprehensive econometric models may be used to estimate “equilibrium” prices on the basis of several factors, against which observed market prices may be compared. Any upside deviation from these equilibrium values could point to a period of overvaluation. These models use different price determinants, including household income, lending rates, housing supply and population size. The results obtained depend on the selected factors and estimation method; the assessment thus cannot rely on one single model. More detailed analytical frameworks that explicitly model housing supply and demand suggest that prices were overvalued in the recent period, by as much as 12% in 2021 Q2. There is however a significant spread in estimates over the recent period that is more pronounced than in the past. These deviations are partly explained by whether the effect of variations in housing supply on prices is considered. An increase in housing supply puts downward pressure on the equilibrium price and therefore leads to a more pronounced overvaluation in models that incorporate this aspect, other things being equal. Models that do not incorporate the increased housing supply tend to indicate that prices are undervalued (i.e. the equilibrium price should be higher or close to the actual price).

Chart 2.22: Gaps between modelled and actual house prices

x: year / y: %



Note: most recent value: June 2021

Source: Banque de France

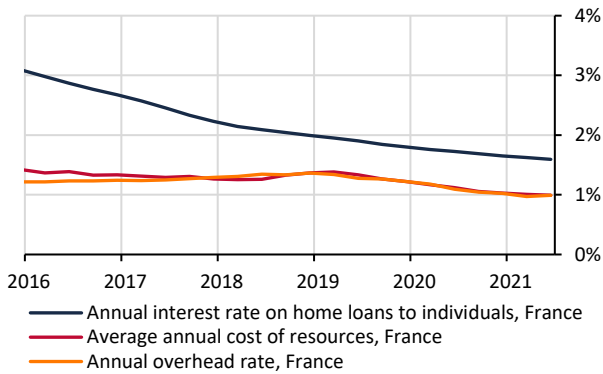
Bank margins have been stable at low levels since the end of 2018

The decline in interest rates, exacerbated by fierce competition between credit institutions, has squeezed margins on home loans. This decrease has however been partially offset by high loan production volume; moreover, margins have recovered a little since late 2019 on the back of lower overheads and the effects of low interest rates on funding costs. Between September 2015 and September 2019, net margin as estimated by the ACPR (interest rate – funding cost – overhead ratio) fell steadily owing to the continued decrease in the average interest rate on outstanding loans (cf. Charts 2.23 and 2.24). While the funding cost decreased by 15 bps to 1.27% and the overhead ratio edged up by 3 bps, also to 1.27%, the average interest rate on outstanding loans contracted by 136 bps to 1.85%, with the result that net margin turned negative in September 2019 (-0.69%). While staying in negative territory, net margin then rose to -0.39% in June 2021, a climb of 30 bps compared with September 2019, as the decrease in funding cost (27 bps to 0.99%) and the overhead ratio (28 bps to 0.99%) more than offset the decrease in the average interest rate (25 bps to 1.59%). Similarly, recent developments on fixed income markets suggest that lending rates may go up moderately overall and from a record low starting point (cf. Box 2.4).

However, these estimates do not consider the ancillary income that banks may earn in connection with their home financing business. The RENT_IMMO reports filed by banks since early 2020 show that this ancillary income accounted on average for 0.31% of average outstanding home loans in 2020. This income essentially comprises commissions for distributing loan insurance policies (51%), handling fees (19%) and prepayment penalties (13%). However, the data gathered reveal considerable disparities between institutions, reflecting very different understandings of what comprises ancillary home loan income. Further, estimates do not factor in the cost of risk, which was however negligible in 2020 (0.7 of a basis point in 2020 and 5.4 bps as a simple average since 2006).

Chart 2.23: Change in the average interest rate, the average cost of funding and the average overhead ratio relative to outstanding home loans (annual data)

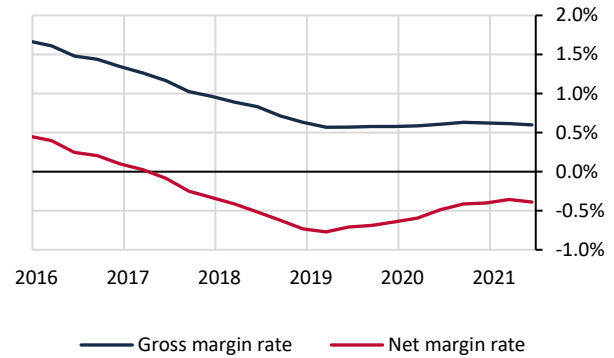
x: year / y: %



Source: accounting and prudential data provided by institutions; ACPR estimates

Chart 2.24: Change in average gross and net margins on outstanding home loans (annual data)

x: year / y: %



Source: accounting and prudential data provided by institutions; ACPR estimates

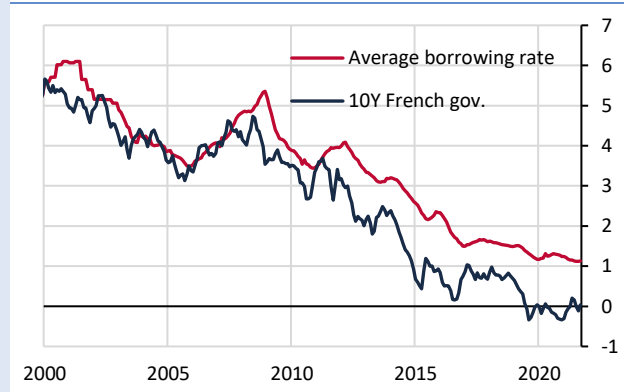
Box 2.4: To what extent are higher sovereign yields passed through to lending rates?

The path of lending rates in France has historically been correlated with that of French ten-year government bonds (OATs), which are the benchmark sovereign bond. A standard home loan in France is a fixed rate loan (these have accounted for over 90% of outstandings on average since 2001) with an average initial term of 19 years. In this regard, the ten-year government bond is a benchmark for the opportunity cost to banks of producing credit, which explains its significant correlation to lending rates (cf. Chart 2.25)

The steady decline in the yield on ten-year government bonds since the 2008 crisis (4.7 percentage points) has thus led to a significant reduction in home lending rates (3.7 percentage points). The downward trend caused sovereign yields to enter unprecedented territory as they turned negative in July 2019. However, the strain that emerged in 2008 also led to an increase in the spread between the two rates – the sovereign yield on the one hand and the property lending rate on the other – compared with the pre-crisis period. This spread has averaged 1 percentage point since 2008, compared with 0.3 of a point before, indicating either the progressive rebuilding of bank margins or a higher risk premium in home loan production.

Chart 2.25: Average lending rate and French ten-year government bond yield

x: year / y: %



Note: most recent value: October 2021
Source: Banque de France

An econometric model may be used to clarify pass-through mechanisms from sovereign yields to lending rates. The model used is an error correction model analysing short-term links between monthly variations in the two rates, factoring in the existence of a long-term equilibrium relationship between the two

variables.⁵⁵ Over the 1998-2021 period, the results show pass-through from sovereign yield movements of around 10 bps per 100 bps of increase after a three-month period. After two years, other things being equal, pass-through reaches 78 bps (from a 100 bps shock), confirming the significant role played by government bond yields in determining lending rates.

Ten-year government bond yields rose in the first half of 2021 by half a percentage point, which was a more measured increase than during the previous cyclical upswing (observed during the second half of 2016, when yields rose by 0.9 of a percentage point). Based on the above results, the short-term effects of this increase on lending rates should be limited, at around 0.05 of a percentage point.

⁵⁵ This model is inspired by the literature analysing pass-through of money market rates to bank rates. See in particular *The single monetary policy and the interest rate channel in France and in the euro area*, Quarterly Selection of Articles Banque de France, Autumn 2005.

3. Decentralised finance and central bank digital currencies

The rise of decentralised finance, including crypto-assets and stablecoins, poses risks to financial stability. Beyond their potential use in money laundering and terrorist financing, crypto-assets are characterised by significant financial vulnerabilities owing to their volatility and their use for speculative purposes, along with substantial exposure to cyber-risks. These markets are growing amid the gradual deployment of decentralised finance, whose lack of transparency and light regulation also entail an increase in traditional risks, e.g. credit and operational, for the financial system.

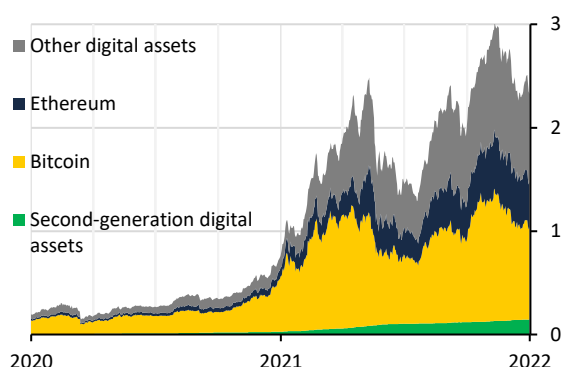
In the face of these challenges, implementing a central bank digital currency (CBDC) is one potential response. In July 2021, the Eurosystem launched investigation on a digital euro. This phase will last at least 24 months and will seek in particular to think about the operating framework and properties of a digital euro, notably with regard to financial stability.

3.1 Stocktaking of risks linked to stablecoins, crypto-assets and decentralised finance more generally

The crypto-asset market continues to grow

Chart 3.1: Market capitalisation of first- and second-generation digital assets

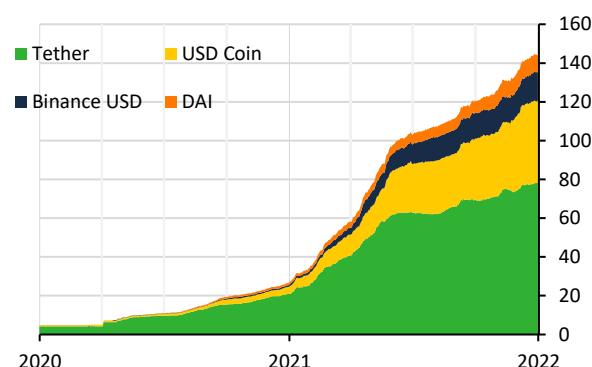
x: year y: USD trillion



Source: Bloomberg. Most recent values: 31/12/2021.

Chart 3.2: Market capitalisation of the main second-generation digital assets: stablecoins

x: year/ y: USD billion



Source: Bloomberg. Most recent values: 31/12/2021

Digital assets⁵⁶, also known as crypto-assets, first emerged in the late 2000s and have grown rapidly in recent years. Crypto-assets include first-generation assets such as Bitcoin and Ether which are issued and are exchanged on Distributed Ledger Technologies (DLTs) such as Blockchain. They do not represent a financial claim on any entity. Since they are not backed by a real underlying asset, first-generation crypto-assets are highly volatile, which prevents them from fulfilling the standard functions of a currency (means of exchange, unit of account, store of value). These assets, whose prices have trended upwards in recent years (cf. Chart 3.1), are therefore primarily used for speculative purposes by individuals but also, to an increasing degree, by institutional investors. However, holding this type of crypto-asset involves several risks. In the first place, their significant volatility puts investors at substantial risk of suffering capital losses in the event of a market reversal, as happened with Bitcoin in January 2018 and May 2021. Next, weak guarantees covering the safeguarding of these assets make them vulnerable to

⁵⁶ The Monetary and Financial Code defines digital assets as:

1. Tokens representing one or more rights that may be issued, recorded, held or transferred by means of a distributed ledger technology system (Articles L552-2 and L54-10-1)
2. Any digital representation of a security that is not issued or guaranteed by a central bank or by a public authority, which is not necessarily attached to a currency that is legal tender and which does not have the legal status of a currency, but which is accepted by natural or legal persons as a means of exchange and which can be transferred, stored or exchanged electronically (Article L54-10-1).

computer theft (cf. hacks at Mt. Gox in 2014 and Poly Network in 2021). Last, these crypto-assets present major vulnerabilities in terms of money laundering and terrorist financing, which is why they are often used to finance unlawful activities (e.g. Bitcoin ransomware, financing of illegal products).

Second-generation crypto-assets emerged to address the volatility of first-generation assets. They are backed by a reserve fund consisting of real assets, such as financial securities or sight deposits, making it possible to stabilise their value – hence their name, stablecoin – and facilitating their use as a settlement asset. Even if the market capitalisation of stablecoins experienced a significant rise in 2021 (cf. Chart 3.2), their use as settlement assets is still limited. Stablecoins are chiefly used as a store of value on the crypto-market by investors looking to secure their investment by placing it in a stable vehicle without leaving the digital asset ecosystem, since converting digital assets to fiat money is a lengthy and costly process, including fees and capital gains tax, for example. Their use as a payment instrument could however increase in the event of issuance by large financial institutions or tech firms benefiting from major network effects, as with Meta's Diem initiative (parent company of Facebook), for example. The creation of closed ecosystems within which private settlement assets circulate could affect effective monetary policy transmission by increasing liquidity fragmentation. This could undermine financial stability. The risks to the stability of the financial system stem in particular from uncertainty about the real value of stablecoins, whose peg to the reference asset must be guaranteed over time. In the event of run risk, there is a danger that the swift liquidation of reserve assets might not be sufficient to preserve the stablecoin's peg to the reference currency.

For now, the crypto-asset market remains relatively small, but it is experiencing rapid growth, calling for closer monitoring. The market is still modestly sized compared with the world financial system: it is worth about 3% of global equity capitalisation (approximately USD 100,000 billion in early 2021) and 7% of the S&P 500's market capitalisation. It had an overall value of around USD 2,900 billion in November 2021, up sharply from the initial peak in January 2018 (increase of 260%). The market is highly concentrated, with Bitcoin (44%) and Ether (19%) making up two-thirds of the total value. Conversely, the capitalisation of stablecoins is on a smaller scale. It amounted to about USD 138 billion in November 2021, driven chiefly by several USD-backed assets (Tether, USD Coin, DAI), or less than 5% of the total value of the crypto-asset market.

The rise of the crypto-asset market and its growing links to traditional finance increase the risks to financial stability

The soaring rise of the crypto-asset market and stronger channels of transmission with the traditional financial system warrant close analysis. Owing to its relatively small size, the crypto-asset sector does not currently pose a systemic risk. However, a number of international organisations⁵⁷ have stressed the risks that the rise of digital assets could pose to financial stability and the need to take these risks in account more effectively.

At present, channels of transmission between the digital asset market and conventional finance stem mainly from two factors:

- **Growing interest in the crypto-asset market among institutional participants.** This is leading, for example, to the development of payment services using crypto-assets by major payment sector firms, such as PayPal, Visa, Mastercard and Worldline. At the same time, some investors, such as hedge funds and wealth managers, are giving direct and indirect investments, such as Bitcoin-linked ETFs, a bigger place in their strategies.⁵⁸ Credit institutions and pension funds, meanwhile, look less keen at this stage to put money into crypto-assets.

⁵⁷ See in particular:

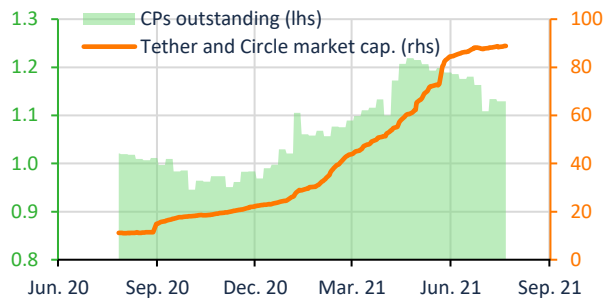
- International Monetary Fund, Global Financial Stability Report, Chapter 2: The Crypto Ecosystem and Financial Stability Challenges, October 2021. <https://www.imf.org/-/media/Files/Publications/GFSR/2021/October/English/ch2.ashx>
- Financial Stability Board, Crypto-asset markets: Potential channels for future financial stability implications, October 2018. <https://www.fsb.org/wp-content/uploads/P101018.pdf>

⁵⁸ Source: Fidelity Digital Assets, *The Institutional Investor Digital Assets Study*, September 2021.

- **Composition of reserves backing the main stablecoins.** Recent research has highlighted the fact that a large portion of the reserves backing the main stablecoins, including Tether⁵⁹ and to a lesser extent Circle, is comprised of commercial paper issued in USD (short-term commercial paper issued by financial and non-financial corporations). Econometric analysis⁶⁰ revealed that the commercial paper market is partially correlated with demand for stablecoins (cf. Chart 3.3).

Chart 3.3: Outstanding commercial paper in USD and capitalisation of the main stablecoins

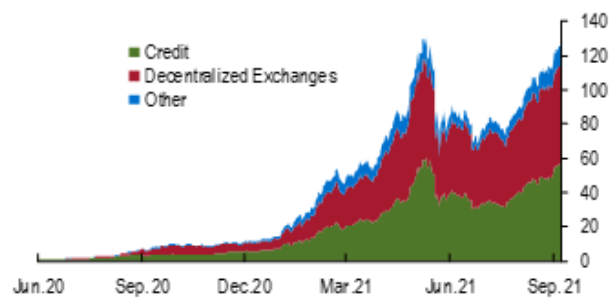
x: time / y (left: USD trillion) (right: USD billion)



Source: Barthelemy, Jean and Gardin, Paul and Nguyen, Benoît, *Stablecoins and the real economy* (November 29, 2021)

Chart 3.4: Total value locked in decentralised finance protocols

x: time / y: USD billion



Source: IMF

New financial services based around crypto-assets have emerged, spurring the development of decentralised finance, or DeFi. DeFi consists in replicating traditional financial products and services within an ecosystem based around crypto-assets and new public blockchain-type decentralised technologies. Examples include Ethereum, Binance, Solana and Terra. In this ecosystem, each investor is directly responsible for managing their crypto-assets in decentralised applications (DApps) developed on the blockchains. There are no identified intermediaries. These applications essentially offer peer-to-peer crypto investment, trading and lending services, without the need for investors to put their funds into the traditional financial system.

DeFi is seeing pronounced growth. Between the end of 2020 and September 2021, total collateral posted on DeFi platforms surged from USD 15 billion to USD 110 billion (cf. Chart 3.4). Growth is being driven primarily by the development of (i) decentralised exchanges (DEX), which are used to trade crypto-assets without intermediaries, and (ii) credit platforms linking lenders directly to borrowers without KYC or credit risk assessment procedures.

The rise of DeFi poses significant risks to the financial system. The decentralised and non-transparent nature of these activities makes it hard to identify the parties to transactions, in turn making it more challenging to apply the rules to these services. In the absence of adequate regulation, the development of these activities poses significant risks, including credit and operational risks, as well as major risks in terms of capital loss, investor protection and compliance with AML-CTF rules. Accordingly, national and international regulators have begun discussing the ways in which the regulatory framework and supervisory practices could change in order to regulate DeFi more effectively.

The risks linked to the use of crypto-assets argue for tailored, harmonised and evolving regulation

The rise of crypto-assets means that a tailored regulatory framework needs to be put in place. France has acted early to establish a more effective framework. Designed before the emergence of DLT and crypto-assets, the existing regulations are not always able to capture the many risks associated with these assets. Adjustments are therefore needed to provide a more effective regulatory framework for the issuance and use of crypto-assets. In

⁵⁹ At 30 June 2021, [Tether reported that one-half of the assets in the reserve backing](#) the Tether stablecoin comprised commercial paper or certificates of deposit (USD 30.8 billion out of a total of USD 62.8 billion), making the company one of the market's largest investors.

⁶⁰ Barthelemy, Jean and Gardin, Paul and Nguyen, Benoît, [Stablecoins and the real economy](#) (November 29, 2021)

France, the Act of 22 May 2019 on the Action Plan for Business Growth and Transformation (PACTE Act) created a framework to regulate digital asset service providers (DASPs) and initial coin offerings (ICOs).

At European level, the European Commission presented a set of regulatory initiatives in September 2020 on digital finance, including a proposal for a Markets in Crypto-Assets (MiCA) Regulation, which is currently under discussion. The proposed regulation aims to establish a harmonised European Union regulatory framework for issuers of first-generation crypto-assets, stablecoins, as well as providers of crypto-asset services based in the European Union. The regulation proposes to require service providers and issuers of crypto-assets based in the European Union or wishing to operate in the European market to obtain prior authorisation from a national supervisory authority. It would set prudential requirements covering (for example, the establishment of a reserve comprising highly liquid assets and guarantees in the event of the cessation of activities), as well as strict governance, and the respect of consumer rights (for example concerning disclosure). The scope of this initiative could now be expanded to better capture recent developments on the crypto-asset market, such as the rapid rise of DeFi, to ensure that the regulatory framework applies gradually to these new activities.

To be fully effective, these regulatory efforts must be coordinated internationally. To ensure overall consistency and prevent any risk of regulatory arbitrage, international bodies are promoting the adoption of a regulatory framework based on the “same activities, same risks, same rules” principle, to ensure the same level of security, regardless of which participant is providing a service, as well as a level playing field for new entrants and established firms. If crypto-asset market participants and bigtechs have the potential to destabilise the financial system, this approach could lead to the imposition of rules applicable to banks and systemically important infrastructures. A minimum, common sense measure would be for example for groups engaged in mixed financial and non-financial activities to be required to combine their financial activities within a single entity, namely an intermediate holding company that would be subject to consolidated supervision according to appropriate rules. This prudential consolidation would enable the supervisor to have an overall view of the group's financial activities, as well as spillover and concentration of the associated risks. Under the proportionality principle, making the systemically important financial activities of these groups subject to prudential rules applicable in the banking sector – which have the benefit of being used most widely and of being the most advanced in terms of managing systemic risk – would make it possible to prevent these groups from exploiting the rigid definitions of banking and financial activities to get around prudential rules and operate without authorisation. Such cases of regulatory arbitrage prevent supervisors from fulfilling their duties in relation to consumer protection and financial stability and introduce unfair practices within the Capital Markets Union. In the United States, the President’s Working Group on Financial Markets (PWG) and two federal agencies (FDIC and OCC) recently took a more demanding stance in a joint report,⁶¹ proposing to totally separate the commercial activities of bigtechs from their financial activities, in particular in stablecoin issuance. This approach could be considered in Europe in addition to MiCA, as a way to respond to a number of global stablecoin issuance initiatives by bigtechs, which have systemic potential. Other countries, such as China, prefer more radical approaches, including banning crypto-assets outright, at the risk of stifling innovation.

Since 2019, multilateral cooperation forums have provided strong impetus to regulate crypto-assets more effectively, especially stablecoins. Following the report submitted to the G7 in 2019, the G20 tasked the Financial Stability Board (FSB) with studying the regulatory issues linked to the emergence of global stablecoins. An FSB working group on Regulatory Issues of Stablecoins (RIS) drew up ten high-level recommendations for the regulation of stablecoins.⁶²

These efforts are being taken forward today through work by various international standard-setters, including FATF, CPMI-IOSCO and BCBS. In June 2019, the Financial Action Task Force (FATF) published initial recommendations on the application of AML/CTF requirements to crypto-assets and DASPs, which were updated in October 2021.⁶³ CPMI-IOSCO also published a consultative document in October 2021 on the application of the principles for financial market infrastructures to systemic stablecoin schemes, clarifying how the principles apply

⁶¹ PWG, FDIC, OCC, [Report on Stablecoins](#), November 2021.

⁶² Financial Stability Board, Regulation, [Supervision and Oversight of “Global Stablecoin” Arrangements](#), October 2020.

⁶³ Financial Action Task Force, [Updated Guidance: a risk-based approach to virtual assets and virtual asset service providers](#), October 2021.

to these new participants. The Basel Committee (BCBS) is currently working to draft rules on the prudential treatment of banking sector exposures to crypto-assets. The consultative document published in June 2021 distinguishes Group 1 crypto-assets (tokenised traditional assets and stablecoins), whose prudential treatment would be based on the underlying asset, from Group 2 crypto-assets (no value stabilisation mechanism), which would be subject to more conservative prudential treatment.

Given the swift changes in the crypto-ecosystem, the regulatory framework is expected to evolve in a regular and concerted fashion. The ongoing development of innovative technologies and the emergence of new uses in the area of crypto-assets as well as in DeFi could make it necessary to review the rules on a regular basis to prevent any risks of circumvention and arbitrage. The challenge is therefore to maintain and amplify the current momentum in international cooperation and be responsive to the swift changes taking place in the crypto-ecosystem. While it will necessarily need to be adjustable, the regulatory framework could also be based on several principles of equality that should apply to all assets that are intended to be means of payment, namely equal safety, equal compliance, equal responsibility and equal accessibility.⁶⁴ These foundations would help to support upward convergence, combining stable rules with tailored regulation. Alongside the regulatory approach, the provision of a reliable reference value through a central bank digital currency might provide an effective solution to accompany the new uses supported by crypto-assets while at the same time safeguarding financial stability.

3.2 Potential impact of central bank digital currencies on the financial system

Issuance of a central bank digital currency is a potential response to the challenges raised by the digitalisation of payments

Central bank money is the keystone of the payments system

The safest and most liquid settlement asset, central bank money anchors retail payments as well as settlements between financial institutions. Within the framework of retail payments, it exists a free convertibility at par between commercial bank money (deposits held by individuals at their commercial bank) and central bank money (cash) ensures confidence in the currency. This parity between commercial currency and central currency is justified in particular by the existence of mechanisms to ensure the soundness of commercial banks (for example regulatory requirements in terms of solvency and liquidity) and the robustness of debts held on them (for example the deposit guarantee mechanism). Free convertibility thus makes it possible to guarantee confidence in the currency, whatever its form..⁶⁵ Likewise, the use of central bank money in interbank settlements eliminates counterparty and liquidity risks. The 2008-2009 financial crisis and its regulatory after-effects⁶⁶ reiterated the importance of using a risk-free settlement asset to secure large-value payments in a setting where some institutions' positions are subject to uncertainty. Today, the TARGET 2 system processes 66% of all large-value transactions, accounting for 90% of the total value. The share of settlements processed in TARGET 2 has increased slightly since 2008, when it stood at 60% of volume and 85% of value.⁶⁷

The development of private digital assets could affect this key role of central bank money and thus impact the implementation of monetary policy and financial stability

The development of private settlement assets could potentially challenge the position of central bank money. It could also impact financial stability as well as the effective transmission of monetary policy. The rise of private digital assets certainly responds among other things to evolving uses linked to the digitalisation of the financial

⁶⁴ Speech by the Governor of the Banque de France at an ACPR conference organised on 25 November 2021.

⁶⁵ Bank for International Settlements, Committee on Payments and Settlement Systems (CPSS), *The role of central bank money in payment systems*, August 2003. / U. Bindseil, I. Terol, *The evolving role of central bank money in payments*, in Central Banking, Juillet 2020.

⁶⁶ The importance of settling transactions in central bank money in market infrastructures is enshrined in the Principles for Financial Markets Infrastructures established by CPMI-IOSCO in 2012.

⁶⁷ TARGET Annual Report 2020.

sector, such as the settlement of transactions involving tokenised instruments, but unlike commercial bank money, these new settlement assets offer no guarantees to users as to their soundness and stability, and they are not backed by central bank money. Accordingly, they are not anchored on central bank money and carry significant financial risks. Furthermore, since these new digital assets circulate on private payment infrastructures, they could lessen the effectiveness of monetary policy transmission.

Issuance of a central bank digital currency to support innovation while safeguarding the pivotal role of central bank money

Development of a CBDC is one of the tools available to central banks to support the digitalisation of payments.

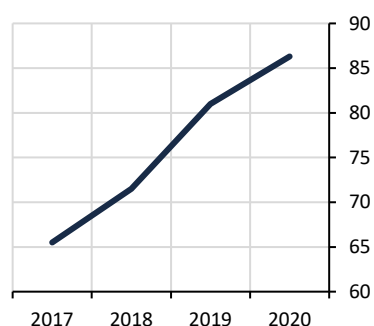
Issuance of a CBDC would be a way to offer a safe digital settlement asset that is suited to new uses linked to the digital economy, ensuring that central bank money continues to be used as exchanges enter the digital era. This accounts for the growing interest among central banks in CBDCs. Central banks are interested in the issuance of retail CBDCs, which would be accessible:

- to everyone for retail payments. As an example, the People's Bank of China (PBoC) has been developing since 2014 a retail central bank digital currency project, the “digital yuan” (e-CNY). This project aims in particular to offer a public alternative to private payment solutions (Alipay, WeChat Pay), and to crypto-assets (Bitcoin, etc.), to fight against illicit transactions and to promote financial inclusion. Ultimately, it could also be a vehicle for the internationalization of the Yuan. The "digital yuan" will be issued by the PBoC and then intermediated by the big banks to individuals in the form of a digital wallet. Several digital yuan experimentation projects were initiated by PBoC in 2020-21 in four major cities across the country, with a view to widespread launch during the Olympic Winter Games scheduled for Beijing in 2022;
- but also wholesale CBDCs, which would be reserved for certain institutions, such as financial institutions. As an example, the Banque de France has carried out several experiments in this direction in a multi-currency and cross-border context.

A recent study by the Bank for International Settlements (BIS) found that 86% of central banks surveyed (cf. charts from 3.5 to 3.9) are currently holding discussions about whether to develop a CBDC.⁶⁸ For example, in July 2021, the Eurosystem launched the investigation phase for a digital euro project (cf. Box 3.1). However, issuance of a CBDC could itself have implications for financial stability and the transmission of monetary policy that central banks must analyse in depth, to ensure that they are properly controlled.

Chart 3.5: Engagement in CBDC work

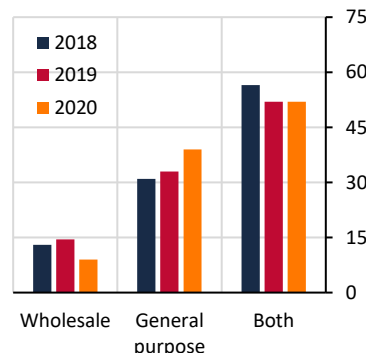
x: year / y: %



Source: BIS

Chart 3.6: Focus of CBDC work

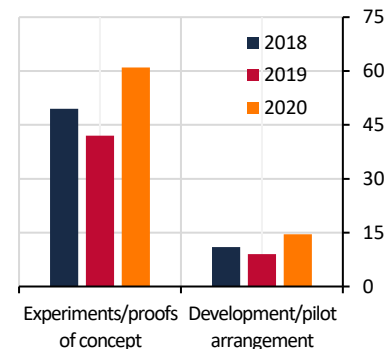
x: category / y: %



Source: BIS

Chart 3.7: Type of work in addition to research

x: category / y: %



Source: BIS

⁶⁸ Codruta Boar and Andreas Wehrli, *Ready, steady, go? – Results of the third BIS survey on central bank digital currency*, BIS Papers No. 114.

Box 3.1: Digital euro project

In early 2000, the Eurosystem began initial discussions on the development of a digital euro by setting up a High-level Task Force on Central Bank Digital Currency (HLTF-CBDC). This led to the publication of a report on a digital euro in October 2020, followed by preliminary experiments and a public consultation. In the light of this work, the ECB Governing Council decided on 14 July 2021 that a two-year investigation phase would begin on 1 October 2021 to determine the outlines of a potential future retail digital euro and to assess the impact on the financial system and payments ecosystem. Following this investigation phase, the Governing Council will decide whether to move ahead with building a digital euro.

The provision of a central bank digital currency must be guided by the concern to safeguard financial stability and monetary policy transmission

Potential impacts of a CBDC on financial stability

In the case of a retail CBDC, the main impact in terms of financial stability would be linked to the uncontrolled conversion of a significant portion of bank deposits into CBDC. The conversion rate would depend on a number of variables, including the spread in rates of remuneration earned on bank deposits and CBDC assets, cost, security, ease of use and the presence of innovative functionalities.

If conversion were to reach significant levels, it could alter the funding model of commercial banks. For commercial banks, deposits are a source of stable and inexpensive funding compared with other possible financing alternatives. They play a key role in the transformation business of commercial banks and are central to meeting their regulatory requirements, particularly in terms of liquidity, notably the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). The loss of a portion of these deposits could therefore impact the profitability of commercial banks, their ability to comply with regulatory requirements and, ultimately, their capacity to finance the real economy.

Commercial banks could respond in a number of ways to the loss of a portion of customer deposits:

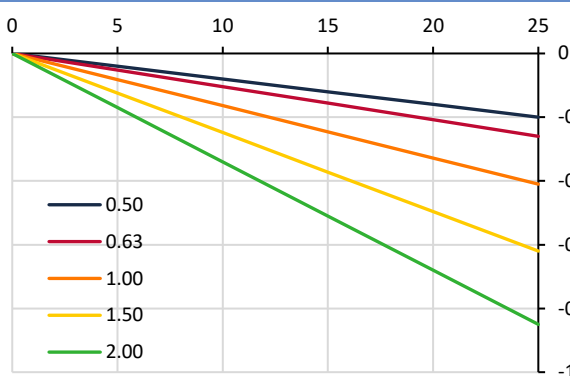
- A decrease in customer deposits, which are a liability item, could be offset through a **matching reduction in assets**, resulting in **deleveraging** by commercial banks. The impact on regulatory ratios and the financing provided to the economy would therefore depend on the asset items used to make the adjustment (excess reserves held with the central bank, outstanding loans to households and businesses).
- **Alternatively, commercial banks could offset the loss of deposits with a different source of funds, such as market financing or central bank refinancing.** However, the use of such alternatives would have consequences for commercial banks:
 - **While the substitution of long-term market financing for bank deposits** can be used to neutralise the negative impact of reduced deposits on liquidity ratios, it implies increased liability costs for commercial banks, since market financing is more costly than bank deposits. The size of the additional cost would depend partly on the market's capacity to absorb an increase in bond issuance by banks. Other things being equal, an increase in refinancing costs would erode banks' net interest margin and reduce their profitability. However, commercial banks could also offset the additional cost by increasing rates on funded assets to preserve their margin, which could lead to a decline in loan volume.
 - **Increased use of central bank refinancing could also be used to make up for the loss of a portion of deposits.** In this scenario, and assuming that current market conditions continue, the additional cost for commercial banks would be below that of market financing. However, this type of refinancing could be problematic because it would require institutions to post collateral that is eligible for central

bank refinancing, i.e. essentially high-quality liquid assets. But these assets are also used to build the buffers required to meet regulatory liquidity requirements. Accordingly there is limited availability of such collateral. Thus, posting these assets with the central bank would have a negative impact on bank liquidity ratios.

A recent study realized by the BIS with seven central banks,⁶⁹ including the ECB, found that introducing a CBDC would have a moderate impact on the banking sector under current market financing conditions. Taking as the starting point the average spread between the cost of market financing and the rates paid on bank deposits in G7 countries between 2017 and 2021 (0.63 pp) and making the conservative assumption of a deposit outflow ratio of 25%, the study finds that issuance of a CBDC would lead to a contained increase in lending rates (0.2 pp) and a small decrease in profitability (decrease in RoE of less than 0.3 pp).

Chart 3.8: Change in banking sector RoE resulting from outflow of deposits to CBDC

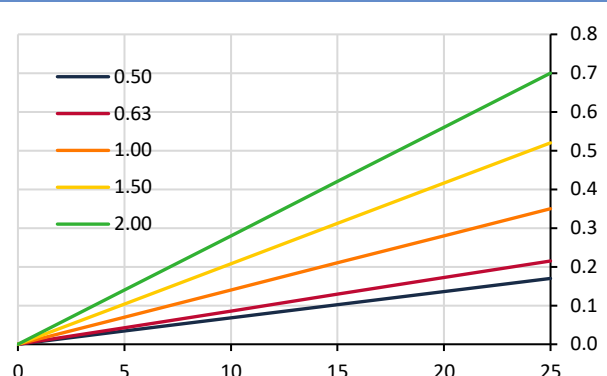
x: deposit outflow to assets (%) / y: % points



Source: BIS

Chart 3.9: Change in banking sector lending rate

x: deposit outflow to assets (%) / y: %



Source: BIS

The risk of deposit-to-CBDC conversion could increase during times of crisis. Demand for CBDC could go up during times of financial strain, just as it does currently for cash. Other things being equal, however, the conversion of bank deposits to CBDC could exceed that of conversion to cash, owing to lower transaction costs.

Potential impacts of a CBDC on monetary policy transmission

The transmission of monetary policy could also be impacted by the issuance of a retail CBDC. Like cash, a retail CBDC would be considered to be an autonomous factor for monetary policy,⁷⁰ whose demand is independent of the central bank's monetary policy. The substitution of a CBDC for a portion of bank deposits (see above) could lead to an increase in autonomous factors and greater volatility owing to the currency's digital nature, which might entail adjustments to the implementation of monetary policy. Furthermore, the introduction of a CBDC, whether retail or wholesale, that is non-interest bearing and that is not subject to holding limits could undermine the ability of central banks to conduct a monetary policy with negative interest rates, since market participants would prefer to hold the CBDC rather than assets earning negative rates of interest. Establishing appropriate remuneration (see below) for the CBDC could help to mitigate this effect.

Making a retail CBDC available could also entail a number of adjustments to monetary policy. To offset the effects of introducing a CBDC, the central bank might have to step up liquidity provision to financial intermediaries through refinancing operations and purchase programmes. Following a prior risk assessment, expanding collateral eligibility criteria might also be considered as a way to respond to the issue of the collateral availability linked to increased central bank refinancing.

⁶⁹ Bank for International Settlements, *Central bank digital currencies: financial stability implications*, September 2021 (working group led by F. Panetta)

⁷⁰ Autonomous factors are central bank balance sheet items that are independent of monetary policy but that affect banking system liquidity.

Central banks could develop tools to limit the impact of a CBDC on the financial system

To prevent the risks caused by introducing a CBDC, especially the risk of excessive conversion of bank deposits into CBDC, central banks have several tools. These can be divided into two categories: (i) usage and holding restrictions (ii) limits related to the “price” of the CBDC.

The first approach would involve imposing strict limits to restrict holdings or use of the CBDC. Holding caps would aim to restrict the total amount of CBDC that could be possessed by an individual or company, ensuring that the CBDC is used as a means of payment rather than a store of value. Usage limits would restrict the amount of CBDC that could be transferred by a user in a transaction or during a given period, such as a day or week. Such restrictions already apply to the use of cash, notably because of its anonymous nature.⁷¹ Central banks could set different limits depending on the nature of users (household, company), in order to accommodate their specific characteristics.

Measures affecting the “price” of the CBDC through remuneration could also be used to influence CBDC holdings. This remuneration could be determined by several countervailing requirements that would strike a balance between preventing excessive use of the CBDC as a store of value and preserving its attractiveness as a means of payment. Several different types of remuneration could be implemented:

- Tiered remuneration depending on how much CBDC is held,⁷² whereby CBDC assets would earn a certain rate of remuneration (r_1) below a set level (q_1), and a lower rate ($r_2 < r_1$) above that level.
- Alternatively, a combination of solutions based on quantitative limits and the application of fixed remuneration might also be considered.

Supplementing these tools, an intermediated model would help to preserve the central position of the banking sector in financial intermediation and reduce the risks to financial stability. In this model, financial institutions would be responsible for distributing the digital euro to end users. This kind of architecture would enable banks to keep control over customer relations and have information facilitating the management of credit risk and the assessment of asset quality.

⁷¹ In France for example, cash payments cannot exceed EUR 1,000 to a professional and EUR 1,500 between individuals who are tax residents, while anyone travelling with more than EUR 10,000 must declare this to customs.

⁷² See in particular U. Bindseil, *Tiered CBDC and the financial system*, in Working Paper Series No. 2351, January 2020 and U. Bindseil and F. Panetta, *Central bank digital currency remuneration in a world with low or negative nominal interest rates*, October 2020

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