



ASSessment
of
RISKS
to the
FRENCH FINANCIAL SYSTEM

December 2019

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Macroeconomic and financial environment

Since last spring, the global growth outlook has deteriorated; numerous uncertainty factors linger: trade tensions (although with the conclusion of the first round of US-China trade negotiations, additional tariffs have been excluded in the short term), Brexit (whose probability has been confirmed by the UK general election result on 12 December 2019) and political and social tensions in many countries. Nevertheless, French growth remains resilient.

At the same time, interest rates have fallen significantly across the board, leading to a marked flattening of bond yield curves and a significant increase in outstandings of securities with negative yields. This sharp decline in interest rates during the summer was only partially offset by the slight correction that followed. As a result, the valuation of financial and real assets increased, which may reflect insufficient risk remuneration in some market segments.

Risks to the French financial system

This context increases the risks to which French financial institutions are exposed, especially since these risks are largely interdependent.

In joint first place, the risks related to the debt of non-financial agents and those related to the impact of interest rates on intermediation activities are expected to increase in the coming quarters.




The debt of non-financial agents (non-financial corporations, households) is rising faster than economic growth, given that low interest rates encourage borrowing. The debt to GDP ratio of the total private non-financial sector has continued to rise – by more than 45 percentage points since the end of 2000 – reaching more than 133% of GDP in the first quarter of 2019. Possible shocks – such as an economic downturn or an increase in interest rates – could weaken the solvency of companies and households and the financial institutions that finance them. The high level of public debt reduces the fiscal leeway of the French general government sector to mitigate the impact of a severe economic slowdown. The *Haut Conseil de stabilité financière* (HCSF – High Council for Financial Stability) remains vigilant with regard to the characteristics of household and corporate debt and, after recommending that banks maintain a prudent lending policy, could envisage binding macroprudential measures if credit standards for housing loans continue to be eased.

The persistently low or even negative interest rate environment, justified in the light of the economic situation, has an impact on financial intermediaries. Lower interest rates and flatter yield curves are weighing on banks' net intermediation margin. In addition, gross lending margins have tightened in certain segments where competition is fierce. Insurance companies are doubly affected by the fall in interest rates: in addition to falling returns on their asset portfolios, they have to cope with a revaluation effect on their long-term liabilities fuelled by lower bond yields (in particular in life insurance). As low interest rates pose risks to the profitability of banks and insurance companies, the *Autorité de contrôle prudentiel et de résolution* (ACPR – Prudential Supervision and Resolution Authority) has stepped up its monitoring of individual cases. More specifically, with regard to the consequences for insurers, it requested that rates offered to policyholders be reduced and products marketed to subscribers be diversified.

The third most significant risks to the French financial system are those related to the financial markets. Further financial asset appreciation since last June does not appear excessive with regard to the falling interest rates. However, narrowing corporate spreads could result in a correction^[BL(11)]. Against this backdrop, French institutional investors' appetite for alternative and

less liquid asset classes is increasing, even though the structure of their portfolio holdings has not yet been significantly adjusted. This diversification, which is in principle welcome, must be monitored to avoid excessive risk taking.

Lastly, risks related to structural changes are ranked fourth. These changes reflect underlying trends of growing magnitude, which need to be identified more clearly: the development of non-bank intermediation, the digital revolution, the emergence of new risks (cyber-risks, financial risks related to climate change). Although these risks are gradually being identified and understood, the process is incomplete. The fact that they are still insufficiently acknowledged is a factor of fragility per se.

Summary of the main risks to the French financial system in December 2019		Level and outlook
<p>1. Risks linked to indebtedness</p> <p>French household and corporate debt to GDP levels continue to rise steadily. The upward trend in corporate debt may increase the risk of default and/or difficulties to roll over debt in the event of a macroeconomic shock. Growth in household lending (mainly housing loans) should also be carefully monitored given the gradual, but steady easing of credit standards.</p>	<p>1=. Interest rate risks for financial intermediation</p> <p>The fall in market interest rates since last June is weighing on banks' future profitability. The persistently low interest rate environment also increases life insurers' asset-liability management constraints, with a significant decline in their solvency ratios and an erosion of the return on their asset portfolios.</p>	
<p>3. Market risks</p> <p>Market valuations remain elevated, in particular for equities, driven by the persistently low interest rate environment and the perception of a more accommodative monetary policy stance. Investors are continuing to take risks, exerting downward pressure on risk remuneration, while investment flows to alternative asset classes are increasing. Thus, investors are exposed to the risk of a simultaneous price correction across several asset classes.</p>		
<p>4. Risks linked to structural changes</p> <p>The financial sector faces structural challenges that could lead to vulnerabilities in the medium term if they are not adequately addressed. Digitalisation puts fresh emphasis on the issues of cost-efficiency in the banking sector and increased competition across the financial sector, or even on its disruption (via payments, for example) and on cyber-security, which is becoming increasingly systemic. Major financial institutions have begun to incorporate climate risk management into their governance, but this process must be extended to the financial sector as a whole.</p>		
<p>🔴 Systemic risk 🟡 High risk 🟢 Moderate risk</p>		
<p><i>Note: 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.</i></p>		

In response to these mounting risks, the sector's authorities have already put several measures in place to strengthen the resilience of the French financial sector, which remains satisfactory.

Measures to mitigate risk and strengthen the resilience of the French financial sector

Despite risks generally being on the rise, the resilience of the French financial sector remains satisfactory.

The HCSF has introduced a set of measures to address the risks associated with household and corporate debt.

- In May 2018, an exposure limit to the most heavily indebted companies was imposed on banks, which was stricter than that required under standard regulations.¹ Systemically important French banks must now keep their exposure to a heavily indebted counterparty to below the equivalent of 5% of their own capital base. This decision was prepared in coordination with European authorities and institutions and is aimed at the risk associated with some of the more financially vulnerable non-financial corporations.
- In July 2018, the counter-cyclical capital buffer applicable to banks was first set at 0.25% of their risk-weighted assets.² This buffer is intended for use in the event of a downturn in the financial cycle in order to maintain a flow of credit to the economy and to reduce the cost and duration of the downturn. Later, as part of a progressive and preventive approach, the HCSF raised the buffer to 0.5% in April 2019.³ With the counter-cyclical buffer, it is possible to build up capital in good times that will absorb credit risk in bad times. As such, the resilience of the financial sector is improved.
- On 12 December 2019,⁴ an action plan was adopted to preserve sound practices that ensure the resilience of the French housing finance model and that safeguard home ownership. Within this framework, the HCSF recommends that banks, after taking into account the characteristics of the project and the borrowing household, comply with established best practices (maximum debt-service-to-income (DSTI) ratio of 33% and a credit period of no more than 25 years). The exceptions to these best practices have been defined. The HCSF also drew the attention of credit institutions to the importance of proper pricing of housing loans that guarantees appropriate coverage of the costs and risks.

In order to avoid the risks associated with the impact of low interest rates on their profitability, the HCSF called on insurance undertakings to adjust the rates they offer to policyholders to the current environment and to diversify the products they sell, while the ACPR has stepped up its monitoring of individual cases.

With regard to market risks, the authorities acknowledge the relative prudence of French institutional investors and are continuing their efforts to support the development of new asset classes. They are particularly concerned in this respect with ensuring that investors have the level of competence needed for a good understanding (or good control, where necessary) of the risks to which they are exposed (or that they have to manage) when approaching these market segments.

Faced with the digitalisation of the financial sector, regulation and supervision must be proportionate to the risks so as not to stifle the emergence of new technologies and players. This requires that the opportunities offered by Fintechs be exploited while safeguarding financial

¹ Decision No. D-HCSF-2018-2 of 11 May 2018 on the major risks of systemically important institutions.

² Decision No. D-HCSF-2018-3 of 29 June 2018 on the counter-cyclical capital buffer rate.

³ Decision No. D-HCSF-2019-2 of 2 April 2019 on the counter-cyclical capital buffer rate.

⁴ HCSF press release dated 12 December 2019:

https://www.economie.gouv.fr/files/files/directions_services/hcsf/HCSF20191212_Communique_de_presse.pdf

stability and a level playing field. The Fintech Innovation hub created in 2016 aims to promote active and open dialogue with market players and helps to strengthen the ACPR's capacity in this respect.

In response to the growing systemicity of cyber-risk, regulators and supervisors have recently undertaken a number of initiatives that have led to:

- an agreement for closer cooperation in France between the *Agence nationale de la sécurité des systèmes d'information* (ANSSI – the French national cybersecurity agency) and the ACPR (January 2018);
- the completion of an IT risk supervision strategy (October 2019), particularly with respect to the organisation and management of IT risks in financial institutions;
- on-site inspections;
- relevant information sharing between authorities;
- preparations for operational crisis management, including carrying out cyber resilience exercises.

However, effectively combating cyber-risk also requires better cooperation between players at the international level (see Box 1).

Box 1: An international cyber-attack simulation coordinated by the Banque de France

A first exercise to simulate the impact of a cyber crisis on the financial system of the G7 countries was carried out in 2019. Its objective was to evaluate the inter-financial authority communications protocol through the simulation of a major financial system disruption caused by a serious cyber incident. This Banque de France-led exercise was carried out over a three-day period in June and involved 24 financial authorities (finance ministries, central banks, bank and market supervisors) from seven countries. It has led to the development of a close international cooperation, which could also serve the purposes of other non-G7 jurisdictions.

Lastly, with regard to the financial system's efforts to adapt to climate change, the Banque de France and the ACPR are fully committed to international cooperation with their peers (see Box 2) and to a dialogue with the players involved. More generally, they have also implemented measures to support and accelerate the transformations required and to strengthen risk management. This is precisely the main objective of the climate stress tests that will be carried out by French banks and insurers from 2020 onwards.

Furthermore, a mechanism for monitoring and assessing the climate-related commitments taken by Paris financial centre institutions has been implemented. The ACPR's "Climate and Sustainable Finance" committee, which was set up on 3 October 2019 and includes representatives from the financial and non-profit sectors and academia, will analyse compliance with the commitments announced by French banks and insurers. The ACPR and the *Autorité des marchés financiers* (AMF – the French Financial Markets Authority), which has put a similar structure in place, will publish a joint annual report setting out their analyses.

Box 2: A solid commitment from international institutions to the NGFS network

At the Paris One Planet Summit in December 2017, eight central banks and supervisors created a Network for Greening the Financial System (NGFS). The NGFS was established at the initiative of the Banque de France, which provides its permanent secretariat.



The NGFS currently has nearly 55 members and a dozen observers (including the Bank for International Settlements, the Basel Committee and the International Monetary Fund) from all five continents. The NGFS strives to strengthen the global response needed to meet the objectives of the Paris Agreement and to enhance the financial system's role in managing risks and raising capital for green and low-carbon investments, against a broader backdrop of environmentally friendly development. The NGFS published a Sustainable and Responsible Investment Guide for central banks and supervisors in October and, in the first half of 2020, it will publish voluntary guidelines on scenario-based risk analysis and a handbook on climate and environmental risk management. More generally, the NGFS is also pushing for greater efforts in terms of transparency on the climate impact of assets and the development of reliable taxonomies.

1. The macroeconomic and financial environment

Although the French economy is proving fairly resilient, the outlook for global growth has been revised downwards again since the spring. The risks to growth also remain skewed to the downside and levels of uncertainty are still very high. Given this less favourable environment and the continuing subdued level of inflation, interest rates are likely to stay low for the long term.

All else being equal, the maintenance of very low interest rates is inflating the price of financial assets (shares, bonds) and creating a financial environment that is generally low in volatility but subject to sudden corrections. Financial intermediaries are having to adapt to the prospect of persistently low interest rates, especially in Europe. This is fuelling the trend of risk-taking, as all investor categories engage in a search for yield.

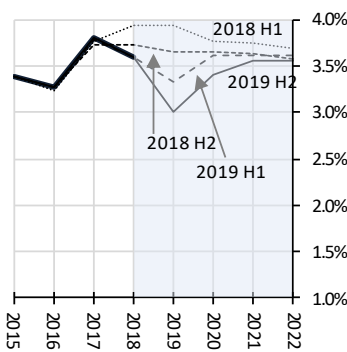
GROWTH OUTLOOK

French growth is proving fairly resilient despite a marked slowdown in global growth since end-2018

Global growth is in the midst of a significant slowdown and the outlook for the short and medium term has been revised down (see Chart A1). After 3.6% growth in 2018, the International Monetary Fund (IMF) now expects the global economy to expand by 3.0% in 2019, the lowest rate since the 2007-08 financial crisis, and then by 3.4% in 2020.

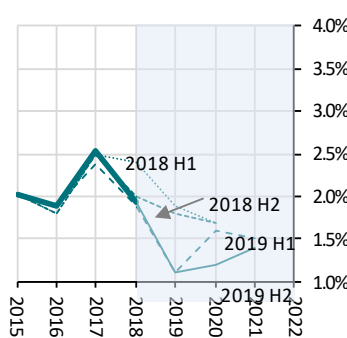
In the euro area (see Chart A2), growth should fall to 1.2% in 2019 from 1.9% in 2018, before picking up again to 1.4% in 2020.

A1
GDP and forecasts: World
x: year; y: percentage



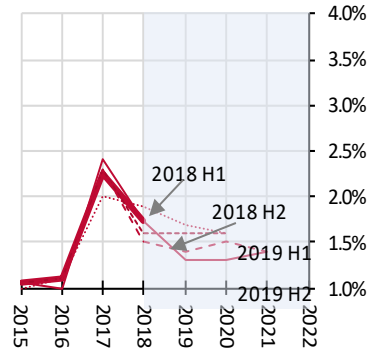
Source: International Monetary Fund (World Economic Outlook).

A2
GDP and forecasts: euro area
x: year; y: percentage



Source: International Monetary Fund (World Economic Outlook).

A3
GDP and forecasts: France
x: year; y: percentage



Source: International Monetary Fund (World Economic Outlook).

The French economy is also slowing but is holding up fairly well compared to its main trading partners (see Chart A3). After reaching 1.7% in 2018, French growth should settle into a rate close to potential over the coming quarters.

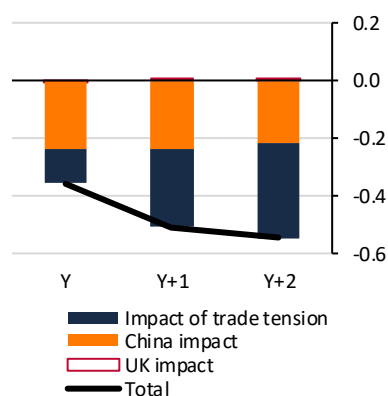
Growth remains subject to persistent downside risks in a context of high uncertainty

According to the IMF, the protectionist measures implemented and announced up to August 2019 will shave 0.2% off world GDP in 2020. In addition, any decline in investment caused by uncertainties over the resolution of the current US-China tensions, disruption of global value chains and slowdown in productivity gains could more than double the impact of these trade tensions in 2021-22 (see Chart A4 and Appendix 1).

A4

Contribution of risks (shocks) to the total impact on world GDP

x: year; y: percentage

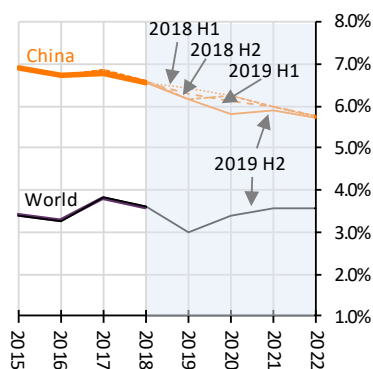


Source: Banque de France, NiGEM model.

A5

GDP and forecasts: China vs World

x: year; y: percentage



Source: International Monetary Fund (World Economic Outlook).

The slowdown in Chinese growth could be stronger than expected owing to structural factors (deteriorating demographics, decline in competitiveness relative to other emerging economies, industrial overcapacity and strict application of environmental regulations) combined with slower growth in indebtedness (see Chart A5).

Alternatively, it could lead to an easing of financial conditions, potentially increasing the fragility of the Chinese financial sector. Although the French financial sector does not carry any significant direct exposure to the Chinese sector, an economic or financial crisis in China would nonetheless have severe adverse consequences for the global environment.

The political and social tensions emerging in certain countries are also weighing on the outlook for growth. Although the risk of disruptions in the financial system following the United Kingdom's exit from the European Union would in principle be contained due to stakeholders' contingency plans, the macroeconomic impact of Brexit is more difficult to assess and could in fact be worse than expected. For example, a withdrawal from the European customs union (which could happen after a transition period) would generate a major shock to the UK economy as the EU accounts for some 50% of UK trade (the shock would be smaller for the EU as only 7% of its exports are to the British Isles). In the short term, a "hard" Brexit (where the United Kingdom simply becomes a member of the World Trade Organization, with no specific trade agreement in place with its former EU partners) could reduce economic activity by 3-9% in the United Kingdom and by 0.4-0.8% in the euro area.⁵

IMPACT OF THE DECLINE IN INTEREST RATES ON FINANCIAL MARKETS

The economic slowdown is leading to the continuation of accommodative monetary policies and a persistently low interest rate environment

The deterioration in the macroeconomic outlook and in the balance of macroeconomic risks in the first half of 2019 has prompted a shift in monetary policy towards even greater accommodation. The main central banks have embarked on another cycle of interest rate cuts (see Chart A6) and in some cases have also stepped up their non-standard measures.

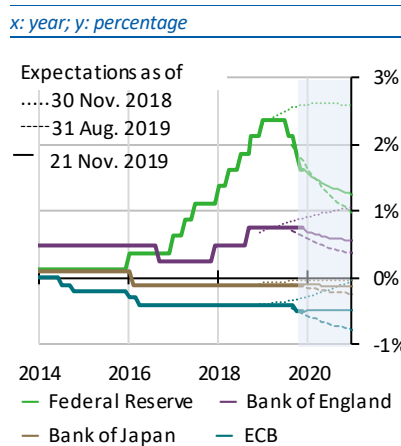
In September this year, the European Central Bank's (ECB) Governing Council loosened its monetary policy and decided to implement a series of measures, including:

⁵ Berthou A., Estrada A., Haincourt S., Kadow A., Roth M., and de la Serve M.E. (2019), "Assessing the macroeconomic impact of Brexit through trade and migration channels", *Occasional Papers* 1911, Banco de España.

- a cut in the deposit facility rate from -0.4% to -0.5%, with the Governing Council also stating that key rates will remain at present or lower levels until the inflation outlook converges towards a level close to 2%;
- the resumption of net purchases under the ECB’s asset purchase programme at a monthly pace of EUR 20 billion and for as long as necessary;
- the introduction of a two-tier system for reserve remuneration, in which part of banks’ holdings of excess liquidity will be exempt from the negative deposit facility rate.

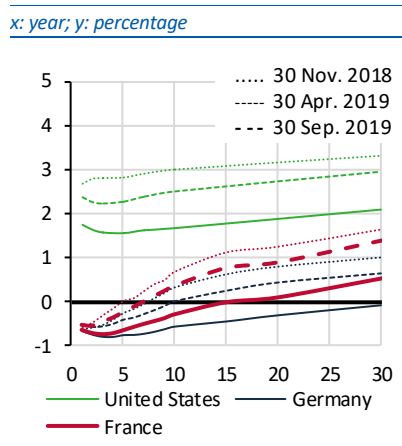
In the United States, the US Federal Reserve (Fed) also cut rates again in September, before announcing more recently that it would keep them on hold, in line with the Eurosystem.

A6 Expectations for monetary policy key rates



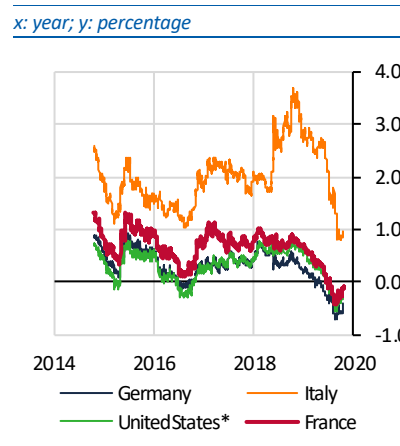
Source: Bloomberg.

A7 Sovereign yield curve



Source: Bloomberg.

A8 Ten-year sovereign yields



Source: Bloomberg.

Note: The curve for the United States corresponds to an interest rate that incorporates an exchange rate hedge.

These measures from the main central banks were only gradually factored into market expectations (see Chart A6). Forward monetary interest rates began to decline at the start of 2019 as markets progressively reappraised the direction of the main central banks’ monetary policies. In Europe, market participants are now expecting interest rates to remain low for a long time given the current sluggishness of inflation and the fall in inflation expectations since the spring.

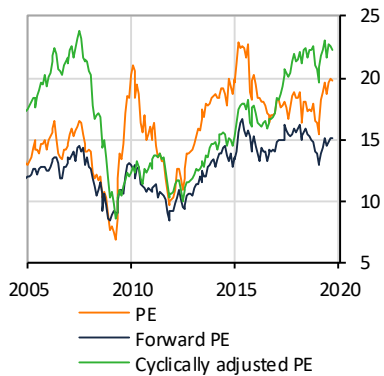
The slowdown in growth has also pushed long-term interest rates downwards (see Charts A7 and A8). Indeed, the decline in sovereign yields that began at the end of 2018 intensified over 2019, due to lower inflation expectations and to a massive shift by investors from equities to long-term sovereign bonds, reflecting a preference for assets that are low risk (flight to quality/flight to safety) and sufficiently long term to offer positive returns.

Valuations are high but overall consistent with interest rate levels

Based on the level of price-to-earnings ratios, which are well above their long-term averages, the equity markets could currently be deemed to be overvalued (see Chart A9). However, the risk premiums on equities are not abnormally low relative to historical averages, and the price rises are consistent with the fall in interest rates observed over the past months. A standard valuation approach would suggest that, if profit and dividend expectations remain unchanged, equity prices will rise when discount rates fall, as shown by the contribution of risk-free rates to the rise in the CAC 40 index (see Chart A10). In the United States, the main contributor to the rise in the S&P

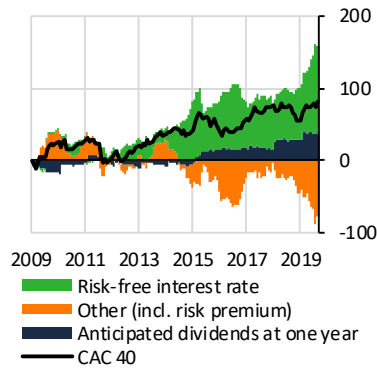
500 index is still dividend expectations, although the decline in interest rates has also played a role over the recent period (see Chart A11).

A9
Price-to-earnings (PE) ratios in France, calculated using 3 methods
x: year; y: index



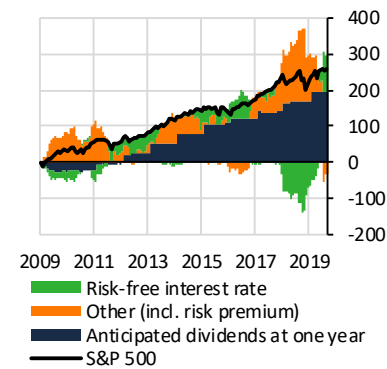
Sources: Datastream (MSCI index), Banque de France calculations.

A10
Contribution to growth in the CAC 40 index since 2009
x: year; y: percentage



Sources: Datastream, Banque de France calculations.

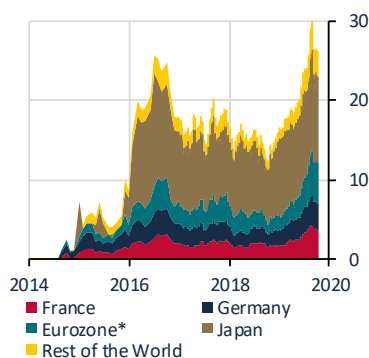
A11
Contribution to growth in the S&P 500 index since 2009
x: year; y: percentage



Sources: Datastream, S&P Global, US Fed, Banque de France calculations.

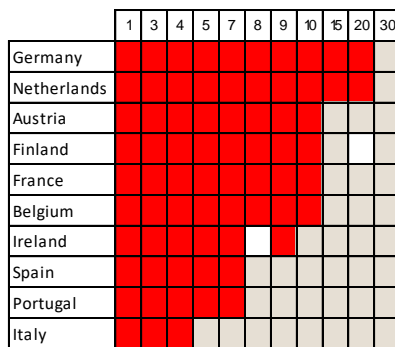
In line with sovereign bonds, the entire bond market has seen a decline in returns: the outstanding amount of negative-yielding debt hit a record high in August (see Charts A12 and A13). It largely comprises investment grade corporate bonds (rated AAA to BBB-), but with a few non-financial corporation (NFC) bonds rated speculative grade or high yield (HY – rated BB+ or below) (see Chart A14).

A12
Percentage of negative-yielding investment grade debt (entire world)
x: year; y: percentage of total investment grade debt



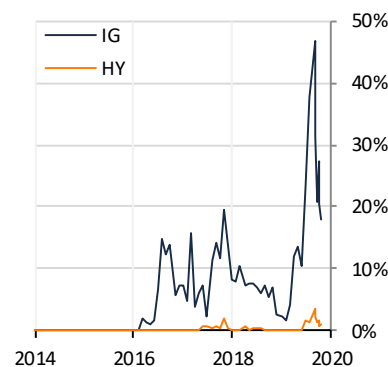
Sources: Bloomberg, Barclays, Banque de France calculations.
(* Euro area excluding France and Germany.)

A13
Negative sovereign yields in the euro area, by maturity
x: maturity buckets; y: country



Sources: Bloomberg, Banque de France calculations.
Note: Negative yields in red.

A14
Outstanding negative-yielding corporate debt (euro area)
x: year; y: percentage of outstandings

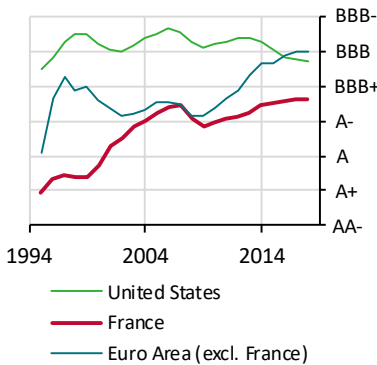


Source: Bank of America.
Note: IG – investment grade, HY – high yield.

As well as being triggered by the fall in risk-free rates, this development has also resulted from a narrowing of bond risk premiums since the start of 2019. The trend has been particularly marked for high yield corporate bonds, leading to risk premiums that are relatively low compared with the past ten years. There has also been a shortening of maturities on high yield notes. This situation has prompted new issuers to enter the market, generally with lower credit ratings. The

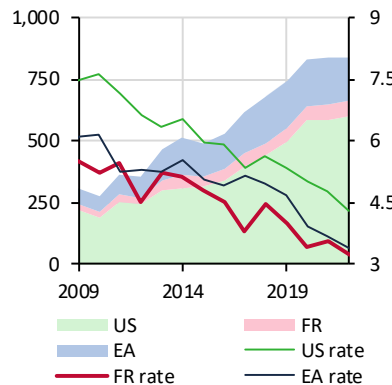
expansion of the population of issuers, coupled with a deterioration in the ratings of some of those already present in the market, has pushed down the average credit rating of the stock of bond debt in France and the rest of the euro area. Despite this, it is still higher than the average rating in the US debt market (see Chart A15).

A15
Average rating of bond debt
x: year; y: synthetic index



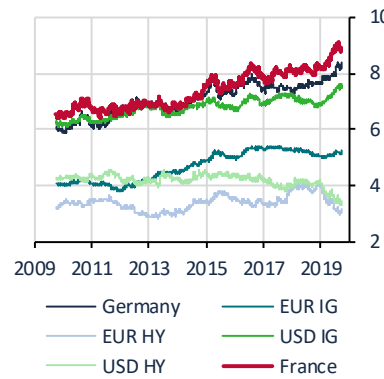
Sources: Dealogic, Banque de France calculations of a financial rating index for non-financial corporation bonds.

A16
Maturity profile of corporate bonds
x: year; y: lhs – USD billions, rhs – percentage



Sources: Dealogic, Banque de France calculations.
Note: US for United States, FR for France and EA for euro area excluding France.
Key: Amount of bond debt reaching maturity each year (left-hand scale, USD billions) and corresponding average coupon rate (right-hand scale, percentage).

A17
Target duration of bond funds
x: year; y: number of years



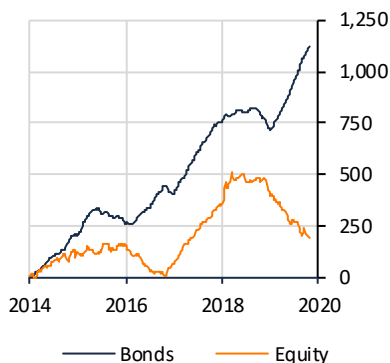
Source: Bank of America Merrill Lynch indices.
Note: EUR – euro, USD – US dollar, IG – investment grade, HY – high yield.

In this context, any further deterioration in the economic environment or rise in interest rates would increase the fragility of those issuers who are already highly vulnerable. They could face difficulties refinancing their debt and/or struggle to afford their increased financing costs. This risk is heightened by the fact that some USD 2,500 billion of bond debt is due to mature over the next three financial years in Europe and the United States (see Chart A16).

Investment flows show a certain amount of selectiveness

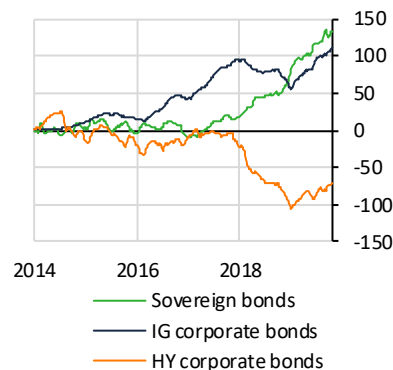
Concerns over the global growth outlook along with profit-taking in equity markets have led to a major reallocation of assets that started at the beginning of the year, with investors shifting out of equities and into bonds (see Chart A18).

A18
Investment flows: equities versus bonds
x: year; y: USD billions



Source: EPFR Global.

A19
Investment flows into bonds by bond type
x: year; y: USD billions



Source: EPFR Global.

In addition, within the bond class (see Chart A19), although appetite for high yield NFC bonds increased again in 2019, leading to a tightening of spreads, asset managers have begun to shorten their investment horizon (see Chart A17) in speculative bonds (high yield securities) and lengthen their horizon in higher quality ones (sovereign or investment grade NFC bonds) with the aim of optimising their risk/return. They have also shifted the geographical allocation of their portfolios, moving out of emerging markets and into Europe and the United States.

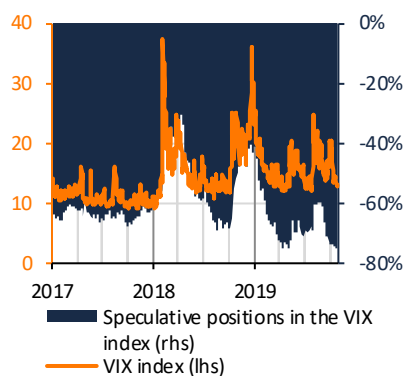
Reduced volatility and potentially uncertain liquidity

The current market environment is characterised by persistently low volatility in financial asset prices, but with periodical spikes such as those observed in February and December 2018. As these spikes have proved short-lived, however, it would be an exaggeration to talk of a return to volatility.

A20

Low implied volatility and rise in speculative positions in the VIX index

x: year; y: lhs – percentage of implied volatility, rhs – short positions as a percentage of total positions



Source: Bloomberg.

Note: The index represented in the shaded area shows the extent to which short positions outweigh long positions due to positions in VIX index futures.

This alternation between periods of compressed volatility and episodes of correction can also be observed in implied volatility indices.

However, this measure of volatility is being affected by the rise of inverse volatility strategies, whereby investors bet that volatility will decline. These strategies lead to an increase in long positions in volatility index futures. They thus amplify any falls in volatility (see Chart A20 for the positive correlation between the rise in the volume of sales of futures contracts and the fall in the VIX index), but also exacerbate any abrupt rises in the index, since, in the event of a sudden increase in volatility, downward positions in futures contracts become loss-making, thus prompting investors to unwind.

The continuing low level of volatility also masks a decline in liquidity. Admittedly, when prices are particularly stable there is a reduced need for market liquidity. However, certain indicators suggest that liquidity has declined recently to levels close to those observed in past periods of stress (see Chart A21).

Although this trend in liquidity is relatively benign in an unstressed market, it could amplify volatility in the event of a marked correction in asset prices.

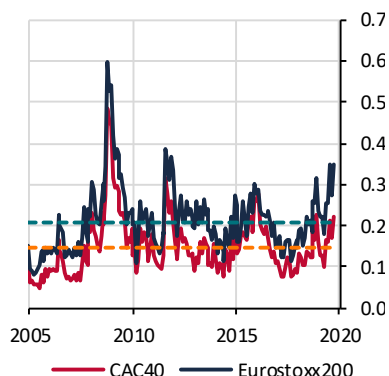
Low volatility also encourages increased risk-taking on the part of investors. For example, the decline in volatility in most foreign exchange markets in 2019 (see Chart A22) has led to a rise in carry-trade strategies accompanied by partial exchange rate risk hedges. These strategies consist in borrowing in a low-yield currency (such as the yen or the euro) in order to invest in a high yield currency (such as the dollar). In the event of a severe deterioration in the global macroeconomic outlook or a financial shock, exchange rates could become significantly more volatile, generating major losses for investors holding carry-trades.

At the same time, the risk of contagion of shocks across financial assets has tended to increase over the recent period (see Chart A23). However, the indicator is still far from the levels observed during the 2008 financial crisis.

A21

Composite indicator of stock market liquidity

x: year; y: synthetic indicator



Sources: Bloomberg, Banque de France calculations.

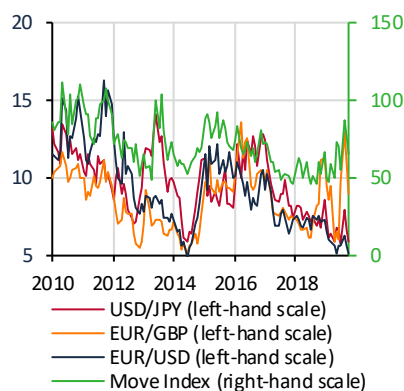
Note: The indicator aggregates information extracted from several measures of the three dimensions of liquidity: tightness, depth and resilience. It is standardised to present a value between 0 and 1. See Fong, K. Y., Holden, C. W., and Trzcinka, C. A. (2017), "What are the best liquidity proxies for global research?", *Review of Finance*, 21(4), pp. 1355-1401.

Key: The higher the index, the less liquid the market.

A22

Implied volatility (3 months ahead) on foreign exchange and bond markets

x: year; y: percentage



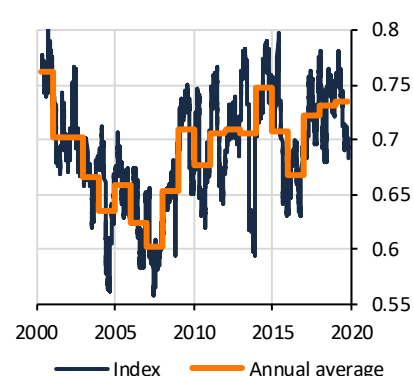
Sources: Bloomberg (foreign exchange volatility), Move Bank of America Merrill Lynch index.

Note: Implied volatility measures the market's expectation of future volatility. The implied volatility of foreign exchange rates is calculated using a Black & Scholes model. The Move index measures the implied volatility of US sovereign bonds.

A23

Indicator of the risk of contagion between financial assets

x: year; y: index



Sources: Bloomberg, Datastream, Banque de France calculations. See Kok et al. (2016), "Multi-layered interbank model for assessing systemic risk", ECB working paper No. 1944.

Key: The lower the index, the higher the risk of contagion.

Box 3: Tensions in the US money market

On 16 and 17 September 2019, there was an unprecedented rise in tensions on the US money market, with the cost of borrowing cash overnight in the repo market in exchange for miscellaneous collateral spiking to 10%, and the Secured Overnight Financing Rate (SOFR) rising to over 5% on 17 September (see Chart A24). The effective Fed funds rate exceeded the upper end of the target range (2.30% versus a ceiling rate of 2.25%) for the first time since the introduction of the corridor in 2008.

Market participants attributed the tensions to a number of cyclical factors, notably the significant flow of US corporate tax payments on 16 September (Tax Day), the financing by primary dealers of a particularly large stock of recently issued US Treasuries in the repo market, and the transactions typically seen towards the end of each quarter to lighten bank balance sheets. The chaos was also blamed on the fact that excess reserves in the US banking system have fallen to relatively low levels (they currently stand at less than USD 1,400 billion compared with over USD 2,700 billion in September 2014), and are insufficient to prevent stresses in the money market. The decline in reserves stems from the Fed's gradual reduction of its balance sheet assets since October 2017 (see Chart A25) and the steady rise in its liabilities (currency in circulation, the US Treasury's account with the Fed and the overnight reverse repo facility offered by the Fed to foreign central banks and institutions). At the same time, however, banks' reserve requirements are increasing due to the tightening of prudential regulations.

In response to the turmoil, on 17 September the Fed set up a number of temporary overnight repo facilities that will remain in place until January 2020. Since 15 October, it has also been purchasing Treasury bills at a monthly rate of USD 60 billion, and will continue to do so until at least the second

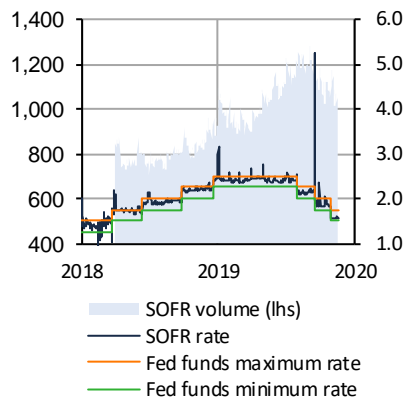
quarter of 2020. The total daily injection of cash is currently fluctuating at between USD 300 billion and USD 350 billion. So far, these measures have helped to avoid a resurgence of tensions. However, some market participants think more will need to be done at the end of the year, especially as reserves are currently highly concentrated within a limited number of large institutions.

The turmoil has not spread to the euro area, and a similar situation would be unlikely to arise in the single currency bloc for a number of reasons: the amount of excess reserves in the euro area banking system has been fairly stable since 2018 at between EUR 1,700 billion and EUR 1,800 billion, and should be boosted by the Eurosystem’s resumption of net asset purchases as of 1 November; and the Eurosystem’s operational framework already includes regular refinancing operations conducted through tenders and a permanent overnight liquidity facility. In addition, the cyclical factors that impacted the US money market are less likely to occur in the euro area: the risk of widespread tensions is limited due to differences in the timing of movements in Member States’ Treasury accounts and the diversity of sovereign collateral.

A24

Volume and rates of USD repos

x: year; y: lhs – USD billions, rhs – percentage

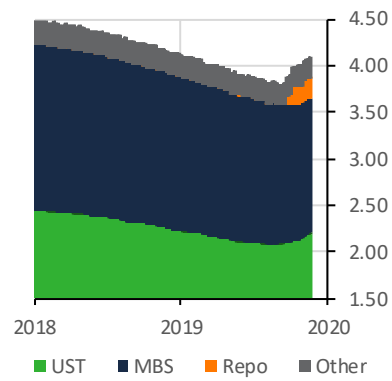


Source: Bloomberg.

A25

Reduction in the size of the Fed’s balance sheet

x: year; y: USD trillions



Source: Bloomberg.

Note: UST = US Treasuries, MBS = mortgage-backed securities, repo = repurchase agreement

2. Risk 1: Risks linked to indebtedness

The debt dynamic of non-financial agents (companies, households, general government) is driven by the current low interest rate environment. However, despite the debt service ratio remaining contained, the rise in debt can also lead to greater borrower vulnerability, while the high and escalating level of indebtedness raises concerns over its sustainability.

A CONTINUED STEADY RISE IN FRENCH HOUSEHOLD AND CORPORATE DEBT LEVELS

At EUR 3,197 billion at the end of the second quarter of 2019, France's private sector debt was equivalent to 133.9% of GDP (see Chart B1). This represents an increase of 15 percentage points of GDP over the past five years, whereas private sector debt stagnated in Germany, the United Kingdom and the United States, and even declined in Italy and Spain (by 11 percentage points and 36 percentage points, respectively). Consequently, France's private sector debt has increased to 14.2 percentage points above the euro area average due to the rise in both corporate and household debt in a generally persistently low interest rate environment.

An increase in corporate debt and the debt service ratio

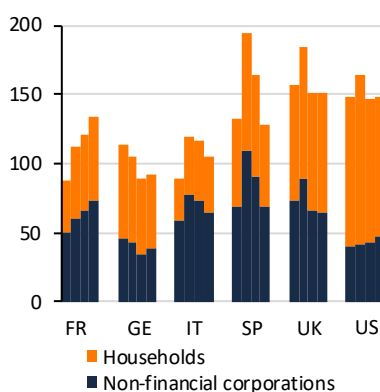
The total debt of non-financial corporations (NFCs) amounted to EUR 1,755 billion at the end of the second quarter of 2019, representing 73.5% of GDP. This debt increase was observed in all categories of firms (see Chart B2) and in bank lending as well as bond issuance.

Over the recent period, the increase in total NFC debt has reflected an accumulation of cash and cash equivalents and an expansion of investments abroad, accompanied by a rise in the ratio of non-financial assets relative to GDP (see Chart B3 and Appendix 2). Given the further decrease in the financing rate, bringing it down to an average of 1.03% in September 2019,⁶ corporate debt is expected to continue to rise.

B1

Household and non-financial corporation debt in 2004, 2009, 2014 and 2019

x: year and country; y: percentage of GDP



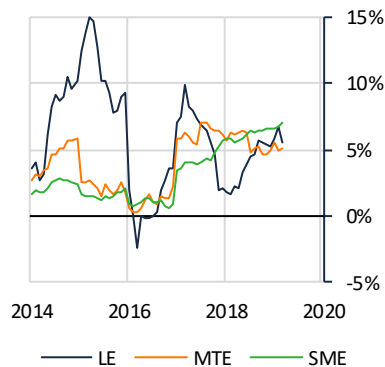
Source: Banque de France.

Note: The four bars correspond to 2004, 2009, 2014 and 2019 for each selected country: FR – France; GE – Germany; IT – Italy; SP – Spain; UK – United Kingdom; US – United States.

B2

Annual change in non-financial corporation (NFC) debt

x: year; y: year-on-year percentage change



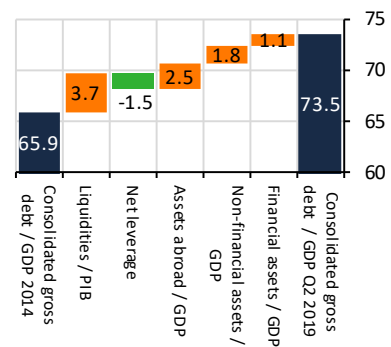
Source: Banque de France.

Note: LE – large enterprises; MTE – mid-tier enterprises; SME – small and medium-sized enterprises.

B3

Breakdown of the change in the NFC debt to GDP ratio between 2014 and Q2 2019

x: breakdown by factor;
y: percentage of GDP



Source: Quarterly financial accounts, Banque de France calculations.

At the same time, the spread between the market yields of the best rated (investment grade) bond issues and high yield (i.e. most risky) bond issues is narrowing, which could be a reflection of declining investor vigilance with regard to NFC credit risk⁷ (see Chart B4). Nevertheless, the

⁶ <https://www.banque-france.fr/statistiques/credit/endettement-et-titres/financement-des-snf>

⁷ Coupons on NFC fixed-rate bond issuance between 2014 and October 2019, excluding perpetual bonds.

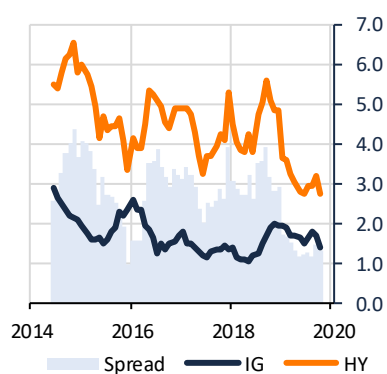
narrowing of the spread is consistent with the ECB survey on credit standards, which shows that the standards applied to French firms have been eased somewhat in recent years.⁸ However, in the last quarter, standards tightened in most European countries, particularly Italy and France.

Despite the reduction in rates, the debt burden (interest and capital repayments) of NFCs as a ratio of earnings has been on the rise again since the start of 2016,⁹ largely due to a slowdown in income (decline in productivity).

B4

Bond yields of French firms

x: year; y: percentage



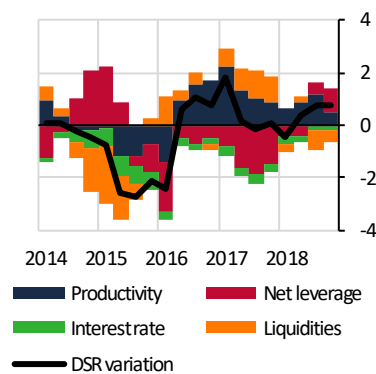
Source: Dealogic.

Note: IG – investment grade; HY – high yield.

B5

Annual changes in the debt burden of French firms

x: year; y: percentage



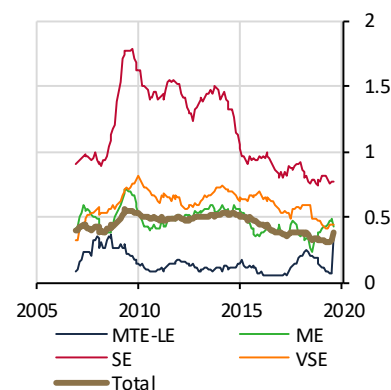
Source: Banque de France.

Note: DSR – debt service ratio.

B6

Economic weight of failing businesses as a percentage of total outstanding loans

x: year; y: percentage



Source: Banque de France.

Note: MTE-LE – mid-tier enterprises and large enterprises; ME – medium-sized enterprises; SE – small enterprises; VSE – very small enterprises.

For the moment, the rise in the debt service burden observed in recent years has not led to greater company delinquency, which has trended downwards for the past five years, both in terms of number of defaults and share of defaults in total outstanding loans (with the exception of a peak in August 2019 for MTE-LEs¹⁰ due to a major company going into receivership – see Chart B6). This drop in the delinquency rate is reflected in an improvement in the non-performing loan ratio of banks' balance sheets, which dropped 54 basis points year-on-year to 4.1%, compared with an average of 5.5% for the banks of the main European countries.¹¹

A stable population of subprime borrowers

Despite this macroeconomic stability (stable aggregate net leverage ratio (LR), a slight increase in the debt service burden since 2016 and fewer delinquencies), individually the situations present very different pictures.

The increase in total outstanding debt is mainly due to an increase in the outstanding debt of firms whose interest payments are proportionally low compared with their earnings (category of firms with an interest coverage ratio¹² – ICR – of more than four in Chart B8). Among large enterprises (LE) and mid-tier enterprises (MTE), the outstanding debt of firms whose interest

⁸ https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/ecb.blssurvey2019q2~8ef4f872f0.en.html

⁹ H. Charasson-Jasson (2019), "Le recours croissant des grands groupes français à l'endettement : une stratégie de financement qui montre ses limites", Bulletin Banque de France 226/4, November, <https://publications.banque-france.fr/le-recours-croissant-des-grands-groupes-francais-lendettement-une-strategie-de-financement-qui>

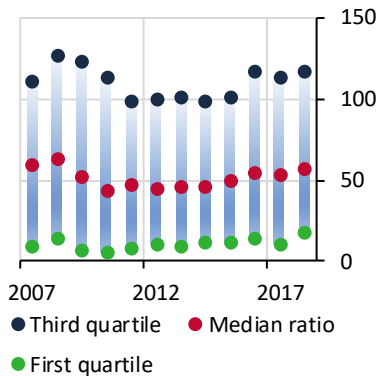
¹⁰ <https://www.banque-france.fr/statistiques/chiffres-cles-france-et-etranger/defaillances-dentreprises>

¹¹ Sources: FINREP, based on quarterly European Banking Authority (EBA) indicators.

¹² The interest coverage ratio (ICR) is calculated by dividing a firm's earnings before interest and taxes (EBIT) by its interest expenses.

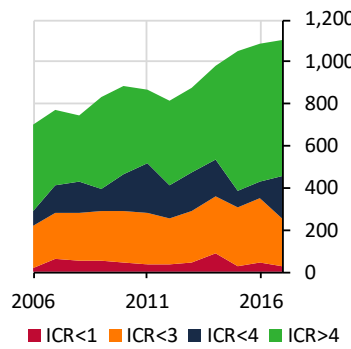
payments exceed their operating income (ICR of less than one) remains low at EUR 25 billion. Firms that allocate over a third of their earnings to interest payments (ICR of less than three) account for EUR 258 billion of outstanding debt.

B7
Distribution of the net leverage ratios of major French groups
x: year; y: percentage



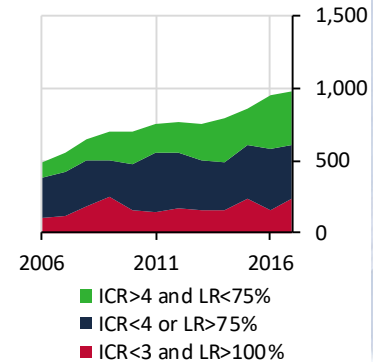
Source: FIBEN database – consolidated groups 2018.

B8
Gross debt of MTEs and LEs by level of ICR
x: year; y: EUR billions



Source: FIBEN database – groups. Note: ICR – interest coverage ratio.

B9
MTE and LE subprime debt (according to the HCSF definition – ICR<3 and LR>100%)
x: year; y: EUR billions



Source: FIBEN database – groups. Note: ICR – interest coverage ratio; LR – leverage ratio.

The proportion of outstanding subprime debt of NFCs (according to the definition adopted by the HCSF in 2018)¹³ in the total outstanding debt of large enterprises and MTEs remained stable at 15% in 2018.¹⁴

This apparent stability is mainly due to the decline in the proportion of large enterprises with an ICR of less than three despite the deterioration in net leverage ratios (see Chart B9). Thus, the consolidated debt net of cash and cash equivalents of these highly indebted firms amounted to EUR 147 billion.¹⁵

Lastly, leverage finance¹⁶ remains a focus of attention,¹⁷ due to the steady increase in outstandings, and the third-quarter spike in the default rate.¹⁸

Vigilance is therefore called for as the most indebted companies are particularly vulnerable to a rapid deterioration in the macroeconomic environment and/or a sharp rise in financing costs:

¹³ A company is judged to be highly indebted if simultaneously (i) its interest coverage ratio is less than three and (ii) its liquidity ratio (net-debt-to-equity) is over 100%. See the HCSF's explanatory note on the high-risk (*grand risques*) measure implemented in May 2016 for which these criteria were developed: https://www.economie.gouv.fr/files/files/directions_services/hcsf/HCSF_180511_-_Notice_Mesure_Grands_Risques.pdf

¹⁴ In its December 2017 *Conjoncture in France* report, INSEE shows that among companies for which debt increased, the rate of net indebtedness of the most indebted 10% of companies increased sharply in 2015. See Khder, M.-B. and Rousset, C, "Is the increase in French firms' indebtedness a cause for concern?": <https://www.insee.fr/fr/statistiques/3292331?sommaire=3292415>

¹⁵ The sample includes 240 large enterprises, 37 of which are highly indebted (15%).

¹⁶ Leverage finance covers three activities: (i) extending loans to indebted firms (leveraged loans); (ii) issuing and holding high yield bonds; (iii) structuring and holding collateralised loan obligations (securitisations backed by a pool of leveraged loans). Firms that meet one of the two following conditions fall within the scope of leverage finance: (i) firms with a total debt/EBITDA ratio greater than 4 and (ii) firms acquired by a venture capital company through an LBO; excluding loans to SMEs (unless condition (ii) is met), specialised loans and loans to investment grade borrowers. These debt thresholds differ from those used by the HCSF and correspond to the definition set down by the ECB in its "Guidance on leveraged transactions" of May 2017: https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.leveraged_transactions_guidance_201705.en.pdf.

¹⁷ The previous *Assessment of risks to the French financial system* report dated June 2019: <https://publications.banque-france.fr/en/liste-chronologique/assessment-risks-french-financial-system>

¹⁸ Moody's *Default Trends – Global: September 2019*.

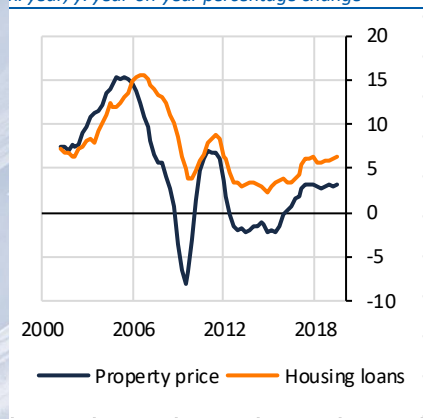
38% of French NFC debt is at a floating rate or treated as such.¹⁹ This proportion has followed an upward trend since the end of 2018 (the share of floating rate loans in new lending is up from 34% at the start of 2017 to 45% in the third quarter of 2019). However, some firms, particularly the largest, may have used derivatives to cover this interest rate risk.

A household debt dynamic driven by the real estate market...

B10

Property price and housing loan growth rates

x: year; y: year-on-year percentage change



Source: Banque de France.

Household debt²⁰ in France stood at EUR 1,441 billion in the second quarter of 2019. This is the equivalent of 60.4% of GDP and is slightly higher than the euro area average of 57.8%. This new increase is mainly due to strong growth in housing loans: outstandings have grown at an annual rate of at least 6% since the start of 2017 (see Chart B10). Housing loans accounted for 83% of French household debt in October 2019 at EUR 1,066 billion. Annual growth in outstanding amounts of personal consumer credit has also remained robust, up 5.6% year-on-year in October 2019 at EUR 188 billion.

Two trends have driven the growth in outstanding housing loans and consequently household debt. First, the number of transactions on the real estate market continues to set new records with more than one million sales on an annual rolling basis at mid-2019. As a result, the proportion of households with housing loans has picked up, after a long decline due to the loans granted during the expansion in the 2000s being repaid.²¹ Second, the proportion of credit to finance a rental investment

(new or old) in new housing loan production has trended upwards in recent months. This trend is set against a general backdrop of households' search for yield, as they more aggressively exploit their capacity to take on further debt (turning to leverage finance) at a time of very low interest rates in order to acquire property.

This dynamism goes hand in hand with a sustained growth in prices since the start of 2017, up a little over 3%, but also with an easing of credit standards that was documented by the HCSF in its report of October 2019:²² deposits have become smaller (the loan-to-value (LTV) ratio²³ amounted to 88.9% in mid-2019) and the debt-service-to-income (DSTI) ratio has deteriorated (26% of outstanding new loans were granted with a DSTI of over 35%).²⁴

The rise in household debt has led to an increase in household leverage, calculated as a ratio of debt to total net worth, for all categories of wealth during the 2014-17 period²⁵ (see Chart B11).

... and sustained by a gradual easing of credit standards

The change in indebtedness is not independent of the persistently low interest rate environment (with an average rate of 1.31% for housing loans and 3.83% for consumer credit in August 2019). Despite this decline, the average DSTI ratio at origination was up for the fourth year running to 30.4% in July 2019 (a 0.3 percentage point year-on-year increase) and the proportion of new loans with a DSTI ratio of over 35% was also on the rise (see Chart B12).

¹⁹ Loans and securities with a residual maturity of less than one year and floating rate loans and securities are treated as floating rate debt.

²⁰ Household debt also includes the debts of unincorporated enterprises (S14A in the national accounts) and non-profit institutions serving households (S15).

²¹ According to the *Fédération Bancaire Française* (FBF – French banking federation), the proportion of households with housing loans declined from 52.6% in 2008 to 46.4% in 2016. In 2017 and 2018, it picked up again to stand at 47.8%.

²² HCSF, *Assessment of risks in the residential real estate sector*, October 2019

²³ The LTV (loan-to-value) at origination corresponds to the ratio between the loan principal and the purchase value of the property.

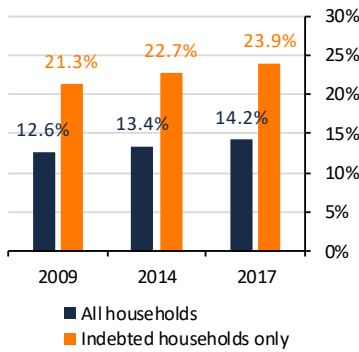
²⁴ Source: ACPR, monthly monitoring of new housing loans – September 2019.

²⁵ In this analysis, household wealth includes financial and property assets, net of the present value of any consumer credit.

B11

Household debt rates by level of wealth

x: year; y: percentage

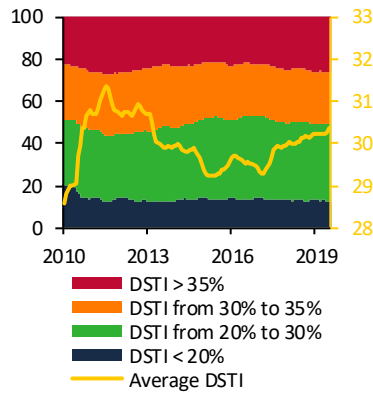


Source: Wealth surveys.

B12

Household debt-service-to-income (DSTI) ratio at origination of housing loans

x: year; y: percentage (left and right-hand scale)

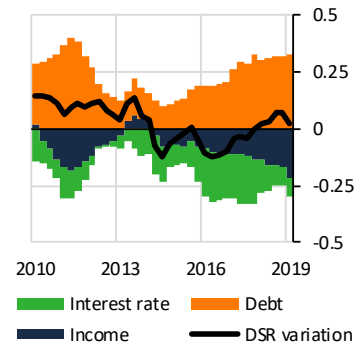


Source: ACPR, annual survey of housing finance and monthly monitoring of new residential lending.

B13

Annual change in the debt service ratio (DSR) (in points of household augmented gross disposable income*)

x: year; y: percentage



Sources: Banque de France calculations; BIS methodology.

* Debt service is the amount required to cover the repayment of interest and principal on a debt.

The increase in the DSTI ratio goes hand in hand with a lengthening of new loan maturities (notably to over 25 years for first-time buyers) facilitated by the flatter yield curve.

Furthermore, falling interest rates since the summer have encouraged borrowers to renegotiate the terms and conditions of their contracts, with housing loan renegotiations accounting for 25% of new lending in August. This development could place even more pressure on banking sector profitability.

Initially, falling interest rates and lengthening loan maturities offset the impact of the growth in indebtedness on debt service (interest and principal repayments included) as a ratio of income between 2014 and 2017. Subsequently, this ratio started to rise again and is expected to do so in the coming quarters.

The French housing finance market continues to benefit from low delinquency rates with a default rate of 1.29% at 31 December 2018, down 2.4 basis points compared with 2017. A rise in interest rates would have little impact given that housing loans are almost exclusively granted at fixed rates by French banks (98.9% of new lending in 2018). Furthermore, almost all of these loans (96.9%) benefit from a form of protection against borrower default, such as guarantees, mortgages or securities.

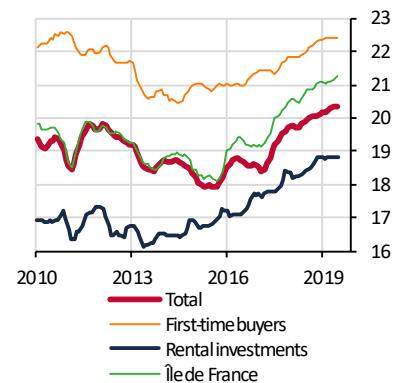
However, the easing of credit standards could have a structural impact on delinquency, whose current low level reflects the growth phase observed in France since 2016. The deterioration in the DSTI ratio at origination must be monitored more closely because in the event of an economic slowdown the most exposed households are likely to decrease their consumption in order to honour their repayments, which could weigh on economic growth. In addition, even though banks are protected by the predominance of full-recourse lending,²⁶ the rise in levels of indebtedness at origination is an additional risk factor if there is a rise in delinquency.

²⁶ French housing loans are full-recourse, meaning that in the event of a default, the bank can seize the borrower's assets. Conversely, recourse in the United States is limited to the real estate property only, which can encourage borrowers to default strategically if the property's resale value no longer covers the amount due to the lender.

B14

Loan maturity at origination

x: year; y: duration in years



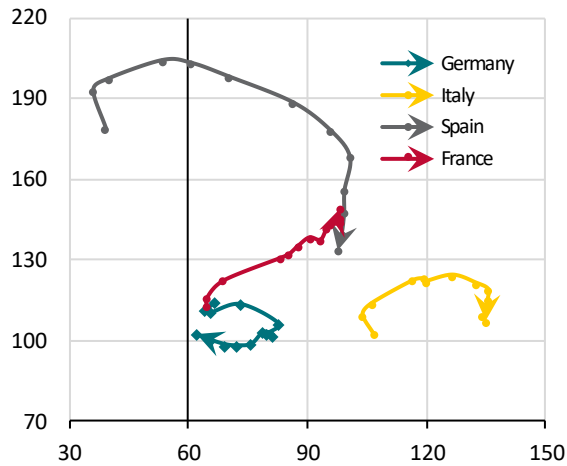
Source: Banque de France.

INCREASING PRIVATE SECTOR DEBT COMBINED WITH HIGH LEVELS OF PUBLIC DEBT REDUCES FINANCIAL SYSTEM RESILIENCE IN THE EVENT OF A SHOCK

B15

Comparative trajectories of private and public debt between 2006 and 2018

x: public debt as a percentage of GDP;
y: private sector debt as a percentage of GDP



Source: Eurostat.

Note: Each point corresponds to a year between 2006 and 2018, with the arrow indicating 2018. The vertical line represents the commitment made at European level (60% of GDP).

French general government debt levels remain high at the equivalent of 99.6% of GDP in the second quarter of 2019, up year-on-year from 99.0% (but down compared with 100.8% in the second quarter of 2017).

The coexistence of elevated, increasing private sector debt and public debt that represents the equivalent of almost 100% of GDP undermines resilience in the event of a macroeconomic or financial shock:²⁷ given this high level of public debt, fiscal policy appears to be less capable of cushioning the recessionary effects of corporate or household deleveraging (as was the case, for example, in Spain during the crisis – see Chart B15).

²⁷ See also the ECB's assessment in its Financial Stability Review, p. 14 <https://www.ecb.europa.eu/pub/financial-stability/fsr/html/index.en.html>

3. Risk 1=: Interest rate risks for financial intermediation

The persistence of the very low or even negative interest rate environment puts pressure on banks and insurance undertakings. The gap – which is behind the profitability of banks' intermediation activity – between the cost of their liabilities and the interest earned on the loans they grant is restricted and narrowing. At the same time, insurance undertakings are doubly affected by the fall in interest rates, with gradually deteriorating returns on their assets and an upward revaluation of their long-term liabilities (particularly in life insurance).

STAGNATING BANK PROFITABILITY

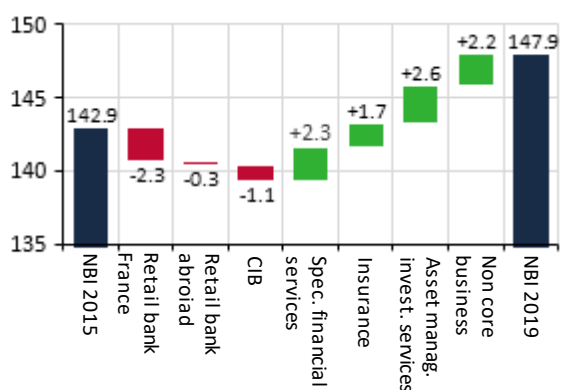
Earnings are down in retail banking and corporate and investment banking

The net banking income (NBI) of the main French banks²⁸ began to pick up in 2015. During the past two years, it has stabilised and is expected to amount to EUR 147.9 billion in 2019.²⁹ However, this change reflects mixed performances depending on the business line. The contribution from retail banking activities is down by EUR 2.3 billion in France and by a further EUR 0.3 billion abroad, reducing their relative contribution to bank earnings from 58.9% to 55.1%. Additionally, the contribution from corporate and investment banking (CIB) activities has also declined by EUR 1.1 billion, bringing their relative contribution down by 1.3 percentage points to 17.6%. These poor performances were fully offset by other business lines such as specialised financial services (up EUR 2.3 billion), insurance activities (up EUR 1.7 billion) and asset management (up EUR 2.6 billion).

C1

Business line contributions to changes in French bank NBI between 2015 and 2019 (annualised view)

x: business line; y: EUR billions



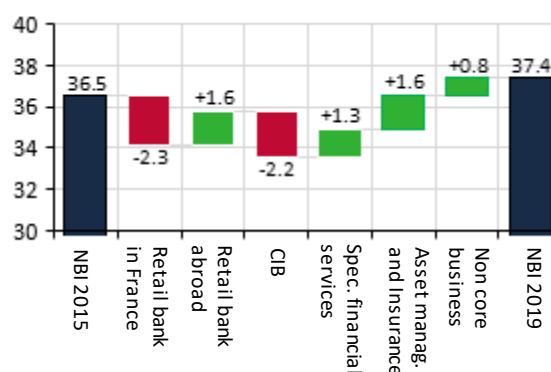
Source: ACPR.

Note: Annualised to take into account the first half of 2019 and seasonal effects; by convention, the NBI in year Y is made up of the NBI of the second half of year Y-1 and the NBI of the first half of year Y.

C2

Business line contributions to the change in earnings before tax between 2015 and 2019

x: business line; y: EUR billions



Source: ACPR.

²⁸ BNPP, BPCE, GCA, GCM, LBP and SG.

²⁹ Annualised to take into account the first half of 2019 and seasonal effects; by convention, the NBI in year Y is made up of the NBI of the second half of year Y-1 and the NBI of the first half of year Y.

Changes in management costs that determine business line contributions to earnings

Since 2015, annualised earnings before tax (EBT) of the main French banking groups had increased steadily until the end of June 2018 from EUR 36.5 billion to EUR 39.3 billion (up 7.6%). However, in the past year EBT dropped sharply to EUR 37.4 billion, notably following the poor performance of corporate and investment banking (CIB) activities.

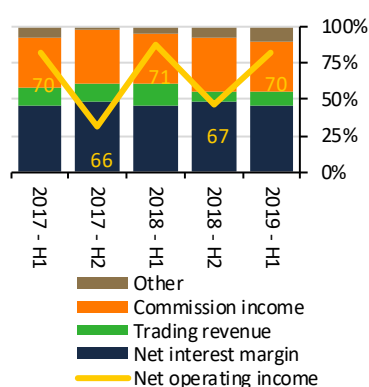
Management costs on retail banking activities in France and abroad have increased at an annual rate of nearly 5%. However, thanks to the sharp reduction in the cost of risk outside France, the deterioration in these activities' contribution to EBT has been limited to EUR 0.7 billion over the past five years.

Meanwhile, CIB recorded a significant increase in management costs of almost 17%, amplifying the decline of NBI, which resulted in a negative contribution to EBT of EUR 2.2 billion. Lastly, increased activity in the other business lines also led to higher management costs, which explains their respective contributions to EBT: an additional EUR 1.3 billion for specialised financial services and a further EUR 1.6 billion for asset management, private banking and insurance activities.

C3

Operating income of the six main French banking groups and breakdown by source

x: half year; y: percentage and net operating income in EUR billions



Source: ACPR.

The breakdown of operating income is generally stable while net interest margin still predominates

Since 2015, the net annual operating income,³⁰ for prudential purposes, of the six main French banking groups has fallen by 2% and stabilised at around EUR 137 billion over the past two years. The breakdown of results primarily shows the importance and stability of net interest margins (between 46% and 47%) and the slight increase in commission income (from 33% to 36%). Conversely, trading revenues were down to their lowest level in 2019 with only an 8% share, due to losses incurred in the second half of 2018.

The deterioration of the intermediation margin is not cushioned by the reduction in the cost of risk

Since 2015, cost of risk as a ratio of interest-generating assets has steadily declined. Although the effect of low interest rates during this period has led to a deterioration in the intermediation margin,³¹ from 1.35% to 1.15%, until 2018 this reduction had been offset by the decline in the cost of risk. Consequently, the intermediation margin adjusted for cost of risk remained relatively stable, slipping from 1.08% in 2015 to 1.06% in 2018. However, during the first half of 2019, as the intermediation margin continued to deteriorate the cost of risk remained unchanged, thus leading to an additional 6 basis point reduction in the adjusted margin since 2018 (see Chart C4). How the cost of risk changes in the coming quarters will therefore be important, as an increase could erode the adjusted intermediation margin and bank profitability.

³⁰ Annualised to take into account the first half of 2019 and seasonal effects; by convention, the NBI in year Y is made up of the NBI of the second half of year Y-1 and the NBI of the first half of year Y.

³¹ The intermediation margin is calculated as a ratio of net interest income to interest-generating assets.

Looking ahead, French banks' maturity transformation activity is expected to suffer from the persistently low interest rate environment

The particularly low interest rates and general flattening of the yield curve are weighing on banks' transformation activity and fuelling concerns with regard to their profitability.

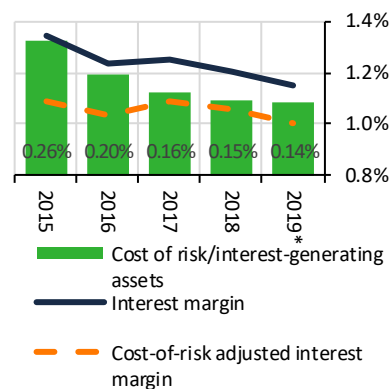
Against a backdrop of close-to-zero interest rates, the ability to transmit changes in the yield curve across banks' liability costs and asset income is asymmetrical: new lending conditions are adapted (lower rates) and therefore generate a smaller return, whereas changes in the cost of funds are more rigid, particularly with regard to regulated savings and sight deposits, and negative interest rates are not passed on to customers.

The flatter yield curve has a direct impact on a major component of bank income – the net interest margin (NIM) – that, simply put, reflects banks' transformation activities from short to medium-term financing (bank liabilities) into medium to long-term lending (bank assets). As new lending interest rates remain below the average interest rate on outstanding loans (the spread amounted to 51 basis points in December 2018), renewal of the stock of loans is expected to continue to bring down the average interest rate on outstanding loans for some time to come, putting downward pressure on banks' net interest income.

C4

Interest margin versus intermediation margin

x: year; y: percentage (cost of risk/interest-generating sets, in percent)



Source: ACPR.

Note: (*) 2019 is calculated based on data from the first half of the year.

For example, keeping interest rates at their current levels until the end of 2021 would lead to:³²

- a reduction in the cost of liabilities, which would only partly offset the decline in interest earned, resulting in a lower NIM;
- net banking income that would logically follow the same evolution as NIM, while, assuming that charges remained unchanged, the cost-to-income ratio would deteriorate;
- ultimately, a decline in gross operating profit.

Assuming a constant cost of risk and distribution rate, banks should nonetheless continue to generate sufficient earnings to maintain their solvency ratios. However, their profitability measured in terms of return on equity (ROE) would inevitably be pushed downwards.

Moreover, this dynamic could also be exacerbated by a new wave of loan buybacks and renegotiations. Indeed, during the final phase of falling interest rates at the end of 2016, the proportion of new growth in housing loans resulting from buybacks or renegotiations rose to over 60% of new lending.

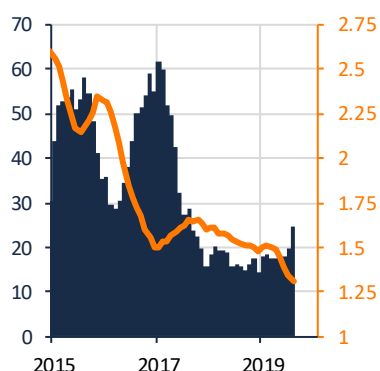
After a period of relative stabilisation in 2018 and early 2019, this phenomenon could again come to the fore thanks to the recent fall in housing loan rates (1.30% in August, down 20 basis points since March). This would lead to a *de facto* significant shortfall in terms of interest income even though these losses would initially be offset by a spike in commissions.

³² Prudential balance sheet forecasts for the six main French banking groups notably assuming a static balance sheet (not taking into account future new lending or any potential resumption of buybacks or renegotiations) and stable operating income excluding net interest margin (NIM).

CS

Average housing loan interest rate and renegotiation values

x: year; y: lhs – EUR billions, rhs – percentage



Source: Banque de France.

Since 2014, institutions have renegotiated more than EUR 430 billion of credit, representing over 40% of current outstanding loans. Of the 15 million housing loans not yet due currently in portfolio, around one in four has been renegotiated and 4% (600,000 cases) have been renegotiated several times. The other loans would never have been renegotiated due to any potential gains being too small.

Given its potential scale, a wave of housing loan renegotiations can significantly alter the interest rate structure of portfolios in banks' assets, as has already been recently observed.

In addition to the impact of a new wave of renegotiations, other downside risks to bank profitability exist:

- in a context of intense competitive pressure on service prices, particularly after competition has stepped up in certain segments that had hitherto been spared (payments, deposits, etc.), maintaining operating income from fees and commission cannot be guaranteed;
- it is a strong assumption that earnings from market activities will remain stable as most French banks were forced to review their strategies, notably by streamlining their scope of intervention, due to setbacks in this business segment in 2018;
- the contribution to earnings from insurance activities could also be affected by the persistently low interest rate environment;
- with regard to the international macroeconomic environment, it cannot be guaranteed that the cost of risk will remain stable over the coming quarters.

Euro area monetary policy decisions to introduce a mechanism to reduce the interest paid out by banks

In September 2019, the ECB Governing Council decided to lower the deposit facility rate from -0.4% to -0.5% and to introduce a two-tier system for reserve remuneration so that part of banks' holdings of excess liquidity (a multiplier of 6 will be applied to the minimum reserve requirement level) would be exempt from the negative deposit facility rate.

Although this second measure is new to the euro area, it has already been implemented in Japan and Switzerland, where it was introduced alongside the negative deposit facility rate. Its aim is to safeguard the bank-based transmission of monetary policy by mitigating the cost to banks of holding excess reserves. Assuming that French banks maintain their current holdings of excess liquidity, this measure will reduce the financial burden associated with negative interest rates on deposits held with the Banque de France.

Limited options to offset the impact of falling interest rates

The past importance of commissions in French banks' income mix, the role of market funding in their liability structure and the decline in the cost of risk have so far enabled French banks to mitigate the impact of falling interest rates on their earnings. Buoyant lending volumes in France have also contributed, to the extent that they have not driven a reduction in net interest margins (this strategy implies fiercer competition, placing greater pressure on margins, and also raises concern as to the sustainability of the debt of French non-financial agents). All in all, while the solvency of institutions is fully guaranteed, these developments taken as a whole would have an adverse impact on their earnings.

THE ASSET-LIABILITY MANAGEMENT OF INSURANCE UNDERTAKINGS IS CONSTRAINED

Decrease in the average solvency capital requirement coverage ratio

The steeper drop in interest rates has led to a revaluation of the risk-free yield curve used to discount future flows within the framework of Solvency II technical provision assessments. This resulted in a marked decrease in the average solvency capital requirement (SCR) coverage ratio of French institutions, particularly life and mixed insurance undertakings, between the end of 2018 and September 2019, driven by both the increase in SCR and, to a lesser extent, the decrease in eligible own funds.

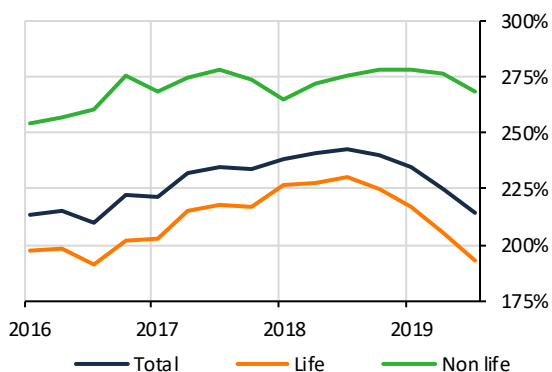
Between the final quarter of 2018 and September 2019, the average SCR coverage ratio of institutions operating on the French market fell by almost 26 percentage points³³ (see Chart C6), appearing to drop particularly sharply in the second and third quarters. This decrease is almost entirely due to life and mixed insurance undertakings, whose average coverage ratio fell 32 percentage points over the same period.

With ratios of 269% and 193%, respectively, for non-life and life insurance, French insurance undertakings are still sufficiently capitalised.

C6

Average quarterly SCR coverage ratio by type of insurance undertaking subject to Solvency II

x: year; y: percentage



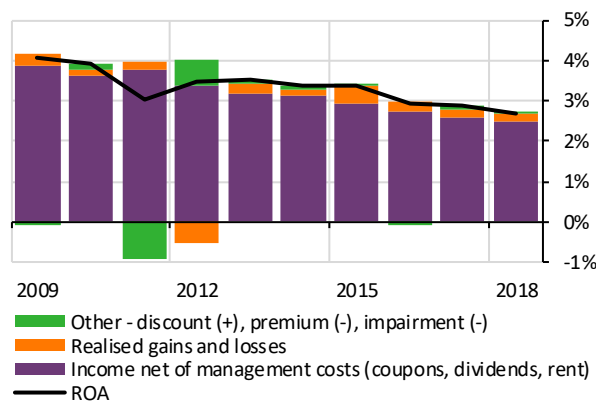
Source: ACPR.

Note: SCR – solvency capital requirement.

C7

Breakdown of return on assets (ROA), excluding unit-linked policies

x: business line; y: percentage



Source: ACPR.

The gradual erosion of investment returns and renewed subscriptions in euro funds

Life insurers' earnings are mainly generated through their financial income, which tends to fall in line with the decline in recurring income, mostly from bonds. For example, average return on assets (ROA) fell from 3.5% to 2.7% between 2013 and 2018 mainly due to the decline in recurring income from 3.2% to 2.5% over the same period (see Chart C8).

The erosion of returns observed in recent years is expected to deepen as bond portfolios are renewed (see Chart C9). Applying the strong assumption of a reinvestment of maturing fixed-rate bonds in zero-rate bonds or in bonds with a negative 1% yield, and zero net inflows on euro-

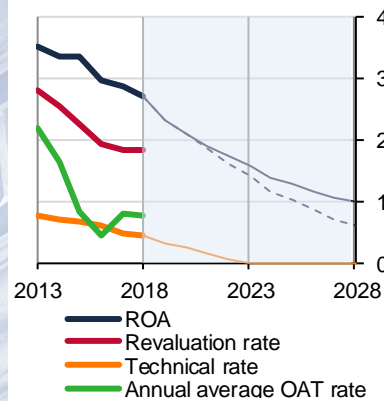
³³ This is partly an estimate because not all institutions recalculate their SCR every quarter. Article R. 352-3 of the French Insurance Code stipulates that "insurance and reinsurance undertakings [shall calculate] their solvency capital requirement at least once a year. [...] If the risk profile of an insurance or reinsurance undertaking deviates significantly from the assumptions underlying the last reported solvency capital requirement, the undertaking concerned shall recalculate the solvency capital requirement without delay and report it to the *Autorité de contrôle prudentiel et de résolution*".

denominated instruments, this decline in ROA could continue at a rate of approximately 20 basis points per year (see Chart C8).

Furthermore, the trend of life insurance flows moving into guaranteed euro funds³⁴ in 2019 is contributing to the dilution of returns on assets in so much as the flows have to be reinvested in bond assets that offer low returns.

C8
Return on assets (ROA) forecast, excluding unit-linked products

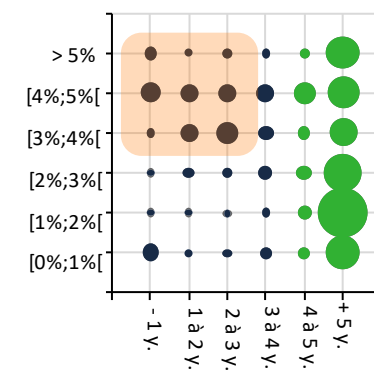
x: year; y: percentage



Source: ACPR.
Note: The blue-shaded area indicates the simulations. Two simulations were carried out for ROA: (i) with an OAT rate of 0% from 2019 (solid line); and (ii) with an OAT rate of 0% in 2019 and of -1% thereafter (dotted line).

C9
Bond portfolio maturity and coupon rate at end-2018

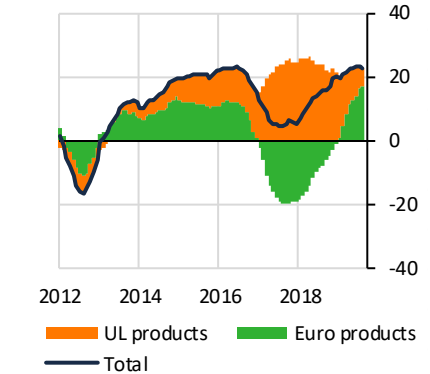
x: residual maturity; y: coupon rate
The size of the bubbles corresponds to the percentage of the indicated node in the total portfolio



Source: ACPR.
Note: The orange-shaded area indicates the points for which reinvestment is likely to result in declining returns given the low or even negative interest rates. It corresponds to 16% of bond investments (residual maturity of less than 3 years and a coupon rate of 3% or more).

C10
Net cumulative life insurance flows (12-month period)

x: year; y: EUR billions



Source: ACPR.
Note: UL products – unit-linked products.

However, while unit-linked products³⁵ benefited significantly from life insurance inflows between mid-2016 and mid-2018 as life insurers generally discouraged payments into euro-denominated funds³⁶ (by increasing contractual deductions or reducing capital guarantees) in order to limit their interest rate exposure, life insurance inflows are now shifting back towards euro-denominated products. The trend towards switching from euro-denominated funds to unit-linked products was also reversed in mid-2018 (see Chart C10).

In this context, the overwhelming majority of life insurance provisions (almost EUR 1,800 billion) are for euro-denominated products (80% compared with 20% for unit-linked products at the end of 2018, unchanged year-on-year).

After several years of decline, revaluation rates stabilised in 2018 without having an adverse effect on reserve accumulation

The decline in return on assets is offset by various measures with regard to insurers' euro-denominated liabilities. The first measure is the decrease in revaluation rates attributed each year

³⁴ Guaranteed euro funds offer policyholders a capital guarantee.

³⁵ Under unit-linked contracts, savings are invested in financial products and the policyholder has no capital guarantee.

³⁶ The objective is to increase the proportion of unit-linked products in contracts as the insurer guarantees the number of units and not their value, meaning the risk of a loss of capital is passed on to the policyholder. While orienting inflows towards unit-linked products means that the sustainability of guarantees is ensured in the long term, insurers are still bound by their duty to advise when selling contracts.

to policyholders on their euro-denominated products. However, the steady decrease observed over the past 10 years stalled in 2018. After the revaluation rate on individual savings and pension schemes fell 30 basis points per year between 2013 and 2016, 2017 showed signs of a turnaround with a moderate decline of 10 basis points. This trend was confirmed in 2018 as revaluation rates remained unchanged between 2017 and 2018 at 1.83% (see Chart C11).

This stability did not prevent undertakings from bolstering their provision for profit-sharing (a provision that allows insurers to smooth policyholders' profit-related incentives over time via the revaluation of contracts). Provisioning levels thus continued to increase in 2018, though at a slightly slower rate than in previous years, to 4.3% of life insurance provisions.

In the event of a sharp rise in interest rates, insurers could use these provisions to revalue their contracts at rates closer to those of the market in order to preserve the relative attractiveness of life insurance products compared with other savings products and to avoid a wave of buybacks prompted by an excessive yield spread.

With the profitability of euro-denominated life insurance activity under pressure, banking groups are also affected via their insurance subsidiaries

Ultimately, the profitability of life insurance undertakings has been badly affected by recent interest rate changes. While life insurers on the whole are still profitable, undertakings differ enormously in terms of their business plans, returns on assets, reserves and even revaluation policy constraints.

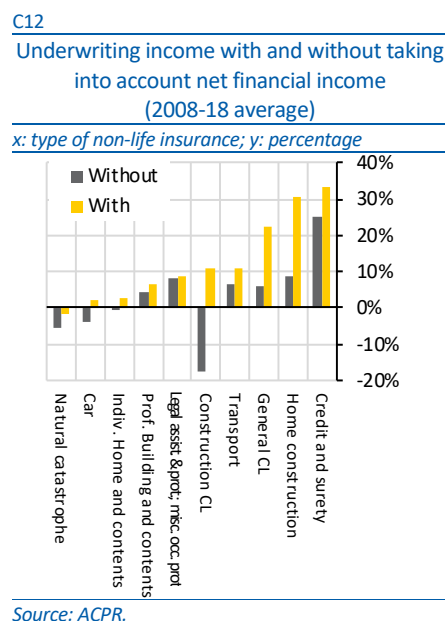
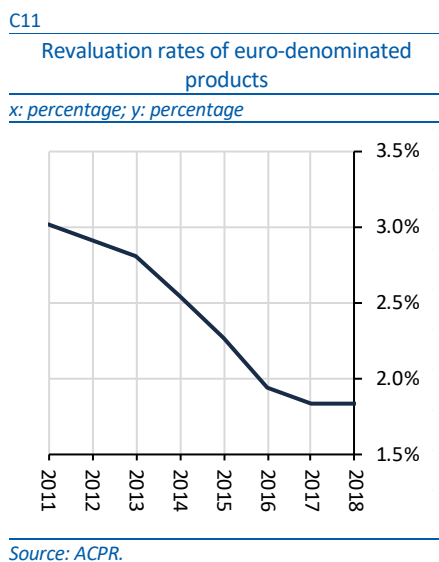
In addition, although the insurance subsidiaries of banking groups (bancassureurs)³⁷ have until now tended to buoy group earnings (see above), recent developments will limit their contribution. In some cases (inadequate coverage ratio of an insurance subsidiary), recapitalisation of the subsidiary by the group could also have an impact on own funds.

Non-life insurance

Although non-life insurers are less exposed to sovereign bonds (and more exposed to equity) than life insurers, the long-term equilibrium of these business lines must be closely monitored, particularly in the current environment of persistently low interest rates.

The profitability of non-life insurance undertakings increased in 2018 to EUR 5 billion, or 7.4% of premiums compared with 5% in 2017.

However, it could be significantly affected in the longer term by a persistently low interest rate. Indeed, net financial income is an important component of the profitability of some long horizon insurance business lines such as construction insurance and civil liability insurance (car and general), as well as death/disability products. On average over the past 10 years, without the input from financial income, these guarantees would have a negative or slightly positive return (see Chart C12).



³⁷ Banking group subsidiaries account for approximately 65% of the French life insurance market.

4. Risk 3: Market risks

The rise in risks associated with the economy’s indebtedness reflects the increase in the risk appetite of investors, who continue to prefer debt markets. In overvalued financial markets, risk-taking continues to mount. This worldwide trend is also evident in Europe and France, where the valuations of equities and bonds are approaching levels that raise fears of downward corrections.

However, on the equity markets, a severe and abrupt correction is not the most plausible hypothesis in the short term given that monetary policies continue to be accommodative and supportive of share prices. Bouts of volatility, though, are a concern. On the bond markets, a sudden revaluation of risk premiums, by undermining players’ confidence in the strength of the economy and the markets, could have serious direct and, above all, indirect consequences via second round effects. The impact of jolts on the international markets can create volatility, but without destabilising French financial institutions, the most systemically important of which benefit from diversified and robust business models. Nevertheless, given the very high valuations of equity markets compared with their historical valuations, a large-scale shock occurring in the United States could be exported by contagion.

Furthermore, these risks may combine with operational problems on the markets, such as those recently encountered on the US money markets, on which French banks play a relatively low-risk role that nonetheless still leaves them exposed to the consequences of lasting financial market dislocations.

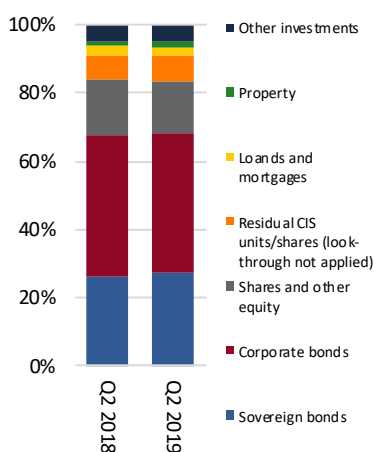
LIMITED RISK-TAKING IN TERMS OF INSURANCE INVESTMENT

Against a backdrop of declining returns on their assets and in order to service the guaranteed rates promised, insurers may be tempted to amend their investment strategies to increase their financial yields.

D1

Breakdown of insurers’ investments

Categories at Q2 2018 and Q2 2019

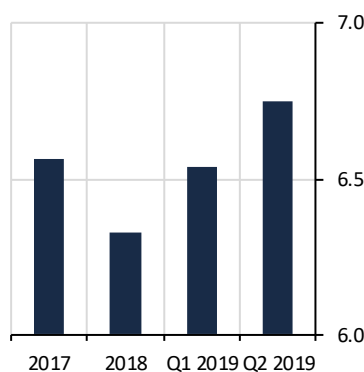


Sources: ACPR and Banque de France.
Note: After applying the look-through approach to collective investment schemes.

D2

Average maturity of securities held by insurers

x: year; y: number of years

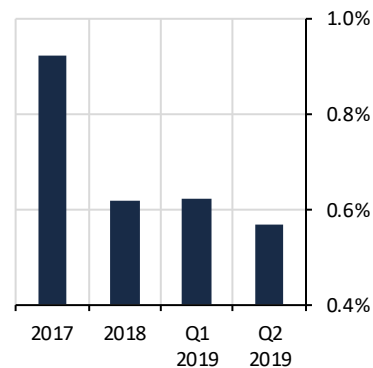


Source: ACPR.
Note: Maturities apply to bonds, structured securities, guaranteed securities and collective investment scheme units whose exposures are mainly to bonds.

D3

Proportion of insurers’ securities with a rating below BBB-

x: year; y: percentage



Source: ACPR.
Note: Ratings apply to bonds, structured securities and guaranteed securities.

However, there is not yet any significant distortion in the structure of insurers' investments towards more profitable and riskier assets. The structure of investments has remained fairly stable over time, particularly in terms of the types of assets held, maturity, ratings and geographical allocation. Insurers continue to prefer to invest in bonds, with 27% and 41% of their investments in sovereign bonds and corporate bonds, respectively, while the proportion of

equities (after applying the look-through approach to assets held in collective investment schemes) remained unchanged at 15% between Q2 2018 and Q2 2019 (see Chart D1). The average maturity of securities held by insurers (bonds, structured securities, guaranteed securities and collective investment scheme units whose exposures are mainly to bonds) has lengthened slightly from 6.6 years at the end of 2017 to 6.7 years in mid-2019 (see Chart D2).

Overall, the level of risky investments held by the main French insurance groups remained low and relatively stable in 2019. The proportion of lower rated bonds (high yield bonds with a rating below BBB-) in the asset portfolio amounts to around 0.6% and is not worsening despite a number of securities held by insurers being downgraded (see Chart D3). Equally, exposure to emerging debt remains very limited. For example, Brazil, Russia, India and China together account for 0.1% of insurers' investments.

However, the fact still remains that current circumstances are pushing institutional investors towards alternative asset strategies (see Chart D4) as they look to benefit from additional sources of yield, particularly by trying to capture illiquidity premiums. While this diversification may be welcome from the point of view of financing the economy, its scale can lead to investors taking poorly understood risks, particularly in the case of complex products or herd behaviour.³⁸ Moreover, the surge in demand for these assets pushes up prices and compresses risk premiums.

OTHER HIGH-RISK BEHAVIOUR IN THE SEARCH FOR YIELD

The search for yield also results in slightly more aggressive behaviour. It is this type of logic, for example, that led a major French banking group's management company subsidiary to overlay its investment strategy centred around major macroeconomic trends (a global macro strategy) and implemented with highly liquid instruments (sovereign bonds, standard and listed derivatives, etc.) by investing a (very limited) proportion of its fund assets in illiquid debt securities (see Box 4).

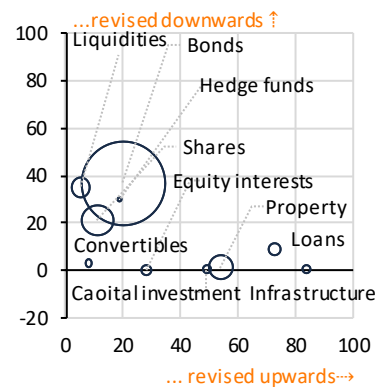
D4

Strategic allocation intentions of French institutional investors

x: percentage of those surveyed who intend to increase their allocation to the asset category shown;

y: percentage of those surveyed who intend to decrease their allocation to the asset category shown

The size of the bubbles corresponds to the current asset portfolio volume



Source: 2019 survey performed by the Association Française des Investisseurs Institutionnels (AF2I – the French association of institutional investors).

Note: The proportion of investors that stated that they did not intend to alter their allocation can be extrapolated from each point's coordinates.

³⁸ Leveraged loan and collateralised loan obligation products are the focus of particular attention from the Financial Stability Board (FSB) and the European Securities and Markets Authority (ESMA)s.

<https://www.fsb.org/2019/11/fsb-plenary-meets-in-paris/>

https://www.esma.europa.eu/sites/default/files/library/esma_50-165-883_report_on_trends_risks_and_vulnerabilities_no.2_2019.pdf

Box 4: Media uproar at the H2O incident

H2O AM LLP is an asset management company that is 50.01% owned by Natixis Investment Managers and is headquartered in London (although it is currently being relocated to Paris). It manages funds and mandate agreements that are for the most part registered in France, Ireland, the United Kingdom or Luxembourg (feeder funds for French funds).

H2O specialises in strategies that take advantage of interest rate or currency movements, but had put an overlay strategy in place that sought to profit from a diversification (within the 10% ratio that limits the proportion of unquoted debt securities in its investment funds).

Following a report in the press of a risk of conflict of interest associated with the investments in certain asset holdings (an H2O director was a member of the advisory board of the holding company of the firm whose assets were held by the fund), the specialist agency Morningstar suspended its rating of H2O's Allegro fund on 19 June 2019, creating a momentary period of market mistrust towards several of the management company's funds. The rush to redeem units and shares in H2O-managed investment funds prompted a total outflow of EUR 8 billion in two weeks, out of EUR 34 billion of assets under management before the incident, without prompting a buyback suspension. The activation of the swing-pricing mechanism provided for in the prospectuses of the funds concerned allowed them to continue to operate with a relatively limited impact from buybacks on the net asset value of their shares or units.

While the H2O incident bears certain similarities to other episodes that have called into question fund liquidities, it also stands quite clearly apart. The incident took place after several others to have hit the City of London (GAM/Haywood³⁹ and Woodford⁴⁰) that led to funds being frozen. Previously, a number of real estate funds had also been forced to suspend buybacks immediately after the Brexit referendum.⁴¹

As daily liquidity was always assured, the incident proved to be a rather conclusive test on the performance of liquidity management tools (in this instance, swing pricing) in a relatively benign market context: the measures taken by the management company to both reassure stakeholders on its private investments and to encourage inflows and discourage outflows stabilised the situation with regard to the investment funds, without necessitating their closure or financial intervention from the Natixis group.

Ultimately, the events point more towards a problem of governance. Investor concerns stayed ring-fenced to Natixis shares, which quickly lost 12% of their market value before recovering, and the risk of market contagion never materialised. The various supervisors of the management company and its parent company are considering how best to follow up on this incident, both in terms of the actors involved and more generally in terms of the conclusions that may be drawn.

³⁹ In July 2018, GAM, a Swiss asset management company, announced the suspension for misconduct (particularly with regard to risk management) of Tim Haywood, business unit head for unconstrained/Absolute Return Bond Fund portfolios and a corporate trade finance fund (with total assets of CHF 11 billion and CHF 2.9 billion, respectively). The controversy particularly concerned privileged links with an Indian industrialist, as the funds under Tim Haywood's responsibility systematically acquired securities issued by companies under the industrialist's control. As the announcement of his suspension led to investors pulling a significant amount of money out of its funds, GAM decided to suspend buybacks and to liquidate the funds (which was completed at the start of July 2019, without any capital losses). Nevertheless, the problems related to the Haywood affair played a significant part in GAM's market value plunging by 75%.

⁴⁰ In the face of continued withdrawal of assets since 2017 due to the poor performance of its founder and lead manager, Neil Woodford, Woodford Investment Management announced a freeze on redemptions from its main equity income fund at the start of June 2019. This crisis led to a (limited) contagion as the distributors of Woodford funds (particularly the broker Hargreaves Lansdown) were also affected by the buybacks.

Compliance problems were subsequently brought to light: Woodford funds appear to have breached the rules limiting illiquid or unquoted exposures (and also carried out lenient listings in Guernsey).

⁴¹ Following the referendum result in favour of Brexit on 23 June 2016, seven asset management companies marketing open-ended funds holding commercial real estate in the United Kingdom (valued at approximately GBP 18 billion) suspended or restricted redemptions.

Internationally, the search for yield has also led to the implementation of carry-trade strategies, mainly acquisitions of USD-denominated bond assets by investors hit by low returns in their own currency area. French banks are fairly active in these intermediation transactions, mainly through a combination of repurchase agreements (repos) and foreign exchange derivatives. Given that the various transactions in which French banks are engaged are fairly rigorously matched, their market risk is controlled but they remain exposed to possible tensions on these markets when carrying out the matched transactions.

MONEY MARKETS MUST ALSO MANAGE THE TRANSITION TO NEW BENCHMARKS

While tensions on the US short-term markets reflect a specific US dollar issue, all the main money markets are currently having to manage the various operational, financial and legal consequences of the transition to the new benchmarks put in place in response to manipulations observed on the previous benchmarks (see Box 5). Beyond the practical challenges, it is above all essential to develop liquidity on these benchmarks and also a sufficiently comprehensive and substantial derivatives market so that they can entirely replace the previous benchmarks and their associated markets.

Box 5: Risks associated with the transition to new interest rate benchmarks

As part of the implementation of Regulation (EU) 2016/1011 (BMR – the Benchmark Regulation), the administrators of EONIA, EURIBOR and LIBOR are required to review and, where appropriate, amend the methodologies used for these critically important benchmarks to make them BMR-compliant before the end of the transition period on 1 January 2022. Failing that, the administrators of these critical benchmarks could be obliged to stop publishing them altogether. Accordingly, the European Money Markets Institute (EMMI), which administers EONIA and EURIBOR, announced that EONIA would no longer be published after 3 January 2022.

In this context, on 2 October 2019 the ECB began to publish a new overnight benchmark on a daily basis; the €STR (euro short-term rate) is expected to gradually replace EONIA until the latter index ceases to be published. In order to facilitate this transition, the EONIA calculation methodology has also been amended to match that of the €STR plus a spread of 8.5 basis points that corresponds to the historical average difference calculated by the ECB between EONIA and €STR. This new EONIA has also been published daily since 2 October 2019.

EURIBOR now appears to be BMR-compliant, as the new “hybrid” calculation methodology developed by its administrator, EMMI, was approved on July 2019 by the competent authority, the Belgian Financial Services and Market Authority (FSMA).

The transition to new benchmarks presents a host of high-risk challenges, raising operational, accounting, legal, tax and regulatory issues. The continued mobilisation of financial centre players and close coordination with all stakeholders are essential to managing in a proper and orderly manner the impacts of this transition on financial institutions as well as on their counterparties and customers. The development of liquidity on these new benchmarks is also crucial to financial market equilibrium.

With particular regard to €STR, it is now down to market players to ensure that this new benchmark quickly replaces EONIA and to actively contribute to increasing its liquidity.

Another significant challenge is the development of a term structure of risk-free rates derived from the new benchmarks. Work is underway in the euro area, where a working group of financial centre operators is analysing €STR and swap prices against €STR in order to develop this type of structure, which would provide reference benchmarks for use in financial contracts as a fallback solution in the event that EURIBOR ceases to be published.

Similar steps have been taken in other jurisdictions, particularly in the United States and the United Kingdom where the authorities – starting with the UK Financial Conduct Authority, which is primary implicated due to its role in supervising LIBOR – have adopted an approach that nevertheless goes beyond simply resolving the issues related to the continuity of contracts as they also plan to transition from LIBOR to risk-free rates at the end of 2021.

Establishing the Secured Overnight Financing Rate (SOFR) and the Sterling Overnight Index Average (SONIA) is thus a key step in the process to definitively abandon LIBOR. The development of SOFR and SONIA futures markets – in addition to the retrospective data that will be available on both benchmarks – should facilitate the determination of a range of forward-looking risk-free rates. However, it remains to be seen whether it will be possible to associate a (dynamically-measured) credit spread with these new term rates, which would meet a requirement expressed by many banks for their hedging needs.

5. Risk 4: Risks linked to structural changes

The financial system is currently undergoing profound change with the development of non-bank intermediation, the trend towards a re-regionalisation of the financial system, digital and demographic transitions, climate change, and so on. Without proper adaptation from the financial sector and, where appropriate, a response from the authorities, these structural challenges could reveal significant vulnerabilities, such as the weakening of existing players, insufficient management of risks that migrate to other parts of the financial sector and the emergence of new risks that are poorly understood by players and authorities.

None of these developments alone is systemic in the short term. However, together they create a particularly fragile situation, especially since the context in which these developments are taking place is already complicated by uncertainties and pressure on earnings due to the low interest rate environment, for example.

ACTIVITY IS MOVING TOWARDS THE NON-BANK SECTOR

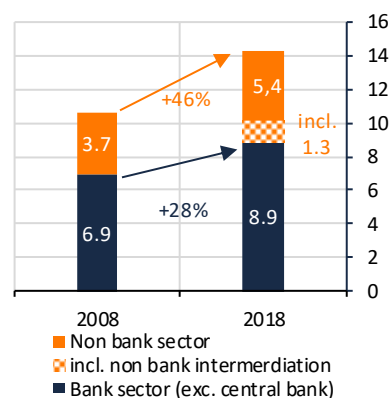
The non-bank sector (i.e. all financial entities with the exception of banks) is continuing to slightly outpace banking activity in both the euro area and France. Overall, between 2008 and 2018 its assets increased by 46% in France compared with 28% for the banking sector.⁴²

In the euro area, the non-bank sector not only includes traditional financial players (insurance undertakings, pension funds, investment funds) but also a myriad of other financial intermediaries primarily located in Luxembourg, the Netherlands and Ireland: specialised subsidiaries of financial institutions, financial institutions performing financial functions for non-financial groups (centralising cash management, issuing securities, administering equity interests), holding companies, etc.⁴³

According to the Financial Stability Board (FSB), non-bank entities that constitute a risk to financial stability make up only a fraction of the non-bank sector and are those involved in intermediation activities that pose a risk in terms of credit, maturity or liquidity transformation or leverage. In France, they accounted for EUR 1,300 billion⁴⁴ of assets in 2018 compared with EUR 8,900 billion for banks alone.

The development of a balanced regulatory framework for these activities and their supervision remains a priority in a European agenda that is aiming to develop market financing through the proposed Capital Markets Union.

E1
Assets of the banking sector and non-bank sector in France and growth from 2008 to 2018
x: selected years; y: USD trillions



Source: Banque de France.

Note: The banking sector includes credit institutions that accept deposits from individuals and businesses. The non-bank sector includes insurers, other financial intermediaries (such as investment funds) and financial auxiliaries (such as holding companies, GIE cartes bancaires).

⁴² This comparison may be slightly qualified due to the effect of taking into account changes in asset prices, which have an immediate impact on investment fund outstandings, with valuation effects sometimes taking precedence over the impact of flows.

⁴³ See Levy-Garboua, Mouriaux and Sabatini, "Le système financier de la zone euro après la crise: une mise en perspective", forthcoming in the *Bulletin de la Banque de France*, for an overview of the development of the non-bank sector in the euro area, and Duclos and Morhs (2017) for a description of the captive financial companies sector in Luxembourg (http://www.bcl.lu/fr/stabilite_surveillance/CRS/Shadow-Banking_CRS-report.pdf). This sector is negligible in France, where it accounts for 2.3% of the assets of all other financial intermediaries, which is itself fairly underdeveloped, accounting for only 16% of the financial sector compared with 40% for the euro area as a whole.

⁴⁴ Source: Banque de France as part of the work carried out by the FSB on non-bank financial intermediation (NBFi). Mainly money market funds and open-ended funds that can carry out maturity transformation. The European and French regulatory framework strictly governs the liquidity risk associated with these types of funds.

A DIGITAL TRANSFORMATION THAT BRINGS EFFICIENCY GAINS BUT ALSO REQUIRES MAJOR ADAPTATIONS

Digitalisation allows financial institutions to make major efficiency gains by automating an ever-greater number of increasingly complex tasks. This issue of productivity is essential to the French banking sector, whose cost-to-income ratios are traditionally higher than those of its peers.

Nevertheless, to achieve these productivity gains traditional players need to upgrade their information systems and develop and deploy new solutions, which requires substantial investments. However, while the IT spending of French banks – like their foreign peers – accounts for around 20% of their operating costs, they still devote a large majority of this spending to maintaining their existing infrastructures and solutions, whereas US banks already spend 50% to 60% of their IT budget on innovative projects. And although an investment drive is a top priority, it will have to overcome two obstacles: first, a context of declining earnings; and second, the execution risk inherent in steering this transformation.

Changes that can give rise to new dependencies...

One of the important trends of these technological developments is a reversal of the rationale for outsourcing information systems. Outsourcing once fell within a perspective of subcontracting and a logic of cost reduction, but is now driven by the adoption of highly advanced technological solutions offered by major tech players (Bigtechs).

This reversal leads to a growing risk of technological dependence, which may soon extend beyond IT infrastructures to software solutions. This burgeoning dependence, in an environment in which very few solution providers exist, brings a risk of spiralling costs and skewed relationships.⁴⁵

... and even question established business models

Digitalisation is one of the driving forces behind the development of new financial players across the spectrum of financial activities (retail banking services, payments, insurance, asset management, market operators, etc.). The gains in productivity and efficiency and the improvements in the quality of financial services that have been made thanks to this innovation are undeniable. However, these new players sometimes disrupt the traditional business models of financial intermediation by concentrating on specific niches with an eye to exploiting economies of scale. By contrast, traditional intermediation has mainly been based on exploiting economies of scope and the ability to offer a large number of services to its customers.

This trend is even more significant in that the French banking sector generates a substantial part of its earnings from its ability to sell a wide range of different financial services to the same customer. Income from commissions, asset management and insurance activities, for example, make a positive contribution to French banking group earnings. However, these revenues alone have not been able to offset the deterioration in the profitability of traditional banking activities (particularly retail activities in France and corporate and investment banking activities, etc.) in recent years. Without calling into question the logic behind this universal banking model or bancassurance in terms of diversification of revenue streams, digitalisation and growing segment-by-segment competition are increasing pressure on earnings and raising the bar for quality of service in each of these group's business lines.

The potential impact of this disruption is heightened by the fact that these new players already benefit from a large customer base and huge volumes of data. This can already be seen in the case of Bigtechs. Furthermore, the development strategy of these new players sometimes

⁴⁵ See the reports of the Financial Stability Board, *Third-party dependencies in cloud services* and *BigTech in the financial sector* (forthcoming).

involves partnerships in which the traditional financial institution is alone in bearing the regulation costs while the technological partner is able to siphon off a significant part of the service value for its own benefit.

Ultimately, if these developments are not properly understood, they may lead to a gradual weakening of traditional players, some of which will continue to be systemically important given their size and central role in financing the economy.

The major financial players in both banking and insurance are aware of the stakes and are focusing their efforts on three main areas: (i) strategically redefining business lines' scope of activities (in banking, by reviewing corporate and investment banking activities, and in insurance, by refocusing on "pure" insurance activities); (ii) restructuring the organisation of business lines (for example, reorganising retail banking or back and middle-office networks) often while promoting complementarities; and (iii) upgrading information systems and pushing for digital innovation (see above).

At this stage, while most of the announced strategic plans have been launched, the expected improvements are not yet reflected in income statements due to the exceptional costs, particularly of the investments required and the social costs of certain measures, generated at the project's inception. The effectiveness of these commitments should therefore be monitored over the longer term.

WITH DIGITALISATION, CYBER-RISK COULD BECOME SYSTEMIC

Lastly, digitalisation contributes to a change in the nature of cyber-risk. Cyber-vulnerability is worsening; the growing dependence of financial players on standardised solutions developed and even supplied by a small number of operators and the dematerialisation of financial player-counterparty relations across multiple channels reinforce both the risk of a cyber incident and its potential impact for the directly affected financial institutions and infrastructures as well as for the financial system as a whole. Cyber-risk is no longer an idiosyncratic operational risk; it has become potentially systemic.

Furthermore, while cyber-vulnerability is increasing, cyber-attacks are becoming more sophisticated, and financial institutions are becoming a target of choice for malevolent acts. According to IBM estimates, the global financial sector was the victim of 19% of all cyber-attacks and cyber-incidents in 2018, more than any other sector.⁴⁶ Moreover, according to Accenture, the annual average direct cost of cyber-crime per institution in 2018 amounted to USD 18.5 million for banks (up 11% year-on-year) and USD 16 million for insurance undertakings (up 22%).⁴⁷ This represents a total annual global cost to the financial industry of USD 140 billion⁴⁸ (in direct costs and lost income following cyber-attacks).

Outsourcing services to a small number of specialised operators (in cloud computing, for example) helps to strengthen the average level of security but also tends to heighten the systemic impact of an incident as it then threatens a larger number of financial players simultaneously.

While there is relative consensus in these different findings, a precise understanding of the risk – for financial institutions, supervisors and central banks alike – is hindered by difficulties associated with its measurement:

⁴⁶ IBM (2019), *X-Force Threat Intelligence Index*. <https://www.ibm.com/security/data-breach/threat-intelligence>

⁴⁷ Accenture, Ponemon Institute (2019), *The Cost of Cybercrime, Ninth Annual Cost of Cybercrime Study*. https://www.accenture.com/_acnmedia/pdf-96/accenture-2019-cost-of-cybercrime-study-final.pdf

⁴⁸ Accenture (2019), *Securing the digital economy* https://www.accenture.com/_acnmedia/thought-leadership-assets/pdf/accenture-securing-the-digital-economy-reinventing-the-internet-for-trust.pdf

- Gaps exist in the information sources: existing publications use non-harmonised definitions and rely on reports that are not entirely free of bias (notably due to the sensitive nature of the data), while regulatory reports only partially reflect the fact that the number of attacks is increasing.
- Adequate measurement criteria have yet to be identified: the impacts are manifold (IT, economic, reputational, legal, share price, etc.) and must be assessed over time, taking into account both direct and indirect costs.
- The nature of the risk is constantly evolving: the usefulness of historical data in predicting and anticipating future vulnerabilities and potential losses, particularly in the event of a major incident, is limited.

ASSESSING THE RISKS ASSOCIATED WITH CLIMATE CHANGE IS STILL A COMPLEX EXERCISE

Among the financial risks that will materialise in the medium to long term, those associated with climate change are now clearly identified and their first signs are already visible. For the French financial sector as a whole, exposures to transition risk are potentially significant but exposures to physical risk would appear to be more modest (institutions' assets are mainly located in areas that are relatively less vulnerable to climate change).⁴⁹

However, these risks are still imperfectly understood and these judgements require validation and refinement.

With regard to physical risks, the most recent report of the Intergovernmental Panel on Climate Change (IPCC) concluded that the effects of climate change on oceans and ice sheets would be greater than previously estimated, suggesting, for example, that rising sea levels and freshwater stress could have a more severe impact than currently anticipated.

With regard to transition risk, the French financial sector has made significant progress in its analysis. For example, the first approaches to measuring portfolio sensitivity have been developed by certain French institutions, with insurers benefiting from more experience in this area due to their regular use of severe stress tests. However, the time horizon for these tests is generally short (five years on average) and well below the assumed materialisation horizon for transition risks (2030), and it is also difficult to integrate a forward-looking perspective of this risk in the environmental, social and governance (ESG) criteria used by insurance undertakings.

In summary, rapid progress in the analysis of these risks, from both financial players themselves and also from the authorities, appears to be crucial. Moreover, the management of these risks must be strengthened in terms of both governance and operational practices.

⁴⁹ ACPR, *Analyses et synthèses: Climate change: which risks for banks and insurers?*
https://acpr.banque-france.fr/sites/default/files/medias/documents/as_cover_note_en.pdf

6. Appendices: Technical considerations

6.1: The impact of trade tensions on global growth

The NiGEM model is used to measure the cumulative impact on global growth of all the risks described in the body of this report by incorporating the following assumptions as follows.

1- The effects of trade tensions on:

i- Agent confidence and corporate investment: on the basis of IMF calibrations,⁵⁰ the decline in US non-financial corporation (NFC) investment over two years in cumulative terms is 1% compared with baseline, meaning that investment growth loses 0.5 percentage point in 2019 and in 2020. The shock is only felt in the United States.

ii- The financial markets: corporate bond spreads increase by 75 basis points in the United States, with contagion to third markets based on past correlations. The calibration of the initial US shock is based on financial market participants' estimates of the impact of an escalation of the US-China trade war on corporate earnings.⁵¹ The increase in risk premium is assumed to occur instantly and be permanent.

iii- Productivity: a 10% increase in import tariffs is expected globally and is reflected in a permanent 1.75% decline in total factor productivity.⁵² It is assumed that the level of productivity will have decreased by 1% after 5 years compared with the no-shock scenario.⁵³

2- The effects of the slowdown in Chinese growth: this risk echoes the 2015-16 incident that saw Chinese business activity slow down abruptly in line with the authorities' desire to rebalance sources of growth (less investment and exports for more final domestic expenditure). This led to a sharp decline in the investment ratio to 24% of GDP (in real terms) from almost 30% in 2008. At the end of 2018, the ratio had climbed back to 25%. A negative shock on corporate investment is applied to bring down the investment ratio to 2015-16 levels.

3- The effects of uncertainty as to the terms of the United Kingdom's exit from the European Union: past weak corporate investment in the United Kingdom is prolonged and intensified over the coming years. This results in a 1.5% decline in NFC investment after four quarters compared with a no-shock scenario as a reaction to greater uncertainty. This scenario is of an orderly exit with an agreement and a transition period but with ongoing uncertainty,⁵⁴ as the delay granted to the United Kingdom for an exit on 31 January 2020 does not dispel uncertainties with regard to the terms under which the United Kingdom will leave or future relations between the United Kingdom and the European Union.

First, these shocks are integrated individually to compare their relative significance. Then the shocks are combined. The findings are presented in Table AT1 and Chart AT1. For each simulation, agents form rational expectations and monetary policies are in place.

⁵⁰ Calibrated based on the Baker, Bloom, and Davis (BBD) overall "economic policy uncertainty" measure and its estimated impact on investment in the United States (*World Economic Outlook*, IMF, October 2019) <https://www.policyuncertainty.com/media/BakerBloomDavis.pdf>

⁵¹ These estimations are set out in the IMF's *World Economic Outlook* of October 2019 <https://www.imf.org/en/Publications/WEO/Issues/2019/10/01/world-economic-outlook-october-2019>

⁵² Reference No. 1 and Berthou, A., Chung, J.-H., Manova, K. and Sandoz, C. (2018), "Productivity, (Mis)allocation and trade", *Mimeo*, University College London.

⁵³ In NiGEM, this translates into technical progress improving labour input by 1.0% per year instead of 1.2% in the baseline scenario for the United States, i.e. a cumulative level after 5 years that is 1% lower. For France, these figures are 1.1% and 1.4%, respectively.

⁵⁴ According to the Bank of England (September 2019), the cost of a disorderly Brexit ("no deal no transition") is expected to be almost 6% of UK GDP over two years, implying a major recession.

According to our estimates, if the risks described materialise over the coming months, global growth will lose 0.4 percentage point in 2020 to drop to 3.0% compared with 3.4% according to the IMF's October forecasts. The impact of a Brexit-related investment shock in the United Kingdom at a global level is expected to be minimal.

Table AT1

Effects of macroeconomic risks on global growth

x: year; y: percentage

Effects of macroeconomic risks on global growth

Cumulative deviation from baseline scenario, in %

	GDP						Global trade	Foreign demand	
	World	US	China	UK	Euro area	France		Euro area	France
Y	-0.4	-0.3	-0.9	-0.4	-0.1	-0.1	-0.9	-0.7	-0.7
Y+1	-0.5	-0.7	-1.1	-0.7	-0.2	-0.1	-1.0	-0.8	-0.9
Y+2	-0.5	-0.7	-1.1	-0.8	-0.2	-0.2	-0.9	-0.7	-0.7

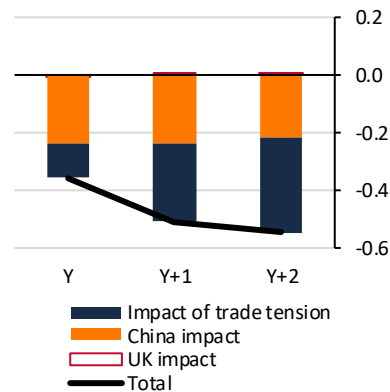
Sources: Banque de France, NiGEM model and Basic Model Elasticities (BMEs) for the euro area and France.

Finally, the impact that these global shocks could have on GDP growth in the euro area and France is assessed.⁵⁵ In order to simplify the exercise, the assumption used is that these shocks occur in the absence of a global crisis and are exclusively transmitted to the euro area via the foreign demand (exports) channel. This approach would limit the euro area and France's exposure to these shocks, and therefore would clearly minimise the risk. For both the euro area and France, a 0.7 percentage point reduction in annual growth in foreign demand would directly reduce GDP growth by 0.1 percentage point in 2020. Deviating from the baseline scenario, the impact of the global shock on GDP would be a 0.2% reduction by 2021-22. These impacts appear to be smaller than those recorded for the United States or the United Kingdom, but that is partly due to the fact that the shocks considered originate from outside the euro area without being deemed common global factors (for example via the financial markets or via a global supply shock). No other transmission channel that could significantly increase the impact on France or the euro area is considered for these purposes.

Chart AT1

Contribution of risks (shocks) to the total impact on world GDP

x: percentage change in GDP; y: year



Source: Banque de France, NiGEM model.

⁵⁵ The analysis is carried out using a synthetic tool called Basic Model Elasticities (BMEs) developed by the Eurosystem and based on all the macroeconomic models used by euro area national central banks, which makes it possible to analyse the impact of a battery of predefined shocks on the main macroeconomic aggregates.

6.2: Factors behind the change in corporate debt and the associated debt burden

In order to better define the rise in corporate debt at the macroeconomic level, this analysis proposes a breakdown of aggregate debt based on national quarterly financial accounts. The change in corporate debt is broken down as follows:

$$\begin{aligned} \frac{\text{Consolidated gross debt}}{\text{GDBP}} &= \frac{\text{Liquidities}}{\text{GDP}} + \frac{\text{Consolidated net debt}}{\text{Consolidated net assets (market value)}} \\ & * \left(\frac{\text{Assets abroad} + \text{Productive assets} + \text{Financial assets}}{\text{GDP}} \right) \end{aligned}$$

Based on the codes used in the quarterly financial accounts, debt and assets are said to be consolidated once they have been adjusted for intra-company loans by consolidating loans (F4) with liabilities held by NFCs (S11), households (S14), and general government (S13), as well as shares (F51) held by resident NFCs (for asset consolidation only).

Debt and assets are said to be net when they are adjusted for liquid assets defined as F2 (currency and deposits) plus F3S (short-term debt securities) plus F52 (shares in investment funds) in the assets of corporations (S11).

The consolidated net debt to consolidated net asset ratio is an aggregate indicator of leverage in the NFC sector, i.e. the proportion of assets financed by debt. *The ratio of productive assets to GDP* is an indicator of aggregate productivity.

In order to understand changes in the consolidated debt service ratio, the Bank for International Settlements (BIS) method of calculation is also applied, defined as follows:⁵⁶

$$\text{Debt burden} = \frac{\text{Gross debt}}{\text{Income}} \frac{i}{1 - (1+i)^{-\text{maturity}}} \text{ with } i \text{ denoting the interest rate.}$$

Taking into account total assets, the debt burden can thus be broken down as follows:

$$\begin{aligned} \text{Debt burden} &= \frac{\text{Gross debt}}{\text{Net debt}} \frac{\text{Net debt}}{\text{Net assets}} \frac{\text{Net assets}}{\text{Income}} \frac{i}{1 - (1+i)^{-\text{maturity}}} \\ &= \frac{\text{Gross debt}}{\text{Net debt}} * \left(\text{Net leverage} * \frac{1}{\text{Productivity}} \right) * \frac{i}{1 - (1+i)^{-\text{maturity}}} \end{aligned}$$

The ratio of gross debt to net debt reflects the effect of liquid assets. *The ratio of net debt to net assets* represents net debt leverage. *The ratio of net assets to income* corresponds to productivity,⁵⁷ and the latter ratio corresponds to the impact of the interest rate.

⁵⁶ https://www.bis.org/statistics/dsr/dsr_doc.pdf

⁵⁷ This productivity is closer to the real productivity of firms than the ratio of productive assets to GDP in the previous breakdown, since income here corresponds to the disposable income of firms, while GDP includes the value added created by other sectors.

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