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2017 RISK OUTLOOK



Risk and Trends



AUTORITÉ
DES MARCHÉS FINANCIERS

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EDITORIAL



Precisely ten years ago, in the summer of 2007, we were headed for a global crisis triggered by the securitisation of US subprime mortgages. A decade later, the economic and financial situation is still not back to normal in terms of business volumes, inflation and interest rates. The tide of regulations approved by the G20 leaders with a view to preventing such a crisis from recurring continues, albeit in a potentially less favourable political climate. Donald Trump's election in the United States appears to have ushered in a new era of deregulation, at least on that side of the Atlantic. We may therefore witness increased regulatory competition between the major jurisdictions, leading to a downward levelling of the protective measures we have introduced. In Europe, Brexit is also likely to contribute to this harmful trend, with the risk of regulatory divergence between the UK and continental Europe and jurisdictions competing for financial activities.

Although a great deal has been achieved over the last ten years, not all of the measures desired at the outset are fully operational yet. For example, derivatives markets have become more secure thanks to the expansion of central clearing, but clearing houses still do not have a clear recovery and resolution system for when they run into difficulties. From now on internalising the risks, clearing houses are increasingly exposed to international competition, and since the UK plays a key role, this is somewhat of a problem in the wake of the Brexit vote. With a great deal of uncertainty surrounding the Brexit negotiations, market operators should prepare themselves for a so-called cliff edge effect, i.e. the UK and the EU fail to reach an equivalence agreement on clearing houses before the UK's scheduled departure from the Union in March 2019.

As far as monetary policy is concerned, although we are some way off from returning to the pre-crisis situation, interest rates are rising gradually and in a controlled manner, which appears to be the best scenario for the time being. A return to the norm began in the US, and the increase in long-term rates we have seen there has been replicated globally, so far without any serious negative consequences. However, the twin interest rate risks we have identified in previous risk and trend mappings, namely keeping rates too low for too long and increasing them too quickly and sharply, still apply. It is the second of these scenarios which currently warrants most concern. Raising rates too quickly results in a sharp correction in bonds, possibly magnified by the fall in liquidity on this market. Risk premiums appear to be a thing of the past, meaning that there is a strong possibility of repricing. Moreover, excessive leverage remains endemic at a global level, affecting the public or private sectors (depending on the country in question) via bank credit or market-based debt. The sustainability of this debt is a cause for concern, and a credit event would doubtless trigger a general revaluation of risk premiums.

The ability of the financial markets to price risk and direct investments and savings therefore remains hampered by this exceptional monetary climate. Another example comes in the form of the difficulties encountered with the transaction-based calculation of important indices, such as Euribor or Libor. The markets that should be acting as benchmarks have practically disappeared, and should these indices no longer be calculable, this would put the continuity of all contracts that use them in jeopardy. On a different note, this persistent atypical monetary environment makes it harder for retail investors to find good returns and may encourage fraudulent investment offers, too much investment in real estate (which is not a risk-free asset and may even be at the peak of a cycle at the moment) or investment in subordinated debt securities with risks that are commonly misunderstood. The rescue of Banco Popular in June 2017, which constituted a first, in terms of a successful outcome for the EU's bank resolution mechanism, required a bail-in that wiped out the investment of some bondholders. In this case, the securities in question were not held by retail investors, which facilitated the process.

So, a decade on from the start of the crisis, the financial markets are still seeing exceptional times. The prolonged nature of this atypical period does not necessarily mean that it cannot lead to genuine improvements. The stability and credibility of our regulation as part of a revised and extensive EU project continues to offer hope, and the international climate provides us with the opportunity to promote the attributes of the Paris marketplace.

**Gérard Rameix,
Chairman, Autorité des Marchés Financiers**

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SUMMARY

Geopolitical risks are not yet behind us

A year on from the Brexit vote, geopolitical factors continue to dominate the risk landscape for financial markets. As well as the Brexit vote leading to negotiations on the UK's withdrawal from the European Union, elections in the US and France have thrown up the unprecedented scenarios of Donald Trump's presidential style and a new government formed by brushing the traditional political parties aside. For the moment, the surprises and uncertainty prompted by these votes have, as yet, not really had much of an effect on the financial markets. When corrections did occur, they were short-lived, while shares have hit record prices and volatility has occasionally dropped sharply to near-record lows (VSTOXX). Price-earnings ratios are high, indeed at their highest level since 2004 in the United States. The global economy does not appear to have improved sufficiently to warrant such highs, in spite of the US president's programme being conducive to high growth and inflation and of a recovery in household and business confidence in the euro area, where unemployment is at its lowest level since May 2009. As such, the risk of equity repricing remains high, since notably there is no shortage of potential triggers. There are more elections around the corner, in Germany and Italy for example. Geopolitical tensions are high in several regions of the world, which may increase the risk of cyberattacks, now motivated by ideology as well as criminal intent. A proliferation of protectionist or populist ideas increases the possibility of commercial policies which, should they materialise, would have a hugely detrimental effect on the markets (global trade, emerging countries/economies, etc.). Lastly, many structural economic problems remain unsolved, not least excessive leverage in the public and private sectors, including in major emerging markets like China.

An increased risk of interest rates rising too sharply and quickly

The isolated corrections we have seen, accompanied by temporary spikes in volatility, are understandable if the markets continue to be dominated by expansionist monetary policy conducive to supporting them. However, a return to the norm is well under way in the United States, where the Federal Reserve has raised short-term rates and long-term rates have increased markedly since the election of Donald Trump. Between July 2016 and March 2017, the 10-year US government bond yield climbed from 1.4% to 2.6% (before retreating to 2.2% in June). Of this 120-basis-point increase, 60 came in the month following the presidential election. As usual, the rest of the world has followed America's lead: in France, for example, the 10-year OAT yield rose from 0.1% to 0.7% between September 2016 and June 2017. As such, the risks associated with keeping interest rates too low for too long have diminished, and the steepening of the euro area yield curve has even proved to be most beneficial to Europe's banks, whose market capitalisations have increased considerably (the prospect, in the wake of the US presidential election, of more favourable regulations as regards profitability in the sector may also have played a part): the STOXX Europe 600 Banks index climbed by nearly 50% between July 2016 and June 2017. At the same time, the twin risks of interest rates rising too quickly and too steeply have increased, particularly in regions where the economy is not yet able to support such a rise, i.e. the euro area, where the ECB's ability to control long-term rates will be crucial, and emerging countries/economies, where the cost of borrowing may become unsustainable while there may be destabilising shifts on the currency and capital markets. A bond re-pricing brought about by interest rates rising too quickly would particularly harm those who hold substantial amounts of securities purchased when rates were low.

Lying somewhere between the opposing risks of rates being too low or too high, the ideal scenario remains that of interest rates returning slowly and gradually to normal levels. Indeed, the rise we have seen so far has been broadly welcomed.

Monetary policy continues to make it harder for financial markets to direct investments

Issuers were able to profit from extremely beneficial rate conditions while they could. Aside from the occasional spikes in volatility mentioned earlier, the markets were favourable so they took on more debt. However, the recovery of the primary bond market has not yet brought about an increase in investment, and the overall debt levels of non-financial companies could present solvency risks. In addition, if we consider share buybacks, equity financing remains at a low level; indeed, the net figure was negative in 2016 for listed French companies (which does not prevent the markets from being useful and mobilised in segments where equity financing is widespread, e.g. innovation financing). Turning to the secondary markets, the markets' ability to direct investments effectively appears to be hindered by how monetary policy is affecting risk premiums. Rate spreads for the least solvent non-financial companies have therefore returned to the lows of two years ago, which raises questions about credit risk pricing (little distinction between securities).

Possible deterioration of market liquidity and quality of price formation mechanism

In France, secondary bond market liquidity seems to have been deteriorating slowly since autumn 2016, particularly in the corporate segment, albeit staying at historically acceptable levels. Moreover, liquidity has so far fared well during shocks. However, these markets are undergoing short-term (the ECB using them to make purchases) and structural (digitisation, orders becoming smaller and more frequent) changes. The availability of good-quality collateral eventually caused problems at the end of 2016, when the repo market saw unusual rates. Lastly, it has become increasingly difficult to calculate benchmark interbank offered rate (IBOR) indices because the market on which observations are based has practically disappeared. On the equity markets, the share of over-the-counter transactions appears to have stabilised but the share attributable to dark platforms (which are exempt from transparency rules) continues to grow and now lies above the ceilings established in MiFID II, which come into force in 2018. This means that the quality of the entire price formation process could be affected, and in particular, given that greater recourse to passive management has eroded the share of participants who analyse the fundamental value of assets. A greater number of transactions carried out during the fixing window, as opposed to when the trading session is ongoing, may be seen as a manifestation of this risk, with fewer investors playing an active role in the price discovery process during the trading session.

Close scrutiny of investment fund liquidity and leverage

In asset management, regulations have evolved in order to better understand and contain the risks associated with leverage or liquidity. Figures show that, on average, there is little leverage, and the very few funds that do have recourse to debt have a strategy that justifies doing so. In France, the Sapin 2 law has introduced a range of tools for managing fund liquidity risk. Bond funds, often the subject of most concern, saw their liquid assets fall slightly in 2016 versus 2015, but their leverage also declined. The new European framework on money market funds is expected to limit their risks. In France, however, it will paradoxically create constant net asset value (CNAV) funds, which have not previously existed in France and which the European Systemic Risk Board (ESRB) has recommended

be outlawed throughout Europe. Lastly, the asset management sector benefits from technological innovation, and funds lending money to FinTech start-ups have already been set up, taking advantage of the new rules.

The new international climate may make it harder to manage risks associated with clearing houses

The drop in notional amounts traded on the derivative markets seems to have come to an end, suggesting we have reached the limit of compression techniques. Figures point to the success of central clearing, which has made clearing houses the new hub for risk. Although the resolution of these houses is now the subject of a plan for detailed and harmonised regulations, the same cannot be said for their recovery. Moreover, rivalry between these clearing houses may give rise to regulatory competition, which the EU's current rules on equivalence cannot contain on a sustainable basis. The matter of British clearing houses will naturally arise during the Brexit process, however the challenges are more general. Donald Trump's stance on financial regulation (the US Financial CHOICE Act bill) also raises the distinct prospect of harmful competition between jurisdictions and a downward levelling of global regulations.

The stress test approach should be further developed so that risks across all the financial markets are properly taken into account

In view of the financial sectors' interconnectedness and how shocks can spread, risk assessment could be improved if it were based on macro stress tests that aim to evaluate resistance to extreme but plausible shocks. In order to properly describe these connections and their dynamic effects (for example, how a negative shock on asset prices may or may not cause downward spirals of asset sales) modelling is required, which would rely largely on academic research. Pending such input, stress tests can provide useful, if more limited, indications, such as those applied simultaneously to a category of entities (e.g. clearing houses, as done regularly at EU level) or those that examine sectoral risk, e.g. the studies on commercial real estate in France published in March 2017 by the *High Council for Financial Stability* (Haut conseil de stabilité financière, HCSF).

Households' allocation of savings risks depriving them of better long-term returns

Lastly, as far as French investors are concerned, yet again they barely capitalised on the performance of the equity markets, since they prefer to place their money in cash and deposits (a record €53 billion in 2016). In a low-rate environment, they are more susceptible to offers of unrealistic returns or offers that disguise the risks involved, perhaps by using complex formulas or indices. Although the Sapin 2 law has restricted their exposure to forex trading adverts, other non-conventional products (such as diamonds) are now starting to attract their attention. Real estate continues to prove popular, as shown, by the success of retail open-ended property investment fund (OPCIs): in 2016 subscriptions doubled, with cumulative investments totalling €9 billion. Admittedly, this figure remains low, and the work conducted by the HCSF has shown a lack of systemic risk in French real estate. However, investing in real estate at a time when prices have never been so high and returns so low is not without risk for the retail investors concerned. As far as the risk-return profile is concerned, real estate lies somewhere between bonds and equities, which still offer the highest potential returns. Efficient allocation of household savings could therefore include these products as part of a long-term investment strategy, taking the short-term risks and the high risk of correction on the markets into account.

	Description of risks	Level at mid-2017	2017-2016	Outlook for 2018
Financial stability	1. Increased risk premiums, weakening indebted firms or those with assets whose prices do not reflect their fundamentals, could correct sharply <i>Observation of low risk premiums, low volatility and high valuations</i>	■	➔	➔
	2. Lack of coordination in monetary and fiscal policies, lack of coordination in regulatory adjustments in the financial sector <i>Brexit and election of Donald Trump: increased risk of regulatory competition</i>	■	↗	↗
	3. Credit risk, unsustainable debt trajectories, non-performing loans <i>Hike in interest rates following the trend in the US</i>	■	↗	➔
Market organisation and functioning	4. Volatility, sharp fluctuations in liquidity conditions, large-scale shifts by investors from one asset class to another <i>Market resistance in spite of the shocks of 2016</i>	■	↘	➔
	5. Increasing needs for high-quality collateral, with an ill-controlled reuse and transformation risk, in light of a potentially scarce supply of local collateral in a stress scenario <i>Problems on the repo market at the end of 2016</i>	■	↗	➔
	6. Functioning of market infrastructure <i>Clearing houses (recovery regime; location of euro clearing in the wake of Brexit)</i> <i>Risk of cyber-attacks motivated by criminal or ideological intent</i>	■	➔	↗
Financing economic activity	7. Profitability of financial institutions in a low interest rate environment and a still-fragile economic environment <i>Favourable effect of a steepening rate curve</i>	■	↘	➔
	8. Challenges facing companies, particularly SMEs, that wish to access the financial markets	■	➔	➔
	9. Lack of investor protection when there is little information about the risks associated with certain investments or distribution channels <i>Protection provided by the legislative body (Sapin 2 law)</i>	■	↘	➔

Level of risk at mid-2016

■	Systemic
■	High
■	Material
■	Low

IN BLUE: major new information that changes the diagnosis

Change in risk since 2015 or outlook for 2017

↘	Lower
➔	Stable
↗	Higher

FOCUS ON: CYBER-RISKS

A SECTOR WITH INHERENT EXPOSURE TO VARIOUS THREATS

The financial sector's reliance on information systems and the strong interconnectedness of its operators mean it is structurally exposed to cyber-risks, whether in the form of involuntary technical faults or malicious attacks. These attacks compromise data integrity and confidentiality as well as the overall functioning of the system. Those responsible are motivated by various reasons: criminal (blackmail, for example), competitive (aiming to harm a company¹), ideological or even political (hacking in order to promote ideas, favour a political party or sway public opinion). The development of FinTechs serves only to increase the financial sector's exposure to cyber-risks.

Recent cyber-attacks and developments in financial cyber-crime

Whether it was the Fancy Bear Group hacking Democratic Party emails during the US presidential election, the attack on Dyn servers that brought down Twitter and Netflix or the week-long internet outage in Liberia, cyber-crime affected a wide range of activities in 2016, adding to the list of notable cyber-attacks (see Box 1). The number of cyber-attacks is growing at a rate of 40% per year, and in one year alone they brought about estimated global losses of \$400 billion². The WannaCry attack in May 2017 took ransomware attacks to a whole new level. On the markets, listed cyber-security companies such as Sophos, Barracuda Networks and FireEye saw big gains (8% in a single week).

Box 1: Memorable cyber-attacks			
Anthem (Health Insurance)	Customer database hacked by phishing* and exfiltration of 80 million customer records: social security numbers, addresses, dates of birth, etc.	ASHLEY MADISON	Following a failed attempt at blackmail to close the site down, hackers leaked the data (emails, phone numbers, names, addresses and even sexual behaviours) of 37 million members
SONY	A hacker obtained an employee's password. He got into the network, broadcast five unreleased films and leaked employees' personal data (salaries, etc.)	Le Monde	The paper's Twitter account was hacked via a phishing email sent to employees. A link in the email took them to a clone of the login page
TV5MONDE	Hackers sent a Trojan horse via phishing* to cause the station to go off air for 21 hours.	BANGLADESH BANK <small>Central Bank of Bangladesh</small>	Data leak (names, dates of birth, passwords, phone numbers, email addresses, etc.) affecting 1.5 billion accounts. These hacks were expected to affect the sale price of Yahoo! to Verizon, or even threaten the entire deal.
2014	2015	2015	2016
			
<small>*: technique that uses identity theft to obtain personal information **: Society for Worldwide Interbank Financial Telecommunication</small>			
<i>Source: AMF, January 2017</i>			

¹ Sometimes, this involves former employees looking for revenge.

² Source: McAfee (2014).

The most recent cyber-attacks in the financial sector seem to have been concentrated in three spheres of banking:

- Credit card data (victims' losses worldwide were estimated at \$114 billion in a single year³, compared with the \$29 billion estimated annual worth of the cocaine market, for example);
- Contamination of banking systems (e.g. 20 Polish banks were contaminated in January 2017 by a malware attack on the website of the country's financial regulator);
- Identity theft of finance sector operators or hacking of payment systems (\$65 million were stolen via the theft of 120,000 bitcoins during the August 2016 Bitfinex hack⁴).

Competent authorities

Combating cyber-risks in the financial sector requires the mobilisation of several actors, whether from different countries (the international dimension of operators and markets, outsourcing to third countries, etc.) or cooperation within the same country (the various competent national authorities). In October 2016, the G7 published the *G7 Fundamental Elements of Cybersecurity for the Financial Sector*.

For the financial markets, the European (ESMA) and international (IOSCO)⁵ regulators currently deal with the issue by identifying cyber-risks, implementing detection or protection systems, and responding to and recovering from attacks. Governance problems (competence sharing between authorities or, within the same authority, between the IT department and other departments) are the preferred angle of enquiry, and neither ESMA nor IOSCO currently envisages any prescriptive recommendations.

OICV believes that asset management companies' sensitive areas are client data, algorithm strategies and the ability to execute a transaction, order books and their website (client access). In France, all asset management companies have a business continuity plan.

In France, the relevant remits are shared by the French Prudential Supervisory Authority (ACPR), the AMF and the Banque de France. The French Network and Information Security Agency (ANSSI) also covers the financial sector as part of a national defence strategy (pursuant to the Military Planning Law). Indeed, finance is one of the 12 sectors of vital importance (SAIVs) for which ANSSI assumes national responsibility. Operators of vital importance (OIVs) have been designated within each SAIV (the list being classified as defence confidential), and they have their own obligations: complying with security rules, sharing information with ANSSI and immediately notifying the agency of any incidents, and accepting audits carried out by ANSSI. Lastly, following three years of talks, on 6 July 2016 the European Parliament and the European Council adopted the Directive on Security of Network and Information Systems (NIS Directive), which establishes a formal framework for cooperation between Member States and makes provision, in particular, for the reinforcement of the cyber-security of operators in key sectors.

³ 2011 estimate by Symantec, a major industry player and owner of the Norton brand.

⁴ The most famous previous example was the \$81 million stolen from the Bangladesh central bank in February 2016.

⁵ In April 2016, ESMA published a report on financial market cyber-security entitled *Cyber Security in Securities Markets – An International Perspective*.

Although applicable French financial sector regulations tend not to explicitly mention cyber-security, they do provide for certain operational requirements. The latest EU regulations require the various industry participants to ensure their information systems are robust: the Markets in Financial Instruments Directive (MiFID) II for intermediaries⁶ and trading venues⁷ as part of algorithmic trading, or for data reporting service providers (for whom the notion of e-security is introduced by a level 2 text)⁸; European Market Infrastructure Regulation (EMIR) for clearing houses⁹; or Central Securities Depositories Regulation (CSDR) for central depositaries¹⁰.

The ability of market infrastructures to protect themselves from cyber-attacks and resume operations following a serious incident has therefore become a crucial part of their operational resilience. Moreover, the quality of the systems put in place to protect against cyber-risks is now part of the key risks identified by the trading venues, central counterparties and central depositaries, due not only to the critical role that these infrastructures play in financial stability but also to the potential financial and reputational damage of a large-scale attack.

The overall strategy of these infrastructures therefore includes action plans to remedy identified weaknesses and continually improve security systems, both in terms of protection and detecting incidents. Strategies should aim to define procedures for recovering critical activities, including in extreme attack scenarios that target data integrity and availability, taking into account the nature of the data ecosystem. They should also include the requirements and recommendations, prescriptive or otherwise, of national and international regulations.

As part of their supervisory mission, the authorities regularly monitor the cyber risk management strategies and action plans that have been implemented by the infrastructures.

Furthermore, as we can see in the following examples, the traditional market abuse offences that come under the AMF's enforcement remit, namely insider dealing, price manipulation and dissemination of false information, may increasingly feature a cyber component:

- Insider dealing: between 2010 and 2015, two young Ukrainian hackers made illicit profits of \$100 million by using as inside information press releases sent by listed US companies to information providers; in addition, sites for exchanging inside information (KickAss Marketplace, Stock Market Insiders, etc.) are appearing on the dark net.

⁶ Article 18 of Commission Delegated Regulation 2017/589.

⁷ Article 23.1 and 23.4 of Commission Delegated Regulation 2017/584.

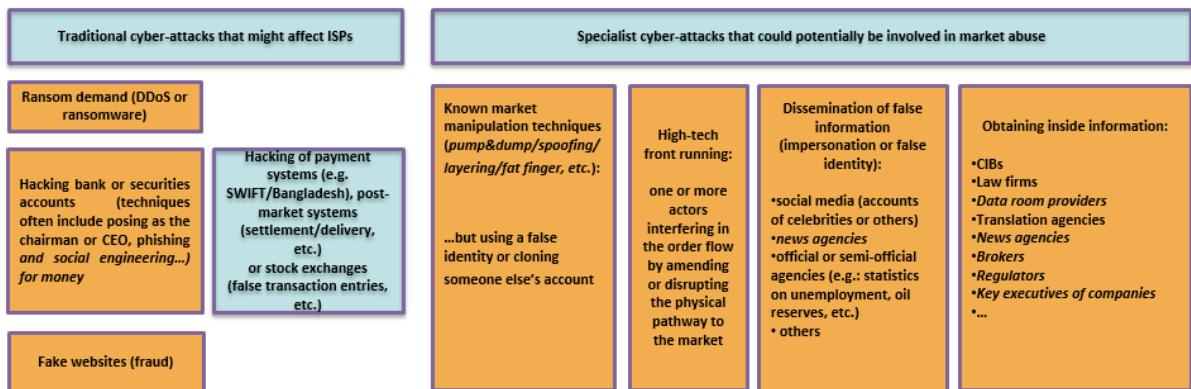
⁸ These service providers include Approved Publication Arrangements (APAs), Approved Reporting Mechanisms (ARMs) and Consolidated Tape Providers (CTPs). Article 9 of Commission Delegated Regulation 2017/571 mentions the notion of electronic security and introduces operational requirements such as the implementation of physical and electronic security systems.

⁹ Article 9 of Commission Delegated Regulation 153/2013, in particular.

¹⁰ Article 45 of the CSDR.

- Price manipulation: in February 2015, Russian hackers targeted a Kazan-based bank and took control of a market-linked terminal to place more than \$500 million worth of orders and send the price of the rouble down by 15% against the US dollar in just 14 minutes; in July 2016, the customer accounts of online British brokers were hacked, enabling the manipulation of illiquid securities in order to make money at the expense of the holders of the hacked accounts.
- Dissemination of false information: a fake Vinci press release had a huge impact on the company's share price on 22 November 2016, which demonstrates the need for discussions with all parties (listed companies, information providers, etc.) regarding measures to prevent such incidents or limit their impact. In the wake of that incident, the AMF published its own press release on 23 February 2017, available online¹¹, in which it defined best practice for issuers and press agencies.

Financial market cyber-crime mapping



¹¹ <http://www.amf-france.org/Actualites/Communiques-de-presse/AMF/annee-2017.html?docId=workspace%3A%2F%2FSpacesStore%2Ffba06651-ed84-4e46-a9db-1876b4330712>.

CHAPTER 1: FINANCING ECONOMIC ACTIVITY

The trends we have seen since the middle of 2016 confirm a significant improvement in risk perception, related particularly to the continuation of accommodative monetary policies in spite of the beginning of monetary normalisation and the prospect of fiscal stimulus packages in the US and China. This trend saw risk premiums squeezed throughout 2016, but this has changed since. Activity was extremely varied on the primary markets. Generally speaking, the episodes of financial instability we witnessed in 2016 had a huge effect on share issues but also on junk bonds, as investors embarked on a flight to quality.

Three primary risks can be seen in such an environment:

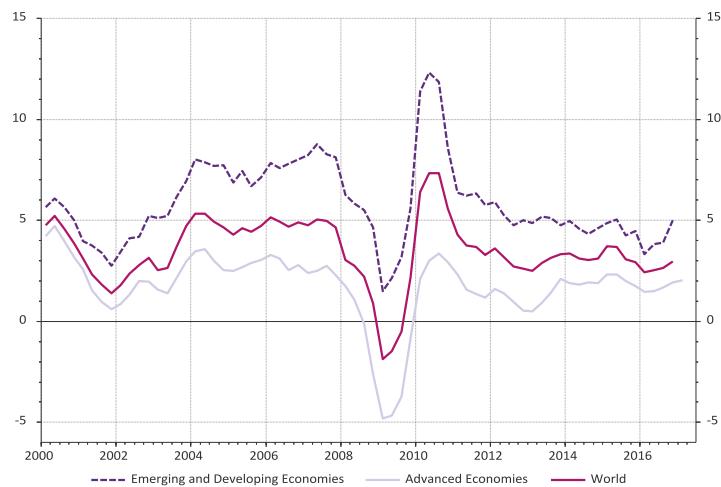
- The risk of a brutal asset repricing, with persistently low interest rates causing spreads to become so narrow they can no longer be used to properly assess risk;
- The risk that the long-term rate rise in the US is sharper than predicted and spreads to the euro area, thereby hampering the economic recovery on this side of the Atlantic. Such an increase in interest rates would counteract the accommodative monetary policy intentions of the ECB and therefore make it less effective. It would also weaken economic agents, particularly certain nation states, and therefore any banks that hold sovereign bonds issued by these countries.
- No recovery in the European IPO market, combined with growth in share buybacks, also raises questions about the role of the equity markets in financing the economy.

1.1. IN SPITE OF A VERY UNCERTAIN ENVIRONMENT, THE PERCEPTION OF RISK HAS IMPROVED SINCE THE SUMMER OF 2016

1.1.1. Better economic outlook at the start of 2017, albeit with some major contingencies, particularly geopolitical ones

During the first half of 2016, the financial markets were seriously affected by continued major uncertainty surrounding the global economy. These uncertainties related in particular to the scale of the Chinese economic slowdown, the solidity of the European banking system in a low-rate environment with some countries having a huge stock of non-performing loans, and the impact of low oil prices on exporting nations. This macroeconomic climate changed in the second half of the year. In the emerging countries, the huge fiscal stimulus unleashed in China reassured the markets, at least temporarily, while the recovery in oil prices dragged exporters such as Russia out of recession.

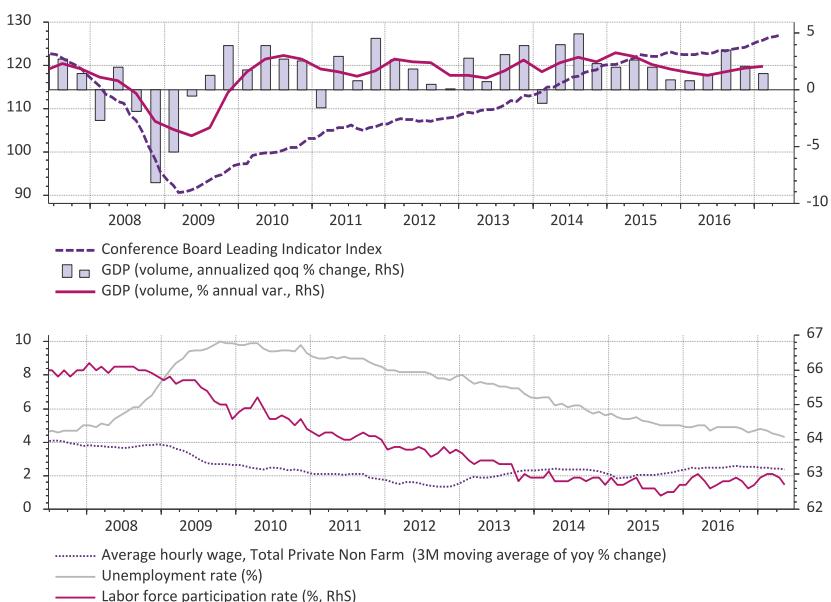
Figure 1: Change in GDP (volume, yoy % change)



Source: IMF.

Supported by demand from emerging markets and stronger oil prices, the US economy has benefited from favourable conditions since summer 2016, and was approaching full employment at the start of 2017, with unemployment dropping back to its pre-crisis level, although this has to be partly because of a falling participation rate¹² (Figure 2). This situation has been accompanied by a rise in wages and inflation, which was close to 2.4% year on year in March 2017. These trends could well continue in 2017, because if President Trump's programme of fiscal stimuli is applied quickly, it should - at least in the short term - deliver more growth and higher inflation.

Figure 2: Activity and employment in the United States

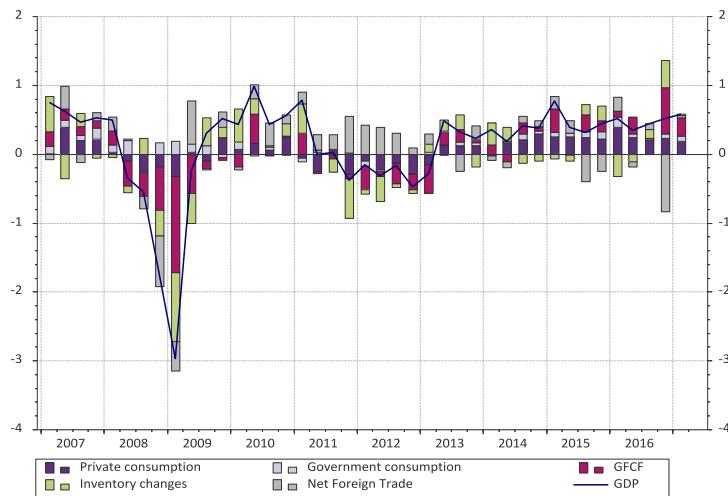


Source: Thomson Reuters Datastream.

¹² The participation rate is the ratio of the labour force to the total population.

In the UK, the result of the Brexit vote did not impact growth as much as expected, with GDP hitting 1.8% in 2016, versus the IMF July 2016 forecast of 1.7%. Moreover, growth prospects for 2017 have improved: in July 2016, the IMF forecast growth of 1.3%, but this had risen to 2% in April 2017, just before the general election. The Brexit risk therefore seems to be taking longer to materialise than predicted. In the euro area, household consumption remained buoyant, while there were also signs of more corporate investment (Figure 3).

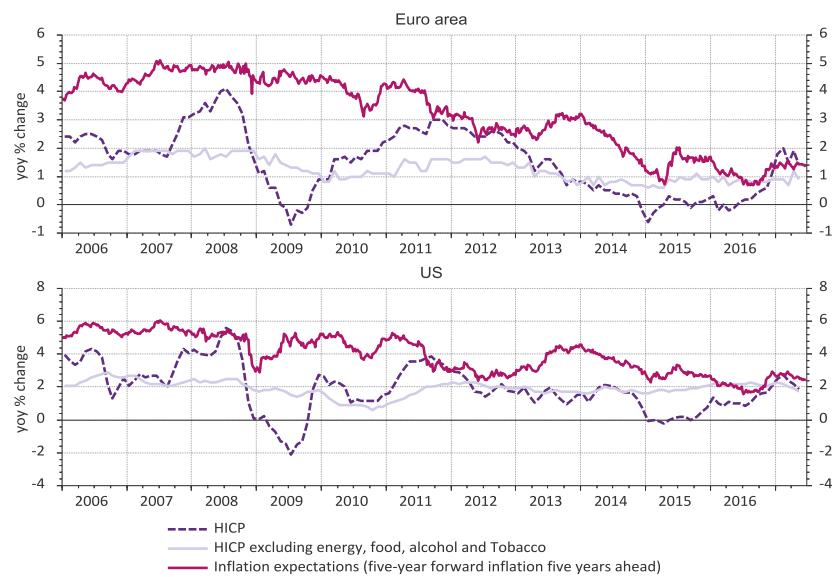
Figure 3: GDP and its components in the euro area (qoq % change and contribution in percentage points)



Source: Thomson Reuters Datastream.

At the same time, with inflation approaching the ECB's target, deflationary fears have considerably increased. Unlike in the US, this rise in inflation has been due primarily to higher petrol prices, with underlying inflation remaining very stable at around 0.9% (Figure 4).

Figure 4 : Change in consumer prices (yoY % change)

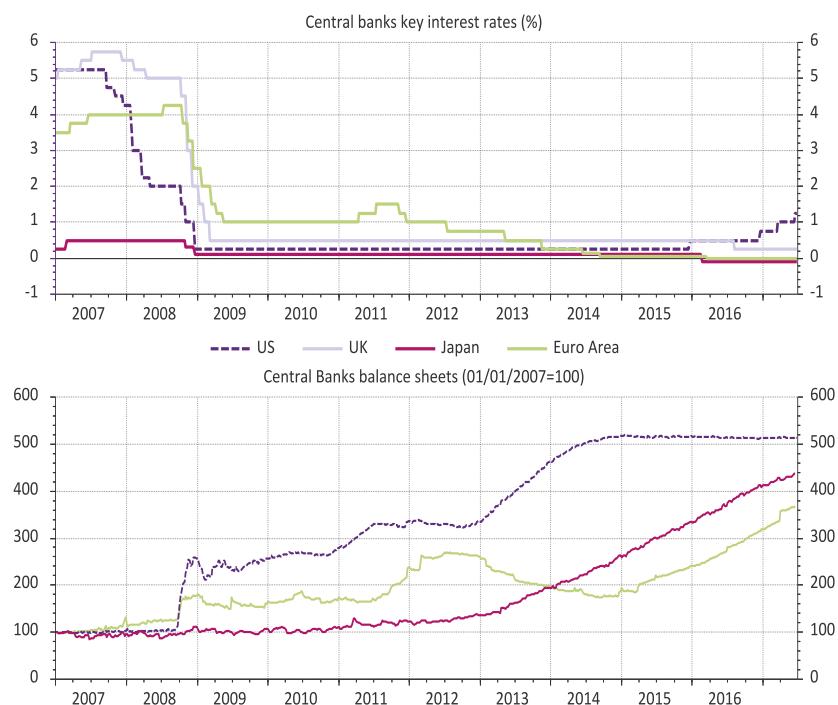


Source: Thomson Reuters Datastream.

1.1.2. Can the difference in European and American monetary policy continue?

The discrepancy in the economic cycles of the US and the euro area explains the difference in monetary policy between the two regions since the end of 2015. After a year's interruption, the Federal Reserve in the US resumed its policy of gradual monetary normalisation by executing three 25 basis point rises in the federal funds rate in December 2016, March and June 2017, taking it to 1.25% (Figure 5). And yet, the Fed has kept the size of its balance sheet unchanged by reinvesting the amounts from securities that were held following the previous quantitative easing programme and were coming to maturity¹³. This policy may be amended, with the Fed envisaging a gradual shrinking of its balance sheet should the macro-financial environment allows¹⁴. On the contrary, the Brexit vote prompted the Bank of England to cut its base rate to 0.25%. In the euro area, a lack of clear signs of an economic recovery, no underlying inflationary tensions and persistently high political risk are the reasons for the low-rate policy continuing. A return to conventional monetary policy is nonetheless envisaged: asset purchasing will certainly continue in 2017, albeit at a considerably reduced net amount of €60 billion a month compared with €80 billion from April onwards, and this drop should escalate in 2018 if the economic recovery continues.

Figure 5: Key interest rates and balance sheets of central banks



Source: Thomson Reuters Datastream.

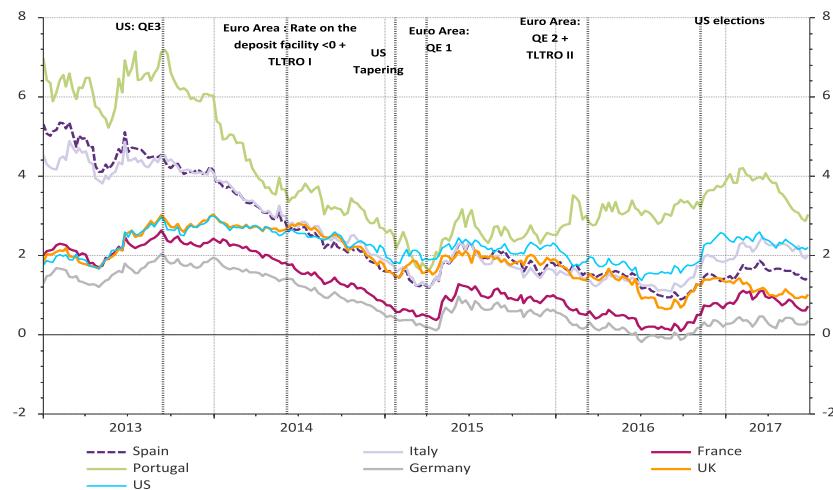
¹³ Minutes of the Federal Open Market Committee, 14-15 March 2017.

¹⁴ FOMC issues addendum to the Policy Normalization Principles and Plans, 14 June 2017.

Limited rise of sovereign bond yields

The continuing overall accommodative nature of monetary policy has kept nominal government bond yields low, both in Europe and the US. Indeed, some of these bonds, such as the French OAT and the German Bund slipped to record lows in the third quarter of 2016 (Figure 6).

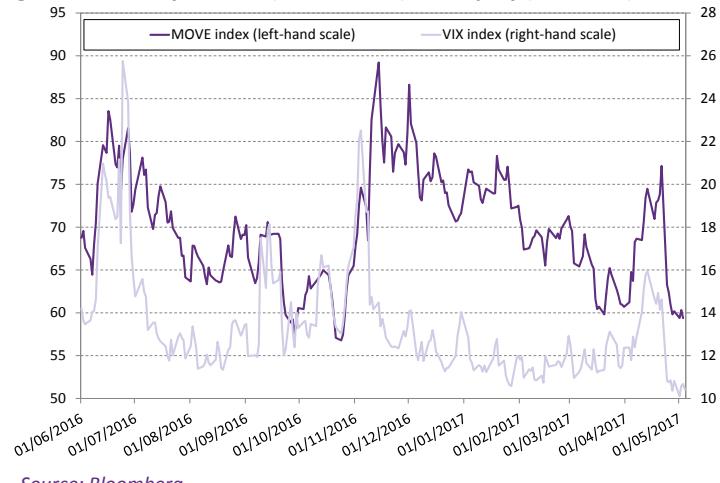
Figure 6: Government bond yields (%)



Source: Thomson Reuters Datastream.

Since autumn 2016, we have however witnessed an increase in long-term rates on both sides of the Atlantic, at least until spring 2017. In the United States, this trend conveys anticipation of monetary normalisation and an expansionary budgetary and fiscal policy now that Donald Trump is in the White House. The uncertainty surrounding the timetable and methods for actually implementing these policies explains the relatively limited nature of the rise, around 80 basis points (pb), between the low of July 2016 and the end of June 2017. Having said that, the increase was extremely sharp immediately after the election (+60 bps in a month). This trend has been accompanied by a temporary increase in bond market volatility, which has been more closely correlated to equity market volatility (Figure 7).

Figure 7: Volatility of bond (MOVE index) and equity (VIX index) markets



Source: Bloomberg

Sovereign debt spreads widen in Europe because of political and economic risk

Despite the ECB's asset purchasing programme, the increase in sovereign debt yields in the US has partially spread to this side of the Atlantic, to varying degrees. The rise has been moderate in Germany, which has benefited from a flight to quality, but more marked in southern Europe, particularly Portugal and Italy, which has been hindered by its weak banking system and economic growth, and, to a lesser extent, France, where the approaching election played a part. The situation is different in the UK, where the Bank of England's rate cut and predictions of a post-Brexit economic slowdown have seen long-term rates fall.

As well as credit spreads widening in the euro area, the increase in long-term rates has seen a steepening of Europe's rate curves (Figure 8), to the benefit of the banking sector, where profits had been jeopardised by extremely low interest margins.

Figure 8: Yield spread (10/2 years) on sovereign bonds (%)



Source: Thomson Reuters Datastream.

- The reduction in private agents' borrowing costs has continued, particularly in the high-yield segment.

As for non-financial private issuers, they benefited from a continued improvement in borrowing conditions between February 2016 and the start of 2017, including in high-yield bonds. High-yield credit risk has fallen in the US, as shown by the reduction in CDS premiums and the sharp decline in distressed bond assets¹⁵. These totalled \$170 billion in May 2017, compared with nearly \$400 billion a year earlier (Figure 9). This trend is surely due in part to the rise in oil prices in 2016, which eased the financial pressures on producers of unconventional oil¹⁶. However, this remains a fragile situation, particularly since the rise in oil prices has slowed since the summer of 2016¹⁷, despite the strengthening of global demand and the restrictions introduced by OPEC but not always adhered to.

¹⁵ These are securities whose yield is more than 10 percentage points above sovereign debt yields.

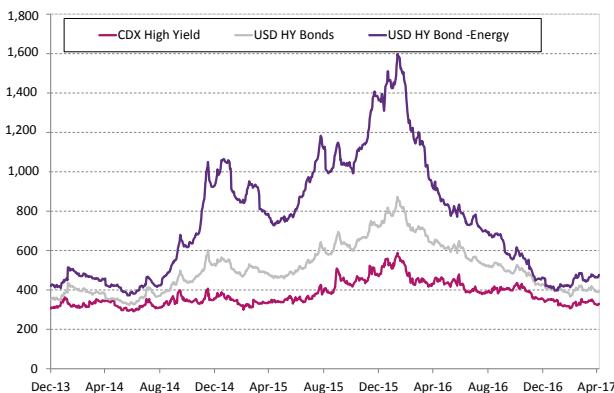
¹⁶ Unconventional oil differs from conventional oil because the techniques used to extract it are generally more complex. Shale oil is an example of unconventional oil. See 2015 Risk and Trend Mapping, pp. 28-29.

¹⁷ Between June 2014 and January 2016, the price of Brent oil dropped from \$111 a barrel to \$32 a barrel; it has hovered around \$50 a barrel since the start of 2017.

***The exception that
proves the rule:
spreads have
increased for
Europe's highest-
rated securities***

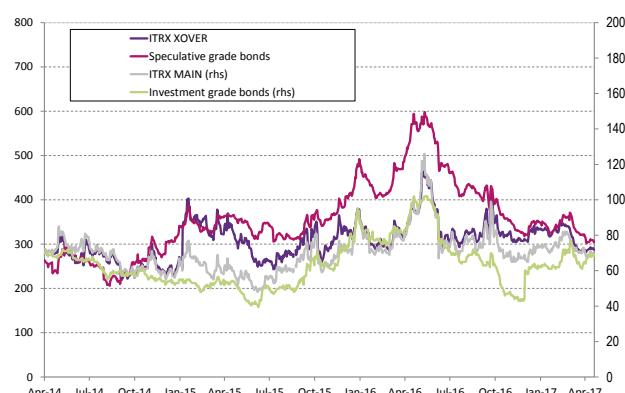
In Europe, the ECB's Corporate Sector Purchase Programme (CSPP) has squeezed risk premiums throughout the corporate bond market, particularly in the high-yield segment, which remains attractive for investors seeking big returns (Figure 10).

Figure 9: Change in corporate dollar-denominated bond spreads and CDS High Yield indexes in the United States (in basis points)



Source: Bloomberg.

Figure 10: Corporate spreads by rating category and CDS indexes in Europe (basis points)



□ Record highs for equity markets

The equity markets have shown dynamic growth since summer 2016, and some indices, including the S&P 500, the FTSE 100 and the DAX 30, posted record highs in March and April 2017, in spite of the myriad uncertainties surrounding the implementation of expansionist economic policy in the US and China, and the impact of Brexit (Figure 11).

Gains on the stock market have gone hand in hand with generous dividend policies. Growth in dividend payments may have slowed, from nearly 10% in 2015 to 0.6% in 2016¹⁸, but they remain extremely high, totalling more than \$1,150 billion, according to Henderson Global Investors. Falling commodities prices during most of the year, due in particular to a slowdown in the emerging economies, has especially affected the dividend policies of mining and oil groups. This is certainly the case in the United States, where dividend growth remained strong at over 4% but down on the double-digit growth witnessed in previous years. In France, total dividends paid out by CAC 40 companies were €46 billion, up by 13%¹⁹ on 2015.

¹⁸ Adjusted for exceptional dividends and currency effects.

¹⁹ Before exceptional dividends.

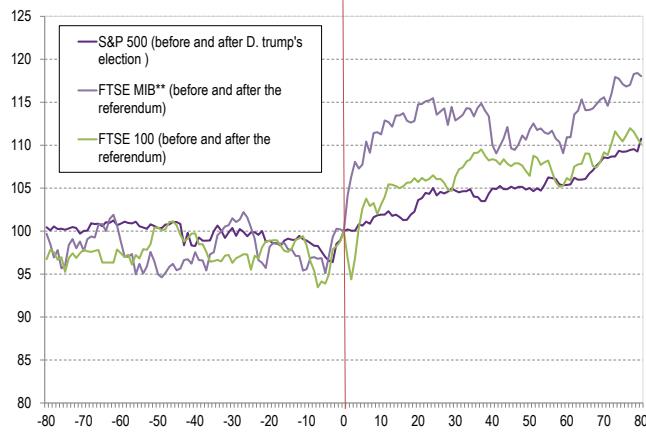
Figure 11: Change in main stock market indices
(in local currency, base 100 on 01/01/2008)



Source: Thomson Reuters Datastream

It is worth noting that in 2016, western stock markets, which experienced significant corrections at the start of the year because of fears over the scale of the Chinese economic slowdown and the solidity of the European banking system, managed to resist in the face of huge political shocks in Europe (the Brexit referendum in June and the Italian constitutional referendum in December) and the United States (the election of Donald Trump in November). The drop in share prices that one might expect as a result of higher risk premiums occurred only after the Brexit vote, but even then was only short-lived (Figure 12). Prices bounced back very quickly.

Figure 12: Change in stock market indices before and after political events*
(Base 100 on day of event)



Sources: S&P, FTSE.

(* Date 0 corresponds to the event date (24 June for the Brexit referendum, 9 November 2016 for the US presidential election and 5 December 2016 for the Italian constitutional referendum).

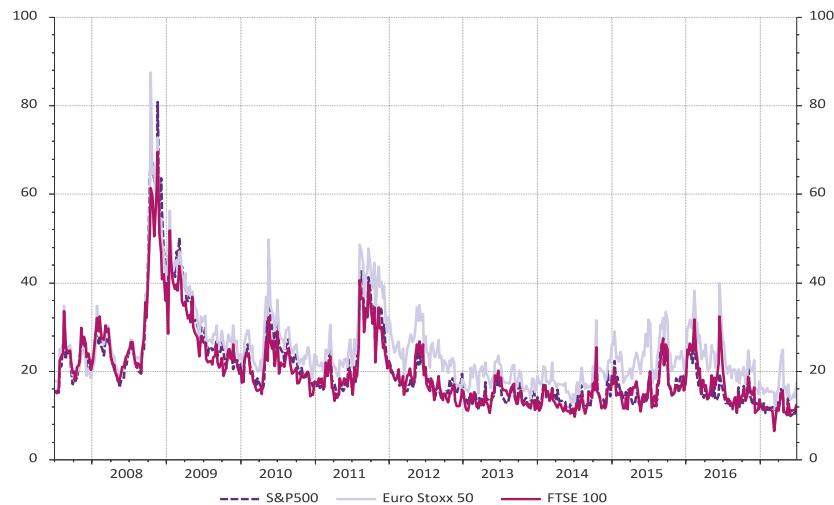
(**) The FTSE MIB is the Italian stock market's main index, consisting of its 40 largest listed companies.

The American election may have a bigger and longer-lasting effect in the marketplaces of certain emerging countries, which could find themselves weakened by higher interest rates and a stronger dollar as well as by trade barriers, particularly in Central America, where the economy is hugely dependent on access to the US market.

Equity market volatility at record lows despite a high degree of uncertainty

In spite of the political shocks in 2016 and the period of uncertainty that several of these (Brexit, Trump) brought about, the equity markets' implied volatility, which measures perception of risk, fell sharply and was at record low levels in spring 2017 (Figure 13).

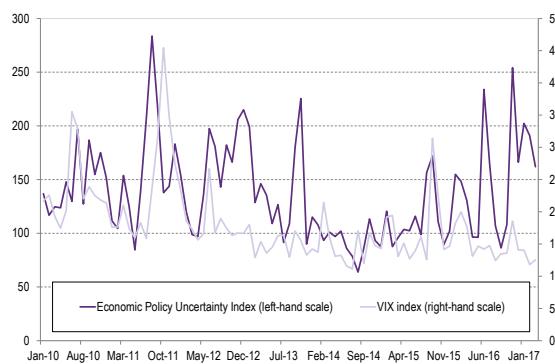
Figure 13: Implied volatility indexes (in %)



Source: Thomson Reuters Datastream.

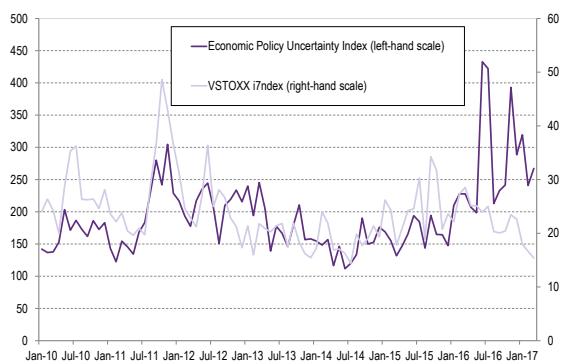
Equity market volatility therefore now appears to be decorrelated from political uncertainty indexes.

Figure 14: Economic policy uncertainty index in the US and VIX



Source: Chicago Board Options Exchange, Economic Policy Uncertainty

Figure 15: Economic policy uncertainty index in Europe and VSTOXX



Source: STOXX, Economic Policy Uncertainty

This trend, combined as we have already seen with high valuations on some equity markets, especially in the US (Figure 16), and extremely low spreads on the bond markets, raises questions as to whether the risks affecting the financial markets are being underestimated, which may lead to a brutal repricing of assets.

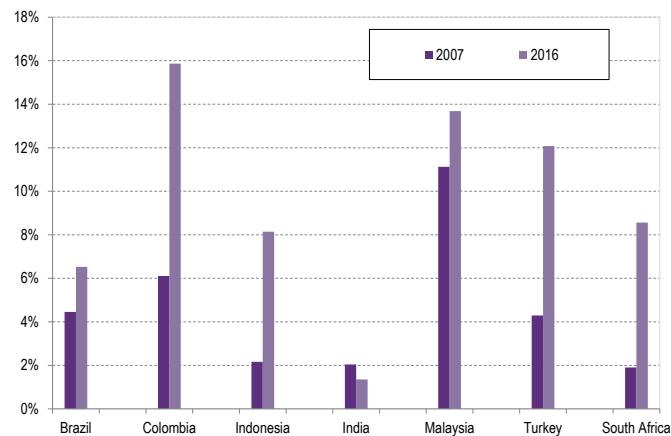
Figure 16: Change in PERs (price-earnings ratios)



Source: Thomson Reuters Datastream.

In particular, there remains considerable uncertainty surrounding the timetable, structure and methods for implementing potentially different fiscal and monetary policies in the US, with Donald Trump's programme for fiscal stimulus on the one hand and a monetary policy tending towards normalisation on the other. These policies could have a major impact on the global financial markets, particularly if interest rates rise more sharply than anticipated in the US and, by contagion, Europe, in spite of the two regions being at different stages of the economic cycle and having different monetary policy aims. The European economic recovery may also be compromised. Combined with the appreciation of the dollar, this interest rate rise would also pose a threat to emerging markets (Figure 17). Regardless of the US policy mix, many of these emerging countries are directly exposed to a certain number of potential shocks, such as a debt crisis in China.

Figure 17: Dollar-denominated debt in developing countries (total assets, as % of GDP)

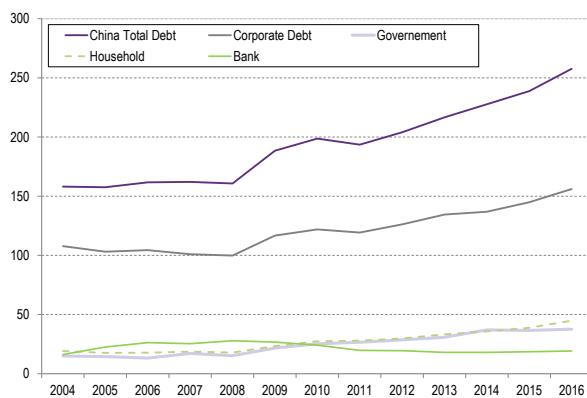


Sources: BIS, IMF, AMF calculations.

Chinese debt has grown rapidly in the last few years, reaching close to 260% of GDP in 2016, up by 100 points compared with 2006, a trend that above all reflects the higher debt levels of non-financial companies (Figure 18). In order to counteract this trend, the central bank has increased its key interest rates twice in 2017, which has caused a

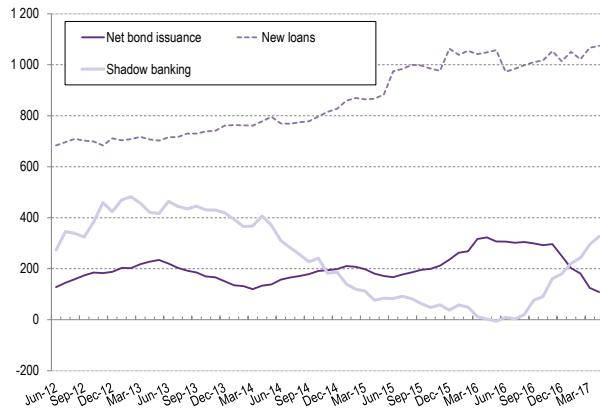
slowdown in bank lending and a reduction in net bond issues, but also a growth in shadow banking.

Figure 18: Chinese debt (as % of GDP)



Source: Bloomberg.

Figure 19: Chinese debt (moving one-year average, in RMB billions)



Source: Bloomberg.

Uncertainties to be factored into a political climate in which populism and nationalism are playing a greater role

Since the UK voted to leave the European Union in June 2016, we have seen at several elections how populist and nationalist ideas are winning support in developed countries. This means that the financial markets should integrate the following risks:

- More government intervention in the decisions of companies or even central banks (including by way of public or political pressure), less independent regulators;
- Governments experimenting with unconventional economic policies, the results of which are far harder to predict;
- The low-inflation environment threatened by potentially inflationary policies, such as protectionism;
- A change in the structure or functioning of well-established institutions (e.g. the European institutions in the wake of Brexit);
- International cooperation giving way to national sovereignty; the growth of regulatory arbitrage;
- An increase in geopolitical tensions affecting the major economies (cold war, cyber-attacks, even armed conflict);
- Lower international investment and trade flows.

Factoring these risks, which although unlikely cannot be ruled out, into the price of financial assets should result in higher volatility.

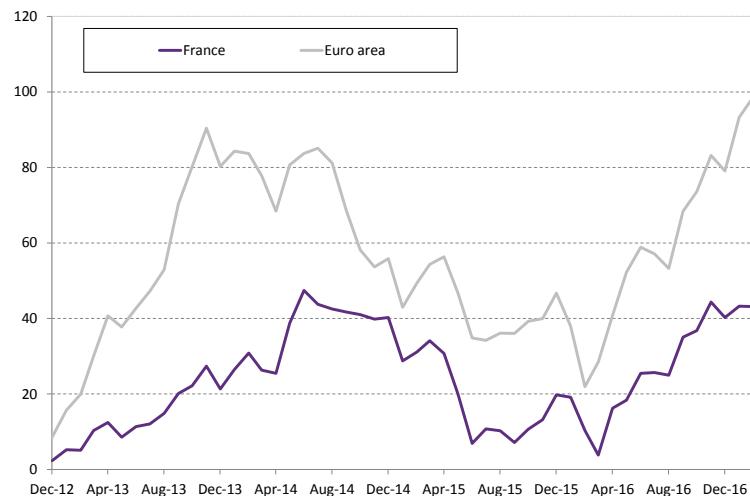
1.2. PRIMARY MARKETS: CONTRASTING FORTUNES AND OUTLOOKS

1.2.1. Once again, monetary policy has had a decisive influence on the primary bond market

- Issues of non-financial corporate bonds have benefited from the low-rate environment

Despite successive episodes of financial instability in 2016, non-financial corporate bond issues continued to flourish. The market was boosted by mergers and acquisitions in the sector as well as the low-rate environment. Globally, gross issues hit a record of close to €2,000 billion in 2016, an annual increase of 6%. In France, issues were up sharply by nearly 50% to €85 billion. Net flows of market-based debt gathered pace, both in France and the euro area as a whole (Figure 20).

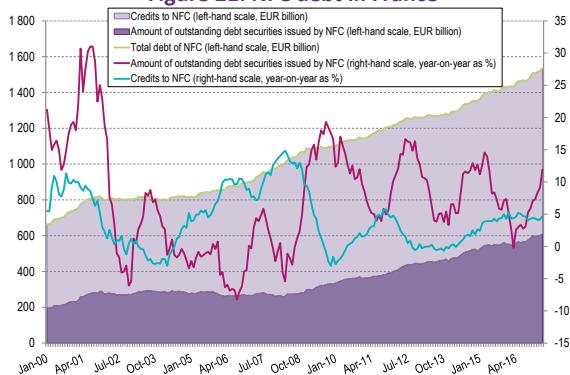
Figure 20: Net bond issues in France and the euro area (yoY cumulative, in € billions)



Source: ECB.

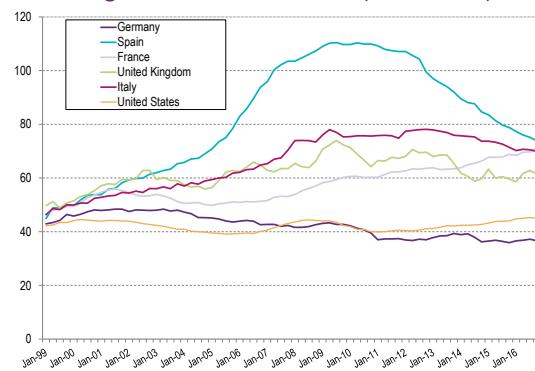
In France, the total debt of all non-financial companies (NFCs) has continued to rise, at a considerably faster pace in the first few months of 2017 (+6.4% yoy in the opening three months of 2017, compared with an average of 4.4% during 2016). France appears to be one of the only countries where NFC debt has not been affected by the financial crisis and has continued to progress. Since December 2016, the French NFC debt-to-GDP ratio has been higher than the equivalent Italian figure.

Figure 21: NFC debt in France



Source: Banque de France.

Figure 22: NFC debt ratios²⁰ (as % of GDP)

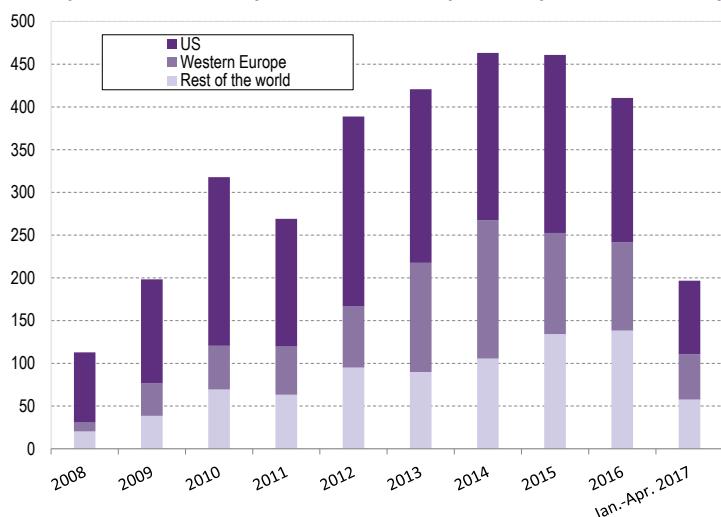


Source: Banque de France.

High-yield debt issues have suffered from moments of instability

The junk bond segment has been hugely affected by the unfavourable macroeconomic climate and the increase in political risk throughout a significant portion of 2016. Volatility episodes have therefore weighed on primary-market activity: across the whole of 2016, gross high-yield debt issues fell by 10%, and this trend continued into the opening months of 2017. It is a pattern that has played out in particular in the US, where falling oil prices caused problems for conventional oil producers until the end of the first half of 2016.

Figure 23: Gross junk bond issues by non-financial companies, by issuer nationality (in € billions)



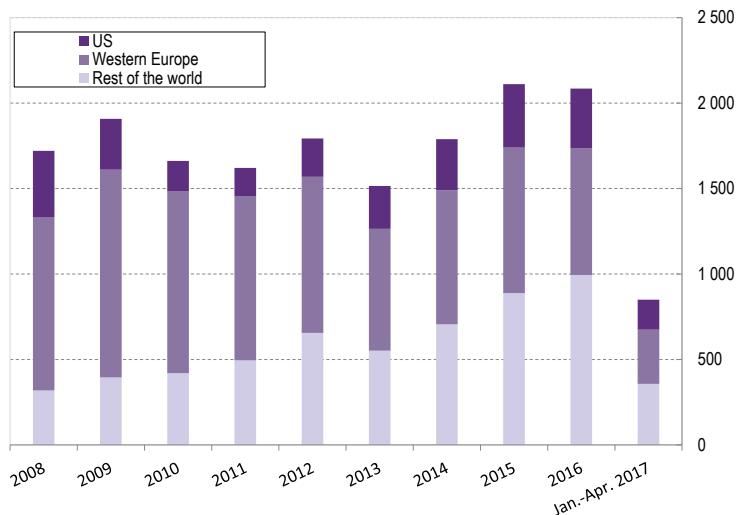
Source: Bloomberg.

²⁰ NFC debt comprises loans from French and foreign financial intermediaries and debt securities (primarily bonds) issued on the financial markets, but it does not include loan/borrowing transactions between companies belonging to the same group. It is booked at nominal value, i.e. the redemption value of the borrowed funds.

□ Very dynamic activity for primary issues in the financial sector

Activity remained dynamic in the financial sector in 2016 and in the opening months of 2017. In the United States, the prospect of monetary normalisation has enabled the banks to finance themselves on the market at borrowing costs that remain favourable.

Figure 24: Gross bond issues in the financial sector by geographical area (EUR billion)

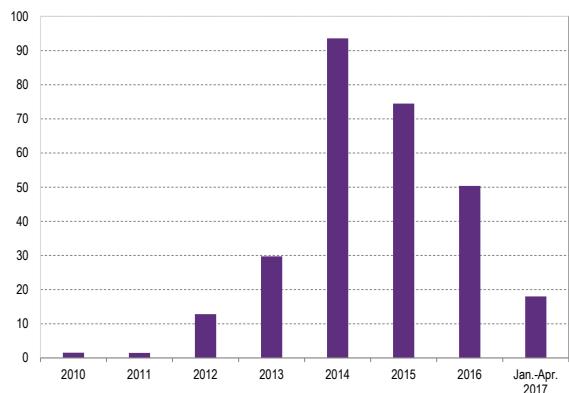


Source: Bloomberg.

The market was particularly active in Europe, despite several factors that should in theory have been detrimental. On top of the succession of volatility spikes that have affected all financial markets, the banking sector had to deal with a crisis of confidence in spring 2016 related to fears over the solvency of certain Italian banks and, to a lesser extent, German ones. Turbulence on the contingent convertible bond market at the beginning of 2016 has very logically been followed by a reduction in issues (Figure 25). During this period, covered bond issues enjoyed renewed popularity before falling back from the second half of the year as overall market conditions improved (Figure 26).

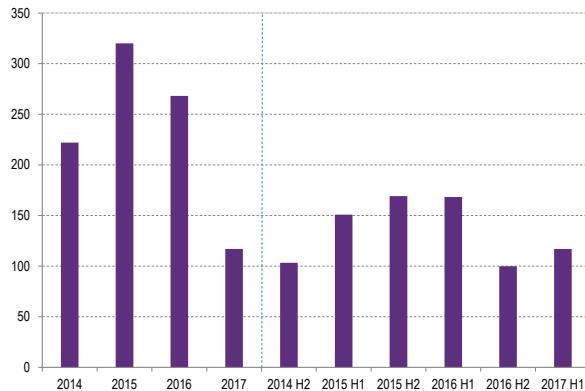
Generally speaking, there has been a flight to security in Europe. This can be seen in the decline in issues by UK banks following the Brexit vote and also by Italian banks. Political risk has not weighed on issues by French banks, however. These remained stable at nearly €110 billion in 2016, with activity remaining strong at the beginning of 2017 (nearly €50 billion of issues in the first four months of the year).

Figure 25: Global issuance of CoCos
(contingent convertible bonds, in € billions)



Source: Bloomberg.

Figure 26: Covered bond issues
(EUR billion)



Source: Bloomberg.

In addition, non-conventional monetary policy has had significant, and sometimes contradictory, effects on the primary bond activity of financial companies. Although the narrowing of spreads is in itself a positive factor, the ECB's June 2016 launch of TLTRO²¹ II and the UK's Term Funding Scheme meant that banks had considerably less need to look for financing on the bond markets. TLTRO II offers banks the chance to finance themselves over four years at a rate between the deposit facility rate and the main refinancing rate. In other words, euro area banks were able to get funding from the ECB at negative interest rates, thereby making bond finance less attractive²². When the programme's final transaction took place in March 2017²³, the ECB had awarded loans of €233 billion (€216 billion in net terms).

Prudential requirements have had a significant impact on the primary market

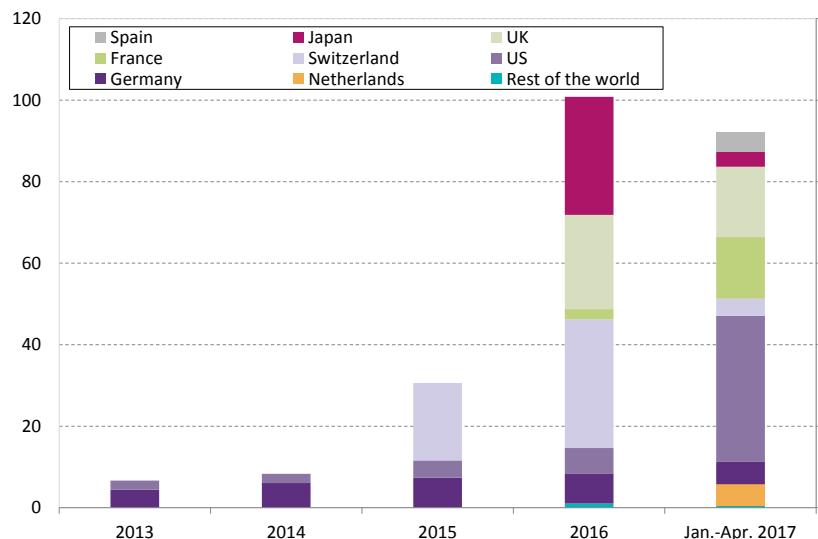
On the other hand, financial sector bond issues have been, and continue to be, driven by the additional capital requirements of systemic banks which must be constituted by 2019 as part of their total loss absorbing capacity (TLAC). Between the start of 2016 and April 2017, nearly €200 billion of eligible debt was raised in this fashion worldwide, including in France the first issues of senior non-preferred bonds created at the end of 2016 by the Sapin II law.

²¹ Targeted longer-term refinancing operations.

²² It should be stressed that the rates applied depend on the volume of loans awarded by banks to households and non-financial companies. The aim of this programme was to mitigate the negative impact of low key interest rates on bank refinancing and to improve the financing of the economy.

²³ The TLTRO II programme consisted of four rounds held on a quarterly basis between June 2016 and March 2017.

**Figure 27: Issues of TLAC-eligible debt by systemic banks
(EUR billion)**



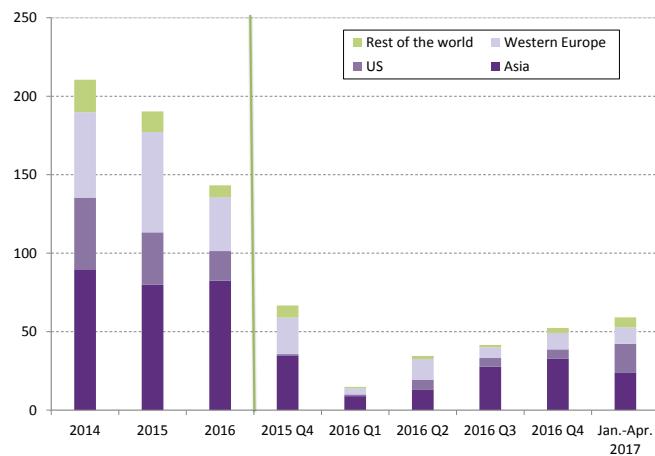
Source: Bloomberg.

1.2.2. Financial instability and share buybacks hindered the primary equity markets in 2016, but activity strengthened at the start of 2017

- After a particularly tough year, IPOs made a return at the back end of 2016.

Instability on the stock markets severely hampered the IPO business, which shrank again in 2016. These transactions raised €125 billion globally, down 30%. Uncertainty surrounding the economic outlook in China and Europe, but also the US presidential election and the Brexit referendum, largely explains the IPO slowdown, which was particularly severe in the US and, above all, Europe, with the notable exception of Scandinavia's Nasdaq OMX. Once the shock of the Brexit vote had died down, IPO activity resumed in London in the autumn.

**Figure 28: Capital raised through IPOs
(EUR billion)**

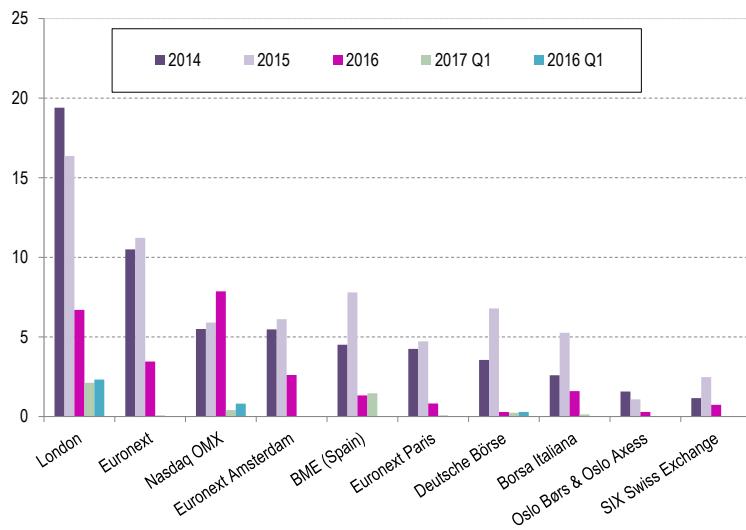


Source: Bloomberg.

IPOs struggling to make a comeback in continental Europe

More generally, the improved macro-financial climate resulted in a significant resumption of activity, particularly in Asia and the US, during the first few months of 2017. However, the situation remains a concern in continental Europe, which was still lagging behind in spring 2017.

Figure 28: Capital raised through IPOs in Europe, by listing market (EUR billion)



Source: Thomson Reuters Datastream.

- Listed companies turned increasingly to the markets in the first few months of 2017

Generally, those companies already listed on the stock exchange also turned less frequently to the equity markets in 2016. Equity security issues were down nearly 40% globally to €210 billion. This trend was particularly marked in Europe, where issues halved. France did not follow the overall pattern, with transaction volumes up from €4 billion in 2015 to €6 billion in 2016.

Since the start of 2017, we have however witnessed a recovery in issues, particularly in Europe, as a result of recapitalisation in the banking sector. Indeed, issues in this sector accounted for 30% of issue volumes in western Europe, versus 12% in 2016.

- Share buybacks at record levels

Listed companies also carried out significant volumes of share buybacks in the US in 2016, albeit at a slower pace from summer onwards. These transactions are used in particular by American companies to remunerate their shareholders. According to Factset, they totalled an annualised \$560 billion for the S&P 500 index as at the end of September 2016, which is comparable to the figure from a year earlier. Consequently, share issues net of buybacks were in negative territory in the amount of 2% of GDP. In France, where the practice is traditionally less widespread, there was also a sharp increase in share buybacks in 2016, nearing €20 billion for CAC 40 companies compared with €13 billion in 2015²⁴, which is more than the gross amounts raised on the markets.

²⁴ Source: AMF.

CHAPTER 2: MARKET ORGANISATION AND INTERMEDIATION

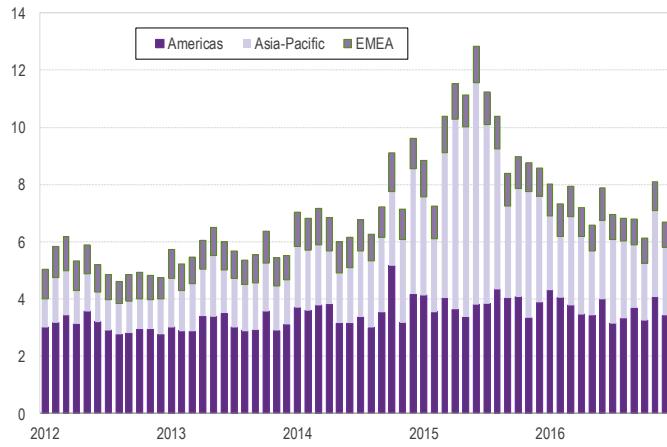
2.1 EQUITY MARKETS

2.1.1 Modest growth and declining trading volumes

Market capitalisations on the up In 2016, annual growth of 5.7% brought global capitalisation to \$67,200 billion. This was driven by the American stock markets, whose capitalisation rose by 10.3% to \$30,900 billion according to statistics from the World Federation of Exchanges, due mainly to higher valuations (the S&P index grew by 9.5%). The capitalisation of European markets²⁵ increased by 9.2% in euro terms but, owing to the depreciation of the single currency, just 5.2% in dollar terms to \$67,203 billion. On the Euronext equity markets²⁶, market capitalisation growth of 8.7% (to \$3,300 billion) outstripped the performance of market indices (3.0% for the Euronext 100 and 5.4% for the Next 150), demonstrating sluggish growth of the primary market.

A decline in trading on the equity markets Global transaction volumes in market order books in 2016 (Figure 29) fell significantly (-24.0%) compared with the previous year, which squeezed the unit revenues of cash equities market operators. The decline came primarily on the Asian (-42.4% in dollar terms) and European (-15.6% in dollar terms) markets. Transaction volumes in electronic order books on Euronext fell by 15.2% to €1,643 billion. However, this is largely a return to the norm following the exceptionally trading volumes witnessed in 2015. The average volumes for 2016 were still 19.5% higher than those during the 2012-2014 period. After reaching their lowest level since the third quarter of 2014, the decline in CAC 40 equity trading volumes on Euronext Paris was reversed in the final quarter of 2016, which saw a sharp rise of 16%, signalling that activity would pick up at the beginning of 2017.

Figure 29: Equity transaction volumes (in \$ trillions)



Source: WFE, AMF.

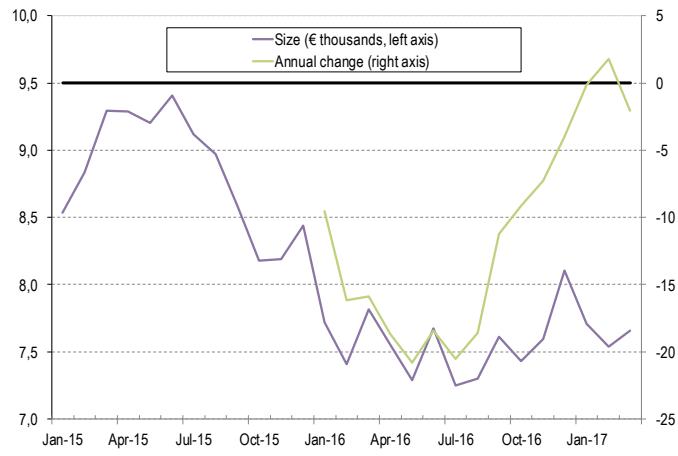
²⁵ The World Federation of Exchanges combines the EMEA zone (Europe, Middle East and Africa).

²⁶ Comprising the Amsterdam, Brussels, Lisbon and Paris marketplaces.

**Reduction in
transaction size
hints at continued
automation**

The drop in trading volumes (-24.0% worldwide) was accompanied by a smaller reduction in the number of transactions, and therefore a fall in their average size (-21.3%), which broadly speaking indicates renewed growth in electronic and algorithmic trading, with automated techniques making it easier to divide and multiply orders. On Euronext Paris, the average size of order book transactions fell by 17.3% (Figure 30).

Figure 30: Euronext Paris: Size of order book transactions

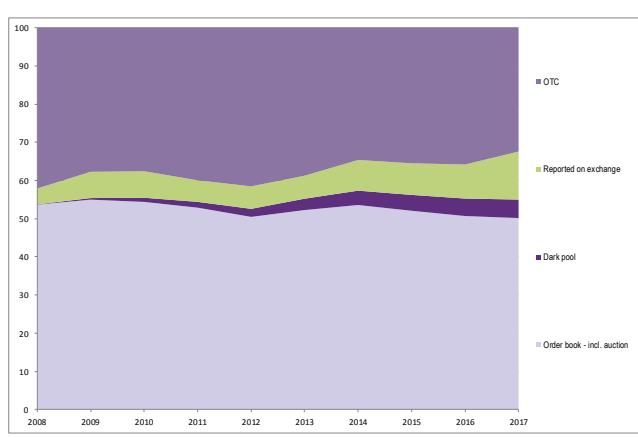


Source: Euronext, AMF.

2.1.2. Markets in wait-and-see mode ahead of MiFID II

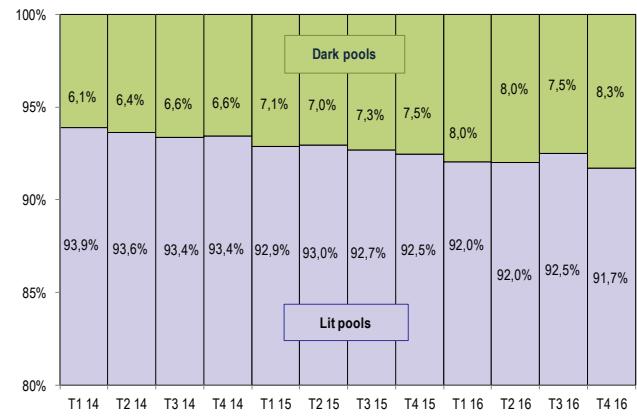
Annual statistics on over-the-counter (OTC) equity transaction volumes across Europe show they remained broadly in line with trading venue transactions. Among OTC transactions, the share of negotiated trades appears to be rising (Figures 31). The Euronext equity markets are an exception, however, and have seen a marked reduction in negotiated trades.

Figures 31: Listed equities (EU): trading locations (%)



Source: Reuters Market Viewer, AMF.

Figure 32: CAC 40 stocks: transactions executed on platforms by pre-trade transparency



Source: BATS, AMF.

**Dark pools
nearing MiFID II
limits...**

If we look more specifically at transactions executed on European trading venues, the share taking place in dark pools (so named for their lack of pre-trade transparency)²⁷ continued to increase in 2016, surpassing 8% of total volumes processed (see Figure 32). An excessive number of transactions exempted from transparency requirements is damaging to the price formation process. Therefore, in 2018 MiFID II will introduce a cap per financial instrument on the share of transactions that can enjoy such waivers, although the new rule will not apply to large in scale (LIS) orders or hidden orders. Specifically, the double volume cap will mean that trading volume on a given dark pool cannot exceed 4% of total volume on all EU trading venues and across all dark pools cannot exceed 8%²⁸. If these caps are breached, trading on the pool(s) in question will be suspended for six months.

**...are targeting
LIS orders**

Against this background, dark pools are tending to focus on **the automation of block trading** – i.e. the trading of LIS orders likely to benefit from pre-trade transparency waivers and avoid the double volume cap. For example, Turquoise's dark pool, Plato, has introduced functionalities for executing LIS orders, for which the platform reports very high average transaction sizes as of now²⁹. BATS has³⁰ given institutional investors (buy side) access to its LIS platform, which was previously open only to market intermediaries. Euronext, meanwhile, has announced that it will introduce a block trading facility in June 2017³¹.

**The buy side is
playing a more
direct role**

These execution service offers are aimed particularly at the buy side, which generally supplies LIS orders, **stressing their increasingly important role on the markets**. In a context of rising specialisation along the value chain, order execution is increasingly seen by asset management companies as a separate function in its own right, requiring special expertise. Consequently, some of them have set up trading desks, while others have turned to external service providers. This trend has also been reinforced by regulatory requirements³², particularly regarding the monitoring of execution policy (best execution) and the specific identification (distinct from research-associated costs) of associated costs (unbundling).

From a more short-term point of view, in a low interest rate environment, companies' sensitivity to trading costs also reflects market liquidity conditions. The increasing role played by asset management on the secondary financial instrument markets, particularly those that are illiquid and/or fixed income, could affect how they function in times of stress. Some of these effects still need to be measured (see the Focus below on macro stress tests).

²⁷ Equity transaction pre-trade transparency waivers are available for four types of order: large in scale (LIS) orders; those executed using an order management facility (OMF), such as iceberg orders; those processed at a price dictated by a market with pre-trade transparency (reference price, or RP); and those that formalise negotiated trades (NT).

²⁸ This rule concerns only transactions carried out by virtue of RP and NT waivers.

²⁹ In February 2017, Turquoise reported an average transaction size of €306,805 on its block trading venue (Block Discovery), which is way above the MiFID waiver thresholds for LIS orders.

³⁰ In partnership with US company BIDS Trading.

³¹ See "Euronext partners with AX Trading to launch pan-European block trading MTF". Press release dated 15/02/17. The proposed hybrid facility would enable LIS orders to match with the hidden orders in the order book (see *Financial News*, "Euronext prepares block trading plan ahead of MiFID II", 11 August 2016).

³² The British Financial Conduct Authority has underlined how trading fees affect investment fund performance and called for closer attention and greater transparency in this area in the interests of beneficiaries ("Asset management market study"; *Market Study MS15/2.2*; Nov. 2016).

**Heightened
vigilance in the face
of the threat to the
systematic
internalisation
mechanism**

In light of these trends on electronic trading venues, the strategy of the sell side, particularly the intermediaries who operate **broker crossing networks** (BCNs) remains to be seen, with MiFID II aiming in particular to reinforce the obligation applicable to transactions executed on own account, on an organised, frequent and systematic basis, to comply with the requirements³³ of the systematic internalisation (SI) regime. Most market intermediaries have not announced their execution strategy or how they intend to use the different categories of trading venue provided for under MiFID II, which is prompting regulators to ask questions. In particular, the European Parliament and ESMA have been concerned about the possible bypassing of some of the Directive's objectives³⁴, namely those linked to intermediaries' ability to form SI networks to execute own-account transactions with their clients in place of existing internal BCN systems. An assessment is needed here of the interactions between order flows of market intermediaries (broker-dealers) and **high-frequency traders** (HFT), who these days play an important role in providing liquidity (see below), with the aim to assess the materiality of underlying intermediation services³⁵. More generally, HFT strategies and how they interact with the different types of order flows can also affect how the structure of the markets evolves. In the US, for example, we have seen the launch of platforms dedicated specifically to the buy side in order to deal with the development of potentially threatening high-frequency strategies³⁶. The long-term success or otherwise of these ventures remains to be seen. Although this trend would remain to be qualified in this respect, a declining trend is noted in the share of transactions executed during the Euronext trading session compared with those executed during the opening auction. Thus, the share of the latter rose by 7% yoy during the opening quarter of 2017 to account for 30% of CAC 40 volumes traded.

Indeed, in an environment where MiFID organises competition between trading venues ("market fragmentation"), competition has above all centred around technological criteria (speed of execution, frequency of transactions, market access time, data flows, etc.) and criteria related to market structure (trading methods, order types, tick sizes, etc.), in the interest of further automating liquidity provider (market making) and arbitrage strategies. The growth of algorithmic trading at high frequency and/or with a low latency has led to a significant rise in order-to-trade ratios (owing to order amendments and cancellations) and a continuing decline in the average size of on-order-book transactions executed (see Box 2).

**MiFID II clarifies
the algorithmic
and high-
frequency trader
regime**

Specifically, MiFID II clarifies the framework that applies to algorithmic and high-frequency operators by specifying the regimes applicable to (and therefore defining) high-frequency and algorithmic trading, direct market access, the provision of colocation services, market making strategies and own-account trading (reducing the scope of exemptions applicable thereto). These regimes introduce new requirements for systems and tools used to manage execution venue and investment firm risks, data storage, disclosure to authorities, algorithm marking, pricing structures, price ticks and synchronisation of clocks. In France, the drawing-up of MiFID II means that operators who send more than four messages a second on average on Euronext or two per second for a given security are classified as high-frequency traders, which in itself means that at least the 25 most active members of

³³ Specifically, pursuant to article 24 of MiFID, the requirement to publish firm prices for shares and similar products for which there is a liquid market, for quantities at least 10% of the normal market size.

³⁴ See letter to the European Commission dated 01/02/17 and ESMA's Q&A on *MiFID II and MiFIR market structures topics* dated 5 April 2017.

³⁵ Internalisation is characterised by intermediaries' positions (risk-facing transactions), as opposed to back-to-back systematic executions (riskless agency).

³⁶ For example, the IEX (Investors Exchange) platform created at the end of 2013 or the Luminex trading venue set up in 2015 by a consortium of major asset managers (Fidelity, BlackRock, State Street, J.P. Morgan, BNY Mellon, T. Rowe Price, Invesco).

the market, who are responsible for over 97% of traded volumes, are designated as high-frequency traders³⁷.

Box 2: HFT: an integral part of the market ecosystem

based on the study "Behaviour of high-frequency traders on Euronext Paris", AMF, 26 January 2017

Over the nine months from November 2015 to August 2016, the AMF analysed specifically the major HFT firms, in particular the members of Euronext's supplemental liquidity provider (SLP) programme who trade on CAC 40 stocks, i.e. those actors who are the main market-makers. In theory, these actors are best equipped to perform efficient inventory management in fragmented markets where conditions are likely to evolve very quickly. Analysis of passive behaviour at the best price limits of the order book confirms that these actors tend to be an ongoing presence in the order book. Indeed, they generally account for between 75% and 80% of the market depth on CAC 40 stocks at the three best price limits of the order book. They also have a major influence over spreads because they are present at the best price limits for 91% of the session time. In addition, their activity remained fairly constant throughout the period of analysis, at around 60% of total traded volumes. However, there are still more "aggressive" trades (initiated by the HFT that issues the orders) than "passive" trades (offering a potential counterparty to the market), with the former accounting for 53% on average. HFTs therefore consume more liquidity than they provide on average, which shows how important it is to account for market-makers' inventory rebalancing and for other HFT strategies (particularly arbitrage) that consume liquidity.

Specifically – in an environment where HFTs considerably reduce their liquidity provision before announcements and market events, and where market depth tends to be negatively correlated to implied volatility – we should assess the activity of market-maker HFTs and their liquidity provision in periods of high volatility. The cases under review focus in particular³⁸ on the day after the Brexit referendum (24 June 2016). On that day, HFTs reduced their liquidity provision (at the three best price limits) by around 40%, which was partially offset by the arrival on the order book of three large non-HFT orders and an increase in trading volumes, without preventing a considerable widening of the spreads. As such, the HFTs' share of transaction volumes fell by 20% at the start of the day and 8% over the rest of the day, compared with previous weeks. More generally, before announcements, during periods of high volatility, there was a sharp decline in market quality (drop in quoted depth; sharp increase in spread) and during periods of high price fluctuation (including after an announcement), there was a marked increase in HFT activity (in terms of share of trades), albeit with the use of more aggressive trading strategies such as arbitrage. These findings justify the adoption of a specific set of measures in MiFID encouraging market-makers to keep providing liquidity during periods of liquidity tension on the markets³⁹.

³⁷ In 2015. See study cited in box.

³⁸ Other episodes of volatility were also studied, including the period from the ECB announcement on 03/12/15 to the turbulence at the start of 2016 associated with fears over the Chinese economy and the falling price of oil.

³⁹ See article 6 of RTS 8 of Commission Delegated Regulation 3523 of 13/06/16.

2.2 BOND MARKETS

2.2.1. Bond liquidity remains decent despite a recent decline in the corporate bond segment

Secondary market trading volumes down in 2016

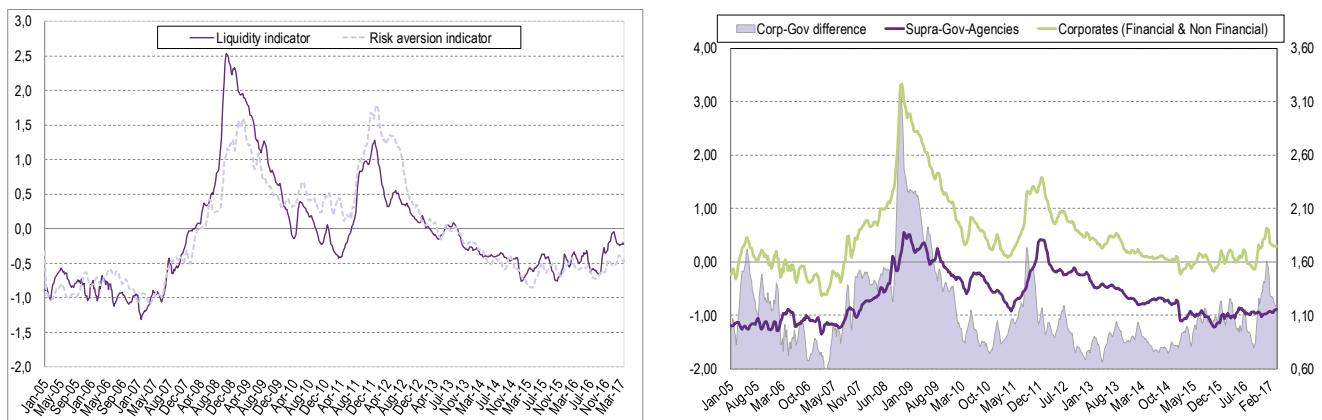
Volumes traded on French secondary bond markets fell by 9% in 2016 to nearly €4,300 billion from close to €4,700 billion in the previous year. This drop is at odds with the pattern seen on the primary markets, where issues saw exceptional growth following the launch of the ECB's Corporate Sector Purchase Programme (see Chapter 1). It should be pointed out the reduction centred mainly on the financial corporate bond segment (-14%) and government bonds (-8%), rather than the non-financial corporate bond segment (-3%).

The downward trend in spreads in 2015 continued in 2016, as risk premiums continued to be squeezed by accommodative monetary policy (see Chapter 1).

Bond market liquidity fell slightly in 2016

This new dip in volumes and the continued narrowing of spreads led to a deterioration of liquidity in 2016, as reflected in the decline in the composite indicator tracking French bond market liquidity⁴⁰ (Figure 33). The deterioration could be seen in both the sovereign and corporate bond segments, albeit more markedly in the latter.

Figure 33: Change in the French bond market liquidity indicator



The liquidity indicator is a proprietary indicator calculated using data on French bonds. It takes the average of the following three standard scores: bid-ask spreads (Bloomberg), zero returns (% of bonds for which the price remains unchanged over a given period) and price impact (dividing intraday price volatility by the square root of trading volumes).

The risk aversion indicator takes the average of several standard scores, including credit spreads (main and Xover), long (2/10 French) and short (Euribor 3m/Eonia) rate slopes and the France-Germany spread.

These findings were shared by ESMA in 2016 when it analysed European sovereign and corporate bond market liquidity between March 2014 and March 2016. It found that liquidity on those markets had deteriorated over the course of the previous two years, albeit not dramatically. When it updated its analysis of corporate liquidity in the UK to include 2015 and 2016, the Financial Conduct Authority came to the same conclusion. Its analysis of the data of one market operator over a long period (2007 to 2016) also shows that (i) the share of orders executed decreased; and (ii) there was an increase in the number of requests for quotation (RFQs), the time needed to secure execution and the

⁴⁰ See AMF, 2015, "Study of liquidity in French bond markets" for a description of how the indicator was put together.

share of bonds that could not be processed in a week. However, these changes were not deemed to be concerning and market liquidity remained satisfactory overall.

Despite bond market liquidity remaining satisfactory, the recent decline warrants close attention amid an environment of high repricing risk and extended accommodative monetary policies, the effects of which are yet to be assessed.

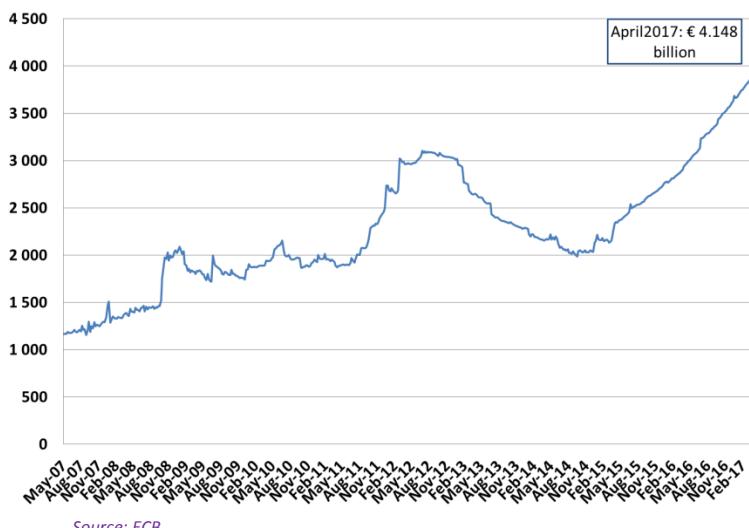
2.2.2. The effects of quantitative easing on corporate bond market liquidity are yet to be measured

The ECB has purchased nearly €1,600 billion of European bonds since March 2015

The European Central Bank (ECB)'s quantitative easing (QE) programme, which was announced on 22 January 2015, began in March 2015 with the acquisition of sovereign debt (Public Sector Purchase Programme, or PSPP). The QE programme was extended in December 2015 then expanded on 11 March 2016 to include corporate bonds in the form of the corporate sector purchase programme (CSPP). The CSPP began on 8 June 2016, taking the total monthly purchasing objective (of sovereign and corporate bonds) to €80 billion. Other central banks have also engaged in asset purchasing⁴¹, but only the ECB and the Bank of England have purchased corporate bonds.

These purchases were initially scheduled to finish in March 2017, but on 8 December 2016 the ECB extended them until at least the end of 2017, albeit reducing the monthly total from €80 billion to €60 million from March onwards. Inflation is forecast to remain below the 2% target until 2019. Finally, on top of these measures, the ECB President specified that the euro area's key interest rates would remain at April 2016 levels or lower beyond December 2017, the current scheduled end of the asset repurchasing programme. **Consequently, the ECB's balance sheet grew from €2,156 billion in March 2015 to €4,148 billion in April 2017.**

Figure 34: ECB balance sheet
(in € billions, weekly change)



⁴¹ Japan was the first country to introduce a QE policy in 2001, followed by the UK (2008), the US (2008) and eventually the euro area (2014).

At the end of April 2017, **the total amount purchased by the ECB came to €1,512 billion of sovereign bonds and €83 billion of corporate bonds** (nearly 14% of the corporate bond purchases were carried out on the primary market)⁴².

The purchased securities can also be loaned by Eurosystem central banks under the same conditions as the securities resulting from the other asset purchasing programmes, through several channels (bilateral or dependent upon agents or central securities depositories).

There remains little understanding of the effects on market liquidity

Central bank asset purchases aim to ease monetary and financial conditions by reducing companies' borrowing costs. In so doing, these unconventional measures are intended to support investment and consumption and, eventually, economic growth and inflation. However, the programmes carry liquidity risk for the targeted market segments since massive purchases can greatly reduce the number of securities available on these markets.

The impact of these very recent programmes on the corporate bond segment is yet to be evaluated. Any studies that have been done have tended to focus on the impact on sovereign debt markets. Andrade et al. (2016)⁴³ analyse the impact of these asset purchasing programmes on domestic 10-year sovereign bond yields and estimate that the reduction attributable to them is between 27 and 64 bps for the euro area (average 44.2 bps), 31 and 107 bps for the UK (average 64.4 bps), 23 and 119 bps for the US (average 74.8 bps) and 10 and 26 bps for Japan (average 16.8 bps).

Marx et al. (2016)⁴⁴ also show that peripheral European countries have benefited the most because of sharper drops in interest rates, both on government debt and bank loans. Lastly, Heam, Lee, Marc and Pak (2015) estimate the impact on 10-year French sovereign bond yields at -0.8 percentage points and on French GDP growth in 2015 at 0.4 points.

Although the effect on yields and growth has been well documented, the effect on market liquidity remains unclear. In particular, we need to assess how this policy affects relative credit spreads between issuers of different quality.

2.2.3. Concerns are hampering safe securities and the repo market

The repo market (which was worth €5,600 billion in Europe in 2016⁴⁵) allows short-term (anything from overnight to one year) borrowing of cash in exchange for securities, particularly the safest government debt, which act as collateral.

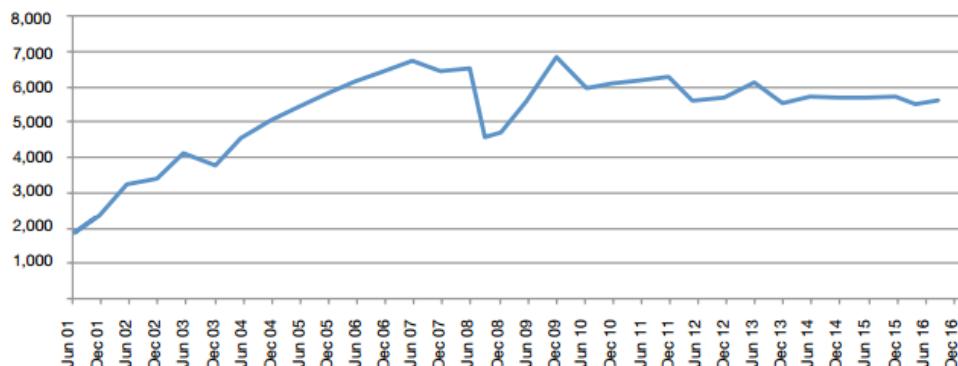
⁴² Running parallel to these purchases are two asset purchasing schemes launched in September 2014: the covered bond programme (€216 billion as at April 2017) and the asset-backed securities programme (€24 billion).

⁴³ Andrade, P., J. Breckenfelder, F. De Fiore, P. Karadi, and O. Tristani (2016), "The ECB's Asset Purchase Programme - An Early Assessment," Working paper n° 1956, ECB.

⁴⁴ Marx M., Nguyen B., Sahuc J.-G. (2016), « Les mesures de politique monétaire en zone euro et leurs effets depuis 2014 », Rue de la Banque n°32.

⁴⁵ Source: ICMA.

Figure 35: The repo market in Europe
(in € billions)



Source: ICMA.

Since recent EU and global regulations have introduced new requirements in terms of the quality of assets used as collateral, there has been a considerable increase in demand for safe assets over the last few years, meaning that the repo market has an even more important role to play, both for market operators in the wake of OTC derivatives reforms (clearing, margin requirements) and for banks and insurers in the wake of new prudential regulations (30-day and 1-year liquidity ratio for banks; Solvency II giving preferential treatment to highly rated debt securities for insurers).

This market underwent major turbulence at the end of 2016, when its rates experienced an unprecedented rise (see Box 3) that prompted the BIS⁴⁶ to worry about how a smaller repo market might affect financial stability, particularly in times of stress. According to BIS analysis, outside the periods of stress observed at the end of the year, the slowdown in the market was probably due to post-crisis prudential regulations but also the QE programmes initiated by the major central banks.

First, banks have less incentive to borrow or lend their reserves on this market because they have access to huge reserves via QE. Second, the prudential cost of the repo market makes banks more reluctant to use it.

Box 3: How the repo market faltered at the end of 2016

On 28 and 29 December, the repo market experienced an unprecedented rate rise with its lenders of sovereign bonds, particularly French and German, who were able to finance themselves at rates of -5% to -6% compared with around -0.5% under normal conditions.

According to the International Capital Market Association (ICMA), short positions in sovereign debt in the euro area were high in the final weeks of 2016, resulting in a major need for hedging before 31 December. In order to limit the size of their balance sheets for year-end, European banks felt the need to reduce their exposure to the repo market, thereby reducing the supply of securities on this market.

By way of its massive euro area sovereign bond purchasing programme, with €1,200 billion purchased as at the end of 2016, including €300 billion of German bonds (27%) and €240 billion of French bonds (15%), the ECB would have contributed in drying up the market and fuelling tensions.

In addition, the measures put in place to make it easier for national central banks to lend these securities would work poorly (according to market participants who were interviewed) and would not have helped alleviate the problem.

⁴⁶ Committee on the Global Financial System, 2017, Repo market functioning, CGFS papers n°59.

In order to mitigate the problems described above, the BIS proposes that:

- in order to reduce market volatility, central banks be more active in lending securities used as part of repo transactions if there is a scarcity of these on the market;
- the agencies responsible for issuing government bonds reissue any securities that show signs of a shortage.

However, the BIS believes that the repo market remains in transition and warrants ongoing monitoring. Within the next two years, it will publish a new study aimed at shedding more light on the impacts of different monetary and prudential factors.

Box 4: Aiming for effective supervision of the benchmark industry

The importance of the integrity of benchmark indexes has been underlined by the recent financial crisis^[47]. In 2016, the principles set forth by IOSCO^[48] prompted the European Commission to publish the Benchmarks Regulation (BMR)^[49], which in the interests of investor protection and financial stability aims to improve governance of the benchmark indices and supervision of their production and administration processes. The BMR defines the role of benchmark administrators, contributors and supervisors and establishes three separate major benchmark categories according to their importance: non-significant, significant and critical. As a result of this, the European Commission classified Euribor, an index administered by the European Money Markets Institute (EMMI), as a critical EU benchmark. At the same time, ESMA published, at level 2, regulatory and implementing technical standards (RTS/ITS)^[50], partly to ensure fair conditions for competition in EU Member States as regards authorising and registering benchmark administrators.

Two potential problems have surfaced regarding:

- First, the final specification and effective implementation of benchmark calculation methods. The aim to base index calculations on actual transactions meets limitations - particularly for IBOR indexes, and Euribor in Europe - because of the increasing lack of underlying transactions, particularly for long maturities^[51]. This may cause uncertainty with regard to the continuity of contracts. ESMA which specifies the European framework in this area, provides competent national authorities with some leeway to factor in the specific characteristics of each benchmark^[52]. More generally, work is continuing at international level under the auspices of the FSB, which is attempting to identify near credit risk-free reference rates in order to take into account market liquidity^[53] and benchmark quality, based primarily on its ability to accurately and reliably represent the underlying market or economic reality. The industry has underlined the importance of adopting flexible methodologies^[54], and US initiatives^[55] have raised the possibility of using secured transaction data, including possibly from Fed operations, while UK initiatives favour using overnight index swap (OIS) rates^[10].
- Second, the transition phase, against a background of the BMR rules being introduced on 1 January 2018 and gradually coming into force up to 2020.

^[47] FSB (2014) "Reforming Major Interest Rate Benchmarks", for example, revealed that notional amounts of financial contracts benchmarked to Euribor totalled more than \$180,000 billion.

^[48] See IOSCO "Principles for financial benchmarks", April 2016, and "Report on guidance on the principles for financial benchmarks", December 2016.

^[49] See EU Regulation 2016/1011 of 08/06/16 on "Indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds".

^[50] See "ESMA publishes final rules to ensure integrity of EU financial benchmarks", 29/06/16 and 30/03/17 list of "National Competent Authorities (NCAs) designated under Article 40 of the Benchmarks Regulation".

^[51] See in particular Joint FSB-ESMA's public statement regarding Euribor of EMMI's decision not to pursue the initially proposed Euribor+ methodology.

^[52] See "Methodological framework Selection of supervised entities for mandatory contribution under Art. 23(7) BMR"; ESMA70-143-5 of 2 June 2017.

^[53] See "FSB Progress in reforming major interest rate benchmarks", 21/07/16.

^[54] See ICE "LIBOR Roadmap"; 18/03/16 (and subsequent Feedback statement on additional consultation; 03/03/17).

^[55] See Federal Reserve Bank of New-York; "Statement Regarding the Publication of Overnight Treasury GC Repo Rates"; Nov. 2016, Richard Berner; OFR; "Time is Right for LIBOR Alternative"; 08/12/16 (and his Remarks at the Power of Transparency Speaker Series; 25/01/17), and Darel Duffie's thoughts on Risk.net; "What to do about Libor?"; 24/04/17.

^[10] See Interim Report of the Working Group on Sterling Risk-Free Reference Rates 13/05/2016 on the Bank of England's website.

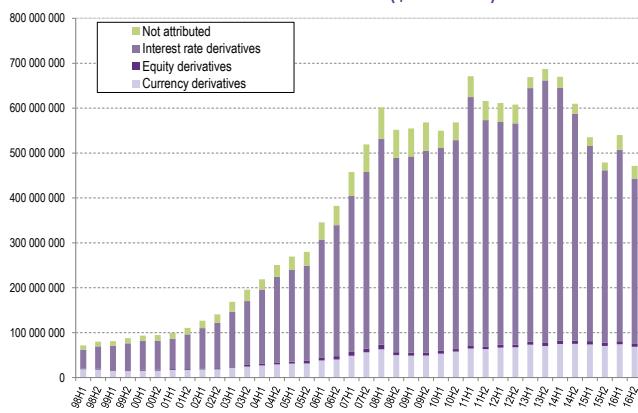
2.3 DERIVATIVES MARKET

2.3.1. OTC derivatives: asset levels stabilise amid more clearing and a greater share of fixed-income derivatives

Stabilisation of OTC derivative assets

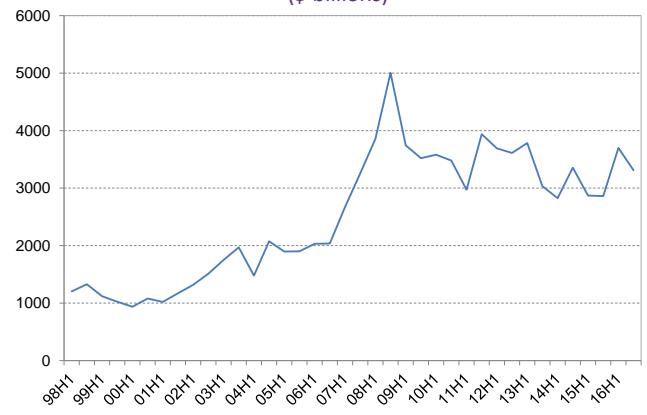
After sinking to their lowest levels since 2007 at the end of 2015, OTC derivative notional amounts (Figure 36) grew by 10.4% in the first half of 2016 before falling by 12.1% in the second half to end the year at \$482,000 billion.

Figure 36: Global (notional) OTC derivative assets by category of financial instrument (\$ millions)



Source: BIS half-yearly statistics, AMF.

Figure 37: Gross credit exposure (\$ billions)

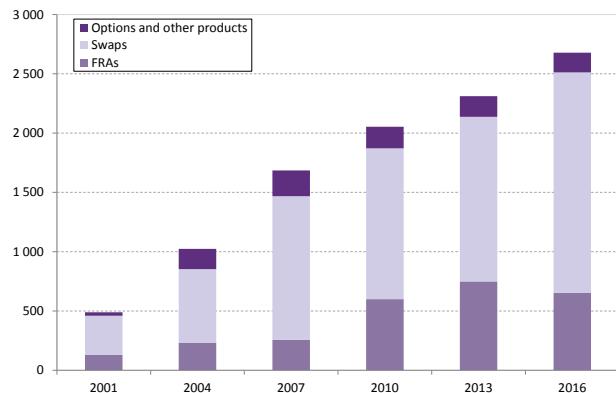


In terms of gross market value (adding together the net asset value of contracts), the global size of the OTC derivative market grew by 3.4% to \$14,986 billion in 2016 following a period of similar ups and downs. This may be a stabilisation following the drop off since the high of \$25,500 billion in mid-2011, but we are still witnessing the lowest levels since 2007. The changes we have seen are due to technical reasons. Contract compression reduces gross exposure⁵¹. More frequent use of central clearing (see below) also reduces market exposure by way of netting, but it has mixed effects because the position of the clearing house between the transaction counterparties results in statistical double-counting. Having said that, gross credit exposure⁵² – which adjusts the gross market value of cross-exposure between financial institutions, thereby creating an aggregate counterparty risk indicator for derivative positions that are not subject to compression – increased by 15.7% to reach \$3,310 billion at the end of 2016 (Figure 37).

⁵¹ Contract compression is a legal, post-market process that resets a series of bilateral exposures within a network of counterparties in order to reduce the notional amounts and, where applicable, the number, without affecting the underlying (net) economic exposure. For more information on compression in Europe, see D'Errico, Roukny (2017); "Compressing OTC Markets" and more generally "The changing shape of interest rate derivatives markets", BIS Quarterly Review, December 2016, pp 53-65.

⁵² Here, 'gross' refers to the non-collateralised nature of the exposure.

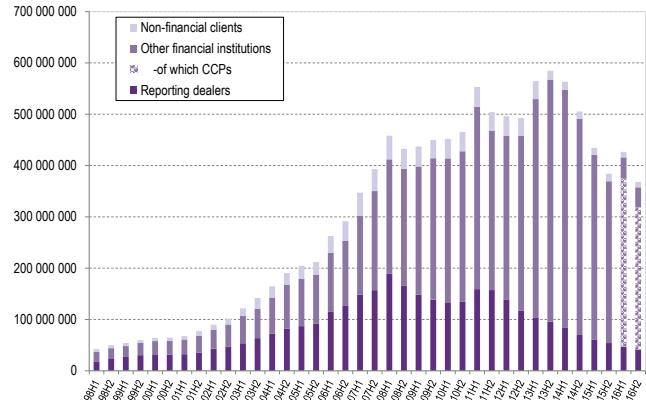
Figure38: OTC interest rate derivatives - Gross transaction amounts by type of instrument (\$ millions)



Source: BIS three-year survey and half-yearly statistics, AMF.

Note: Gross amounts adjusted for double-counting of transactions between dealers (local and cross-border).

Figure 39: Global (notional) interest rate derivative assets by type of counterparty (\$ millions)



Growth in clearing usage continues

Concentrated largely among the main dealers⁵³, the notional amounts confirm a growing trend⁵⁴ for central clearing, which was used for 62% of the \$544 billion under review. Since mid-2016, the BIS's half-yearly statistics have specifically identified contracts that have been subject to central clearing. As at the end of 2016, 89% of the notional assets of interest rate derivatives where the counterparties were classified as 'other financial institutions' appeared as such because they went through clearing houses (Figure 39)⁵⁵. These figures also show that central clearing primarily concerns the market for interest rate derivatives subject to new clearing obligations, for which 76% of positions are cleared, compared with 43% for the credit derivatives market and less than 2% for OTC currency or equity derivatives.

This growing recourse to clearing also reflects an increasing dominance⁵⁶ of interest rate derivatives, which now make up a vast majority (76% of the notional amounts at the end of 2016) of the total OTC derivative assets under review and, within that, swap contracts, as shown in the latest BIS three-year survey (Figure38).

Although volatile, the weighting of interest rate derivatives appears to be growing over the long term

Asset levels are extremely volatile because of the valuation phenomena brought about by fluctuations in the currency markets and the underlying instrument markets. In particular, during the first half of 2016, changes in asset levels (notional or gross amounts) of interest rate derivatives revealed growth in dollar (from \$139,000 billion to \$149,000 billion) and yen (from \$39,000 billion to \$50,000 billion)⁵⁷ contracts as well as a drop in 10-year bond yields (of over 70 bps for German, UK and US yields, and 50 bps for Japanese yields)⁵⁸. In the second half, the weakening of many currencies (including the euro and the yen) against the dollar amplified the reduction in dollar assets. Ignoring the foreign-exchange

⁵³ The data that the BIS collects from the main dealers also reveals concentration by country.

⁵⁴ With no historical clearing data, this growth is estimated by assuming that the ratio of reporting dealers to 'other financial institutions' remains constant. See "Central clearing predominates in OTC interest rate derivatives markets", BIS Quarterly Review, December 2016, pp 22–24.

⁵⁵ Double-counting of cleared transactions between reporting dealers results in the share of cleared transactions being overestimated. In June 2016, a lower bound (excluding any possibility of double-counting) was nevertheless within 10% of this ratio. See BIS op. cit.

⁵⁶ In part, this also conveys the revaluation of contracts owing to the decline in interest rates. Ten-year sovereign German, UK and US bond yields dropped by over 70 basis points between the end of 2015 and mid-2016.

⁵⁷ The increase in gross values, however, is across the board, regardless of the contracts' currency of denomination.

⁵⁸ Reductions in long-term rates tend to increase contracts' market value by increasing the spread between observed market rates and those that applied when the contracts were established.

effect, the drop in global notional amounts was 9% rather than 13%. Beyond the short-term trends, there is evidence however (Figure 36) of significant long-term growth in interest rate derivatives as a share of notional assets by type of instrument - this share rose from 67.9% at the end of 2000 to 76.3% at the end of 2016 (from 44.8% to 66.7% of assets in terms of gross value). Nevertheless, it is not easy to attribute this growth to a particular type of instrument within interest rate derivatives (Figure 38).

2.3.2. Post-crisis OTC derivative regulatory framework completed by entry into force of margin requirements for uncleared derivatives

The margin requirements for products that are not subject to central clearing aim to protect one counterparty of an OTC derivative contract against the risk that the other counterparty may default. These are made up of:

- initial margins** (IMs), which shield counterparties from the losses that may result from fluctuations in the market value of contracts during the time required to liquidate positions and replace them in the event of a counterparty default;
- variation margins** (VMs), which hedge against market risk.

The introduction of these new margin requirements should help not only to reduce systemic risk by reducing contagion effects but also potentially to encourage central clearing. The level of these margins will be particularly important because they concern products that are not standardised to the generally higher risk, thereby encouraging the use of more standardised and cleared products.

The timetable for implementing this system dictates that all the counterparties in question⁵⁹ have been subject to variation margins since 1 March 2017. Entry into force of the initial margin requirements has been staggered, according to the amounts of the positions concerned, over a period ranging from February 2017 for the biggest exposures (over €3,000 billion) to September 2020 for the smallest exposures (less than €750 billion).

2.3.3. The draft European regulation on CCP recovery and resolution remains light on prescriptive recovery measures

The CCP recovery and resolution framework is taking shape

When the clearing obligation came into force in Europe for the first categories of contract in June 2016, it made it essential to set up a CCP recovery and resolution regime. As the figures show (see above), centrally cleared volumes have risen continually and have actually nearly doubled since the crisis began in 2007⁶⁰. In Europe, the following have successively been declared eligible for central clearing: interest rate swaps denominated in euros, pound sterling, yen and US dollars, then those denominated in Polish, Norwegian and Swedish currencies, as well as credit default swaps (CDSs) based on certain indices.⁶¹

⁵⁹ These requirements apply to financial entities that deal with derivatives and also to non-financial companies, provided their positions in derivatives are above the mandatory clearing threshold.

⁶⁰ BIS Quarterly Review, December 2016.

⁶¹ Please see the register published on the ESMA website for a detailed and exhaustive list of contracts subjected to the clearing obligation.

There are three phases involved in how a CCP manages default:

- The default waterfall**, which is the process used by a CCP to manage the default of a clearing member during a ‘normal situation’;
- If this waterfall has not been able to return the CCP to viability, the CCP formulates a recovery plan and then triggers **the recovery phase**. This phase allows the CCP to use certain measures (terminating contracts, making cash calls, applying margin discounts);
- If neither the default waterfall nor the recovery phase has been able to return the CCP to viability, or if it deems it necessary to preserve financial stability or ensure an effective resolution procedure, the resolution authority steps in. This **resolution phase** involves using specific measures (terminating contracts, making cash calls, selling or transferring CCP activities, public-sector intervention).

The default waterfall is currently the only phase governed by article 45 of EMIR which makes provision for the successive use of different resources (the defaulting member's margins, the defaulting member's contributions to the default fund, some of the CCP's own resources - known as skin in the game - and finally other members' contributions to the default fund). The other two phases have been the subject of work by the Committee on Payments and Market Infrastructures (CPMI) and IOSCO, as well as by the Financial Stability Board (FSB) in 2014, but this is yet to be finalised.

Since summer 2016, two complementary projects have emerged with a view to defining how the CCP recovery and resolution framework can be implemented:

- The draft CPMI-IOSCO report on market infrastructure recovery plans , which was submitted for public consultation in August 2016;
- The draft FSB guidance put out to consultation on 1 February 2017 aiming to further clarify the 2014 market infrastructure resolution report⁶².

The draft resolution is not very prescriptive on the recovery phase

The European Commission's draft resolution, presented in November 2016, is currently being discussed by the Parliament and the Council⁶³. Despite being fairly prescriptive on the resolution phase, defining resolution tools and their conditions of use, it gives CCPs considerable leeway over drawing up their recovery plan (see Box 5).

Implementing a recovery framework should help the CCP to keep operating without having to involve the resolution authorities in the case of an extreme event that threatens its viability (typically the default of one of its clearing members). The latest CPMI-IOSCO analysis on how the principles for financial market infrastructures (PFMIs) are being implemented shows that many CCPs have still not set up recovery plans that comply fully with international requirements⁶⁴. Moreover, a recent study analysing a CCP default from 1974⁶⁵ appears to show that things started to malfunction when one of its clearing members started to experience difficulties because the CCP managed the recovery phase badly (continued registration of transactions coming from this member, a deliberate delay in declaring the member's default and liquidating its positions despite receiving offers from other members, among other things).

⁶² The final versions of the CPMI-IOSCO and FSB guidelines are scheduled to be published in summer 2017.

⁶³ Published on 28 November 2016, the European Commission's draft is consistent with the CPMI-IOSCO and FSB guidance.

⁶⁴ CPMI-IOSCO (August 2016), “*Implementation monitoring of PFMI: level 3 assessment – Report on the financial risks management and recovery practices of 10 derivatives CCPs*”.

⁶⁵ V.Bignon, G.Vuillemey (February 2017), “*The Failure of a Clearinghouse: Empirical Evidence*”.

It is therefore crucial to define the recovery plan properly, and the lack of a document setting out a harmonised and detailed framework of recovery measures could pose certain problems, particularly regarding the use of potentially systemic recovery tools (initial margin discounts, full termination of contracts, forced allocation).

Box 5: Draft European regulation on CCP recovery and resolution framework

The draft European Commission regulation provides for:

- the designation of CCP resolution authorities by the Member States and the establishment of resolution colleges chaired by the resolution authorities and comprising: the clearing members' resolution and competent authorities, the competent authorities of the trading venues and central securities depositories associated with the CCP, the competent authorities of the linked CCPs, the issuing central banks, ESMA and the European Banking Authority (EBA);
- CCP recovery and resolution planning, with:
 - the recovery plans, which are prepared by the CCPs themselves. These must be updated at least once a year and following any major change to the CCPs' legal or operational structure;
 - the resolution plans, which will be drawn up by the resolution authorities and also updated once a year. These must be based on a complete range of scenarios (including default scenarios not linked to the default of a clearing member) and include a description of the tools that can fulfil resolution objectives (maintaining access to payment and clearing services, settling obligations to CCP members in a timely fashion, making sure that members retain access to cash and securities accounts, allowing clearing members' positions to be transferred, etc.);
- the resolution authorities evaluating the resolution plan, particularly the CCP's preparedness for resolution, i.e. analysing the impediments thereto: organisation of the CCP's business lines and governance structure, management of information systems, exposure to intragroup guarantees;
- early intervention powers if a CCP is in breach of EMIR's prudential requirements or a competent authority has observed other factors suggesting an imminent crisis at the CCP;
- the definition of resolution tools and their conditions of use, with legal guarantees for members who feel they have been harmed by the resolution procedure.

2.3.4. The EMIR revision must include necessary reforms to the third-country equivalence regime⁶⁶

A proposal to simplify EMIR

Article 85 of EMIR states that the European Commission shall review the regulation by 17 August 2015 and prepare a report and appropriate proposals for the European Parliament and the Council. On 23 November 2016, the European Commission published its report on the review of EMIR, following on from the consultation that it launched in May 2015. This led to a proposal to amend EMIR, which was published by the Commission on 4 May 2017.

The proposed changes are mainly organised around three key areas (cf. Box 6): (i) make the obligations provided for under EMIR simpler and more effective; (ii) make the obligations stemming from the regulation more proportionate; (iii) extend the exemption period for pension funds. These amendments should make it possible to reduce regulatory costs and burdens on market participants without calling these obligations, which help to strengthen transparency and mitigate risk on the OTC derivatives market, into question.

⁶⁶ See AMF (May 2016), "EMIR review - What are the priorities for the AMF?" and "Third countries: What form of equivalence for post-market infrastructures?", to learn about the AMF's recommendations on reforming EMIR and the equivalence regime for CCPs.

Box 6: Main amendments to EMIR

The proposed changes seek to:

- **Simplify reporting requirements for all counterparties:**
 - Transactions in exchange-traded derivatives will now only be reported by the CCP on behalf of both counterparties;
 - Intragroup transactions will not have to be reported any longer if one of the counterparties is a non-financial company;
 - Reporting on historic transactions, known as backloading, will no longer be required.
- **Introduce more proportionate rules for non-financial counterparties and small financial counterparties:**
 - Only non-hedging contracts will be counted towards the thresholds triggering the clearing obligation for non-financial counterparties;
 - A clearing threshold based on the volume of OTC derivatives transactions will be introduced for small financial counterparties. Only counterparties exceeding that threshold would be required to clear centrally.
- **Extend the temporary exemption for pension funds from central clearing:**

Pension funds do not normally have access to the necessary cash collateral for central clearing, and no specific solutions have been developed so far. Accordingly, a new three-year exemption has been provided to give the time needed to develop a solution.

The equivalence regime needs to be rethought

The measures initially proposed by the Commission when the EMIR review report was released targeted bare-bone reforms, since EMIR implementation was felt to be too recent in some cases (clearing obligation) or had not yet taken place in others (bilateral margin requirements).

While initially, bold reforms might indeed have seemed premature, the current environment⁶⁷, featuring Brexit, possible changes to the regulations by other jurisdictions⁶⁸, implementation procedures for the CCP equivalence mechanism⁶⁹ and movements in the post-trade sector, makes it vital to rethink Europe's rules and notably application of the equivalence regime to countries outside the Union, in order to prevent regulatory shopping⁷⁰ and properly meet the regime's objectives of promoting financial stability and protecting investors (cf. Box 7).

Brexit, meanwhile, has the potential to create an unprecedented situation in which the equivalence regime could be applied to third-country infrastructures that currently handle the largest volumes of euro activity in OTC derivatives clearing, creating a risk for the Union's financial stability. The regime was not designed for, and is ill-suited to, this situation, which would see the largest positions of clearing members and European clients cleared by infrastructures supervised outside the Union. These extraneous factors may be

⁶⁷ See V. Levy-Garboua (October 2016), "L'organisation des infrastructures de marché en Europe", Report to the head of the Treasury.

⁶⁸ US President Donald Trump signed an executive order on 3 February 2017 on the resolution framework for financial institutions whose failure could have systemic consequences, which was introduced by Title II of the Dodd Frank Act (Orderly Liquidation Authority). He asked the Treasury to assess the benefits of maintaining the framework by studying the impact, under the current arrangements, of the failure of a financial institution on taxpayers and the financial markets. The order explicitly provides for an examination of alternatives, including an overhaul of the bankruptcy framework.

⁶⁹ Recognised in March 2016, the equivalence of US CCPs illustrates the limits of the European approach, which opened up Europe's market to US CCPs without requiring them to comply strictly with EMIR: for example, the equivalence decision did not include provisions related to the period for liquidating margins for client accounts on listed derivatives, which led to changes in European standards, or the 80% limit set in the European Union for margin reductions resulting from portfolio margining.

⁷⁰ ESMA's supervisory convergence initiative should help to reduce shopping.

the source of day-to-day concerns for supervisors of these institutions. Furthermore, they could be exacerbated in a crisis if it were necessary to access ECB liquidity, especially since the CCP equivalence regime under EMIR does not stipulate the need for an equivalent recovery and resolution regime for third-country infrastructures.

Brexit is also generating much uncertainty, with particularly significant implementation risks for the post-trade sector. Only good anticipation and careful preparation by all sector participants can ensure that the cliff edge effect⁷¹ is avoided. Reducing the uncertainty will therefore depend heavily on negotiations, particularly on equivalence regimes.

In this context, on 13 June 2017, the European Commission published a draft amendment to the EMIR regulation for its provisions on CCPs⁷², which covers concerning both European and non-european CPPs. The proposal is based on two main axes:

- the strengthening of the supervisory convergence of CCPs at EU level and that of the role of the European Supervisory Authorities (ESAs);
- the reform of the third-country CCP regime with a declination according to the level of risk for the EU :
 - ↗ a continuation of the current regime for non-systemically important CCPs with, in addition, developed powers for ESMA;
 - ↗ stricter requirements as well as direct supervision and sanction powers for ESMA when third country CCPs are of systemic importance;
 - ↗ moreover, for systemically important CCPs, In view given the importance of their activities for the financial stability of the EU and the Member States, “ESMA, in agreement with the relevant EU central banks, has the power to recommend to the Commission, that that CCP should not be recognised. On that basis, the Commission is empowered to take a decision that that CCP should not be recognised and if it wishes to provide clearing services in the Union, it should be authorised and established in one of the Member States”.

⁷¹ A term used in Brexit talks to refer to an abrupt transition.

⁷² voir: <https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.pr170623.en.html>

Box 7: Third-country regimes and the equivalence principle

A principle that is built into many European laws and regulations

Increasingly, financial services-related activities have a cross-border reach necessitating effective cooperation by regulatory authorities at international level. In Europe, this cooperation can, where it involves other jurisdictions, be conducted bilaterally by affected authorities, or, as is increasingly the case, be performed at European level on a harmonised basis through the development of third-country regimes in laws and regulations.

These regimes are based on the principle of equivalence. Pursuant to this principle, if the European Commission believes that the applicable law in a third country is equivalent, an institution located in that state may, while complying with the legislation applicable in the state and being exclusively supervised by its local regulator, offer its services in the European Union without having to apply the law of the European Union or apply for authorisation/be subject to the supervision of the competent authority of the European state in which it is based or proposes to offer its services.

This principle is contained, with variations, in 15 pieces of European legislation, including those dealing with market infrastructures (EMIR, MiFID/MiFIR), investment services (MiFID/MiFIR), securities issues (Prospectus, Transparency) and alternative investment funds (AIFM). When all legislation is taken into account, 37 jurisdictions were recognised as equivalent by the European Commission at end-December 2016⁷³.

A principle that is supposed to foster financial stability, investor protection and international regulatory convergence

Equivalence decisions have two objectives⁷⁴:

- Balance the needs of financial stability and investor protection with the benefits of maintaining open and globally integrated financial markets in Europe;
- Promote regulatory convergence around international standards by establishing or upgrading supervisory cooperation with relevant third-country partners.

Accordingly, equivalence regimes are supposed to achieve some or all of the following:

- Reduce or eliminate overlaps in compliance for the EU entities concerned and in the supervisory work of EU competent authorities;
- Provide EU firms and investors with a wider range of services, instruments and investment choices originating from third countries that can satisfy regulatory requirements in the EU.

To meet these objectives in full, equivalence decisions must be careful not to:

- Be responsible for regulatory shopping that is detrimental to financial stability, notably through a race to the bottom by lowering EU standards to align with those of third countries;
- Create a competitive advantage for firms in third countries: while the equivalence decision must promote broader supply of services, it should do so only under more favourable competitive conditions.

Implementation procedures that raise questions about the ability to achieve these objectives in the existing framework

- The equivalence principle is said to be outcome-based, that is, based solely on the overall effects of the rules (regulation and supervision), but the assessment criteria are not always clearly defined;
- The equivalence principle is sometimes – but not always – accompanied by a principle of reciprocity;
- Considerable latitude has been allowed in terms of implementation, raising questions about the effective application of rules and how these rules are supervised by the local regulator;
- As it stands, the equivalence regime is static, that is, the legislation does not provide for equivalence to be automatically reviewed after a set period, meaning that European or local laws could change without equivalence being subject to an automatic review.

⁷³ See https://ec.europa.eu/info/sites/info/files/file_import/equivalence-table_en.pdf for details.

⁷⁴ "EU equivalence decisions in financial services policy: an assessment" (27 February 2017), Commission staff working document.

**FinTech:
innovative
entrepreneurial
initiatives**

2.4 FINTECH AND DISTRIBUTED LEDGER TECHNIQUES: WITH REGULATORY SUPPORT, THE MATURING MARKET IS BEING PUT TO THE TEST

Banks and established players are stepping up their influence as several innovative projects, particularly in the blockchain field, reach maturity

FinTech is a catch-all term for the many innovative technological initiatives seen in the financial sector over the last five years. Innovation in this sector forms part of a broader trend towards the automation and rationalisation of finance jobs, particularly in customer relations management (BtoC) and back-office processing of financial transactions. It has the capacity to drive the organisation of markets, for example in unlisted instruments, and generally occurs at two levels: either innovative technologies are used while the services themselves remain unchanged; or new services or products are developed with the potential to disrupt⁷⁵ market organisation and structure⁷⁶. By extension, the term FinTech also denotes firms that are taking part in this trend, many of which are start-ups specialising in developing and/or promoting the use of these technologies.

The degree to which FinTechs have developed varies depending on the area, the entrepreneurial initiatives undertaken, the services offered and the technologies employed⁷⁷. Notably, initiatives⁷⁸ have been identified in payments (and cryptocurrencies), insurance, planning, crowdfunding, blockchain, trading and investment, data processing and analysis, and security⁷⁹. These initiatives can be categorised based on the regulatory status of the financial services offered, which, in France, may come under the jurisdiction of the AMF and/or the ACPR (see below). Following a proliferation of projects, trends observed over the course of the past year reveal that a number of projects, particularly blockchain-related undertakings, are reaching maturity. In this setting, **various initiatives are taking clearer shape, particularly in terms of their financing, technical and regulatory procedures**.

⁷⁵ With this in mind, it may be worth identifying areas in which FinTechs are aiming to create new services in fields that were not previously exposed to competition, where the benefits of automation could potentially be harnessed more fully, e.g. trading in unlisted shares.

⁷⁶ Notably by unbundling services through the introduction of processes with the capacity to disintermediate participants' connections to the markets.

⁷⁷ Examples include blockchain, which uses distributed ledger technology (DLT), big data analytics, artificial intelligence, cognitive techniques and machine learning. According to the European Commission, FinTech "involves the entire financial sector, including front, middle and back-office activities, as well as services for both retail and wholesale markets.

⁷⁸ Various categorisations are possible based, for example, on the target customer base (business-to-business, business-to-consumer, etc.) or more specifically on the affected parts of the value chain.

⁷⁹ A recent ISOCO report (*Research Report on Financial Technologies* (FinTech), Feb. 2017) identifies four categories of initiatives that come under the jurisdiction of market authorities: "Financing Platforms, incl. Peer-to-Peer (P2P) lending and equity crowdfunding (ECF); Retail Trading and Investment Platforms, incl. robo-advisers and social trading and investing platforms; Institutional Trading Platforms, with a specific focus on innovation in bond trading platforms; and Distributed Ledger Technologies (DLT), incl. application of the blockchain technology and shared ledgers to the securities markets". Cross-cutting themes are also identified, such as in the areas of financial advice (robo-advice) and regulatory services (RegTech).

Supply is maturing as established players step up their presence

With the maturity of these projects comes the need to **fund technical developments aimed at testing their proof of concept**. This is translating in some regards into a greater role for **established institutions (often banks), which are capable of providing the requisite funds⁸⁰**. In particular, at a time when the organisation of payment systems continues to pose challenges, IOSCO (2017) has noted the importance taken on by private blockchains (permissioned DLTs), which use DLT technologies in privately shared systems between identified, trusted parties⁸¹. These systems thus benefit only partially from technologies that cryptographic encryption⁸² predisposes in principle to use in open peer-to-peer structures. However, they are being employed in less disruptive business models that pose less of a head-on challenge to established firms and are enabling a more gradual adoption of innovative technologies. It will also be important to consider the normative scope of the technological choices made in a setting where, for example, some discussions have crystallised around the strategic choices (and membership changes) of R3, a US consortium that promotes DLT, and Hyperledger, a project sponsored by the Linux Foundation and developing open source DLT standards⁸³.

Developing appropriate, non-discriminatory regulation

The significance of the financial regulation issues surrounding FinTech has promoted some regulators to create specific units in this area. The AMF, for one, set up a FinTech, Innovation and Competitiveness Division in June 2016 that is tasked with monitoring and analysing innovation and assessing the need to amend regulations or policy in the affected areas⁸⁴. These issues are primarily significant at two levels. First, from an operational perspective, the **compatibility of the financial services proposed by these innovative projects with the existing regulatory framework and different types of status needs to be assessed** and the rules need to be made clearer. **The risks** linked to the activities, whether these be operating risks or risks to market stability or integrity (and investor protection), then need to be **appropriately managed** on this basis.

The materiality of the potential risks was illustrated on 17 June 2016. At that date, the Decentralized Autonomous Organization (DAO), a crowdfunding project equivalent to a fund with units denominated in a cryptocurrency known as the ether, which had raised over USD 100 million from members, was reported to have lost 3 million ethers (equivalent to tens of millions of dollars⁸⁵) after a hacker exploited coding weaknesses in DAO's smart contracts. Since these actions could not be characterised under law, the perpetrators went unpunished. Some FinTechs have already received sanctions, such as LemonWay, which received a warning and a fine of EUR 80,000 from the ACPR for deficiencies in the identification of counterparties, which is required by rules on preventing money laundering and terrorist financing, in relation to bitcoin payments in 2014 and 2015.

⁸⁰ Euroclear and BP2S have announced blockchain initiatives.

⁸¹ Cf. ECB discussion (2017).

⁸² A prime example is that of cryptocurrencies such as bitcoin, whose blockchain is permissionless. Based on the decentralised principles applied, the degree of influence of members on the consensus process makes it possible to approve transactions according to the quantity of "resources" (computing power, underlying currency) contributed.

⁸³ To give one example, R3 and IBM are contributing to the development by DTCC of a Trade Information Warehouse in the USA. The distributed ledger protocol will be submitted to Hyperledger when the solution goes live, anticipated in early 2018 (see press release: "DTCC Selects IBM, AXONI and R3 to Develop DTCC's Distributed Ledger Solution for Derivatives Processing", 9 January 2017).

⁸⁴ NB: the AMF and the ACPR have taken a joint approach to coordinate their work in this regard.

⁸⁵ Fluctuations in the price of ethers mean this amount is sensitive to the pricing date.

Second, **the impact of innovation on market functioning** - including in the shape of (potentially positive) externalities, and the consequences of technical choices (often normative and hard to reverse) for market organisation, efficiency, resilience and fairness, **need to be assessed more generally**. Potentially bringing benefits, notably in terms of transparency, market access and the costs of products and services (see the cost-benefit analysis by market segment prepared by IOSCO (2017)), innovation could possibly prompt changes in the regulatory framework to consider new types of products or participants (cf. amendments to the regulatory framework mentioned below). It is important in this regard, and acting as much as possible at international level, to strike a balance between the goals of risk management, investor protection and market efficiency.

Against this backdrop, regulatory initiatives are being conducted at four levels:

- From an **analytical standpoint**, IOSCO, the BIS-CPMI⁸⁶ and, within Europe, the European Commission⁸⁷, ESMA⁸⁸ and the ECB⁸⁹ are applying their specific prisms to review⁹⁰ the situation of FinTech - in some cases focusing specifically on blockchain – in order to identify the challenges, opportunities and risks relating to development of this area. Some of these exercises have given rise to public consultations.
- At the supervisory level**, various national initiatives are being taken forward to facilitate interaction with industry representatives. The AMF and the ACPR have set up specific teams for FinTech and innovation, organised a Fintech Forum in July 2016, and devoted specific areas of their websites to this question⁹¹. Through its Agility programme, the AMF has created a specific system for welcoming UK-based management companies and FinTechs, comprising a pre-authorisation procedure (2WeekTicket), a quick authorisation process and a single AMF-ACPR point of contact⁹². Some regulators, like the UK's FCA in May 2016, have created regulatory sandboxes to test innovative financial services under a specific regulatory regime. These remain exploratory initiatives in many cases and, in a setting of fierce competition between financial centres, their scope has yet to be determined. The French method, adopted by the ACPR and the AMF, is based on a more gradual approach that aims to federate traditional firms developing new digital products and entities with innovative projects, some of which have begun developing their activities through partnerships. The two authorities have therefore begun an analysis of different types of status in the banking and securities sectors, which are often run together and required for

⁸⁶ Committee on Payments and Market Infrastructures of the Bank for International Settlements, "Distributed ledger technology in payment, clearing and settlement: An analytical framework", Feb. 2017.

⁸⁷ Consultation document, "FinTech: A more competitive and innovative European financial sector", https://ec.europa.eu/info/finance-consultations-2017-fintech_en.

⁸⁸ ESMA, "The Distributed Ledger Technology Applied to Securities Markets", Discussion Paper, 2 June 2016, ESMA/2016/773.

⁸⁹ Andrea Pinna, Wiebe Ruttenberg (2016), "Distributed ledger technologies in securities post-trading. Revolution or evolution?", Occasional Paper Series No 172, April.

⁹⁰ Discussions are also being conducted in the United States, for example by DTCC, a member of the R3 consortium, which called on 29 March 2017 for global DLT standards; by FINRA, with its "Report on Distributed Ledger Technology: Implications of Blockchain for the Securities Industry", January 2017; by the SEC (<https://www.sec.gov/spotlight/fintech>) and by the Federal Reserve (cf. for example the speech on 28 April 2017 by Governor Brainard entitled "Where Do Banks Fit in the Fintech Stack?"). Many other initiatives are being conducted in different national jurisdictions, such as the FCA Discussion Paper on Distributed Ledger Technology, DP17/3, April 2017, in the UK.

⁹¹ See for example <http://www.amf-france.org/Acteurs-et-produits/Prestataires-financiers/FinTech.html>.

⁹² See the news release issued on 28 September 2016: The AMF has set up a specific programme, Agility, to welcome UK-domiciled management companies and FinTechs.

these technological platforms to carry on their business mix. They are also reviewing the proportionality of European legislation, particularly with the aim of adapting the rules for activities whose volumes fall below specified non-materiality thresholds.

- At the regulatory level**, various national initiatives have been instigated⁹³. In France, for example, by the end of 2017, the law applicable to financial securities is to be reformed by executive order to enable the representation and transmission of unlisted financial securities by means of a DLT system⁹⁴. Lawmakers have identified new areas, including trading in unlisted shares and management of UCITS liabilities, where the use of information technologies could be of particular benefit to market organisation.
More generally, the European Commission initiative in this area is likely to have legislative implications. The Second Payment Services Directive (PSD2), which is scheduled to come into force in 2018, breaks new ground in BtoC. It has been welcomed in the USA, although that country "is likely to address these issues in a different way, at least initially"⁹⁵. Outside Europe, the Monetary Authority of Singapore (MAS) has, for example, initiated a reform of its regulatory framework for payment transactions – specifically by adopting an activity-based approach – to adapt its framework for cryptocurrencies⁹⁶.
- Steps to establish an appropriate framework are intended to promote innovation.** Backed by the European Parliament⁹⁷, the European Commission's initiative is based around four broad policy objectives: i) Foster access to financial services for consumers and businesses; ii) Bring down operating costs and increase efficiency; iii) Make the single market more competitive by lowering barriers to entry; iv) Balance greater data sharing and transparency, security and privacy needs⁹⁸. The initiative is also a sign of the political will to develop FinTechs, which, it is hoped, will generate substantial economic gains. Some provisions of the Payment Services Directive (PSD2) are already designed to open up access to the data of bank account holders, which could support the emergence of FinTechs. More specifically, a number of bilateral initiatives are

⁹³ According to Clifford Chance, "Regulators across Europe", April 2017, work is being done by the AMF and the ACPR in France, the AFM and the DNB in the Netherlands, BaFin in Germany, CSSF in Luxembourg, and the European Commission and Parliament; the ECB and ESMA have publicly announced their support for the work of the European Commission and have begun work that is likely to have regulatory impacts. See in particular the speeches entitled "Financial Technology: Applications within the Securities Sector" given on 18/01/17 by P. Armstrong, ESMA, and "Digital na(tive)? Fintechs and the future of banking" given on 27 March 2017 by Sabine Lautenschläger, ECB. See also the contributions by these institutions to the European Commission's 2017 mid-term review of CMU.

⁹⁴ The mechanism adopted under Article 120 of the Sapin 2 Act, which applies to the trading of financial securities not handled by a central depositary or delivered via a securities settlement system was covered by a public consultation launched on 24 March 2017.

⁹⁵ Cf. speech by Lael Brainard of the Federal Reserve on "New Developments in Consumer Finance: Research and Practice", 28/04/17.

⁹⁶ Cf. "Proposed activity-based payments framework and establishment of a national payments council", consultation paper, Aug. 2016.

⁹⁷ See March 2017 briefing entitled "FinTech: Prospects and challenges for the EU" and the press release on 25 April 2017, "EU needs to accelerate FinTech development", which identified the following four priorities: Cybersecurity and data protection; Level playing field; Interoperability and passporting; and Room for controlled innovation and fostering financial education and IT skills. Specific work on FinTech by the European Parliament is being done within the framework of a Digital Single Market Strategy for Europe that seeks to "(i) support digital infrastructure development; (ii) improve access to digital goods and services; and (iii) design rules that foster technological development".

⁹⁸ "FinTech: A more competitive and innovative European financial sector", Consultation document issued by the European Commission on 23 March 2017 for a consultation running to 15 June 2017.

intended to promote collaboration between authorities. The cooperation agreement of 27 March 2017 reflects the commitment by the ACPR, the AMF and the MAS to promote innovation in financial services⁹⁹. Some authorities have already begun participating actively in FinTech projects, such as MAS, which is a member of the R3 consortium that is developing a proof-of-concept project to conduct interbank payments using blockchain technology¹⁰⁰.

⁹⁹ See the press release entitled "Singapore and France bolster FinTech ties with cooperation agreements" and the agreement, which is posted online.

¹⁰⁰ See MAS, R3 and Financial Institutions experimenting with Blockchain Technology; Press release dated 26 November 2016.

FOCUS: AUTHORITIES STEP UP THEIR USE OF STRESS TESTING

Inspired by researchers' development of quantitative modelling tools¹⁰¹, financial institutions and their supervisors have made extensive use of stress testing techniques in the wake of the financial crisis. These exercises look at the impact of extreme but plausible scenarios and incorporate these analyses into risk management processes. Regulators have kept step with the growth of these techniques by establishing requirements and promoting best practices¹⁰². Stress tests can thus refer to two different types of exercise, according to whether they are conducted by private entities or the competent authorities. Exercises conducted by the authorities complement those performed by the industry with two levels of requirements. They ensure that stress tests by supervised entities are systematic and consistent- drawing attention to failures to meet regulatory obligations identified within this framework. Over and above the risks considered by supervised entities¹⁰³, these exercises may also seek to assess the risks for the overall stability of the financial system, in which case they are referred to as macro stress tests.

Developed on the basis of existing supervisory practices, notably bank solvency stress tests, macro stress tests are now seeking to capture new categories of risk, including bond liquidity and risks involving non-bank market participants. This entails:

- having granular databases covering the relevant scope, if need be cutting across jurisdictions and financial sectors. Considerable benefit could be gained here from supervisory data, notably the new EMIR¹⁰⁴, SFT and AIFMD data gathering programmes in Europe and those associated with the financial accounts under the national accounting system¹⁰⁵. Establishing consistency across these data-gathering programmes by means of appropriate identifiers and reference frameworks is thus vital;
- developing tools to model the market dynamics underlying the observed risks. It matters particularly, in this respect, for the analysis of market¹⁰⁶ and contagion^{107,108} dynamics to be based on observed behaviours of agents;

¹⁰¹ See BCBS (2009), "Principles for sound stress testing practices and supervision"; BIS (2015), "Making supervisory stress tests more macroprudential", Working Paper 29; Jobst, Ong, Schmieder (2017), "Macroprudential Liquidity Stress Testing in FSAPs for Systemically Important Financial Systems", IMF Working Paper 17102.

¹⁰² CCPs under the AMF's jurisdiction, for example, are required to conduct internal stress tests. In February 2017, the AMF also published a guide for asset management companies on using stress tests within the framework of risk management. The AMF has additionally conducted stress testing under the supervision of the HCSF (see below).

¹⁰³ Ensuring financial stability is not one of the statutory objectives of supervised entities.

¹⁰⁴ See Abad, D'Errico, Killeen, Luz, Peltonen, Portes, Urbano (2017), "Mapping the Interconnectedness between EU Banks and Shadow Banking Entities"; NBER WP 23280.

¹⁰⁵ See for example the ECB press release on 02/02/17, "Extended publication of Securities Holdings Statistics".

¹⁰⁶ Some factors (sensitivity of fund in(out)flows to performance, market impact of asset sales, deleveraging, etc.) could amplify shocks and trigger liquidity spirals. Conversely, others, such as countercyclical moves by contrarian investors, have stabilising effects.

¹⁰⁷ See Clerc, Giovannini, et al. (2016), "New policies to mitigate indirect contagion", ESRB Occasional Paper 9.

¹⁰⁸ The integration of agent-based models in counterparty networks across the financial system might be useful in this regard. See Battiston, Farmer, et al. (2016), "Complexity theory and financial regulation-Economic policy needs interdisciplinary network analysis and behavioral modeling", *Science*, 19/02/16.

- integrating risk assessments in effective supervisory processes to ensure the resilience of the entire financial system, beyond the individual pass/fail solvency of supervised entities.

While the development of macro stress tests remains a long-term objective, various exercises attest to the materiality of the progress already made and to the growing use of these techniques among non-bank authorities. In Europe, insurers have been subject to prudential solvency stress tests since 2010¹⁰⁹. EIOPA also now conducts stress testing of institutions for occupational retirement provision (IORPs), covering both defined benefit (DB) and defined contribution (DC) funds. In 2015, ESMA¹¹⁰ carried out a stress test of European central counterparties (CCPs). This preceded a similar exercise by the US CFTC in 2016¹¹¹ and has been repeated since. The methodology used today does a better job of capturing the diverse range of entities and risks under review, notably by considering multiple scenarios and stress factors¹¹².

Furthermore, in a setting where fears have been voiced over the resilience of the asset management sector¹¹³, notably when faced with bond liquidity shocks¹¹⁴, the IMF has integrated stress tests of the investment fund sector in several of its recent assessments of the resilience of national financial systems¹¹⁵. The exercises conducted recently in Ireland and Luxembourg narrowed their focus to look specifically at money market and bond funds (especially high yield funds). Under the supervision of the HCSF, France's authorities conducted an innovative exercise in 2016. Although static and constrained by its recognition of interconnectedness, the assessment examined the resilience of the entire financial system, including banks, insurers and asset managers, to price shocks in the commercial real estate segment, finding it to be generally satisfactory¹¹⁶ (see Box 8).

¹⁰⁹ The regulations that govern it require EIOPA to work with the ESRB, the ECB and EBA to conduct stress tests in the European insurance sector.

¹¹⁰ The regulations that govern it require ESMA to work with the ESRB to conduct stress tests involving an assessment of systemic risk (incl. Art. 21(2)b on colleges of supervisors, 23(2) on identifying and measuring systemic risk, 32(2) on analysing market developments). More specifically, Article 21(6) of EMIR requires stress tests of CCPs to be performed.

¹¹¹ CPMI-IOSCO has been working since 2014 to prepare an international framework for CCP stress testing.

¹¹² The stress test begun in February 2017 features three types of scenarios (credit stress, liquidity stress, reverse credit stress) and involves several additional analyses (clearing member knock-on, concentration analysis, interconnectedness).

¹¹³ On 12/01/17, the FSB said in its "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities" that authorities should consider system-wide stress testing to: "capture effects of collective selling by funds and other investors on the resilience of financial markets and the financial system more generally".

¹¹⁴ For an analysis of bond liquidity, see section 2.2 of Chapter 2.

¹¹⁵ Cf. Financial Sector Assessment Programs for the United States (2015), Ireland (2016) and Luxembourg (2017).

¹¹⁶ In this setting, the AMF published two news releases on 31 March 2017 as part of a broader effort to ensure investor protection against the risks linked to real estate investments. The first, which was co-published with the ACPR, recalled the expectations placed on distributors of financial products invested in real estate. The second, which was co-published with the ANC, recalled the expectations in terms of the valuation of real estate assets.

Box 8: Macroprudential stress test of French commercial real estate organised by the HCSF in 2016*

- **Scenarios:** designed by the Banque de France, approved by the HCSF, and specified by sector authorities.
Scenario where commercial real estate prices fall within one month and then remain unchanged for two years
 - Scenario 1: prices fall by 30% (Paris area) and 15% (elsewhere in France)
 - Scenario 2: 30 % (Paris area only)
 - Scenario 3: 60% (Paris area only)
- **Simultaneous implementation** by the ACPR, AMF and Banque de France (July 2016 – December 2016)
 - Banking sector:** Autorité de contrôle prudentiel et de résolution (ACPR) - Bottom-up approach**
 - Scope: Five major banks
 - Indicators tested: Risk Weighted Assets (RWA); Core Equity Tier 1 (CET1) ratio
 - Results:
 - ↗ Weak impact on RWA and CET1
 - ↗ Banks are weakly exposed to commercial real estate
 - Insurance sector:** ACPR - Bottom-up and top-down approaches**:
 - Scope: 19 insurance companies
 - Indicators tested (bottom-up and top-down): capital; Solvency Capital Requirement (SCR)
 - Results:
 - ↗ Consistency between bottom-up and top-down
 - ↗ Weak impact on average
 - ↗ Among a limited number of insurers, the stressed SCR falls below 100%
 - Investment funds sector:** Autorité des marchés financiers (AMF) - Bottom-up approach
 - Scope: Eight main companies managing retail OPCFs
 - Additional assumptions concerning:
 - ↗ Redemption requests of 40% (scenarios 1 and 2) or 50% (scenario 3) over two months
 - ↗ Prices of listed assets (equities and debt of real estate companies)
 - ↗ Focus on open-end funds distributed to retail investors
 - Results:
 - ↗ Decline of 6% to 21% in fund NAV
 - ↗ Resilience in terms of the ability to honour redemption requests
 - ↗ (Minimum) liquidity ratio temporarily restrictive for some funds; diversification ratio (max. physical real estate/unlisted assets) restrictive.
 - Risk monitoring:**
 - The limited exposure of participants reveals no evidence of systemic risk at this stage
 - However, areas to watch were highlighted by:
 - ↗ the ACPR and the AMF in terms of the distribution of funds invested in real estate (not only commercial) to individual investors
 - ↗ the ANC and the AMF concerning the valuation of real estate assets
 - **Communication** of the results by the HCSF: March 2017
See the updated analysis and results of stress tests for the commercial real estate segment

* See more at: https://www.economie.gouv.fr/files/files/directions_services/hcsf/HCSF-170331-Note_publique_CRE.pdf

** Under the bottom-up approach, supervised entities are provided with the stress scenarios and their contributions are consolidated. The top-down approach uses data gathered regularly by the supervisor and does not involve specific interactions with supervised entities.

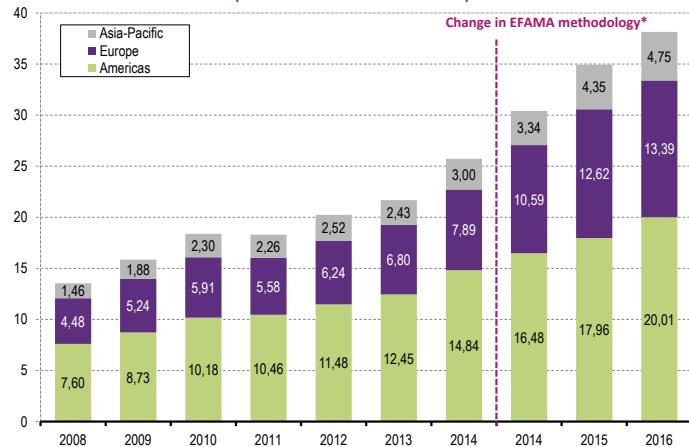
CHAPTER 3: ASSET MANAGEMENT

3.1 THE STATE OF ASSET MANAGEMENT: INFLOWS AND RISK PROFILE

3.1.1. Steep fall in global inflows in 2016

Growth in worldwide assets under management declined from 15% between 2014 and 2015 to 9% between 2015 and 2016. This loss of momentum was most keenly felt in Asia-Pacific and Europe, where the rate of increase fell from 30% to 9% and from 19% to 6%, respectively.

Figure 40: Assets in the fund industry (excluding funds of funds) by major fund domiciliation region (amounts in EUR trillion)

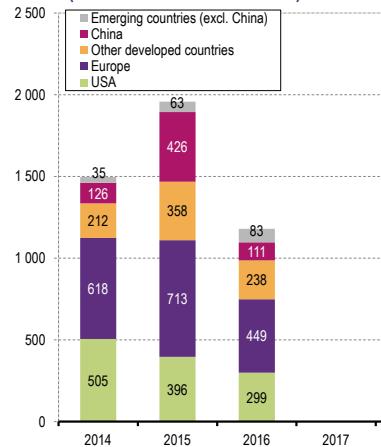


Source: EFAMA – International Quarterly Statistical Release, AMF calculations.

* Note: The change in EFAMA's methodology mainly concerns the recognition of funds of funds and also includes modifications to the fund classification rules. These changes resulted in a statistical jump of about EUR 4.7 trillion for the transition year (2014), of which EUR 1.65 trillion for the United States, EUR 1.23 trillion for Germany, EUR 450 billion for France, EUR 390 billion for Ireland, EUR 320 billion for Japan, EUR 260 billion for the United Kingdom, and EUR 260 billion for Luxembourg.

The lower growth in assets in 2016 was due to the overall fall in inflows (down 40% worldwide). This drop was particularly sharp in China: after more than doubling in 2015 over 2014, investment flows into Chinese funds fell nearly fourfold in 2016. The Asian crisis of the summer of 2015 no doubt contributed to this decline. For developed countries as a whole, inflows decreased by a third (EUR 481 billion less) between 2015 and 2016. The only group for which inflows were higher between 2015 and 2016 was emerging countries excluding China, where they rose by EUR 20 billion, due to dynamic marketing of Indian, Brazilian and South African funds, in particular.

Figure 41: Net inflows into funds (including funds of funds) (amounts in EUR billion)

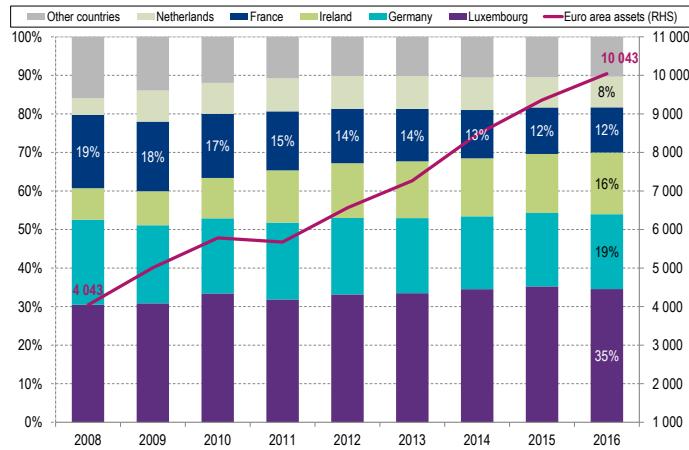


3.1.2. The asset management market in the euro area remains highly concentrated

The euro area market remains concentrated in five countries (in descending order of assets at end-2016: Luxembourg, Germany, Ireland, France and the Netherlands), which represent 90% of assets.

The trend shows a decrease in funds domiciled in France (19% of assets at end-2008, and less than 12% eight years later) in favour of Luxembourg, Ireland and the Netherlands.

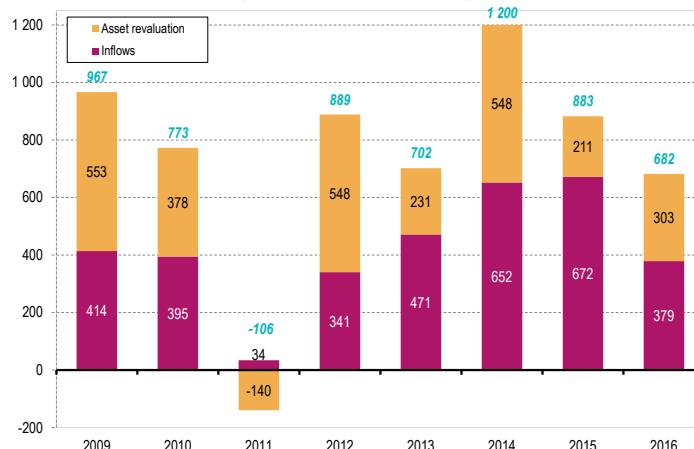
**Figure 42: Structure of the euro area fund market
as a % of total euro area assets under management
(total assets in EUR billion, right-hand scale)**



Source: ECB – Investment Funds Balance Sheet Statistics, AMF calculations.

Assets in euro area funds increased by approximately EUR 680 billion in 2016 to exceed EUR 10 trillion. This is the lowest growth in assets since 2012, with a particularly sharp slowdown in equity and diversified funds; and even a negative growth for hedge funds¹¹⁷. Inflows, which had been very strong for two years (at more than EUR 650 billion in 2014 and 2015), therefore plunged by more than 40% in 2016 to EUR 379 billion.

**Figure 43: Change in euro area assets (impact of net inflows and revaluation)
(amounts in EUR billion)**



Source: ECB – Investment Funds Balance Sheet Statistics, AMF calculations.

¹¹⁷ It should be noted, however, that classification in the hedge fund category is based on self-reporting at the European level.

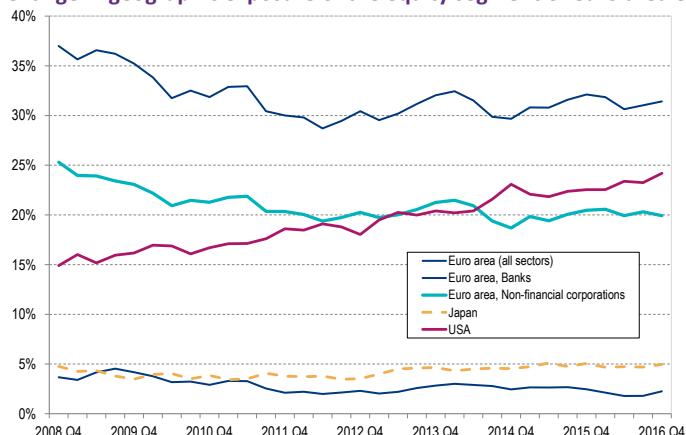
Euro area equity funds are increasingly exposed to US equities

3.1.3. Equity funds fail to convince investors

In Q4 2016, euro area equity fund assets returned to their Q1 2015 high of nearly EUR 3 trillion. The breakdown of fund assets by major class of security was relatively stable, at nearly 82% equities¹¹⁸. In contrast, shares and units of U.S. equity funds accounted for a growing share, having reached nearly 25% of total assets in 2016 versus 15% at end-2008. The increase in the percentage of U.S. securities reflects a significant revaluation effect, in combination with a buy strategy.

The other geographic regions that did benefit from higher investment flows nonetheless recorded much weaker performances. The proportion of shares and units of euro area funds on the asset side has been relatively stable since 2011 (around 30%), despite a decline in banking sector securities.

Figure 44: Change in geographic exposure of the equity segment of euro area equity funds



Source: ECB – Investment Funds Balance Sheet Statistics, AMF calculations.

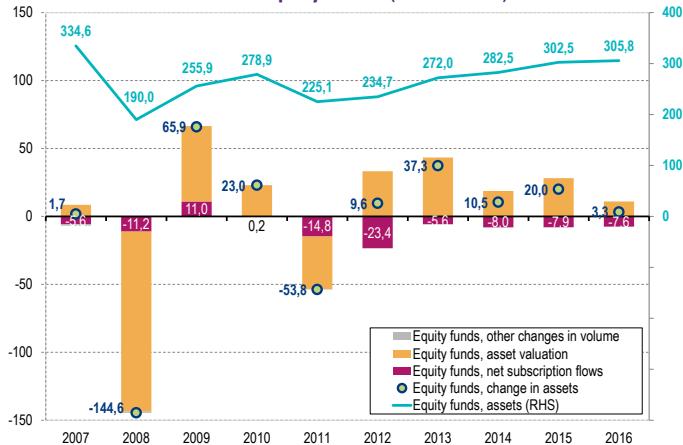
French equity funds suffered net outflows in 2016 despite higher markets

At end-2016, French equity funds totalled just over EUR 300 billion in assets under management, representing steady growth since 2011.

Outflows, which have been ongoing since 2010 impacted negatively the stock of assets, which nevertheless rose due to higher markets (valuation effect).

¹¹⁸ The minimum threshold of 60% exposure to the equity markets is generally used to define the equity fund category (see AMF categories defined in Articles 30-1 to 30-4 of AMF Instruction DOC-2011-19; see also the categories enabling the Banque de France to fulfil its reporting obligations to the European Central Bank).

Figure 45: Change in assets, net inflows and revaluation¹¹⁹
French equity funds (EUR billion)



Source: Banque de France – Financial Overview of Investment Funds, AMF calculations.

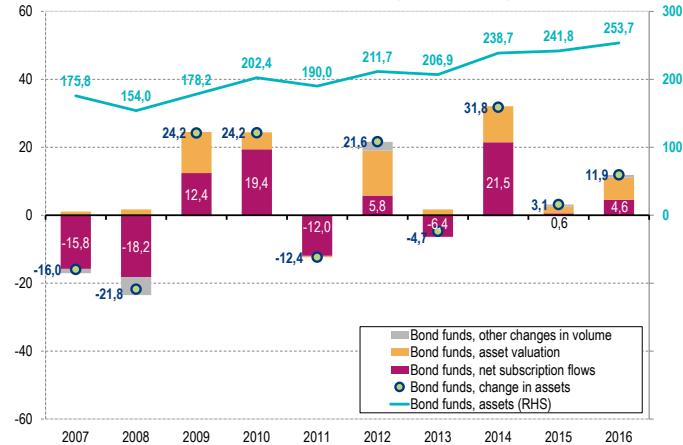
Equity fund performances turned positive again in second-half 2016, after a difficult start to the year and despite the very unusual political environment (Brexit, U.S. elections) which surprised many analysts.

3.1.4. Positive net inflows to bond funds in 2016

French bond fund inflows picked up in 2016

Net inflows to French bond funds were positive in 2016 at EUR 4.5 billion with a more than EUR 7 billion revaluation.¹²⁰ Assets exceeded EUR 250 billion.

Figure 46: Change in assets, net inflows and revaluation
French bond funds (EUR billion)



Source: Banque de France – Financial Overview of Investment Funds, AMF calculations.

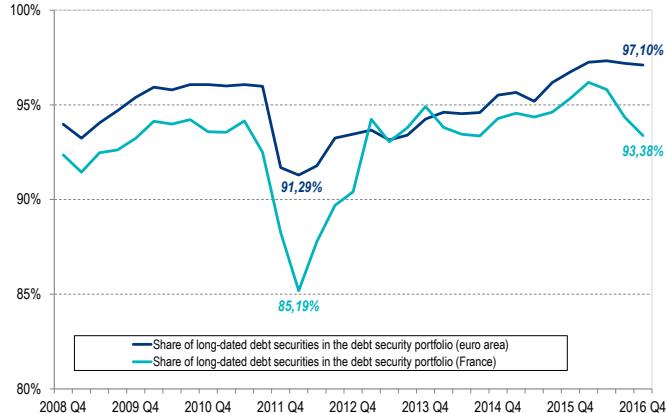
¹¹⁹ Other changes in volume concern fund reclassifications, formations and liquidations.

¹²⁰ Bond funds are mainly exposed to debt securities and other fixed-income products, and an upper limit of 10% of assets exposed to the equity markets is generally used (see AMF categories defined in Articles 30-5 and 30-6 of AMF Instruction DOC-2011-19; see also the categories enabling the Banque de France to fulfil its reporting obligations to the European Central Bank).

The share of long-term securities in French bond fund assets is below the euro area average

A comparison of French and euro area data shows the same pattern of a collapse in the share of long-term securities¹²¹ from Q3 2011, with a recovery to about 94% in early 2013. However, France and the euro area average have moved apart since early 2016.

Figure 47: Change in the maturity of bond fund assets in the euro area and France

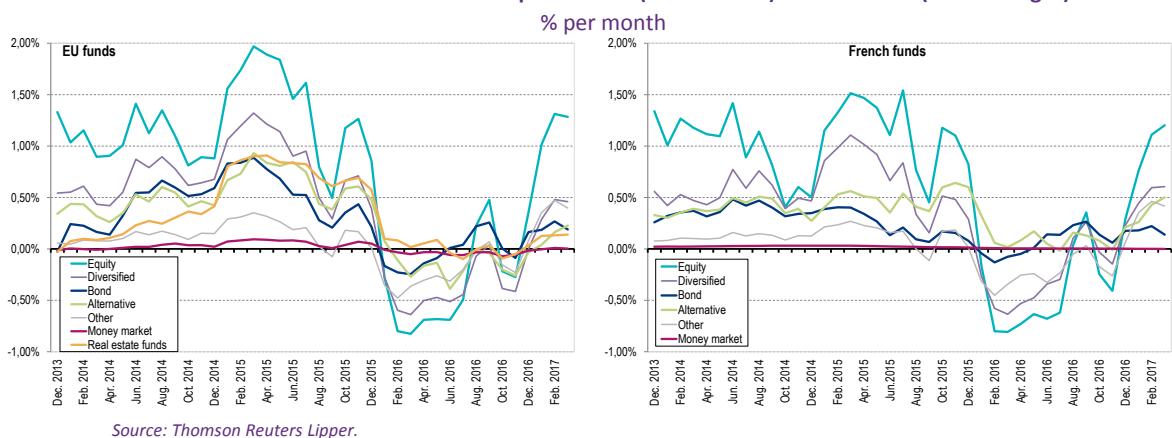


Sources: ECB – Investment Funds Balance Sheet Statistics. Banque de France – Financial Overview of Investment Funds, AMF calculations.

3.1.5. The performance of French funds was in line with the EU average: an underwhelming 2016

The performance of French funds was relatively close to that of European funds. After the sharp falls in the summer of 2015 and early 2016, funds performed well at year end and continued to do so into the first few months of 2017. The exceptional smoothing of the performance by French money market funds just above 0% is of particular note.

Figure 48: Monthly performance (geometric mean on a rolling 12-month basis) of different families of funds domiciled in the European Union (chart on left) and in France (chart on right)



¹²¹ Long-dated debt securities refer here to securities maturing in more than one year.

Assets continue to rise despite low rates

3.2. THE RESHAPING OF THE GLOBAL MONEY MARKET FUND MARKET

The international money market fund market underwent significant changes in 2016, with the entry into force of the U.S. reform, the finalisation of the European reform, and the stabilisation of Chinese money market fund assets, which had grown very quickly. These three changes appear to be positive for the financial stability of this market, which is of key importance to international banks' short-term funding and to the diversification of major institutional investors' investments. Domestically, vigilance will be required to support the reshaping of the market that is expected once the new European regulations have been implemented.

Global money market funds represented 12% of investment fund assets¹²² at the end of 2016, and the market is concentrated mainly among U.S. funds (54% of global assets) and European funds (EUR 1.233 trillion, 26% of global assets). Few other countries have developed a similar short-term funding market, except for China (EUR 585 billion, 12% of global assets). Chinese money market funds enjoyed a record expansion in 2015, having doubled their assets¹²³, but were down slightly in 2016 due to the introduction of new liquidity management constraints in December 2015¹²⁴. Caution is in order, however, regarding future amounts given that this market, where assets have increased tenfold in three years, is still very new and that demand is highly volatile.

Within the European Union, domiciliation of these funds is also highly concentrated in three countries¹²⁵. Ireland, France and Luxembourg represent 97% of the EUR 1.169 trillion in assets of euro area money market funds. The other euro area countries that had developed this activity gradually shut down their market at end-2016: for example, assets in Italy and Finland have decreased by 92% and 94% in 10 years¹²⁶.

In 2016, the sharpest increases in assets were in Luxembourg (up 17% year on year), France (up 10%) and Ireland (up 2%), while assets in other countries continued to fall (down 30%). This growth came entirely from strong gross inflows of EUR 89 billion, as portfolio valuations were negative in 2016 (-EUR 22 billion). This was 8% higher than in 2015 and was driven equally by investors inside and outside the euro area.

Non-euro area investors, which held only 33% of units of the area's money market funds before the financial crisis at end-2007, are now in the majority at 51% of units at end-2016. This reflects investors' interest in Irish and Luxembourg funds denominated in foreign currencies. Their funds are mostly constant net asset value (C-NAV)¹²⁷ money market funds, separated into C-NAV funds in dollars (about EUR 350 billion), sterling (about EUR 200 billion) and euros (about EUR 100 billion), which increases their exposure to volatility in external capital flows and to the risk of runs. In contrast, French funds are 98% held by euro area investors.

¹²² EFAMA International Statistical Report Q4 2016.

¹²³ Fitch Ratings (2016), "Chinese Money Funds See Institutional Demand Surge", July.

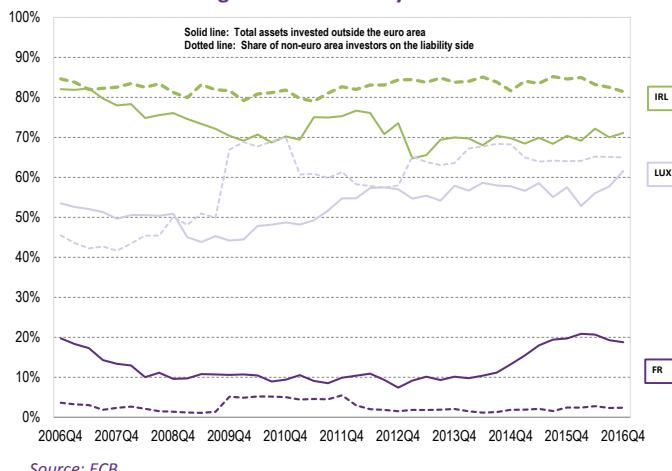
¹²⁴ These include a framework for weighted average maturity, weighted average life and portfolio diversification, as well as the introduction of liquidity fees and redemption gates.

¹²⁵ Swedish money market fund assets represented EUR 17 billion at end-2016 (1.4% of assets of European money market funds) and UK money market funds accounted for EUR 10 billion (1%).

¹²⁶ Only Spain and the Netherlands (EUR 9.7 billion and EUR 7.5 billion in assets, respectively, at end-2016) maintain a local and a relatively growing market. Taken together, they represent 1.5% of euro area assets.

¹²⁷ Until implementation of the new European regulation, the two money market fund models are variable net asset value (V-NAV) funds, which fluctuate daily based on the value of the securities in the portfolio, and C-NAV funds, which have a constant NAV (USD 1 or EUR 1) as income is redistributed and straight-line accounting is used to smooth performance.

Figure 49: Proportion of non-euro area exposure and ownership (on the asset and liability sides) of leading euro area money market funds



A new European regulation that imposes more controls on money market fund risks, but retains the C-NAV model

The European regulation¹²⁸ on money market funds is ultimately a response to the international and European recommendations of 2012¹²⁹, which sought to make all money market funds more robust. These recommendations also called for an end, as far as possible, to the C-NAV fund model, so that the net asset value of these funds would be tied directly to their market value and thus reflect fluctuations in the instruments that the funds hold.

European institutions have decided to impose more controls on the European market by taking account of the specific characteristics of the three countries where the vast majority of the market is concentrated, while maintaining the existing types of money market funds (C-NAV and V-NAV). However, the regulation now requires that funds wishing to use the amortised cost method, allowing them to report a constant value, either invest 99.5% of their assets in European or third-country public debt (short-term C-NAV¹³⁰), or become a low-volatility hybrid fund (short-term LVNAV), a new model introduced by the regulation¹³¹. They are considered hybrids because they can be converted, if their C-NAV per unit repeatedly diverges from their shadow NAV, to a V-NAV fund¹³². New constraints related to transparency and to oversight of these divergences also aim to better anticipate sharp haircuts to NAV¹³³. Liquidity risk is also regulated through the implementation of liquidity ratios requiring that funds hold assets with a residual maturity of one day (at least 7.5% for V-NAV funds, at least 10% for C-NAV and LVNAV funds) and one week (at least 15% for V-NAV funds, at least 30% for the others).

¹²⁸ See Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds.

¹²⁹ IOSCO (2012), “Policy Recommendations for Money Market Funds” and ESRB (2013), “Recommendation of the European Systemic Risk Board of 20 December 2012 on Money Market Funds”, 2013/C 146/01.

¹³⁰ All short-term funds have additional constraints regarding weighted average maturity (WAM), which must be less than 60 days, and weighted average life (WAL), which must be less than 120 days.

¹³¹ V-NAV funds have to use a mark-to-market valuation for portfolio securities or, failing that, a model that takes a prudent approach.

¹³² Regulation of LVNAV funds is two-pronged: (i) the linear value of each portfolio security cannot diverge from its market value by more than 10 basis points and (ii) NAV per unit must remain within 20 basis points of its market value. Otherwise, they will have to honour redemptions at the portfolio value or, if this situation lasts longer than 15 days over a 90-day period, they will have to switch to the V-NAV model.

¹³³ The amortised cost accounting used by C-NAV funds entails risks: at times of stress, declines in the valuation do not translate into a reduction in the fund's net asset value, leaving the fund artificially overvalued. If the market value of the underlying assets declines, these funds are therefore liable to sudden drops in value when the amortisation mechanism reaches its limits.

For C-NAV funds, failure to comply with these ratios leads to exit penalties and the suspension of redemptions. Lastly, a better understanding is expected of the securities held on the asset side and of investor behaviour on the liability side. This will be supplemented by stress tests resulting in an action plan if vulnerabilities are observed, as well as by regular and comprehensive reporting to the regulator¹³⁴.

This regulation, which will enter into force in July 2018, ends the regulatory uncertainty hanging over the European money market fund industry and makes these vehicles more robust. Work is ongoing to define the delegated acts that will clarify certain provisions on which continued vigilance is required:

- While regulations covering the maturity and liquidity risk of portfolio securities are strong for securities held, that is not currently the case for securitised assets. Additionally, counterparty credit quality is not regulated for public debt instruments received under reverse purchase agreements. Public debt C-NAVs may therefore hold up to 100% of their portfolio through reverse purchase agreement transactions collateralised by public debt maturing in 10, 20 or 30 years; these maturities do not comply with the daily or weekly liquidity ratios in the event of counterparty default¹³⁵.
- For C-NAV and LVNAV funds, any negative performance will have to be reflected in market value per unit: these funds may not destroy units to reflect the destruction of value on the asset side of the portfolio. At the European level, funds' compliance with this prohibition will have to be monitored as it ensures disclosure and equal treatment of investors and allows for an appropriate risk assessment.
- Diversification risk for funds invested in sovereign debt, which may invest up to 100% of their assets in a single issuer under different transparency and issue conditions¹³⁶. Furthermore, these securities are not covered by any credit quality constraints. From a hunt for yield perspective, the expectation is that some funds may turn to higher-yield sovereign debt, possibly from emerging countries.

¹³⁴ The funds will have to implement internal assessments of the credit quality of the portfolio securities and be able to anticipate the redemption behaviour of the fund's holders. They will have to submit, in standardised reports, the characteristics of the fund, line-by-line portfolio details, WAL and WAM, the results of the stress tests and information on liabilities.

¹³⁵ Possible constraints would be to include reverse purchase agreements in the liquidity constraints, or to define additional requirements based on the probability of default of the counterparty to the reverse purchase agreement transaction.

¹³⁶ The cumulative conditions are that: (i) the fund must have six different issues, (ii) a single issue cannot exceed 30% of total assets and (iii) this must be detailed in the fund's documentation.

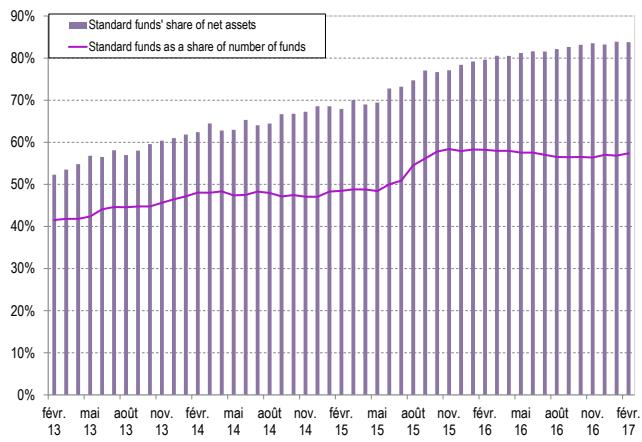
*The French
market could
now open up to
C-NAV funds*

3.2.1 Market trends uncertain in the context of very poor performances by French money market funds

The French market, which has consisted only of V-NAV funds, could therefore have to open up to C-NAV money market funds which, despite the European regulation, will remain more exposed to the risk of runs than V-NAV money market funds¹³⁷. The extent of this development and its impact on investor protection are difficult to quantify at this time. This change, in parallel with the introduction of new constraints, some of which may prove costly (new reporting, independent credit risk assessment), raises concerns about the profitability of money market funds at a time when interest rates remain very low. In February 2017, French money market funds therefore hit a gross annual performance low of -0.012%, the first time a negative performance has been recorded (see 3.1 for the returns of European money market funds).

They have increasingly shifted their investments into debt securities that are longer term (but still mature in less than two years, due to regulatory constraints) and away from short-term securities, thereby increasing their risk. The decrease in the number of vehicles that has been ongoing since 2014¹³⁸ has been accompanied by a focus on the “standard” model (84% of the EUR 370 billion in assets in February 2017) at the expense of short-term money market funds, which now represent only 16% of assets, compared with half at end-2012¹³⁹.

Figure 50: Change in the share of standard funds in total French money market funds (as %)



Source: Banque de France.

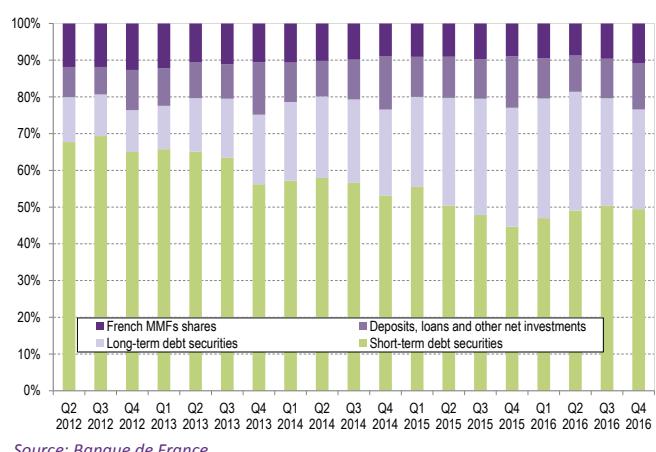
¹³⁷ The ESRB stressed that C-NAV funds remain more exposed to liquidity transformation risk in a recent publication. See ESRB (2017), “EU Shadow Banking Monitor No. 2”, May.

¹³⁸ There were 230 vehicles in February 2017, compared with 402 in February 2013, likely in order to benefit from returns to scale at a time of low yields.

¹³⁹ The main difference between the two types is, in addition to the maturity requirements for securities that are eligible assets for portfolios, the constraint on the WAM, which must not exceed 60 days for short-term money market funds and 6 months for other money market funds, and WAL, set at 120 days for short-term money market funds and 12 months for the others.

At end-2016, this maturity extension strategy appeared to have reached its limits, with a slight increase in short-term debt securities in volume (but not value) terms year on year: 49% of French money market fund assets consisted of short-term debt securities, compared with 45% at end-2015 (27% and 32%, respectively, for long-term debt securities). These reallocations have led to a decrease in the average residual maturity of securities held in the portfolio, at 213 days at end-2016 compared with 240 days one year earlier. This shift likely reflects the increasingly limited room for manoeuvre, given the availability of high-quality securities, as well as the possible anticipation of new portfolio liquidity constraints.

Figure 51: Change in securities holdings of French money market funds based on the maturity of the securities held (as %)



Source: Banque de France.

Box 9: Impact of U.S. money market fund reform: a far-reaching restructuring of the market requiring vigilance over USD financing of international banks

In July 2014, the United States adopted its second significant money market fund reform, which entered into force in October 2016¹⁴⁰. This reform made two major changes to the U.S. market: first, the conversion to V-NAV funds of C-NAV funds invested in corporate debt and offered to institutional investors (institutional prime funds, representing 59% of U.S. money market fund assets in July 2014), and of municipal money market funds invested in bonds issued primarily by municipalities or regions (9% of assets pre-reform). It also requires the implementation of liquidity fees and redemption gates once the proportion of weekly liquid assets falls below 30% of a fund's assets to address the risk of runs. Only C-NAV government money market funds are exempt from these measures (32% of assets in July 2014)¹⁴¹.

While U.S. assets remained stable (USD 2.931 trillion in February 2017, or 1% more than before the reform was adopted), the market has been significantly transformed. There has been a sharp drop in the assets of prime funds, which lost more than USD 1.123 trillion in assets from July 2014 to February 2017, i.e. a 66% decrease. Some of this decline benefited government funds, whose assets increased by 138% at the same time, from USD 927 billion to USD 2.210 trillion. The shift from prime money market funds to government funds reflected choices made by investors, whose flows moved from one type of money market fund to another¹⁴².

U.S. C-NAV money market funds, which remain vulnerable to the risk of runs, now account for 75% of assets. U.S. prime money market funds have nevertheless strengthened their portfolios' liquidity by reducing their duration¹⁴³. Conversely, government funds have tended to increase the maturity of their portfolios¹⁴⁴.

¹⁴⁰ See SEC (2014), "Amendments to Securities and Exchange Commission (SEC) rule 2a-7". This reform significantly strengthens the first wave of reforms introduced in 2009.

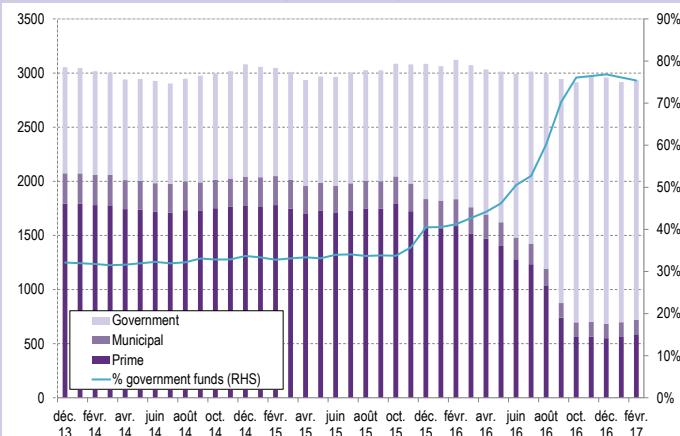
¹⁴¹ They have to invest 99.5% of their assets in government debt or similar securities.

¹⁴² Chen, C., Cipriani, M., La Spada, G., Mulder, P. and Shah, N. (2017), "Money Market Funds and the New SEC Regulation", *Federal Reserve Bank of New York Liberty Street Economics* (blog), 20 March.

¹⁴³ In February 2016, their holdings of daily and weekly liquid assets increased by 24% and 27%, respectively, year on year. At the same time, their weighted average maturity (WAM) fell from 43.4 to 29.3 days and their weighted average life (WAL) from 77.5 to 58.6 days.

¹⁴⁴ Over the same period, their WAM fell from 42.9 to 40.9 days and their WAL increased from 80.1 to 93.3 days.

Figure 52: Change in assets of U.S. money market funds by type
(USD billion)



Source: SEC data - Money Market Fund Statistics.

On the supply side, Di Maggio and Kacperczyk highlight the adaptation of certain money market funds ahead of the reform in order to survive the extended period of low rates¹⁴⁵: they observe a restructuring of the product offering, with a decrease in the number of money market funds and the transformation of money market funds into short-term bond funds. The number of vehicles fell from 553 in July 2014 to 411 in February 2017 and the reform also encouraged the development of ultra short-term bond funds (traditional or ETF), categories that have remained marginal thus far¹⁴⁶.

On the demand side, as prime money market funds are mainly focused on international banks¹⁴⁷, there were some concerns about a tightening of their financing conditions. Prime money market funds reduced their holdings of bank securities by 69% in volume terms between October 2014 (earliest available data) and February 2017. The BIS nevertheless stresses that non-U.S. banks were not adversely affected by the approximately USD 555 billion decline in funding between September 2015 and December 2016¹⁴⁸, as they developed new funding strategies. International banks instead reported an increase in their USD financing, made possible by issuing more long-term bonds in dollars, raising their USD deposits outside the United States and drawing down their excess reserves at the Federal Reserve. French banks fared fairly well in terms of USD financing, with the country still in second place among prime funds' exposure at USD 62.1 billion in February 2017. The Banque de France nevertheless highlights the need to pay close attention to their foreign-currency liquidity position¹⁴⁹.

The U.S. example highlights how quickly investors moved and the money market fund market reorganised to adapt to the regulation. The reform in Europe raises questions, as it did in the United States, about whether the constant and market valuation models can coexist in harmony when one of them, the C-NAV model, presents the risk of an illusion of liquidity and performance. Retail investors' appetite for this type of fund will therefore have to be closely monitored and accompanied, if necessary, by additional reforms.

¹⁴⁵ Di Maggio, M. and Kacperczyk, M. (2016), "The unintended consequences of the zero lower bound policy", NBER Working Paper Series, No. 22351.

¹⁴⁶ See Kilburn, F. (2016), "Ultra-short funds see opening in money market reforms", Risk.net, 19 September.

¹⁴⁷ They represented 83% of holdings of bank securities by prime money market funds in October 2014 (earliest available date) and 87% in February 2016.

¹⁴⁸ BIS (2017), "Non-US banks' global dollar funding grows despite US money market reform", Quarterly review, March.

¹⁴⁹ French banks have moved the liabilities of their branches into government money market funds and are also benefiting from a favourable position as the preferred counterparties of U.S. banks for repos. Banque de France (2016), "Assessment of risks to the French financial system", December.

**Risks arising from
the use of
leverage by
investment funds**

3.3. DEVELOPING A BETTER UNDERSTANDING OF LEVERAGE RISKS

3.3.1. The nature of the risk arising from the use of leverage by investment funds

Following a consultation in 2016, in January 2017 the FSB published its work on identifying structural vulnerabilities in the asset management sector, the top two being liquidity and leverage risk¹⁵⁰. Funds use leverage as part of their investment strategy to increase their market exposure or secure additional returns. It can be gained through borrowing ("real" leverage) but also by using derivatives or securities lending ("synthetic" leverage).

The theoretical risks linked to funds' use of leverage¹⁵¹ are chiefly (i) counterparty risk, which increases the portfolio's sensitivity to market fluctuations and heightens the risk of contagion; and (ii) the risk of an amplification of shocks and of an acceleration in haircuts to asset prices because funds need to hold fire sales to meet an increase in haircuts, creditors' margin calls or redemption requests in times of stress¹⁵².

However, history empirically teaches that, while leverage clearly has an adverse effect in financial crises, it is particularly detrimental for the banking sector (where leverage is on the order of 10-30 times capital) and for the non-financial sector¹⁵³. Investment funds with significant leverage have not, in contrast, had a systemic impact during financial crises, and the impacts of the few historical examples of defaults by highly leveraged funds have not been so significant as to require government intervention¹⁵⁴. For funds that have faced difficulties, leverage has served to amplify risk (large amount of assets under management, asset liquidity management, or risky investments). Nevertheless, in light of the increase in the weight of investment funds in the financial sector, it is worth considering the risks involved when investment funds use leverage¹⁵⁵.

3.3.2. The various possible indicators of leverage risk

Based on the FSB's recommendations, IOSCO will work to implement one or more consistent and simple measures of leverage for all investment funds at the international level. While there is a common calculation for "real" leverage, not all jurisdictions have the same calculation methodology of "synthetic" leverage, which makes it difficult to estimate aggregate risk and to compare across countries. There are many ways to assess the risk of funds' off-balance sheet exposure to financial instruments.

¹⁵⁰ FSB (2017), "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities", January.

¹⁵¹ El Kalak, I., Azevedo, A. and Hudson, S. (2016), "Reviewing the Hedge Funds Literature I: Hedge Funds and Hedge Fund's Managerial Characteristics", International Review of Financial Analysis 48, September.

¹⁵² Chan, N., Getmansky, M., Haas, S., and Lo, A. (2007), "Systemic Risk and Hedge Funds, The Risks of Financial Institutions", ed. Mark Carey and Renee Stulz, University of Chicago Press, Chicago, IL, pp. 235-338.

¹⁵³ Schularick, M. and Taylor, A. M., "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008", American Economic Review, Vol. 102(2), 2012.

¹⁵⁴ Examples include U.S. funds Long-Term Capital Management (LTCM, in 1998) and Amaranth (2006) and the Madoff Investment Securities LLC fund (2009).

¹⁵⁵ Pozsar, Z. (2015), "A Macro View of Shadow Banking: Levered Betas and Wholesale Funding in the Context of Secular Stagnation", working paper.

The gross exposure method aims to take into account a fund's exposure arising from a derivative contract (and not the market value of this contract)¹⁵⁶. It has the advantage of providing a straightforward explanation of a fund's market footprint in the event of a shock. However, for more complex derivatives, including, for example, options or volatility swaps, this calculation is not as straightforward or transparent. The method does not account for the risk transfer strategies of funds using derivatives to reduce their exposure to certain assets or risks (interest rate risk, for example); similarly, short positions can offset long positions. This method could therefore be fine-tuned by taking these strategies into account and allowing derivative netting at the portfolio level. However, as Breuer¹⁵⁷ notes, netting positions when they are not perfectly correlated involves robust assumptions about their covariance, and these assumptions may be invalidated under stressed market conditions.

A second method may take better account of the ripple effects of funds' interconnectedness with the rest of the financial system, via counterparty risk which depends on the direction of the derivatives¹⁵⁸. This type of risk may be approached through potential loss calculation models, which assess the channels of contagion and their related risks¹⁵⁹. Various stress scenarios and their impacts on the fund's portfolio are modelled to estimate value-at-risk (VaR) or expected shortfall¹⁶⁰. Nevertheless, these loss scenario calculations present a significant model risk, which leaves room for calculation arbitrage, based on methodological or calibration choices. This makes it difficult to obtain consistent results across the universe of funds. The use of this type of complex modelling, employed extensively in the banking and insurance sector, has also been criticised at being a poor ex ante indicator of balance sheet fragility¹⁶¹.

Lastly, a third method differs from the previous approaches in that it assesses the consequences of counterparty risk by recognising the level of liquidity held in reserve by funds in connection with their exposure to derivatives or to securities lending, similar to the new leverage measures now used in the banking system¹⁶².

Without prejudging the outcome of IOSCO's findings, it seems that one single leverage measure alone will never capture the different dimensions of the risk, nor will it make it easier for investors and counterparties to understand this risk. There is also the issue of available data and their cost, as well as of the supervision of funds by taking into account their characteristics (fund strategy, market conditions, etc.) on a case-by-case basis to assess the related risk.

¹⁵⁶ A futures contract that consists, for example, of taking a long position on a EUR 100 asset (bond, interest rate, equity, index) means that the fund expects this underlying asset to rise and agrees to acquire it at a specified price and date. The leverage of this position is then the nominal value of the contract, which represents the maximum amount that the fund can lose through this exposure (in this case, EUR 100).

¹⁵⁷ Breuer (2000), "Measuring off-balance sheet leverage", IMF Working Paper No. 00/202.

¹⁵⁸ Taking into account the directional position of the derivative means taking into account both the possibility of netting short and long positions and the possible differences between the possibility of gains or losses on a single contract.

¹⁵⁹ For example, one might argue that a fund's counterparties to derivative contracts also put in place a collateralisation system to protect against this same counterparty risk.

¹⁶⁰ Conditional expected shortfall is calculated at a given confidence level: it calculates the average size of losses above and beyond an event, such as expected loss through a selected value-at-risk or a number of "worst-case losses" established over a period of time through various scenarios.

¹⁶¹ Idier, J., Lamé, G. and Mésonnier, J.-S. (2013), "How useful is the marginal expected shortfall for the measurement of systemic exposure? A practical assessment", European Central Bank working paper series, no. 1546, May.

¹⁶² Basel Committee on Banking Supervision (2014), "The standardised approach for measuring counterparty credit risk exposures", March.

3.3.3 A restrictive framework at the European level, supplemented with new reporting requirements

Box 10: Calculating leverage under the European framework

To assess their aggregate risk exposure, the two types of European vehicles (UCITS and AIFs) may use two calculation methods.

1) The commitment method is a measure of leverage expressed as the ratio of the fund's aggregate risk exposure to its net asset value. Risk exposure is the sum of the absolute values of the positions of each derivative (equivalent position in the underlying asset or by applying a conversion formula for complex derivative instruments), plus positions resulting from securities lending and exposures arising from cash borrowings. AIFs have to estimate their gross commitment, by calculating their exposure and subtracting their cash, and their net commitment, by subtracting positions entered into for hedging purposes.

Harmonising the disparities that remain in the nuances of the calculation of the commitment method for UCITS and AIFs would make it easier to compare these vehicles and to understand the associated risks and strategies.

2) If a fund uses complex or non-standard financial futures, it can also use the VaR calculation method, which can, in some cases, allow for more substantial leverage. This may be calculated in relative terms (in comparison to a reference portfolio), or in terms of absolute VaR (by comparing potential losses at a fixed threshold). The use of this method requires additional human and technical resources, prior notification of investors and the regulator, and an independent risk controller.

At the European level, a combination of measures is used under the UCITS and AIFM directives (see box). Furthermore, Europe has established a restrictive framework for the supervision and control of leverage: regulations applicable to UCITS lay down strict limits on leverage, irrespective of its source and how it is calculated (see 2016 Risk Outlook). Alternative investment funds (AIFs) are not subject to a quantitative limit, but must regularly notify the regulator of how much leverage they are using, an obligation that is even more stringent if it exceeds 300%. Their leverage may be capped by the competent authority if it reaches a level deemed to present a risk to financial stability.

The measures of leverage used may be supplemented by the work initiated by ESMA and the ESRB in order to review the European directives governing investment funds (AIFM and UCITS)¹⁶³. This work concerns possible improvements to the existing framework, for example:

- through European guidelines for the practical implementation of the competent authorities' ability to cap the leverage of AIFs when there are concerns about the system's stability;
- by improving the understanding of leverage risk, by developing empirical analyses using existing data sourced from AIFM reporting or private data¹⁶⁴, or by developing new indicators that combine existing data;

¹⁶³ Directive 2011/61/EU on Alternative Investment Fund Managers (AIFM Directive) includes a review clause and Directive 2014/91/EU, known as "UCITS V", includes an overall review of the regulatory framework. In both cases, this review work must be initiated in 2017 and could encompass other topics, with the overall conclusions expected in 2018.

¹⁶⁴ See, for example, ESMA's recent analysis of European funds reporting that they use leverage in their strategy (Lipper data): Mazzacurati, J. (2016), "Synthetic leverage in the asset management industry", ESMA Report on Trends, Risks and Vulnerabilities No. 2, 2016.

- by improving existing reporting to enable this necessary understanding of the risks: possible developments include, for example, being able to calculate UCITS' synthetic leverage or fine-tuning the quality and exhaustiveness of AIFM data to enable risk monitoring, at both the individual and aggregate level.

At the same time, two other types of data reports could improve the understanding of European investment funds' synthetic leverage. First, at the European level, EMIR transposes the commitments made by the G20 after the financial crisis with respect to standards for the regulation and supervision of over-the-counter derivatives¹⁶⁵. Since February 2014, investment funds have been required to report all their positions and transactions in derivative products to a trade repository. While significant shortcomings have been identified in terms of data quality¹⁶⁶, improving EMIR reporting will give regulators and supervisors a better understanding of investment funds' synthetic leverage.

Next, implementation of the European Securities Financing Transaction Regulation (SFTR), adopted in November 2015, will allow a better understanding of funds' use of securities lending. This regulation will require that these transactions be reported from 2018, and already requires that fund managers be more transparent to investors by publishing information on their use of SFTs and total return swaps (recognised as having an equivalent effect to SFTs) in their regular information reports and their pre-investment documents.

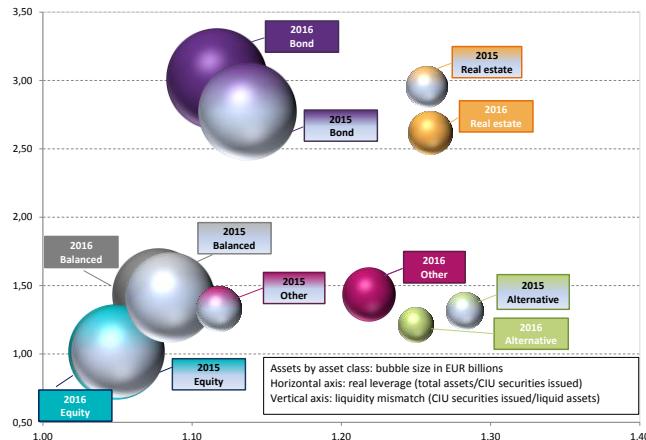
*Initial
leverage
calculations
do not
emphasise
risks*

Based on the data that are usable at this stage, the change in "real" leverage of all euro area funds can be observed by comparing total assets to the volume of securities issued. As the risks associated with leverage can be exacerbated by funds' liquidity risks, it is worth comparing real leverage with the balance sheet liquidity mismatch by comparing securities issued (on the liability side) with liquid assets held (on the asset side). In 2016, there was an improvement in the debt level of alternative and bond funds, and real leverage for all types of funds was relatively low at 1.11 on average, slightly higher for alternative and real estate funds. Nevertheless, particular attention should be paid to the increase in leverage and in the liquidity mismatch of other funds, which encompass various types of fund strategies, as well as to the increase in liquidity risk of bond funds between 2015 and 2016 (up 9%).

¹⁶⁵ Regulation (EU) No. 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories.

¹⁶⁶ ECB (2016), "User experiences and remaining shortcomings of EMIR data", Economic Bulletin, December.

Figure 53: Euro area funds: use of leverage, liquidity mismatch and total assets



Note: The assumptions used are those of the ECB. The selected liquid assets are equities, euro area sovereign bonds, deposits with euro area financial institutions and other securities with maturities of less than one year.

Interpretation: the use of leverage by euro area bond funds was 1.12 in 2016 versus 1.14 in 2015. Their liquidity mismatch is estimated at 3.01 in 2016 and was 2.77 in 2015, for total assets of EUR 3.361 trillion, an increase relative to 2015. Real estate funds are also more exposed to this liquidity mismatch, since they invest more in illiquid physical assets.

Source: ECB, AMF calculations.

Some initial observations may be drawn from AIFM reporting data about the risk exposure of AIFs managed by French asset management companies. These data are also useful for identifying funds that report high leverage, in order to better understand their strategy and risks. At end-2016, the level of leverage calculated using the net commitment method¹⁶⁷ was less than 110% of their net assets, except for real estate funds, which have traditionally relied more heavily on borrowing (average of 156%). Bond funds also have higher gross leverage than other funds (129% on average), which can be attributed to greater use of derivatives for hedging purposes, as can be seen through the far lower net leverage of hedging instruments (107% on average).

3.4. ETF RISKS REMAIN LIMITED IN FRANCE

**Sharp increase in
ETF assets both
internationally and
in France**

Exchange-traded funds (ETFs) have experienced explosive growth in recent years: at end-2016, their assets under management reached EUR 3.136 trillion, i.e. 8% of total assets in the fund industry worldwide¹⁶⁸, due to a 20% average annual increase in assets over the last four years. Inflows to ETFs were the highest among global inflows in 2016, outpacing all other types of funds (35% of total inflows).

The United States is where 72% of worldwide assets are domiciled, with EUR 2.421 trillion in assets under management at end-2016 and more than 2,000 ETFs¹⁶⁹. The 10 largest ETFs by assets under management are also American and alone accounted for 28% of the assets of U.S. ETFs and 20% of worldwide assets. The market is then divided between Europe (EUR 544 billion, 17% of assets) and Asia (EUR 273 billion, 8% of assets).

¹⁶⁷ These initial analyses use AIFM reporting data, restating outliers (clearly resulting from reporting errors), for a scope of funds reporting on a quarterly basis in euros, with strictly positive net assets and net asset values, for the "equity", "bond", "balanced", "real estate" and "money market" classifications. For Q4 2016, the scope analysed in this manner represented approximately 70% of AIFs' EUR 707 billion in assets.

¹⁶⁸ EFAMA International Statistical Release Q4 2016.

¹⁶⁹ All figures presented subsequently, when they concern international and European comparisons, are taken from an extraction of Lipper data performed in April 2017, which explains the slight discrepancy with the EFAMA data at end-2016.

In France, ETFs represent 4% of assets in the fund industry, with EUR 62 billion in assets. France is one of the four largest jurisdictions for ETF domiciliation in Europe (13% of European assets), behind Ireland (54%) and Luxembourg (15%), but ahead of Germany (10%). The leading listing venues for European ETFs are also highly concentrated: in London (39% of European assets are listed there), Frankfurt (28%) and Paris (14%), with certain ETFs being multi-listed.

Table 1: Domiciliation of European ETFs

Country of domiciliation	Number of ETFs in 2016	Assets in 2016 (€bn)	Assets in 2015 (€bn)	Net redemption/subscription flows in 2016 (€bn)
Ireland	1,013	293.6	230.9	43.8
Luxembourg	661	82.5	82.2	-6.3
France	384	69.9	62.4	5.2
Germany	114	52.9	49.6	2.2
Other	481	22.7	16.9	4.4
Total EU	3134	544.4	458.9	53.7

Source: Lipper.

At end-2016, the market for ETFs listed on Euronext Paris (i.e. including foreign ETFs listed in France and excluding French ETFs listed abroad) consisted of 477 ETFs for total assets under management of EUR 103 billion. Following the sharp increase in 2015 in both assets (up 44%) and trading volumes (up 37%) for French ETFs, due mainly to higher subscription flows, growth in inflows decreased in 2016 (up 15% in 2016) and trading volumes fell (down 8%, primarily due to OTC trading which declined by 17%).

Trading volumes stood at EUR 634 billion, of which EUR 446 billion was OTC (i.e. 71% of volumes) and EUR 57 billion was on Euronext Paris (9%)¹⁷⁰. High-frequency trading represented more than 60% of ETF trading volumes on the Paris regulated market in 2015 (or 17% of the total market given the percentage of OTC)¹⁷¹. This percentage is greater than that observed in the equity markets, where it has stabilised at 45% on average for CAC 40 securities. ETFs listed in France consist mainly of equity ETFs (83% of assets) and, to a lesser extent, bond ETFs (16% of assets). While commodity ETFs represent only 1% of assets under management, other ETFs (currency and alternative) are entirely insignificant.

The growth in ETFs, and more generally in passive management, raises a number of questions¹⁷², in particular with regard to its impact on market efficiency. The effects considered by the economic literature are twofold. On the one hand, ETFs help eliminate arbitrage opportunities, which improves market efficiency (Stambaugh, 2014)¹⁷³; they also have a positive impact on active funds, by encouraging them to adopt more aggressive strategies (Appel, Gormley and Keim, 2016)¹⁷⁴. On the other hand, Wurgler (2011) concludes that the growth in index investing is now, because of its scale, creating new market phenomena and more opportunities for mispricing, with externalities for the real

¹⁷⁰ This compares with volumes of EUR 1.443 trillion for CAC 40 securities and EUR 1.477 trillion for CAC 40 futures in 2016. Other European platforms where certain ETFs are multi-listed accounted for the balance.

¹⁷¹ Based on number of orders given, HF traders account for more than 85% of order book activity due to their market-making commitment to Euronext.

¹⁷² See Ben-David, I., Franzoni, F. and Moussawi R. (2016), "Exchange Traded Funds (ETFs)", NBER Working Paper No. 2282 for a comprehensive review of the literature.

¹⁷³ Stambaugh, R. (2014), "Investment Noise and Trends", Journal of Finance 69 (4), 1415–1453.

¹⁷⁴ Appel, I. R., Todd A. Gormley, and Donald B. Keim, 2016, *Passive Investors, Not Passive Owners*, Journal of Financial Economics 121(1), 111–141.

*A sharp increase in
ETF trading
volumes, primarily
OTC*

economy that are still not properly understood¹⁷⁵. This point, which is very important given the growth in passive management, will require further analysis in the future. Other questions concern the potential illusion of liquidity that ETFs represent, as well as their role in the liquidity of the underlying assets. The AMF examined these risks in a recent analysis of the French market and its findings are presented here¹⁷⁶.

3.4.1. Counterparty and collateral risk limited by enhanced European framework

ETF management companies may use two different replication methods:

- Physical replication, where the fund manager builds a portfolio of securities included in the benchmark index in proportions that are appropriate or representative of this index;
- Synthetic replication, which is used to match the performance of the index through the use of performance swaps. The management company enters into a total return swap with a third party, usually a bank, which provides it with the return of the index for a given nominal exposure.

Unlike ETFs in other countries, French ETFs primarily offer synthetic replication (69% of assets), a technique that automatically exposes the ETF to counterparty risk. This percentage has fallen significantly from 2014, when it stood at 80%. However, physical replication ETFs (which therefore hold a portfolio of securities) often use securities lending to generate additional revenue and increase their returns, which also exposes them to counterparty risk.

In Europe, there are no limits on the securities lending amount; a fund may lend up to 100% of its assets. U.S. funds cannot lend more than 33.3%¹⁷⁷. However, the vast majority of ETFs in Europe are structured as UCITS and are therefore subject to the corresponding constraints in terms of eligible assets, portfolio asset diversification and risk management. The entry into over-the-counter derivatives contracts and the use of securities lending are thus governed by limits on the counterparty risk to which ETFs are exposed because of these transactions. The funds are also subject to the European requirements relating to these transactions (transparency and risk management via margin payments) provided for in the EMIR regulation, for derivatives contracts, and in the SFTR regulation, for securities lending.

¹⁷⁵ It would promote distortions in the valuation of the underlying assets by placing upwards and downwards pressure on their prices due to their addition to/deletion from the indices, the correlation between asset prices and indices, and greater sensitivity to crashes. Wurgler, J. (2011), “On the Economic Consequences of Index-Linked Investing”, in *Challenges to Business in the Twenty-First Century*, American Academy of Arts and Sciences, Cambridge, MA.

¹⁷⁶ AMF (2017), “ETFs: characteristics, overview and risk analysis — the example of the French market,” Risk and Trend Mapping, February.

¹⁷⁷ Investment Company Act of 1940.

3.4.2. Limited risk of decorrelation from the underlying index due to the circuit-breaker mechanism in place on Euronext Paris

Certain market events, such as the fall in ETFs in the United States on 24 August 2015, have helped highlight the liquidity risk posed by ETFs in general, as well as the role they play in the price formation mechanism and for the liquidity of their underlying assets. In this event, the U.S. ETF market showed just how vulnerable it is to spikes in volatility and large numbers of ETFs were quoted at anomalous prices for several minutes. The behaviour of the Guggenheim S&P 500 Equal Weight ETF¹⁷⁸ is particularly striking: the difference between the theoretical value and the traded value reached nearly 35%.

Such a risk is extremely limited in France due to the circuit-breaker mechanism in place on Euronext Paris: based on the last indicative net asset value (iNAV)¹⁷⁹ calculated, the market operator establishes a corridor outside of which trades may not take place. If order matching results in a trade at a price that falls outside the corridor, the ETF is halted for a 30-second period which may be repeated¹⁸⁰.

This protection mechanism has proven particularly effective. The most volatile trading sessions led to a large number of temporary suspensions; each one was triggered by a trade made at a price outside the corridor. On 24 August 2015 in particular, ETFs were subject to an average halt of two minutes per instrument (compared with three seconds on average on other days in 2015). Excluding periods of stress, the distribution of price spreads between the ETFs' iNAV and the actual trade price did not really have any outliers, with nearly 90% of transactions (whether as number of trades or trading amounts) carried out at less than 0.25% of the iNAV price and more than 95% at less than 0.5%.

The protection mechanism in place on Euronext Paris appears to be relatively specific to the French market, with other European markets tending to use circuit-breaker models consisting of a dynamic suspension limit based on the reference price for the last trade, a mechanism that does not prevent a string of consecutive aggressive sales from widening prices.

A halt in trading on the regulated market does not stop trades from taking place OTC at prices that may fall outside the boundaries of the corridor. In that case, the buyer or seller will have to find a counterparty willing to trade at the bid or ask price¹⁸¹.

*Paris circuit-breaker
particularly
effective for on-
venue trading*

¹⁷⁸ Gerig, A. and K. Murphy (2016), "The Determinants of ETF Trading Pauses on August 24th, 2015", SEC White Paper, February.

¹⁷⁹ Indicative net asset value, published every 15 seconds by Euronext, is the price at which the ETF is actually traded as determined by supply and demand on the secondary market. Net asset value, generally calculated daily, is the price at which investors redeem or subscribe shares on the primary market.

¹⁸⁰ The boundaries of the corridor are set at +/-1.5% of iNAV or +/-3%, at the ETF management company's discretion; Euronext allows narrower corridors to be set but this option has not yet been used.

¹⁸¹ The report nevertheless shows that there were no OTC transactions at prices much lower than the prevailing iNAV on the ETF.

3.4.3. ETF liquidity risk still at the centre of the debate

While some ETFs can increase access to an asset class or market segment that is inherently illiquid (emerging markets, commodities, high yield, etc.), the ETF's liquidity remains dependent on that of the underlying as well as on the presence of authorized participants (APs). These intermediaries carry out the unit creation/destruction process on the primary market and thus ensure that the ETF units do not deviate too far from the market value of their underlying assets (due to the arbitrage opportunities)¹⁸².

The question that remains is nevertheless that of the role played by the ETF in the event of a shock to the underlying instrument: does it act as liquidity provider or, in contrast, can it exacerbate volatility? To date, the academic literature remains inconclusive on these two points. Madhavan (2016)¹⁸³ and Madhavan and Sobczyk (2016)¹⁸⁴ consider that ETFs, due to their low costs, promote the rapid integration of any new information into their prices, even before the prices on the underlying markets¹⁸⁵. However, other studies, such as that of Israeli, Lee and Sridharan (2015)¹⁸⁶ do not reach the same conclusions. The authors show that the securities held by ETFs have higher trading costs and higher levels of correlation with the indices and are characterised by lower informational efficiency.

ETF take-up on the European and French underlying markets remains limited

At this time, ETFs listed in Europe have a very low take-up rate relative to the assets to which their benchmarks correspond. ETFs that track the CAC 40 index (French or foreign ETFs, but mainly listed on Euronext Paris) thus have a take-up rate of 0.6% (1.5% including the share of French stocks in the Euro Stoxx 50), and those whose underlying is the Euro Stoxx 50 have a take-up rate of about 1.5%, which is low. Bond ETFs, whether corporates or sovereigns, have a lower take-up rate. This compares with the take-up rate of U.S. ETFs of about 10% of the underlying markets, while their daily volumes represent 36% of total trading volumes in the United States¹⁸⁷. Additionally, an analysis of French primary market activity highlights the counter-cyclical nature of these flows, which serve to dampen rather than magnify major price moves. However, the recent growth in this market calls for continued vigilance with regard to the change in the take-up rate of ETFs on the smallest underlying markets or those that may present a specific risk.

An ETF's liquidity is always impaired by the underlying asset and the involvement of the AP

It should also be noted that the liquidity of an ETF is always impaired by that of its underlying and, under extreme circumstances, ETFs can be suspended from trading, on both the secondary and primary markets, with the regulator's consent. The most recent striking example is the closure of the Greek stock exchange in July 2015, which resulted in the lengthy suspension of ETFs. Similarly, the very specific role played by the AP continues to capture much of the risk associated with these products, as it can cease to perform its arbitrage role and thus pass the stress on to the underlying assets. A detailed analysis of

¹⁸² When unit prices increase, the AP may find it profitable to create new units at the end of the day: it therefore buys on the market the basket of securities underlying the ETF, and exchanges it at the end of the day for new units, which will then be sold at a higher price than the basket bought during the day. The same arbitrage is possible when unit prices fall.

¹⁸³ Madhavan, A. (2016), "Exchange-Traded Funds and the New Dynamics of Investing", Oxford University Press.

¹⁸⁴ Madhavan, A., and A. Sobczyk (2016), "Price Dynamics and Liquidity of Exchange-Traded Funds", Journal of Investment Management, Vol. 14, No. 2.

¹⁸⁵ This theoretical view is corroborated by certain empirical studies, which show that information is incorporated into asset prices more quickly for securities included in the underlying portfolios of ETFs. See Glosten, L., Nallareddy, S. and Zou, Y. (2016), "ETF Trading and Informational Efficiency of Underlying Securities", Working Paper, Duke University.

¹⁸⁶ Israeli, D., Lee, C. and Sridharan, S. (2015), "Is there a Dark Side to Exchange Traded Funds (ETFs)? An Information Perspective", Working Paper, Stanford University.

¹⁸⁷ See analyses by Ben-David, I., Franzoni, F. and Moussawi, R. (2016), *ibid.*

market-making activity¹⁸⁸ nevertheless shows that the percentage of ETFs whose quotes are regularly proposed by a single market maker is fairly low. They represent 19% of assets (31% of equity ETFs and 66% of bond ETFs in number terms) and 5% of trading volumes. Conversely, more than 80% of assets are invested in ETFs with at least four market makers.

3.5. ASSET MANAGEMENT INNOVATIONS: SOME MODEST DEVELOPMENTS AND A CHANGING REGULATORY FRAMEWORK

3.5.1 The growth of FinTechs in asset management

New financial technologies by way of FinTechs (see Part 2) also affect the asset management sector. Philippon (2016)¹⁸⁹ highlights the inherent reasons for the growth in FinTechs, mainly from a supply standpoint. Philippon believes the reason consumers continue to pay a lot for financial intermediation is that the financial sector has benefited, more so than other sectors, from a number of technological advances (lower transaction costs, process automation, etc.) but has not passed the savings on through lower costs¹⁹⁰. This may be due to rents arising from the lower level of competition in the sector (complex regulations, high barriers to entry, etc.). It therefore makes sense that new firms are seeing an opportunity to offer new models or to eliminate the frictions that persist in the financial sector.

The first companies to be created do not, however, seem to be putting the entire value chain of established operators to the test at this stage, but rather to be reinventing certain practices. These innovations therefore relate mainly to improvements in management techniques:

- by improving portfolio management with the help of artificial intelligence or more extensive databases;
- by finding ways to better understand and manage funds' liabilities, through new order marking techniques¹⁹¹ or the development of blockchain in settlement/delivery;
- by better adjusting supply to clients' needs, using technologies that help define their profile (robo-advisers) or, more broadly, through the use of social media and digital communications to increase direct sales through new distribution platforms.

¹⁸⁸ Market-maker status results from an agreement reached with Euronext between a market member and a listed company (in this case, an ETF), whereby the member commits to ensuring a permanent price range for a security, i.e. a buy order and a sell order in the order book. This status was created to improve the liquidity of the securities.

¹⁸⁹ Philippon, T. (2016), "The FinTech Opportunity", NBER Working Paper no. 22476, August.

¹⁹⁰ Philippon's empirical analysis shows that intermediation costs in 2016 were similar to those at the beginning of the 20th century.

¹⁹¹ One example is the collaborative *Modélisation de la Gestion du Passif des Fonds* (fund liability management modelling, or MGPF) project from the House of Finance at Université Paris-Dauphine which aims to design and develop new IT tools to model and anticipate the behaviour of fund clients.

These innovations are not all at the same stage of development, and at this time consist mainly of new services FinTechs are offering to existing management companies. The use of blockchain to replace the role of the central securities depositary, for example, is only in the prototyping stage¹⁹², while direct digital communication with investors is already quite common.

While these innovations may have benefits for consumers, by improving their experience (better access for certain consumers, speed, cost, supply that meets their needs, transparency, etc.; see Chapter 4), they also pose risks. The main risk is the possibility that the procyclicality of asset management will be heightened if investor behaviour is mimicked to an even greater extent by the development of algorithm-based management techniques.

From a financial stability standpoint, if the development of these asset/liability management tools continues, the asset management sector can be expected to show greater resilience. Optimising management techniques on the asset side and better understanding investors and their behaviour on the liability side could reduce liquidity risk. These tools could also help management companies to better meet the recent regulatory requirements, such as MiFID II and MiFIR, which call for improvements in knowledge of investors and in best execution¹⁹³. Management companies could also benefit from the development of RegTechs, new companies that offer to outsource compliance and risk management functions using IT tools.

Therefore, although at this stage no firm is offering a new integrated asset management service as such in France, the digital transformation of asset management business models is underway, whether through new entrants who are using some of the innovations described, or through the adoption of these innovations by existing operators. For the regulator, this entails close monitoring of these transformations and their potential risks by the FinTech, Innovation and Competitiveness Division (FIC – see Chapter 2). Competition in financial services from new players (telecom operators, leading digital companies, etc.) or new entrants should not come at the expense of compliance with regulations and the integrity of the financial system.

For example, the processes of decentralising or disintermediating important functions in the asset management business value chain¹⁹⁴ proposed by certain FinTechs should not also entail any dilution of operators' responsibilities. Replacing certain businesses/processes with technological innovations such as blockchain will require adjustments to the existing legal framework, as demonstrated by the consultation of the Ministry for the Economy and Finance currently under discussion¹⁹⁵. The European Commission's consultation on FinTechs¹⁹⁶ and the European Parliament's initiative report

¹⁹² One example, in Luxembourg, is the creation of the "Labchain" consortium, which aims specifically to accelerate the development of the first blockchain prototypes in asset management. In France, several companies have also created a consortium around Euronext to simplify post-trading activities for SME securities through the use of blockchain, a tool that could also be useful for asset management.

¹⁹³ See AMF (2017) "Guide to MiFID II - Asset Management Companies", February.

¹⁹⁴ See Association Française de Gestion (French Asset Management Association) (2017), "Le Guide : La transformation digitale des sociétés de gestion en "SGP 3.0"" (guide to the digital transformation of management companies into "SGPs 3.0"), January.

¹⁹⁵ DG Trésor (French Treasury)/Finent (2017), "Public consultation on the planned legislative and regulatory reforms relating to Blockchain technology", March. This consultation document seeks to elicit stakeholders' opinions on the future order (authorisation granted in Article 120 of Act 2016-1691 of 9 December 2016) allowing the government to enable securities that are not traded via a central securities depositary (fund units, for example) to be represented and transmitted using distributed ledger technology (blockchain).

¹⁹⁶ European Commission (2017), "Public consultation on FinTech: a more competitive and innovative European financial sector", opened in March and closed on 15 June 2017.

also demonstrate European bodies' commitment to addressing this topic, by considering the need to change the regulation to adapt to these innovations, facilitate their development and develop their interoperability in Europe, as well as prevent the risks associated with cybercrime and with the protection of personal data¹⁹⁷. Hybrid models could be developed to offer consumers integrated models, subject to adjustments to the legal framework required, for example, for management companies that would also like to provide crowdfunding services.

3.5.2 Loan-granting funds: a change whose effects are yet to come

While funds already had the option of acquiring loans originated by a financial institution (about 40 French management companies already do so), the European ELTIF regulation gave funds the ability to grant loans themselves¹⁹⁸. Since December 2015, AIFs have been able, under certain conditions¹⁹⁹, to obtain a label authorising them to lend directly to infrastructure projects, unlisted companies and listed small and mid-sized enterprises that issue equity or debt instruments. Subsequently, a November 2016 decree²⁰⁰ clarified the conditions under which specialised professional funds and professional private equity investment funds could also grant loans to companies without the ELTIF label. At this stage, about a dozen management companies have sought authorisation to grant loans through a specialised professional fund, a professional private equity investment fund or an ELTIF-authorised fund that they manage²⁰¹.

These two possibilities thus further extend the banking monopoly exemption, initiated in 2013 by insurance companies and in 2014 by crowdfunding services. This possibility already exists in other countries²⁰² but is currently concentrated primarily in the United States. This change is in keeping with the commitment to diversify sources of corporate financing and promote the European Union's shift towards a financial system that is less focused on the banking sector²⁰³. It will also make it possible to develop new hybrid models, in particular for private equity, where loans and capital investment would be complementary.

¹⁹⁷ See Committee on Economic and Monetary Affairs (2017), "Report on Fintech: the influence of technology on the future of the financial sector", A8-0176/2017, April.

¹⁹⁸ Regulation (EU) no. 2015/760 of 29 April 2015 on European long-term investment funds (ELTIF).

¹⁹⁹ An AIF that meets the conditions of the ELTIF regulation must in particular invest at least 70% of its capital in long-term assets and be a closed-end fund or one that limits opportunities for redemption.

²⁰⁰ Decree of the Conseil d'État no. 2016-1587 of 24 November 2016 clarifying Article 27 of the 2015 supplementary budget act 2015-1786 of 29 December 2015.

²⁰¹ The revisions to the AMF General Regulation is recent and determine the loans' terms and conditions – see the update to the AMF Instruction no. 2016-02, and the changes in the AMF General Regulation, articles 423-36-2 and 423-56.

²⁰² IOSCO (2017), "Findings of the survey on loan funds", Final report, February.

²⁰³ See European Commission (2016), "Strategic plan 2016-2020 – Financial stability, financial services and capital markets union", July.

It is far too early to assess the risks of this nascent market whose regulatory constraints are very recent. Funds also need to find a model that ensures their profitability as they grow this new activity, which imposes additional costs for credit risk oversight, know your customer and anti-money laundering.

The theoretical risks related to the development of any credit activity undertaken by operators not governed by prudential constraints (like banks and insurance companies) are significant, for example:

- maturity and liquidity transformation risk;
- credit transformation risk,
- risk of a deterioration in the quality of the loans granted, as it is possible they will not be held to maturity. As a result, there is less incentive to monitor loan performance and to select borrowers (as was observed in the case of securitisation before the financial crisis);
- interconnectedness and counterparty risk without the option to draw on Central Bank liquidity.

It should nevertheless be noted that funds that lend, by investing long-term assets, must limit their liquidity risk by being closed-end funds or by limiting opportunities for redemption, including for small amounts. They must also have a specific credit analysis and monitoring system. The restrictions implemented to limit the possibility of selling originated loans, subject to exceptions and specific programmes of activity²⁰⁴, reduce these operators' risks. The ELTIF regulation therefore, while not explicitly banning the sale of assets, calls for strict diversification limits to restrict the possibility of selling illiquid assets. Additionally, the French decree notes that the purpose of loan-granting funds is, in theory, to hold loans to maturity. Lastly, the most vulnerable investors are protected through the ban on marketing these funds to retail customers.

It is therefore too early to comment on the impact of this new way to diversify the asset management business, as the size of the market is too small. Furthermore, the amounts lent are not yet known as dedicated reporting has not been implemented for now.

²⁰⁴ The Decree provides for four exceptions: liquidation in the interest of holders or shareholders; small amount of capital outstanding; ownership of units or shares in the fund by a single holder; or deterioration in the financial position of the borrower of the loan, leading the fund to hold bad/doubtful debt. The other possibility is for the management company to have a strategy of selling the loans granted, provided this strategy is approved by the AMF under the conditions set by the AMF General Regulation.

CHAPTER 4: HOUSEHOLD SAVINGS

In 2016, the trend towards the concentration of savings flows into bank investments (cash and deposits) continued and became more pronounced, as these vehicles captured EUR 53.5 billion to beat the record of EUR 52.9 billion set in 2011. Increasingly, French households are turning to commercial real estate to supplement these financial savings, with the net assets of real estate collective investment funds (OPCIs) for retail investors increasing by 96.8% in the space of a year to EUR 8.7 billion. Buy-to-let investment offers a half-way risk-reward profile between bonds and equities and represents a legitimate investment for those taking a long-term view. But these kinds of investments are not risk-free. In fact, the Haut conseil de stabilité financière (High Council for Financial Stability – HCSF) issued a communication on commercial real estate in 2016, in which it said that prices might be 15%-20% overvalued, with some segments, such as Paris office space, closer to 30% overvalued.

At the same time, French retail investors are being offered ever more complex investment products, including subordinated debt, structured and atypical products and forex. There is therefore a danger that savers might end up holding products without fully understanding their risks and implications. Access to advice is also changing with the development of digital commercial relationships. The number of bank branches is in decline already, but this trend could gather pace still further because the number of branches per person is still high in France compared with the rest of Europe. As face-to-face activity in branches diminishes, people may seek other kinds of advice, notably online, creating new risks (risk of error in the algorithm used to provide advice, insufficient customer profile identification, etc.).

4.1. REVIEW OF SAVINGS AND ASSET STRUCTURE

4.1.1 Non-financial assets comprise the bulk of French households' wealth

Broadly speaking, household net worth comprises three items:

- Financial assets, such as bank accounts, life insurance and securities accounts;
- Non-financial assets, such as land, buildings and artworks;
- Financial liabilities, such as loans (on the negative side).

Before looking specifically at households' financial assets, this section provides a broad overview of their total assets based on annual balance sheet accounts. The most recent available data was published by Insee in December 2016 and go up to 2015. At that date, the net worth of French households stood at around EUR 10,600 billion.

*Non-financial assets
make up 60% of
households' gross
assets.*

Total (gross) assets stood at EUR 11,984 billion in 2015, of which 60% was in non-financial assets, down slightly compared with 2008, when the percentage was close to 65%. The value of households' non-financial assets appears to have stabilised since 2010, reaching EUR 7,225 billion at end-2015, after growth in real estate prices drove a sustained increase between 1998 (EUR 2,404 billion) and 2008 (EUR 6,509 billion). These assets are more or less evenly split between buildings (around EUR 3,500 billion) and land (just under EUR 3,400 billion).

Figure 54: Decomposition of household wealth²⁰⁵
(aggregates, EUR billion)

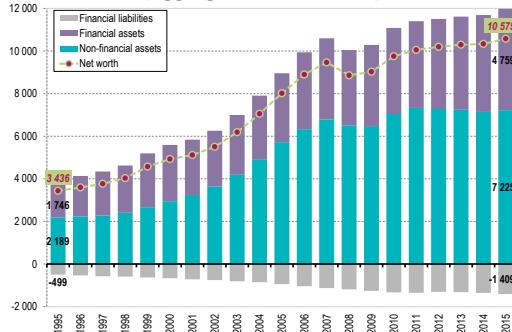
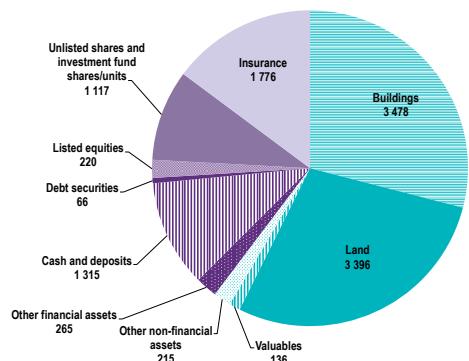


Figure 55: Structure of household assets at end-2015
(EUR billion)



Source: Insee, household balance sheet accounts (16/12/2016).

Household financial assets amounted to EUR 4,759 billion at end-2015, including EUR 1,776 billion in life insurance, pension funds and standard guarantees²⁰⁶, EUR 1,403 billion in financial securities (investment funds, listed and unlisted equities and debt securities), and EUR 1,315 billion in bank investments.

Financial liabilities, which mainly comprise loans to households, increased by 3.8% between end-2014 and end-2015 to EUR 1,409 billion.

In national accounting terms, households²⁰⁷ saving flows are the share of gross disposable income not used for final consumption expenditure²⁰⁸. The household savings rate in France was 14.6% in 2016 (it has fluctuated around 15% since the 1990s, as shown in Figure 56). In 2016, the household financial savings rate²⁰⁹ was unchanged from 2015 at 5.5%.

²⁰⁵ Households include self-employed individuals but not non-profit institutions serving households (NPISH).

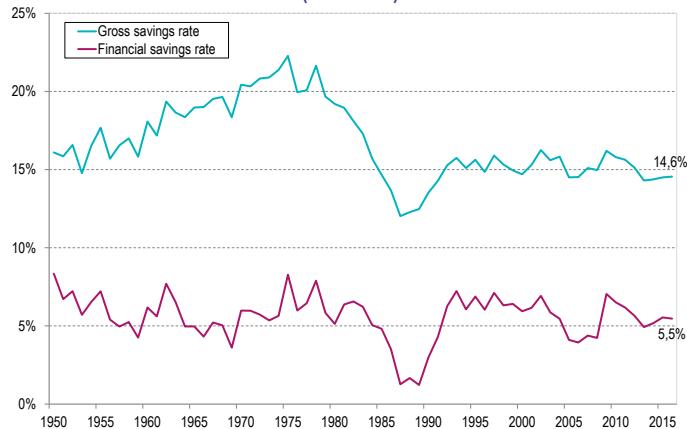
²⁰⁶ Standard guarantees essentially mean the activities of the Fonds de garantie de l'accession sociale à la propriété (FGAS), a fund that provides guarantees against the risk of default on real estate loans.

²⁰⁷ Including self-employed individuals.

²⁰⁸ Household gross disposable income (GDI) comprises "all income from activity, investments and social benefits less direct taxes and social security charges" (Insee).

²⁰⁹ The financial savings rate is the ratio of household cash flow (savings plus net capital transfers less outlays for capital accumulation) to gross disposable income.

Figure 56: Household gross savings rate and financial savings rate
(% of GDI)



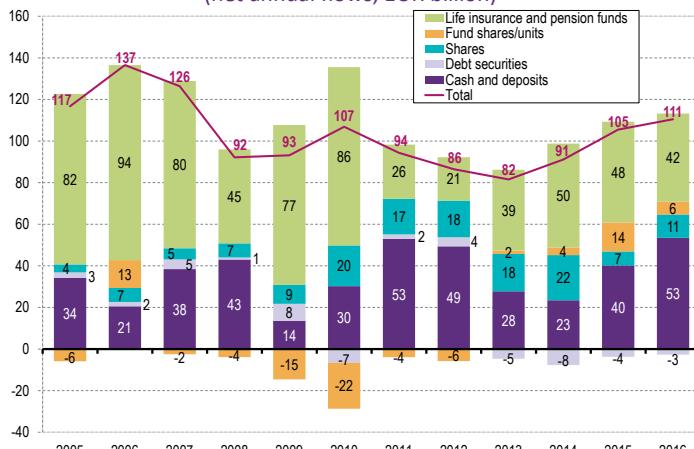
Source: Datastream, Insee.

4.1.2. Financial savings held by households

4.1.2.1. Overall structure of financial savings

Household financial savings flows into the main types of vehicle²¹⁰ amounted to EUR 111 billion in 2016, or EUR 6 billion more than in 2015, Figure 57).

Figure 57: Households' main financial investment flows
(net annual flows, EUR billion)



Source: Banque de France²¹¹, National Financial Accounts, base year 2010, AMF calculations.

Cash and deposits and life insurance are the main asset items for households and receive the largest savings flows.

²¹⁰ Loans granted by households, accounts receivable/payable and premium and claims reserves (property & casualty insurance) are not included in the analysis. When aggregate financial investments are considered, households' net financial savings fell by EUR 3 billion compared with 2015 to EUR 72 billion in 2016.

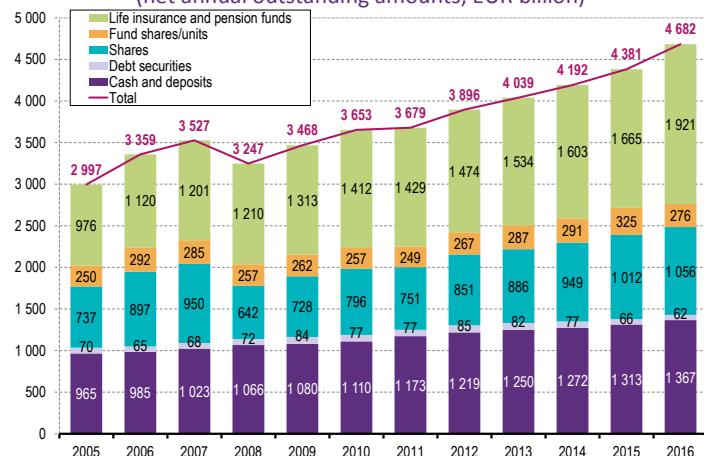
²¹¹ Note: The data on household financial wealth are taken from the national financial accounts published by the Banque de France and are regularly revised: in year n+1, the data for the previous year (n) are published provisionally, those pertaining to year n-1 are revised and considered semi-final, while the data for year n-2 are revised for the last time before being considered final. These revisions account for differences with regard to Risk and Trend Mappings of previous years.

The trend towards the concentration of savings flows into bank investments (cash and deposits) continued and became more pronounced, as these vehicles captured EUR 53.5 billion to beat the record of EUR 52.9 billion set in 2011. Flows into life insurance amounted to EUR 42.4 billion in 2016, or around EUR 6 billion less than in 2015.

Direct equity investing picked up to EUR 11.2 billion from EUR 6.7 billion in 2015, but this statistic may be misleading. Listed shares actually recorded net outflows of EUR 3.5 billion, but these were more than offset by inflows of EUR 14.8 billion into unlisted shares and other equity²¹². For the fourth year running, debt securities saw net outflows, while inflows to collective investment schemes were positive.

In terms of the total outstanding amount, the main financial assets held by households were worth EUR 4,682 billion at end-2016, or EUR 301 billion higher than one year previously. Valuation effects accounted for close to two-thirds of the increase in the total amount. Liquid, low-risk assets continue to make up the lion's share, with non-unit-linked life insurance²¹³ and savings accounts and current accounts amounting to 64% of households' assets (Figure 58).

**Figure 58: Households' main net financial assets
(net annual outstanding amounts, EUR billion)**



Source: Banque de France, National Financial Accounts, base year 2010, AMF calculations.²¹⁴

²¹² Unlisted shares and other equity are almost entirely made up of shares in limited-liability companies (SARLs) owned by households and independent workers.

²¹³ Non-unit linked insurance investments accounted for an estimated EUR 1,620 billion of the total EUR 1,921 billion in life insurance contracts held by households at end-2016.

²¹⁴ With the introduction of the Solvency 2 regime, insurers' balance sheets are now measured at market value. The data on the insurance sector and on household investments in insurance products is reported in the financial accounts based on these prudential statements. As a result of the switch to market value, household assets held in insurance technical reserves have been revised upwards by EUR 202 billion. Furthermore, the valuation method shift and the reclassification of equity interests to CIS securities had a positive impact on the reported holding of investment funds securities by insurers (a EUR 64.7 billion revision). This translated into a reverse revision for the securities holdings of other sectors (particularly households). Due to these mis-assignment issues, the household's (excl. NPISH) assets in CIS securities were previously overvalued. The correction thus induces a contraction of households' CIS securities holding by EUR 49.1 billion, even though net inflows were EUR 6.1 billion and outstanding amounts increased in value by EUR 17.0 billion. For more information on the statistical corrections to the national financial accounts, see the 2016 Rapport de l'Observatoire de l'épargne réglementée (June 2017).

4.1.2.2. Current and savings accounts continue to exert strong appeal

It is instructive to look at a decomposition of the abovementioned EUR 53 billion in inflows to cash and deposits (Figure 57).

Box 11: Types of bank savings and investments

Five main types of bank savings and investments are defined in the French national financial accounts:

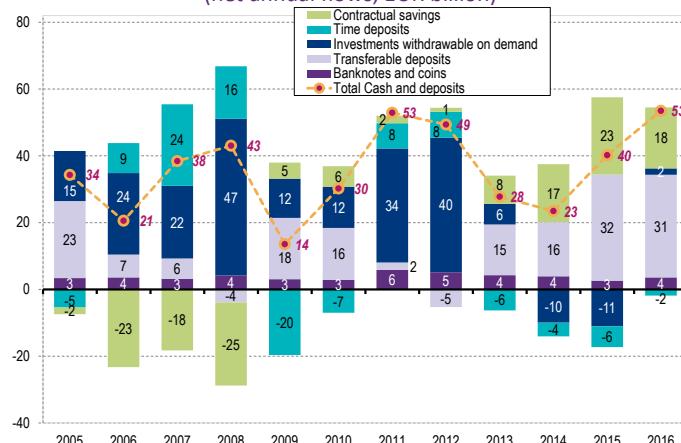
- **Banknotes and coins** in circulation that are commonly used as a means of payment;
- **Transferable deposits**, comprising deposits (in domestic or foreign currency) which may be converted immediately into cash or which may be transferred by cheque, credit transfer, debit entry or any other method without significant charges or major restrictions;
- **Investments withdrawable on demand**, consisting of *Livret A*, *Livret Bleu*, Sustainable Development, Popular Savings, and Youth Savings passbooks, as well as home-savings and taxable passbook accounts;
- **Time deposits**, composed of term deposits (fixed-term accounts, unavailable factoring accounts, securities futures transactions), interest-bearing notes and savings certificates;
- **Contractual savings**, made up of deposits created under a savings contract or plan, notably the *Plan d'épargne logement* (PEL – housing savings plan), *Livret d'épargne entreprise* (business savings passbook), *Plan d'épargne populaire* (PEP – personal savings plan) and funds due to be employed under personal equity plans.

Source: Banque de France

Current accounts ("transferable deposits") continue to capture a large portion of household savings.

While net flows into cash and deposits increased significantly in 2016, climbing by EUR 13 billion compared with 2015, this was mainly because the outflow from investments withdrawable on demand halted. Payments into transferable deposits were steady at over EUR 30 billion. The contraction in inflows to contractual savings from EUR 23 billion in 2015 to EUR 18 billion in 2016 may be attributable to the regulatory caps on payments into these products (e.g. EUR 61,200 into housing savings plans) or to the low rates of return on new plans (Figure 59).

Figure 59: Decomposition of savings flows into cash and deposits
(net annual flows, EUR billion)



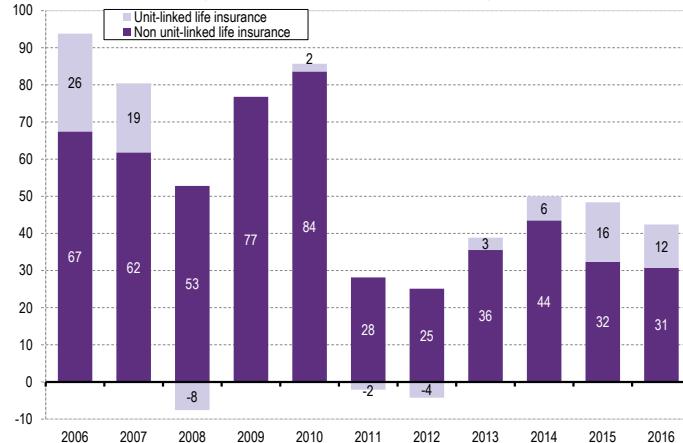
Source: Banque de France, National Financial Accounts, base year 2010, AMF calculations.

4.1.2.3. A slight dip in savings flows into life insurance

Despite a trend decline in revaluation rates for non unit-linked insurance contracts, the gradual phase-out of guarantees and commercial pressure in favour of unit-linked products, non unit-linked funds continue to attract a substantial share of household savings, with inflows of EUR 30.7 billion in 2016. With the decline in returns on investments withdrawable on demand, the revaluation rates offered by insurers on non unit-linked contracts may still exert appeal (Figure 60).

*In life insurance,
inflows were stable
into non unit-linked
funds but declined
for unit-linked
products.*

Figure 60: Annual investment flows by French households into life insurance products
(net annual flows, EUR billion)



Source: Banque de France, National Financial Accounts, base year 2010, Datastream, AMF calculations.

There was a small decrease in investment flows into unit-linked products in 2016 (EUR 11.7 billion, compared with EUR 16.1 billion in 2015). However, net inflows for 2016 were the second-highest recorded since 2008.

Article 49 of the Sapin 2 Act²¹⁵ extended the powers of the HCSF, which may now, acting on a proposal by the Governor of the Banque de France, require the revaluation rate of non-unit-linked contracts to be reduced ("modulate the rules governing the endowment of and reversals from profit-sharing reserves") and even, in the event of a crisis ("a serious and clear threat to the financial position of these entities or a significant subset of them or to the stability of the financial system"), suspend redemptions of French life insurance ("suspend or temporarily limit the payment of surrender values for some or all of the portfolio"). These special arrangements are intended to protect household savings from the consequences of disorderly withdrawals.

4.1.2.4. Household financial assets are low-risk overall

The items that make up households' financial assets do not all have the same exposure to principal risk. Some financial assets offer guarantees to protect their principal and even returns, while others are illiquid and exposed to market risk.

Table 2 classifies households' financial assets based on their degree of risk. Assets are grouped by increasing level of risk into five categories. Figure 61 shows how the structure of household portfolios has changed by risk class.

²¹⁵ Act 2016-1691 of 9 December 2016 on transparency, anti-corruption and economic modernisation.

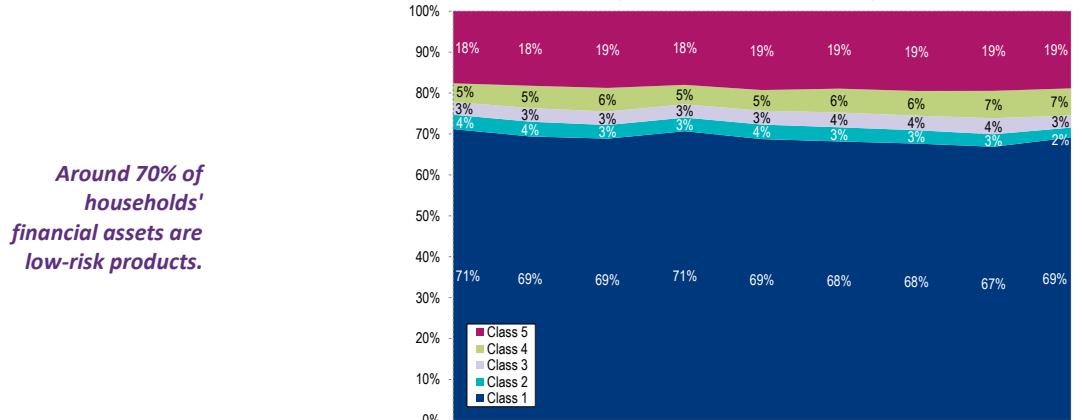
Table 2: Risk classes of financial assets

Degree of risk	Composition
Class 1	<ul style="list-style-type: none"> - Currency and deposits, including cash and savings held at banks (sight deposits, passbook savings accounts, fixed-term deposits, PELs, PEPs) - Money market funds - Short-term debt securities held directly - Non-unit-linked life insurance
Class 2	<ul style="list-style-type: none"> - Bonds held directly - Bond funds - Structured and guaranteed funds
Class 3	<ul style="list-style-type: none"> - Equity funds (excluding employee savings plans invested in equities) - Diversified and alternative investment funds
Class 4	<ul style="list-style-type: none"> - Listed shares held directly - Shares held in employee savings schemes (and employee savings plans invested in equities)
Class 5	<ul style="list-style-type: none"> - Other equity interests - Unlisted shares (including employee savings schemes)

Source: AMF.

Wealth is clearly concentrated in low-risk products. More than two-thirds of French households' financial savings are placed in products offering principal protection or very short-term investment horizons. It should be noted that while these products will not lose a significant portion of their value overnight because of sudden market movements (as shares can do when markets crash), the principal can be eroded over time by inflation (sight deposits, cash) or management expenses and fees (non-unit-linked funds). Money market funds, meanwhile, have even posted negative rates in recent times.

Figure 61: Distribution of financial assets by risk class
(% of main financial assets)



Around 70% of households' financial assets are low-risk products.

Sources: Banque de France, National Financial Accounts, base year 2010, AFG and AMF calculations.

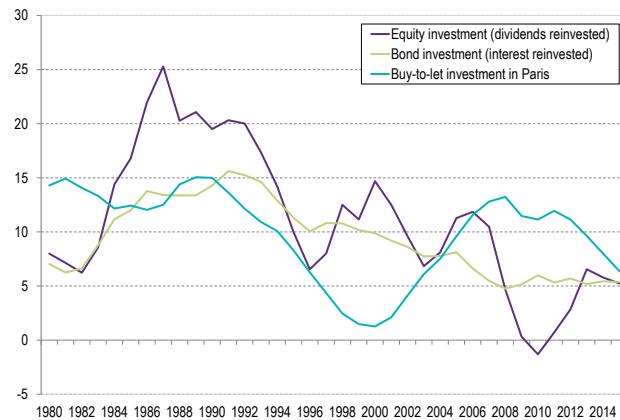
4.1.3. Households use real estate for their long-term investments

4.1.3.1 Equities, buy-to-let investments and bonds offer complementary risk/reward profiles

Housing and land accounted for 57.4% of the total assets of French households and NPISHs in 2015. The share of housing and land in total assets increased steadily between 2000 and 2008 before gradually declining thereafter, as total assets grew at a faster pace than the value of housing and land.

A significant portion of the savings of French households is therefore invested for the long term through real estate investments. To assess the benefits of such an investment over the alternatives, it is instructive to compare the return on a buy-to-let investment in Paris (excluding leverage)²¹⁶ with the return on an investment in French shares²¹⁷ or in French bonds^{218 219}. Depending on the decade, the ten-year annualised return on a buy-to-let investment in Paris ranged from 1.3%-15% over the 1970 – 2015 period²²⁰ compared with -1.3% to 25.3% for French equities and 4.7%-15.6% for French bonds (these results do not take account of income and wealth tax treatment).

Figure 62: Ten-year annualised nominal returns on different investments (before income and wealth tax²²¹ - %)



Source: CGEDD²²², following Arbulu 1998, Euronext, Vaslin 1999, Loutchitch 1930, Ixis, Banque de France, notary databases, Notaires-Insee indices, Duon 1946, Insee.

Guide: the dates on the x-axis indicate the end of the investment. For example, the final point shows that a ten-year buy-to-let investment in Paris between 2005 and 2015 generated an annualised return over the period of 6.4%.

²¹⁶ The value of a buy-to-let investment in Paris is determined based on an index of real estate prices to which is added an index of net rental income, less transaction costs. For more details on the series, see the study by Jacques Friggit, "Long Term (1800-2005) Investment in Gold, Bonds, Stocks and Housing in France – with Insights into the USA and the UK: a Few Regularities".

²¹⁷ The index of French shares, for which annual data are available since 1800, is constructed based on Arbulu (1998) for the 1800 – 2000 period and then extended using the SBF 120 index and the CAC all tradable net return index from 2000 to 2010 and then the CAC all tradable total return index from 2010 onwards.

²¹⁸ The bond index was obtained by using two series: Insee's average yield at issuance of guaranteed and equivalent bonds (TMEOG) for the 1960 - 1988 period and the Banque de France's average government bond yield from 1989 onwards.

²¹⁹ All the series are based on public data available on the website of the Conseil général de l'environnement et du développement durable (CGEDD).

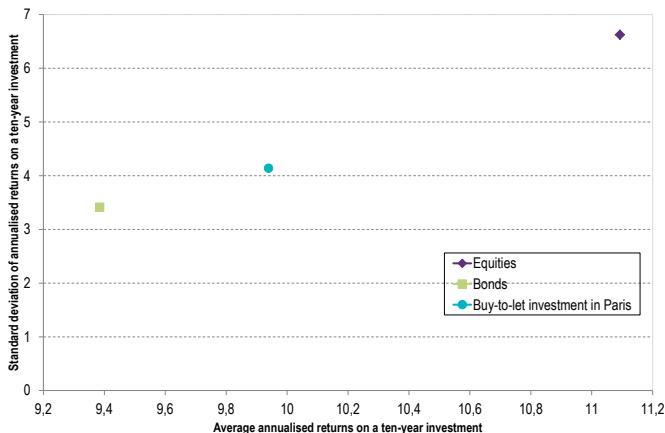
²²⁰ For an analysis over a longer period, see the study by Jacques Friggit, "Long Term (1800-2005) Investment in Gold, Bonds, Stocks and Housing in France – with Insights into the USA and the UK: a Few Regularities".

²²¹ For more information on tax treatment, see the source of the series: http://www.cgedd developpement-durable.gouv.fr/IMG/doc/sources-valeur-immobilier-1800-2015_cle21c446.doc.

²²² The series may be downloaded from the CGEDD website (<http://www.cgedd developpement-durable.gouv.fr/prix-immobilier-evolution-a-long-terme-a1048.html>) in section 2.1.

Over the period under review, the annualised return on a ten-year buy-to-let investment beats an investment in French equities at the beginning of the 1970s and from 1996 onwards. In 1976 and 1977 and from 1981 to 1994, a ten-year investment in bonds was more profitable than a buy-to-let investment in Paris. When the returns and volatility of different investment vehicles are factored in, a buy-to-let investment in Paris offers an investment option that is mid-way between equities and bonds.

Figure 63: Ten-year return and volatility of various investments (before income and wealth tax)



Source: CGEDD, following Arbulu 1998, Euronext, Vaslin 1999, Louitchitch 1930, Ixis, Banque de France, notary databases, Notaires-INSEE indices, Duon 1946, INSEE.

Investments in French equities, buy-to-let property in Paris and French bonds offer complementary risk/reward profiles. A ten-year investment in equities looks to be the most profitable on average, as shown by a current and as-yet unpublished AMF study (Box 12).

Box 12: Study of compared returns on different investment strategies in France

The AMF recently conducted a study aimed at analysing the returns obtained by investors using a variety of stylised investment strategies, measured by the performance of a French equity index and bond index. Tax treatment, expenses and fees were not taken into account. In the first place, an analysis of annualised real returns from a one-time investment at the start of the period reveals that lengthening the investment period reduces the occurrence of outlier values for bonds and equities alike. Although equities are more volatile than bonds, a ten-year investment in equities generates better returns than a fixed income investment more than half the time. To replicate the behaviour of a retail investor as faithfully as possible, the study looks at the returns obtained by an investor seeking to build up financial assets through regular saving. The analysis reveals that the performance of a one-time investment at the beginning of the period, a subject extensively covered by the academic literature but not very representative of the behaviour of an individual investor, and the returns that may be obtained through regular saving, which is the approach adopted by most individual investors, are not the same. In particular, the distribution of outperformances is clearly not comparable, whether for bond investments or equity investments. The study also considered the possibility that retail investors might establish mixed portfolios containing equities and bonds. In particular, the study compares the performances of a portfolio whose composition fluctuates according to the relative performances of the two vehicles with the performances of a portfolio whose composition is regularly rebalanced to maintain the initial allocation. Whether a one-time investment is made at the start of the period or whether the investor saves regularly, rebalancing the portfolio every year to keep the portfolio's initial composition appears to generate a better performance (in the order of several dozen basis points) than a strategy where the portfolio is not rebalanced. However, these findings do not take account of tax treatment, expenses and fees.

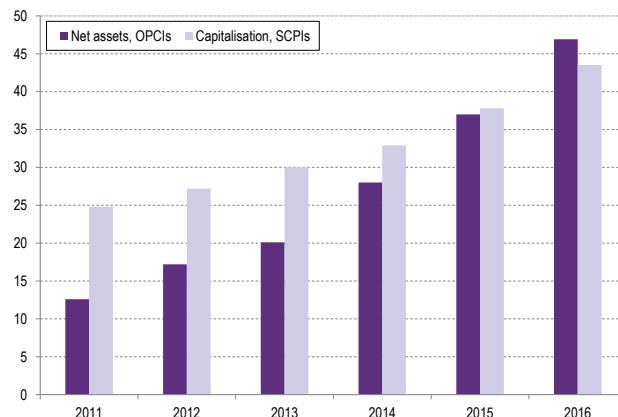
4.1.3.2. Focus on the net assets of real estate collective investment undertakings

At the same time, more and more individual investors are turning to commercial real estate²²³, investing their savings through real estate investment companies (SCPIs) and real estate collective investment funds (OPCIs).

Interest among institutional and individual investors in real estate funds is mounting, with the total outstanding assets²²⁴ of these funds reaching EUR 90 billion at 31 December 2016, up from EUR 75 billion one year previously. Within the French real estate fund segment, SCPIs increased their capitalisation by 15.1% to EUR 43.5 billion in 2016. OPCIs had a particularly strong year in 2016, with their total net assets climbing by 26.8% compared with 2015 to EUR 46.9 billion. The net assets of OPCIs for institutional investors increased by 17.4% to EUR 38.3 billion, while the net assets of OPCIs for retail investors almost doubled, swelling by 96.8% to EUR 8.7 billion. Real estate funds, then, have considerable appeal for retail investors.

*The net assets of
OPCIs for retail
investors almost
doubled between
2015 and 2016.*

Figure 64: SCPI and OPCI total assets
(EUR billion)



Source: IEIF, Aspim and AMF.

4.1.3.3. Price trends, the number of transactions and rental yields are sources of concern in the French real estate sector

The HCSF published an initial communication on commercial real estate in 2016²²⁵ that drew attention to potential risks in the sector. The HCSF said that commercial real estate prices might be 15%-20% overvalued, with some segments, such as Paris office space, closer to 30% overvalued. Low interest rates, easy access to liquidity and uncertainty over financial markets may have prompted investors to turn towards commercial real estate, so boosting demand. In March 2017, the HCSF issued a second memo on the topic, providing an updated assessment and results of stress tests on the commercial real estate sector. This new memo emphasised two risks for the sector, namely that of a swift increase in

²²³ In a memo analysing the commercial real estate market published in April 2016, the HCSF defined commercial real estate as "all real estate assets held by professional parties that do not occupy these properties and that earn recurring income from these properties".

²²⁴ Total assets are net of debt.

²²⁵ HCSF (2016), "Analyse du marché de l'immobilier commercial en France - Rapport de consultation publique", April 2016.

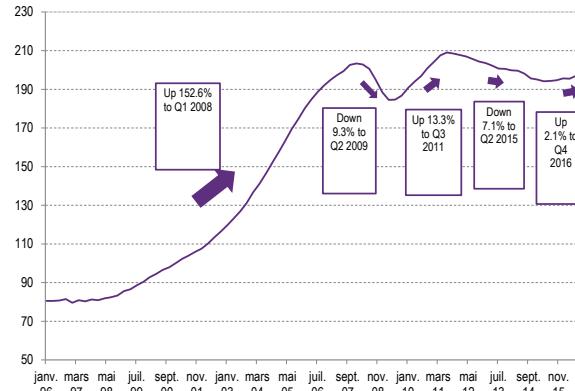
rates against a backdrop of unsupportive economic conditions and that of excess supply on the rental market. Real estate prices would fall if one of these risks materialised. The HCSF therefore carried out stress tests with the aid of the Banque de France and the AMF to assess the impact of a decline in commercial real estate property prices on banks, insurers and investment funds. The test results suggest that the effects of the three proposed scenarios²²⁶ would be limited from the perspective of the overall financial sector and would not in theory have a direct systemic impact.

As regards residential real estate, the key assessment findings (over and above the work carried out by the HCSF) are as follows:

Prices have not fallen much since 2008

Existing-home prices in France experienced strong growth between 1996 and early 2008, which was followed by a mild correction through to the second quarter of 2009. This decline, though, was a minor one compared with the surge seen in previous years, particularly since the decrease in the price index was swiftly followed by a rise between the second quarter of 2009 and the third quarter of 2011. Residential real estate prices then softened again moderately between third quarter of 2011 and the second quarter of 2015. Since then, real estate prices have trended upwards (Figure 65).

Figure 65: House prices (existing homes segment) in France
(Q1 2001 = 100)



Source: INSEE.

Unusual trends compared with other countries

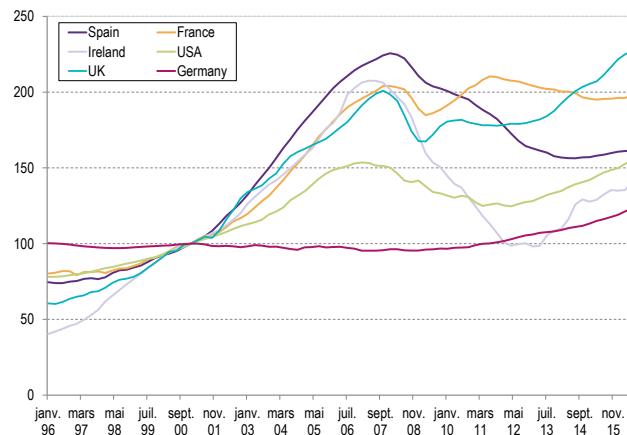
French residential real estate prices did not fall markedly following the crisis, unlike in other countries.

Whereas real estate prices dropped sharply in Spain, Ireland and the USA in the wake of the financial crisis, the same was not true for France. The latest figures suggest that prices started firming again in mid-2015.

Germany is a case apart, since prices on its domestic real estate market experienced neither a sustained pre-crisis run-up nor a post-2008 reversal.

²²⁶ The stress tests considered three scenarios: in the first, prices fell by 15% for the overall French commercial real estate market (excluding offices in the Île-de-France region, which covers Paris and the surrounding area) while offices in Île-de-France fell by 30%; the second scenario was based on a 30% fall for office prices in the Île-de-France region, while scenario three featured a 60% price decline.

Figure 66: Nominal real estate prices in developed countries
(Q1 2001 = 100)

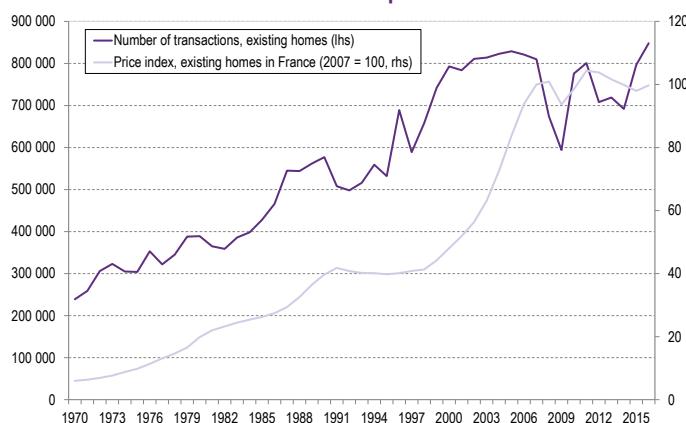


Source: Federal Reserve Bank of Dallas²²⁷.

□ A large number of transactions

Rising real estate prices in the existing homes segment were accompanied by an increase in the number of transactions, which began in 2015 and peaked in 2016.

Figure 67: Nominal residential real estate prices and number of transactions



Source: Insee, CGEDD based on DGFiP (Medoc) and notary databases.

□ Falling returns

As shown in Figure 62, the return on a ten-year buy-to-let investment in Paris has deteriorated since 1998. These factors raise concerns that residential real estate may be overvalued.

²²⁷ This database was selected because it can be used to obtain real estate price indices for most developed countries since 1975.

A fall in French residential real estate prices would represent a risk for those selling to move to smaller properties and those selling their property for life annuities.

4.1.3.4. Does the real estate exposure of households represent a risk?

The combination of high prices, record volumes of transactions and low returns for investors could be a sign of overheating. Since French households have a significant share of their net worth in real estate (65%), they are exposed to the risk of a possible decline on residential real estate markets. However, if such a risk occurred, it would be unlikely to severely impact owner-occupier households provided they either do not sell or sell for a more costly property. Conversely, a decline in real estate prices would hurt households that sell in order to move to a smaller property. If prices fall by the same proportion across the entire real estate sector, the cash reduction increases with the value of the asset. A household wishing to sell its property to acquire a more costly one will therefore be helped by the price decline, which will reduce the top-up that the household needs to add²²⁸. By contrast, a household looking to buy a smaller property will be disadvantaged by the fall in prices because the price difference between the two properties will be lessened²²⁹. The risk of defaults on real estate loans appears limited, even though the Banque de France stressed in its December 2016 Assessment of Risks to the French Financial System²³⁰ that every risk indicator was showing a deterioration, reporting increases in average loan amounts, initial loan terms and the affordability ratio, as well as a decline in average annual initial borrower incomes. Finally, a decline in residential real estate prices would have a pronounced impact on owners wishing to sell their property for life annuities, because they could end up with far lower income than they had hoped for.

Households exposed to real estate through financial investments would be more adversely affected. Accordingly, a decline in residential real estate prices would be much more damaging to landlords, who would suffer capital loss. By the same token, investors holding shares in SCPIs or OPCIs with exposure to commercial real estate could lose some or all of their invested capital.

4.2. THE CHANGING FACE OF FINANCIAL ADVICE

4.2.1. Traditional sources of advice are set to decline

Face-to-face activity in bank branches is declining in France.

With the rise of the internet and new technologies, more and more services are being provided on a digital basis while face-to-face activity in bank branches is declining. To adapt to the changes being driven by the new technologies, banks are trimming their branch numbers. This is particularly true in France, where the number of bank branches shrank by 8.3% between 2005 and 2015.

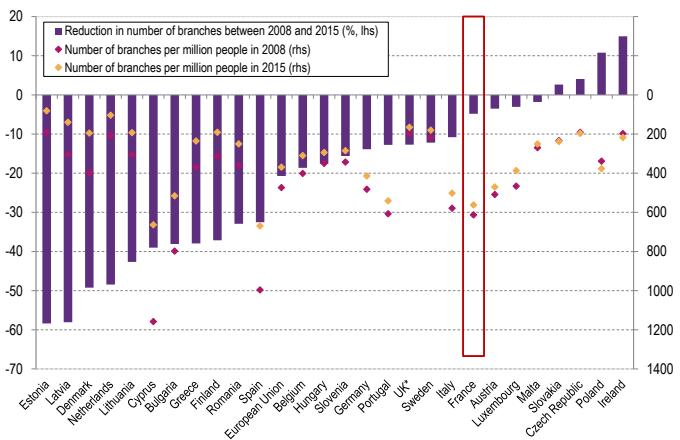
This trend looks set to continue, because banking groups have not scaled back their local presence by much in France, and the number of branches per person remains high compared with other European countries.

²²⁸ Consider the example of a household occupying a property with an estimated value of EUR 400,000 and wishing to sell in order to buy a larger property worth EUR 600,000. The household will have to add EUR 200,000 in addition to selling its current home to make the purchase. If prices fall by 10% across the entire residential real estate market, the household will sell its current property for EUR 360,000 but will be able to buy the new home for EUR 540,000. The top-up required will come down to EUR 180,000.

²²⁹ Conversely, if a household lives in a home worth an estimated EUR 400,000 and wants to acquire a smaller property worth EUR 200,000, the price difference between the current and target properties is EUR 200,000. If prices fall by 10%, the household will be able to sell its existing property for EUR 360,000 and buy the new one for EUR 180,000, meaning that the difference between the two will have narrowed to EUR 180,000.

²³⁰ <https://www.banque-france.fr/sites/default/files/medias/documents/ers-2016-s2-evaluation-des-rsques-du-systeme-financier.pdf>

Figure 68: Number of domestic branches, credit institutions



Source: ECB (structural financial indicators).

(*) The last value point for the number of branches in the UK is for 2014. The calculations used to compile the chart are consequently based on 2014 rather than 2015 data for the UK.

As face-to-face activity in branches diminishes, people may turn to other kinds of advice. Banks could also take steps to improve retail investors' in-branch access to financial advice (Box 13).

Box 13: Mystery shopping visits using actual customers point to areas for improvement in KYC information, the suitability of sales proposals and the quality of product information provided

In addition to the mystery shopping campaigns by prospective customers²³¹ that it has performed since 2010, the AMF decided to conduct a new study using actual customers. The study involved 39 actual customers of 11 major banks during the month of September 2016 and was designed to gain information about their experience with their bank and adviser. By examining customer experiences, the AMF was able to check whether customer profiles were adequately reviewed and updated, whether sales proposals matched customer profiles and whether the quality of the information provided about proposed products was satisfactory, i.e. customers were told about the advantages but also the drawbacks, and received disclosures about expenses, fees and tax treatment.

The first phase of the study consisted in reviewing the most recent meeting (within the last year) that customers had had with their adviser. In the second phase, customers had to make an appointment to meet an adviser at their main bank to carry out a review or an investment project.

The second phase revealed areas for improvement in the questions put to customers. Questions about the customer's savings were asked frequently (74% of cases), as were questions about the customer's project and risk aversion (67% of cases). But the amount of loss that the customer was prepared to accept was covered less often (38% of cases). Similarly, a wide range of questions about the customer's knowledge and experience, income, expenses and so on were asked only in a minority of cases. These findings are consistent with those obtained from mystery shopping campaigns involving prospective customers since 2010.

Product descriptions were found to be severely imbalanced, with advantages given far more prominence than the drawbacks and risks. These findings are again consistent with those of visits involving prospective customers.

²³¹ Since 2010, the AMF has conducted mystery shopping visits at bank branches to test the quality of meetings and the suitability of sales proposals made to customers. The mystery visitors play the role of retail investors who make an appointment at a bank branch with a view to investing some money. These mystery shoppers are prospective customers, that is, they are not current customers of the bank. To analyse the quality of these types of meetings more fully, the AMF organised a series of mystery visits involving banks' actual customers. The aim was to gain greater insight into banks' practices when dealing with "real" customers.

4.2.2. Meanwhile, automated financial advice is on the rise

New firms from the FinTech sector are emerging on the market and offering automated financial advisory services. These "robo-advisers" offer customers automated algorithm-based portfolio management services and advice. Customers must fill out a standardised questionnaire that describes their profile, including the desired investment amount, risk appetite, and target final amount, to ensure that they are offered suitable portfolios. The term robo-adviser covers a variety of firms with different features: some exclusively provide investment advice and therefore have financial investment adviser (FIA) status, while others set up delegated management arrangements for investors, in which case they must have asset management company status. The products proposed to investors and remuneration arrangements also vary from platform to platform. It is hard to say exactly how many robo advisers there are and hence to estimate their total assets. That being said, there appear to be about a dozen, of which one is an asset management company, while the others have FIA status.

According to a research report published by the International Organization of Securities Commissions (IOSCO) on FinTechs²³² in February 2017 and the discussion paper issued by the European supervisory authorities in December 2015 on automation in financial advice²³³, the rise of robo-advisers presents opportunities but also risks. For instance, robo-advisers provide quick, low-cost, easily accessible financial advice, which might encourage retail savers to make more use of such advice. Automated advice is available to all retail savers, regardless of income or wealth, and therefore reaches a broader population than more traditional sources. Furthermore, automated advice ensures better traceability of advice provided and transactions executed, and makes it possible to test how customers' needs and profiles match up against the suggested products.

But automated advice also carries risks. For example, the adviser might use the wrong algorithm to provide advice or employ an algorithm based on unrealistic assumptions. Similarly, the algorithm might be overly complex, the customer might not necessarily understand why the algorithm recommended one allocation over another, and the advice might not be suited to the specific profile of each individual customer. A platform offering automated advice might find itself in a conflict of interest: this would be true if, for example, the algorithm seeking out the right allocation was programmed to steer the investor towards investments or platforms paying larger commissions to the robo-adviser. Robo-advisers use automated questionnaires to identify customer profiles. An overly concise or standardised questionnaire will make it impossible to understand each customer's individual – and potentially unusual – situation. If the questionnaire comprises a self-assessment component, it may be unsuitable because of cognitive biases, which can be extremely significant. Meanwhile, if the questionnaire is completed entirely online, customer responses cannot be checked in the same way as during a face-to-face meeting. Some robo-advisers are aware that customer questionnaires can be unwieldy and are trying to make them more appealing and educational. In some cases, the advice provided to investors covers the asset allocation only, but investors may need a broader vision that encompasses such aspects as tax treatment or succession planning. In addition, an investor who is offered a particular asset allocation may not be financially literate enough to understand the risks, rewards and advantages of each product. The emergence of these risks may lead to a proposed allocation that is unsuited to the customer's needs or to a

²³² <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD554.pdf>

²³³ <https://www.eba.europa.eu/documents/10180/1299866/JC+2015+080+Discussion+Paper+on+automation+in+financial+advice.pdf>

misunderstanding on the part of the customer about the products or the rationale underpinning the advice.

Note, however, that some of these risks are common to traditional advisory services as well. Traditional approaches may, for example, result in inappropriate advice, the adviser may be subject to conflicts of interest, and the saver may not have enough financial knowledge to challenge the suggested advice.

For the time being, robo-advisers are doing limited amounts of business in France. However, their activity may grow through traditional firms, with some FinTechs forging ties to established players as they move to a Business to Business to Consumer (B2B2C) distribution model to reach a broader customer base. In particular, the entry into force of the second Payment Services Directive (PSD2) and the opening up of bank databases could strengthen the partnerships between data aggregators, robo-advisers and traditional players. The sector may also benefit from interest from tech giants such as Google, Apple, Facebook and Amazon.

4.3. SALE OF COMPLEX, RISKY PRODUCTS TO RETAIL INVESTORS

4.3.1. **The sale by banks of subordinated debt or debt that is callable in the event of a bail-in creates a risk of mis-selling**

Following the financial crisis, governments were forced to intervene by injecting public money to protect the soundness of the banking system. The use of public funds to bail out private financial companies was the subject of much discussion. Most policymakers and regulators now consider that such a course of action should be avoided at all costs.

Payment and investment services may be considered to be crucial elements in the functioning of modern economies: accordingly, by rescuing banks, the government ensures the continuity of these services and contains the threat of bank runs and self-sustaining liquidity risk. But a bail-out means that a *de facto* implicit government guarantee is given, which has an adverse effect on risk-taking in the banking sector (moral hazard) and potentially disastrous consequences for government budgets. The conceptual problem lies in the fact that while the government may say ahead of time that it will not intervene in the event that the banking sector runs into trouble, in order to make private firms accountable and prevent excessive risk taking, if a problem arises later on, the government will have a strong incentive to provide help to protect the depositors, investors and borrowers of a struggling bank, exposing the limited credibility of earlier promises not to step in.

To address this situation, the European Commission said in a communication on 30 July 2013 that, to benefit from future bail-outs, banks would have to convert a portion of their debt into equities (i.e. the banks' creditors would become shareholders and no longer be assured of repayment) or write down the value of their creditors' debt securities. As a result, a bail-out using an injection of taxpayers' money will not be possible until certain categories of the banks' creditors have borne the first losses through a bail-in. This vision was brought to life in the Bank Recovery and Resolution Directive (BRRD) of 15 May 2014.

Subordinated and callable debt offer appealing returns but higher risk than senior debt securities.

In a low interest rate environment, subordinated and hybrid debt securities, such as contingent convertible bonds (CoCos), offer more attractive returns than conventional senior bonds, but carry the risk that in the event of a bail-in, their yield will go to zero as

coupons are suspended and the principal itself could be lost through a writedown or conversion. These securities enable the authorities to make sure that creditors pay more attention to risk taking by the bank's management (discipline through the debt market), and that any losses are borne by shareholders and creditors before taxpayer money is injected. As the rule currently stands, banks must bail in 8% of their liabilities before public authorities will consider a bail-out.

Subordinated debt:

By definition, subordinated debt carries a higher risk of non-repayment in the event of failure than senior debt²³⁴. Furthermore, under the new regulatory framework, if a company runs into difficulty (i.e. before it fails), all debt may be subject to a writedown determined by the level of subordination. This step must happen before the government can intervene.

*Sales of
subordinated debt
instruments to retail
customers may
force governments
to step in to protect
retail investors.*

A significant portion of subordinated debt securities has been sold to individual bank customers and individual investors with little knowledge of banking regulations: governments might therefore be inclined, before the bail-in, to take steps to protect small investors, as happened for example with Monte dei Paschi di Sienna, an Italian financial institution, in late 2016. The IMF estimated in July 2016 that Italian retail customers held half of the country's EUR 60 billion subordinated bank debt.²³⁵ In France, EUR 19.4 billion in redeemable subordinated securities have been placed through public offerings since 2008, with an outstanding amount of EUR 15.4 billion at end-2016. Over the last two years, issues of redeemable subordinated securities placed by public offering have exceeded EUR 8 billion in France, with individual investors accounting for over 95% of subscribers and holding more than 85% of the outstanding amount.²³⁶

In Europe more generally, regulators and supervisors are concerned that the sale by a banking network of subordinated securities issued by its parent, a practice known as self-placement, could raise significant conflict of interest issues (sales targets for sales personnel for example). These issues have been known about for a long time (cf. Conac, 2017).²³⁷ On 31 July 2014, ESMA, EBA and EIOPA, the three European supervisory authorities, reminded banks and insurers of their obligations when marketing financial products under MiFID. ESMA reiterated this reminder on 2 June 2016.²³⁸ The AMF plans to supervise the sale of these products to the public.

²³⁴ Keep in mind the fact that financial securities are characterised by their subordination level, among other things. In the event that the debtor is wound up, creditors are repaid in order of priority (from least to most subordinated), until all the assets are gone. For example, secured senior debt is repaid before senior debt, which in turn has priority over non-preferred senior debt. Next come subordinated debt securities, which include redeemable subordinated securities, followed by undated subordinated securities and finally super-subordinated securities. Equities rank even lower.

²³⁵ International Monetary Fund (2016), "Italy: 2016 Article IV Consultation" – Press release; Staff reports; and statement by the executive director for Italy, IMF Country Report No. 16/222 (July 2016), [<http://www.imf.org/external/pubs/ft/scr/2016/cr16222.pdf>]

²³⁶ See also: Resti, Andrea (2016). "Should the marketing of subordinated debt be restricted/different in one way or the other? What to do in the case of mis-selling?" In-depth analysis provided at the request of the Economic and Monetary Affairs Committee of the European Parliament. PE 497.754 (March 2016).

²³⁷ Conac, Pierre-Henri (2017), "L'auto-placement d'instruments financiers par les établissements bancaires et la protection des investisseurs par l'European Securities and Markets Authority (ESMA)", in *L'Europe bancaire, financière et monétaire*, Revue Banque Édition, 460p.

²³⁸ Joint committee of the European supervisory authorities (2014). "Placement of financial instruments with depositors, retail investors and policy holders ('Self placement') – Reminder to credit institutions and insurance undertakings about applicable regulatory requirements", JC 2014/62, 31 July 2014, [https://www.esma.europa.eu/sites/default/files/library/2015/11/jc_2014-62_placement_of_financial_instruments_with_depositors_retail_investors_and_policy_holders_self_placement.pdf].

Hybrid debt

Paralleling the rise of subordinated debt, some hybrid securities have seen their markets boosted by the BRRD. This is especially true of CoCos, which offer a higher return than a standard bond. On the flip-side, however, returns may be suspended if the solvency criteria for the specific issue are breached on the downside. The security itself may be converted into equity with a discount, or even cancelled, if the situation requires this to comply with regulatory capital requirements. This possibility of compulsory and automatic pre-failure conversion is what distinguishes CoCos from subordinated debt securities.²³⁹

In France, CoCos are not sold to individual investors

BaFin, Germany's financial supervisor, said on 15 October 2014 that it had serious concerns over the appropriateness of CoCos for retail customers. Other authorities, such as the UK Financial Conduct Authority (FCA), have simply banned them from being sold to individuals (a temporary ban introduced in October 2014 was made permanent in June 2015). In France, CoCos are not sold to individuals. Some management companies have invested in these securities, which is why they may be present in funds or units. However, this activity remains on a relatively small scale: at 31 December 2016, 262 French funds (out of about 11,000) held CoCos worth some EUR 3.5 billion in their portfolios (as compared with the EUR 1.2 trillion in assets held by French funds).²⁴⁰

On 7 June, Banco Popular (BP), a Spanish bank on the verge of bankruptcy, was bought for one euro by the Santander Group under the Single Resolution Mechanism. During the takeover, BP's CoCos were totally written down. At the same time, BP's subordinated debt was converted into shares, which were sold to Santander for EUR 1 (all shareholders lost their investment). This solution made it possible to rescue the deposits of retail savers without an injection of public money from the Spanish government. BP's subordinated and hybrid debt and shares, however, lost all of their value.

4.3.2. Overly complex structured products for individual investors

Every investment decision should be based on an assessment of the risk/reward trade-off²⁴¹. To take properly informed decisions, individual investors must be able to gain a relatively clear and precise idea of the features of the products in which they are planning to place a portion of their savings. In particular, they need objective information in order to assess expected performances and understand the circumstances in which their return or principal could be significantly compromised.

European Securities and Markets Authority (2016), "MiFID practices for firms selling financial instruments subject to the BRRD resolution regime", Statement ESMA/2016/902, 2 June 2016,
[\[https://www.esma.europa.eu/sites/default/files/library/2016-902_statement_brrd.pdf\]](https://www.esma.europa.eu/sites/default/files/library/2016-902_statement_brrd.pdf).

²³⁹ CoCo holders can also lose more than shareholders.

²⁴⁰ Note however that 11 of these funds held more than 25% of their assets in CoCos as at 31/12/2016, and three funds had exposure to these securities that exceeded 50%.

²⁴¹ NB: as a rule, a higher potential return comes with a higher risk of loss.

Overly complex products that tap into savers' appetite for returns in a low-rate setting.

Claire Célérier and Boris Vallée (2015)²⁴² provided one of the first analyses of the development of the market for complex products in Europe between 2002 and 2010. They documented the average increase in the complexity of products marketed over the period. They found that products with a high level of complexity advertised the highest returns but were also much more exposed to the risk of total loss of invested capital, and that their performances tended to be poorer ex post. For issuing banks, however, these complex products were more profitable than other products. The authors also noted that mutual banks showed more inclination to market complex products than commercial and private banks, even though their customers are less financially literate as a rule.

Since 2010, the AMF has been working to restrict the marketing of overly complex products to retail customers, notably through its Position 2010-05, which seeks to limit the complexity of financial instruments. Products deemed to be complex are not banned outright by the AMF. However, any advertising materials must state that the AMF considers the product as too risky to be sold to retail investors and, accordingly, has not reviewed the product's sales documentation.

A product's complexity is not limited to the formula used to determine gains and losses, but is also related to the features of the underlying index.

However, AMF staff has noted a shift in complexity from the formula used to determine gains and losses to the underlying index. In other words, the formula used to calculate gains based on the value of the reference index is not necessarily very complicated, but the indices created to act as references for these products have become far more sophisticated, with, for example, layers of filters used to select securities for inclusion in the index, plus weighting rules and discretionary rules on the structure of the index.

The AMF felt that with this transfer of complexity and non-transparency from the product's formula to the underlying index, there was a danger that individual investors might misunderstand the risks to which they were exposed; it further considered that the discretionary nature of some indices used to calculate gains and losses might not only create conflicts of interest but could also change the nature of the risks borne by the investment, without investors fully appreciating this fact.

Accordingly, the AMF recently supplemented Position 2010-05²⁴³ to capture this gradual shift in complexity from structured products to their reference indices by adding three explicit examples illustrating its procedures for assessing the level of complexity of underlying indices.

²⁴² Célérier, Claire and Boris Vallée (2015), "Catering to investors through product complexity", Working paper, 15 October 2015.

²⁴³ The ACPR has published an equivalent recommendation for complex products marketed through the units of life insurance contracts.

France's public authorities are committed to the fight against speculative trading platforms and have achieved tangible results.

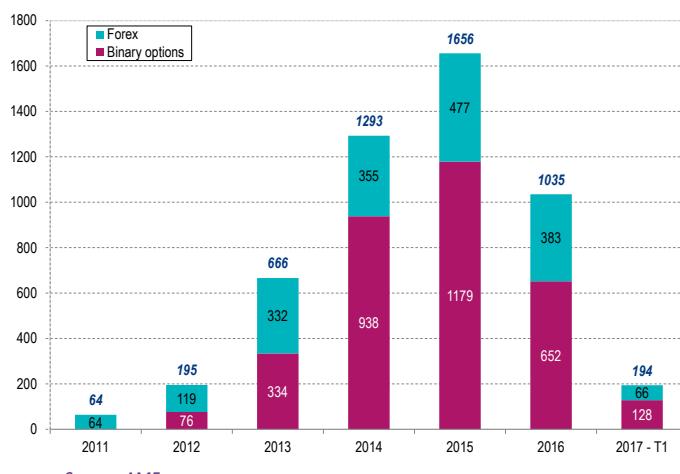
4.3.3. Forex firms may shift into other atypical products

Back in 2014, France's authorities warned the public about the risk posed by online platforms offering foreign exchange (forex) trading, as well as by highly speculative financial instruments such as contracts for difference (CFDs) and binary options. These financial products inherently expose investors to an extremely high risk of loss, and in some cases the platforms in question are outright scams (cf. 2016 AMF Risk and Trend Mapping and the 2016 AMF Ombudsman's Report).

Faced with the rise of this type of activity and the explosion in complaints from harmed consumers, France's Parliament banned the advertising of these products in the Sapin 2 Act passed on 9 December 2016. The legislation covers all participants, including ISPs and advertising firms, and provides for administrative or criminal penalties under the jurisdiction of the AMF, the DGCCRF or the Courts. The first positive effects were noticeable in Q1 2017, as the legislation limited the scope of aggressive advertising campaigns by scam websites and by sites acting under the freedom to provide services.

Action by the public authorities has helped to slash the number of complaints received by the AMF and the number of cases referred to the AMF Ombudsman.

Figure 69: Complaints received by the AMF about forex and binary options



Source: AMF.

Investors are urged to be on their guard and to be wary of investment offers that advertise high returns with no risk.

As part of its work on monitoring the advertising of investments, the AMF noted a significant drop in the number of new ads for highly speculative products in February and March 2017 (32 and 24 respectively, compared with an average of more than 50 a month in 2016)²⁴⁴.

There are grounds to fear, however, that scams touting miracle zero-risk, high-return investments might shift to other types of products that are outside the scope of the ban.

²⁴⁴ Note that 85 new advertisements for highly speculative products were recorded in January 2017. It may be that this high number reflects timing issues (i.e. the ads were released before the ban came into effect on 1 January) or it could reflect an intention to test how the authorities respond with the new measures at their disposal.

There are moreover early signs that such a shift is taking place, with the AMF detecting an uptick in advertising for investment services involving atypical products (a dozen new ads in February and March). Note, however, that these investment offers advertising atypical products do not typically use conventional advertising channels, but tend to be distributed by email. The AMF has expanded its toolbox to step up and adapt its monitoring to these mass direct marketing campaigns.

Box 14: Aligning the transactions under the atypical assets 2 regime with the transactions under the atypical assets 1 regime

Act 2016-1691 of 9 December 2016 (Sapin 2) extends the obligation to file an information document with the AMF to all investment offers relating to atypical assets and also extends the authority's supervisory powers.

The regime governing the intermediation of atypical assets was established by Act 83-1 of 3 January 1983 to regulate non-traditional investment offers concerning such assets as renewable energies, wine, diamonds, artworks, rare earths and precious metals. Under the terms of the law (Art. L. 550-1, I of the Monetary and Financial Code), this regime applies to offers "by means of advertising or direct marketing [...] to subscribe to life annuities or to acquire title to movable or immovable property where the acquirers do not perform the management thereof themselves or where the contract offers a buy-back or exchange option with revaluation of the capital invested". Any investment offer meeting these criteria must be the subject of an information document to be filed with the AMF, which shall determine, among other things, whether the transaction offers the minimum guarantees required for an investment aimed at the public.

This regime was supplemented by Act 2013-344 of 17 March 2014 ("Hamon Act"), which introduced the "intermediaries in atypical assets 2" regime, as defined by Article L. 550-1, II of the Monetary and Financial Code, in order to regulate more broadly investment offers involving atypical products that fall outside the standard scope of atypical assets, since previously, investment offers where the buyer performed management and contracts did not offer a buy-back, exchange or revaluation option were not subject to any supervision.

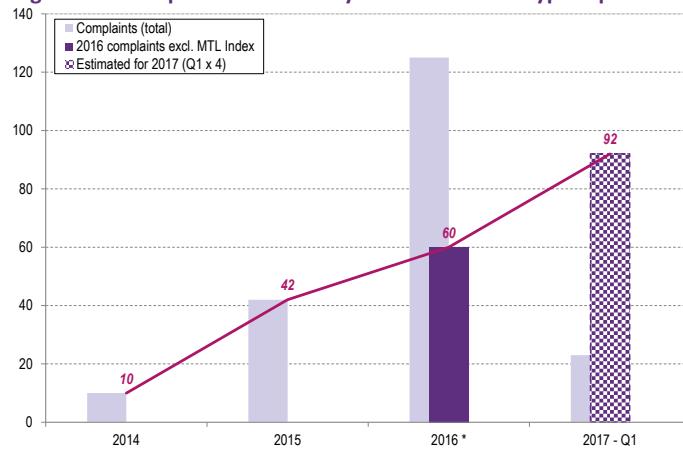
The "intermediaries in atypical assets 2" regime introduced by the Hamon Act applies to "offers consisting of the acquisition of title to one or more assets highlighting the possibility of direct or indirect financial returns or having a similar economic effect". However, the mechanism created by the Hamon Act gave only limited power to the AMF, namely the right to conduct ex post reviews of the sales communications for these investment offers. These communications were required to comply with the rules customarily applied to savings products in the form of financial instruments, which include providing balanced, clear, precise and non-misleading information.

Sapin 2 aligned the atypical assets 2 regime with the already established regime. As a result, any intermediary initiating a transaction in atypical assets must file an information document with the AMF before issuing sales communications or engaging in direct marketing campaigns. Criminal penalties apply in the event of failure to comply with these rules.

Conventional scams may also occur in this sector. The most commonly encountered techniques involve websites that act as a front, making it impossible to identify the underlying structure, or companies that vanish without trace after collecting their victims' savings. Other scams trick investors over the value of the assets underlying the investment, for example by using poor quality diamonds or forged artworks. Some scammers sell the same asset more than once. There are also very real risks connected with money laundering and concealment. Ex ante control by the AMF is designed to mitigate these risks.

The number of complaints received by the AMF about investment offers relating to atypical investment products has soared in recent years (cf. Figure 70). As with forex, three types of players are present on this market: unregulated entities that are acting completely unlawfully; firms taking advantage of weak supervision by a European regulator to operate in France under the freedom to provide services; and firms that are regulated directly by the AMF (making them subject to the regime for transactions in atypical assets).

Figure 70 : Complaints received by the AMF about atypical products



Source: AMF.

NB: in 2016, a news release by the AMF concerning MTL Index, a company offering investments in rare earths, caused a sharp increase (65) in the number of complaints received. To avoid a skewed interpretation, Figure 70 also shows the number of complaints excluding those regarding MTL Index.

In the first quarter of 2017 alone, the AMF received 23 complaints about atypical products. The dotted bar shows an annualised estimate obtained by multiplying the quarterly value by four.

ACRONYMS

ACPR	<i>Autorité du contrôle prudentiel et de résolution/ Prudential Supervision and Resolution Authority (France)</i>	EIOPA	European Insurance and Occupational Pensions Authority
AFG	<i>Association française de la gestion/French Asset Management Association</i>	ELTIF	European long term investment fund
AFM	<i>Authority for the Financial Markets (Netherlands)</i>	EMEA	Europe, the Middle East and Africa
AIF	Alternative investment fund	EMIR	European Market Infrastructure Regulation
AIFM	Alternative investment fund manager	EMMI	European Money Markets Institute
AMF	<i>Autorité des marchés financiers/ Financial Markets Authority (France)</i>	EONIA	Euro OverNight Index Average
ANC	<i>Autorité des normes comptables/Accounting Standards Authority (France)</i>	ESMA	European Securities and Markets Authority
ANSSI	<i>L'Agence nationale de la sécurité des systèmes d'information/National Agency for Information Systems Security (France)</i>	ESRB	European Systemic Risk Board
APA	Approved publication arrangement	ETC	Exchange-traded commodity
ARM	Approved reporting mechanism	ETF	Exchange-traded fund
ASC	Advisory Scientific Committee of the ESRB	EU	European Union
ASPIM	<i>Association française des sociétés de placement immobilier/French Association of Real Estate Investment Companies</i>	EURIBOR	Euro Interbank Offered Rate
B2B2C	Business to business to consumer	FCA	Financial Conduct Authority
BCBS	Basel Committee on Banking Supervision	FCPE	<i>Fonds commun de placement d'entreprise/Employee investment fund</i>
BCN	Broker crossing network	FED	United States Federal Reserve System
BIS	Bank for International Settlements	FGAS	<i>Fonds de garantie de l'accès sociale à la propriété/Fund providing guarantees against the risk of default on real estate loans (France)</i>
BMR	Benchmark Regulation	FIA	Financial investment adviser
BRRD	Bank Recovery and Resolution Directive	FPCI	<i>Fonds professionnels de capital investissement/Professional private equity investment fund</i>
BtoC	Business to consumer	FPS	<i>Fonds professionnels spécialisés/Professional specialised fund</i>
CCP	Central counterparty clearing house	FSAP	Financial Sector Assessment Program (IMF)
CDS	Credit default swap	FSB	Financial Stability Board
CET1	Core Equity Tier 1	FSMA	Financial Services and Markets Authority
CFD	Contract for difference	GDI	Gross disposable income
CFTC	Commodity Futures Trading Commission	GDP	Gross domestic product
CGEDD	<i>Conseil général de l'environnement et du développement durable/General Council for the Environment and Sustainable Development (France)</i>	HCSF	<i>Haut conseil de stabilité financière/High Council for Financial Stability (France)</i>
C-NAV	Constant net asset value	HFT	High-frequency trading
CoCo	Contingent convertible capital instrument	ICMA	International Capital Market Association
CPMI	Committee on Payments and Market Infrastructures	IEIF	<i>Institut de l'épargne immobilière et foncière/Property investment research institute (France)</i>
CSDR	Central Securities Depositories Regulation	IM	Initial margin
CSFF	<i>Commission de surveillance du secteur financier/Authority responsible for financial sector oversight (Luxembourg)</i>	IMF	International Monetary Fund
CSPP	Corporate Sector Purchase Programme	INAV	Indicative net asset value
CTP	Consolidated tape provider	INSEE	<i>Institut national de la statistique et des études/National Institute of Statistics and Economic Studies (France)</i>
DAO	Decentralized Autonomous Organization	IORP	Institution for Occupational Retirement Provision
DB	Defined benefit	IOSCO	International Organization of Securities Commissions
DC	Defined contribution	ISBLSM	Institutions sans but lucratif au service des ménages/Non-profit institutions serving households
DGCCRF	<i>Direction générale de la concurrence, de la consommation et de la répression des fraudes/DG Competition, Consumers and Fraud Prevention (France)</i>	ISP	Investment services provider
DGFiP	<i>Direction générale des finances publiques/DG Public Finances (France)</i>	ITS	Implementing technical standard
DLT	Distributed Ledger Technology	LIBOR	London InterBank Offered Rate
DNB	<i>De Nederlandsche Bank, central bank of the Netherlands</i>	LIS	Large in scale
DTCC	Depositary Trust and Clearing Corporation	LTRO	Long-term refinancing operation
EBA	European Banking Authority	LVNAV	Low-volatility net asset value
ECB	European Central Bank	MAS	Monetary Authority of Singapore
EFAMA	European Fund and Asset Management Association	MiFID	Markets in Financial Instruments Directive
		NAV	Net asset value
		NCA	National competent authority
		NIS	Network Information and Security
		NT	Negotiated Trade
		OIV	<i>Opérateurs d'importance vitale/Operators of vital importance</i>
		OMF	Order management facility

OMT	Outright monetary transaction
OPC	<i>Organisme de placement collectif</i> /Collective investment undertaking
OPCI	<i>Organisme de placement collectif immobilier</i> /Real estate collective investment fund
OTC	Over the counter
PEA	<i>Plan épargne en actions</i> /Equity savings plan
PEL	<i>Plan épargne logement</i> /Home savings plan
PEP	<i>Plan épargne populaire</i> /Popular savings plan
PER	Price-earnings ratio
PFMI	Principles for Financial Market Infrastructures
PSD	Payment Services Directive
PSPP	Public Sector Purchase Programme
RFQ	Request for quotes
RFR	Risk-free rate
RTS	Regulatory technical standard
RWA	Risk-weighted assets
SAIV	<i>Secteurs d'activités d'importance vitale</i> /Vitally important sectors of activity
SCPI	<i>Société civile de placement immobilier</i> /Real estate investment company
SCR	Solvency capital requirement
SEC	Securities and Exchange Commission
SFTR	Securities Financing Transaction Regulation
SGP	<i>Société de gestion de portefeuille</i> /Asset management company
SI	Systemic internalisation
SLP	Supplemental Liquidity Programme
SMEs	Small and medium-sized enterprises
TLAC	Total Loss Absorbing Capacity
TLRO	Targeted longer-term refinancing operation
TMEOG	<i>Taux moyen à l'émission des obligations garanties et assimilées</i> /Average yield at issuance of guaranteed and equivalent bonds
TSR	<i>Titres subordonnés remboursables</i> /Redeemable subordinated securities
UCITS	Undertaking for collective investment in transferable securities
VaR	Value at risk
VM	Variation margin
V-NAV	Variable net asset value
WAM	Weighted average maturity
WAL	Weighted average life
WFE	World Federation of Exchanges

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