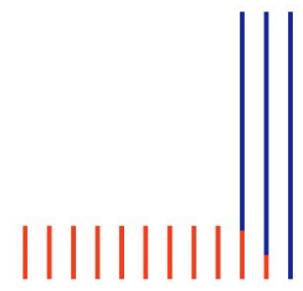




# 2022 MARKETS AND RISK OUTLOOK



AUTORITÉ  
DES MARCHÉS FINANCIERS



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**EXECUTIVE  
SUMMARY**

**Following an upturn in 2021, the financial market environment deteriorated due to the combined effects of the Russian invasion of Ukraine and the resurgence of the health risk in China, which have impaired the growth outlook and heightened inflationary pressures.**

2021 confirmed the exit from the crisis accompanied by a resumption of initial public offerings, record levels of asset valuations, a persisting revival of retail investors' appetite for investment in the stock market, and renewed vitality in the field of collective investment management. Contained inflation, keeping real interest rates at negative levels, supported the financing of governments and corporates. The Russian invasion of Ukraine sounded the death knell of this most favourable period and very adversely affected economies and financial systems.

Commodity markets (energy, grains, metals) were the first source of tension. The substantial weight of Russia and Ukraine on markets which were already under pressure at the end of 2021 resulted in a surge in prices, which were multiplied by two or even three during the initial weeks of the war. As an immediate consequence of this volatility, margin calls reached unprecedented levels mostly for non-financial market participants, creating doubts over their ability to honour them, as attested by the first ever shutdown of the nickel market in the 145 years' of its existence and resulted in the cancellation of all the transactions executed on 8 March 2022.

**The persistence of high inflation is leading central banks to speed up monetary normalisation, marking the end of the low-interest-rate environment.**

Inflation has reached record levels: +8.6% year-on-year in the United States in May 2022 and +8.6% in the euro zone in June 2022. Excluding energy and food, inflation stands at 3.8% in the euro zone and even 6.0% in the United States. These levels arouse fears of a prolonged trend substantially above the 2% target, and have led central banks to speed up the implementation of monetary normalisation by signalling the end of quantitative easing measures, and by ending net asset purchases and the policy of extremely low interest rates. Thus, after two hikes of its key policy rates initiated by the US Federal Reserve (the Fed) from the start of 2022, and a third historic hike of 75 basis points (bp) announced in June 2022, the European Central Bank (ECB) was also led to change its strategy and announced two interest-rate hikes, of 25 bp in July and at least 25 bp in September, in addition to the termination of the pandemic emergency purchase programme announced in the spring (although continuing the full re-investment of bond redemptions in order to maintain its overall net holdings).

The monetary normalisations, which markets expect to become even tighter, were immediately reflected by a rise in nominal interest rates: for example, the spread between Italian and German 10-year sovereign rates widened significantly, to 250 bp at mid-June 2022, or more than twice the level prevailing at mid-2021, reflecting fears of a fragmentation of financing conditions in the euro zone. The ECB's announcement of flexibility in re-investment of the assets acquired under the purchase programme and the design of a new anti-fragmentation instrument have so far been able to alleviate pressure on markets.

**In light of the price levels on certain markets and excessive debt levels, the risk of a steep market correction remains the main vulnerability.**

Asset prices have undergone a sharp correction since the start of 2022: at the end of June 2022, the CAC 40 (dividends reinvested) has lost around 15% relative to its level at end-2021, but prices remain volatile and valuations are still high in certain segments. The corrections have notably affected crypto-asset markets, which underwent considerable turmoil during the first few months of 2022, as shown, for example, by the fall of the Bitcoin, which has lost more than half of its value, and the disappearance of the Terra Luna stablecoin.

The ongoing Russo-Ukrainian war, repeated supply chain disruptions as a result of further lockdowns in China, and persisting labour shortages are all additional factors arousing fears of further corrections in the future. Their impact would appear to particularly hard felt according to the degree of countries' and economic sectors' dependence on the conditions prevailing in commodity markets, and to wider market's expectations concerning the severity and pace of monetary and possibly fiscal normalisations in the future.

Excessive debt levels grew yet further in 2021. Bond issuance remained dynamic and showed good levels of resilience in the opening months of 2022, despite the deteriorating macro-financial environment. Witness of these excesses can be found in the sovereign debt segment. Governments have in fact been able to fund budgetary and fiscal policies attenuating the effects of inflation. In the private debt segment, borrowing benefited companies with the best credit ratings, and was conducive to the use of leveraged loans.

The past year confirmed the growth of leveraged finance, whose assets under management, also boosted by the boom in private equity funds, reached levels similar to those seen prior to the 2008 crisis. The faster-than-expected rise in key policy rates could bring real rates back into positive territory and pose a serious threat to numerous issuers' capacity to repay, hence jeopardising their solvency in a period in which the sharp increase in producer costs is already squeezing profit margins significantly.

Thanks to their very slight exposure to Russia, French investment funds have not, as a whole, suffered massive surges in redemptions as was the case for money market funds during the health crisis. The declines in net assets seen at the start of 2022 were rather the result of valuation effects following the fall in share prices. The leverage levels seen for alternative investment funds remain limited and do not require the effective application of Article 25(d) of the Alternative Investment Fund Managers Directive (AIFMD) which now enables the competent authorities to cap leverage in case of excessive risk taking. Money market funds are still maintaining liquidity ratios exceeding the regulatory requirements, and are all the larger for the large funds. However, these factors of resilience could be significantly affected by the impending rise in interest rates. This will inevitably have an impact on the valuation of portfolio securities, and could lead to major reallocations. Hence this could, in particular, affect bond funds, whose duration has increased in recent years, in their pursuit of higher returns; or else where this could affect real estate funds, in the event of a fall in prices, e.g. a correction in commercial real estate prices. The sharp growth in passive funds, especially listed index bond funds (ETFs), is accompanied by a concentration of assets under management involving a limited number of products. Some segments could be vulnerable to market shocks, or cause them to spread through markets.

Lastly, market infrastructures have proved resilient despite the start-of-year turmoil and the occurrence of chance events such as the flash crash of 2 May 2022, caused by a market participant's error in typing an order. However, the war started by Russia is a trigger for further causes for concern, notably in the field of cyberattacks, although this risk has not clearly materialised as yet.

### **Savings behaviour and the redirection of savings towards corporate equity will constitute a real challenge in an higher interest rate environment.**

The level of French savings remained very high in 2021, above all reflecting precautionary behaviour: deposits and cash holdings are still predominant. However, investors' pursuit of returns persist and is even amplified, standing out in certain segments in certain segments – with a risk of drastic corrections in asset prices. Life insurance, which accounts for most of households' financial investments (excluding deposits and cash), gives the person insured a 50% exposure, via unit-linked policies, to the risks of equity and bond markets, and increasingly to illiquid assets (real estate, etc.). Retail investors also confirmed the revival in activity observed during the Covid crisis. Since 2020, the number of French people executing at least one equity transaction per month has almost doubled. The offers of neo-brokers, in particular, have contributed to the emergence of a category of younger investors, also giving them access to products and services with no or low regulations (foreign markets, crypto-assets, share fractions, etc.). At the same time, alerts and complaints concerning investment scams are becoming increasingly frequent (particularly regarding crypto-assets and currencies) and are affecting an increasingly broad public – young people, the elderly, small investors, etc.

**Funding of the energy transition, which implies long-term investments with low returns, could also be impacted by the rise in interest rates.**

Since the start of the health crisis, the market for sustainable bonds has been very firm. In 2021, the doubling of green bond issuance and the emergence of sustainability-linked bonds made it possible to raise around EUR 950 billion globally. However, the rise in interest rates could slow this trend. This is because the energy transition requires significant investments over very long time horizons and often with low financial returns. While the low-interest-rate environment could provide incentives for investing in longer-term projects, an inflationary environment with higher interest rates could make these investments harder to fund, because these could be seen as less attractive.

	Description of the risks	Level at mid-2021	Level at mid-2022	Outlook for 2023
Financial stability	1. Increased risk premiums, weakening indebted firms or those with assets whose prices do not reflect their fundamentals, which could correct sharply High valuation levels, with very low risk premiums, despite the start-of-year correction Commodity markets which remain tight, with no prospect of settlement of the war in the short term	Very high	Very high	↗
	2. Lack of international policy coordination Risk of desynchronisation of monetary policies between the United States and Europe due to the difference in nature of the respective inflationary shocks affecting them Risk of fragmentation of the euro zone	Very high	Very high	↗
	3. Credit risk, unsustainable debt trajectories, non-performing loans Increase in both private and public debt due to the Covid-19 crisis and the impact of the Ukraine crisis (tariff caps) Defaults yet to be seen, having been retarded by government support policies End of the low-interest-rate environment due to monetary policy normalisation	Very high	Very high	↗
Market organisation and functioning	4. Volatility, sudden fluctuations in liquidity conditions, massive moves by investors from one asset class to another Resilience to the correction of early 2022 Stimulus by the authorities (central banks, supervisors, etc.) which is drawing to an end Rising interest rates	High	High	↗
	5. Functioning of market and post-trade infrastructures Resilience to the correction episode of 2022 Satisfactory functioning of circuit breakers during the 2 May 2022 flash crash Cyber risk heightened by the crisis in Ukraine	High	High	→
Financing of the economy	6. Profitability of financial institutions faced with an environment calling their business model into question Rise in interest rates But expected rise in non-performing loans and risk of persistence Climate and digital transitions	High	High	→
	7. Difficult access to financing for corporates, especially SMEs Financing ensured during the crisis But debt financing may be reaching limits Difficulties in guiding investors to products based on capital	Significant	High	↗
	8. Difficulties in obtaining financing for the energy transition Difficulties in obtaining equity financing for long-term investments (climate transition) Difficulties exacerbated by rising interest rates	Significant	High	↗
	9. Lack of protection of retail investors in the event of poor information about the risks associated with certain investments or certain distribution channels Further waves of scams Boundary becoming blurred between gaming and investment	Significant	Significant	→

IN BLUE: main new information that changes the assessment

Very high	Very high	Lower	↘
High	High	Stable	→
Significant	Significant	Higher	↗
Low	Low		



## **FINANCING THE ECONOMY – MACRO-FINANCE**

Less than two years after the outbreak of the health crisis, the global economy has faced two supply shocks with dramatic consequences since the beginning of 2022. The resurgence of the health risk in China, coupled with the Russian-Ukrainian conflict, is undermining an economic recovery that was well underway. Given the inflationary pressures these have created, most monetary authorities have stepped up the process of monetary normalisation, resulting in a significant, albeit still contained, deterioration in the financial environment. The tightening of financing conditions, correction of stock market valuations, and rebound in volatility partly linked to the uncertainty of the outcome of the conflict, have largely contributed to dampening activity in the primary markets, particularly in the speculative corporate bond segment, as well as in the IPO segment. The process of monetary normalisation could, in the event of persistent inflationary pressures, ultimately exacerbate these trends and penalise economies and players already weakened by the health crisis and/or heavily exposed to the Russian-Ukrainian conflict.

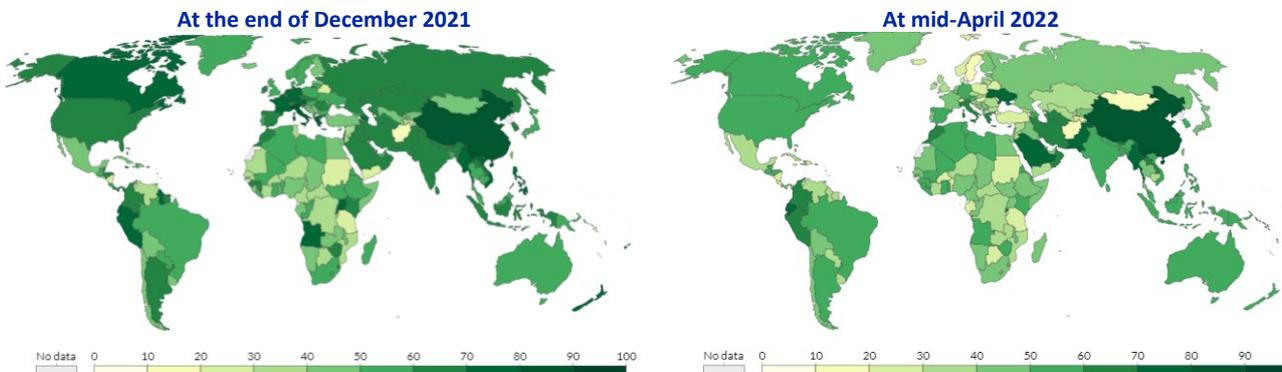
## 1.1 TRENDS

### 1.1.1 A bleak economic outlook

- **Tightening health constraints in China and the war in Ukraine have derailed the post-Covid economic recovery**

Just as the post-Covid economic recovery was well underway, global activity began to slow down at the turn of 2022, due to a double supply shock. The extreme contagiousness of the Omicron variant and the maintenance or tightening of sanitary restrictions in many countries around the world, such as China (Figure 1), combined with the Russian invasion of Ukraine at the end of February, not only affected production in the countries concerned, but also severely impacted international trade and disrupted production chains worldwide.

**Figure 1: Composite index of restrictions linked to Covid**

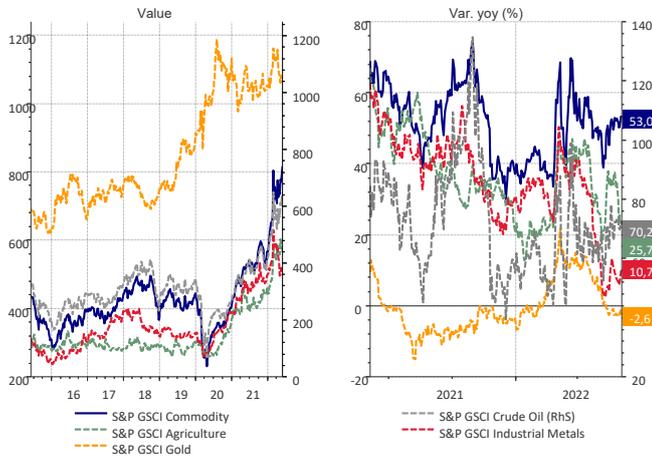


Sources: OurWorldInData.org, Hale et alii (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." Note: Composite measurement based on nine response indicators, including school closures, workplace closures and travel bans, rescaled to create a score of between 0 and 100 (100 = strictest).

Since Russia and Ukraine are major suppliers of many commodities, such as wheat, palladium, nickel, gas and oil, the war between these two countries has led to disruptions in the supply chains of many industrial sectors, particularly the food and automotive industries. In France, according to the National Institute of Statistics and Economic Studies (INSEE), 45% of companies were experiencing supply difficulties in April 2022, an increase of 9 percentage points compared with the beginning of the year, with a particularly sharp increase in the food industry.

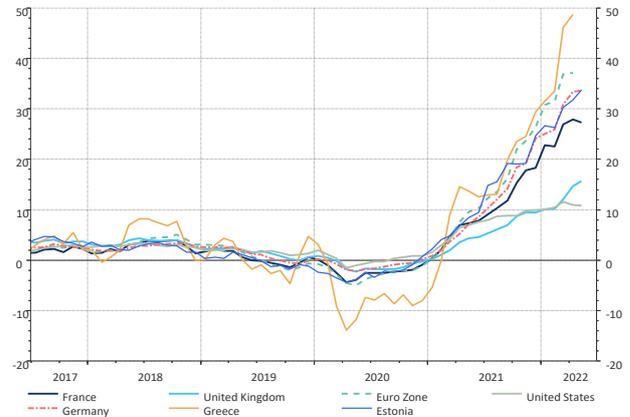
This double supply shock had the immediate effect of exacerbating the pressure on prices observed since the post-Covid recovery phase in 2020. The rise in commodity prices, particularly for energy and agricultural products, continued as a result of the outbreak of war in Ukraine (Figure 2) and continued to be reflected in producer prices (Figure 3), thereby fuelling inflationary pressures in most countries around the world, with the notable exception of Japan.

**Figure 2: Prices of raw materials, S&P GSCI indices**



Source: Refinitiv  
Last observation 29/06/2022

**Figure 3: Production price trend**



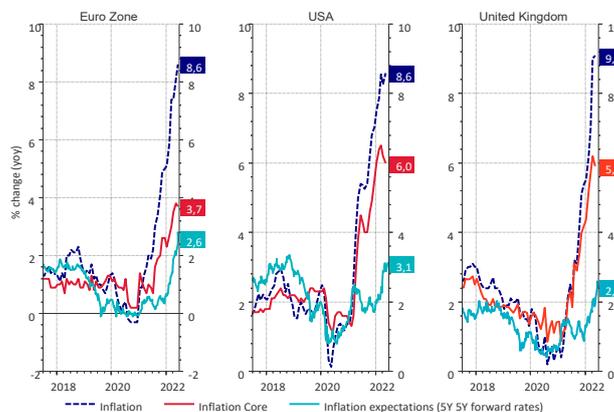
Source: Refinitiv  
Last observation: April/May 2022

Consumer price rose by 8.6% year-on-year in the US and in the euro area in May and June 2022 respectively, reaching levels that have not been seen since the early 1980s. Looking beyond this overall observation, the inflationary impact of the shock nevertheless varies greatly from one country and region to another, depending in particular on the structure of their trade and production. In the Eastern European countries, inflation exceeded 11% year-on-year in May 2022, and was as high as 20% in Estonia, mainly due to the greater reliance of these economies on Russian fossil fuels. In contrast, price rises continued to be more moderate in France (5.8% year on year in June 2022), where specific government measures (capping the rise in electricity prices, subsidies on petrol prices paid at the pump for companies and individuals) had a mitigating effect.

Core inflation is also on the rise, but much less so in Europe than in the US and the UK, where it exceeded 6% year-on-year in May, accounting for more than half of the increase in consumer prices (Figure 4). This points to differences in the nature of the inflationary shock at work in different geographical areas.

It is worth noting that inflation expectations also rose in the first part of 2022 in the euro area and the United States, but more moderately, since they were not far from the central bank's inflation targets at mid-year, at around 3%. This can be interpreted as a sign of confidence in their ability to contain the ongoing inflationary pressures.

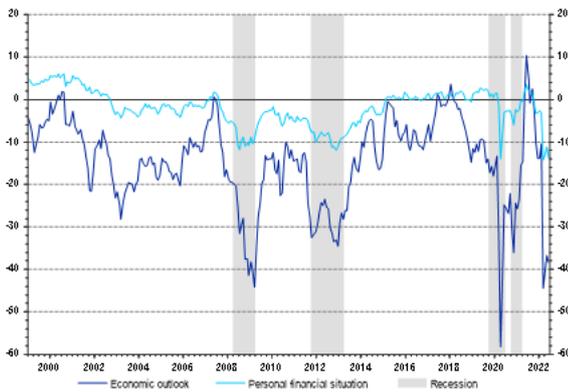
**Figure 4: Inflation in the United States and in the euro area**



Source: Refinitiv, last observation: May/June 2022

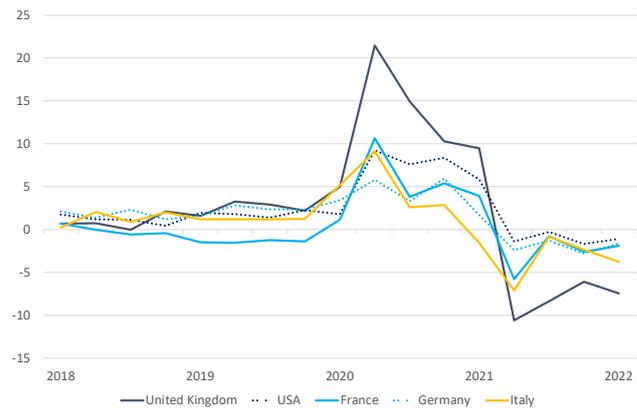
On the demand side, inflationary pressures have already led to a deterioration in household confidence, as well as a decline in purchasing power and consumer spending. In France, there was a marked decline in gross disposable household income per consumption unit in the first quarter of 2022, in the region of -1.9% according to INSEE. Nevertheless, the inflationary shock does not affect all households in the same way. The French Economic Observatory (Observatoire français des conjonctures économiques - OFCE) considers that 10% of French households saw an increase of more than 8.4% in the cost of their consumption basket in March 2022, while inflation on this date stood at 5.1% year-on-year.<sup>1</sup>

**Figure 5: Household confidence in Europe**



Source: European Commission, last observation: June 2022

**Figure 6: Change in actual salaries (yoy % change)**



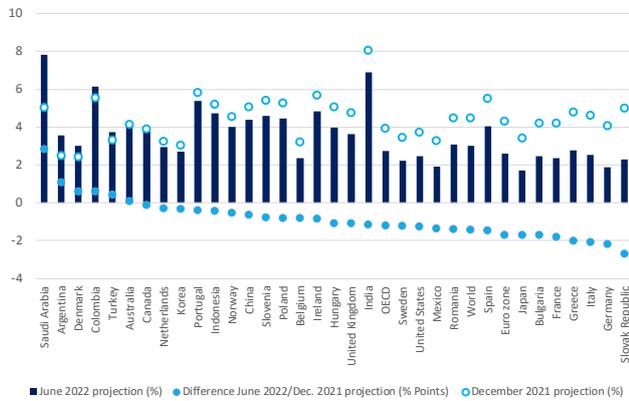
Source: OECD

As a result, growth outlook has been revised downwards. According to the forecasts of the Organisation for Economic Co-operation and Development (OECD) published last June, after the rebound of 5.8% observed in 2021, the global economy may increase by 3% in 2022, i.e. 1.4 points less than forecast in December 2021 (Figure 7).<sup>2</sup> Given their proximity to the Russian and Ukrainian territories and their energy dependence on the warring parties, European countries, and more specifically Eastern European countries, are likely to be the hardest hit by the crisis. For its part, France could experience slightly lower growth than the euro area (2.4%, compared with 2.6%). Because of the trade links between these two geographical areas, Europe should also suffer from the lockdown measures in China, where the economy is expected to slow down sharply in 2022 to 4.5% (after 8.1% in 2021). Overall, this new crisis will heighten the differences between developing countries, depending on whether they are commodity importers or exporters (Figure 8).

<sup>1</sup> OFCE Policy brief "Une analyse macro et microéconomique du pouvoir d'achat des ménages en France", 17 March 2022

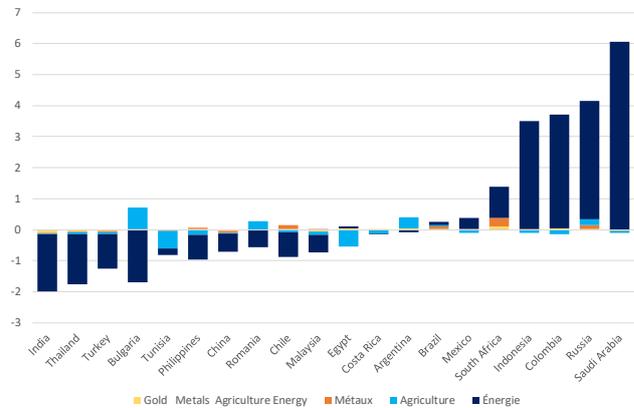
<sup>2</sup> OECD: World Economic Outlook, June 2022.

Figure 7: OECD revised growth outlook



Source: OECD

Figure 8: Impact of commodity price shock on the current account balance (as a % of GDP)



Source: OECD

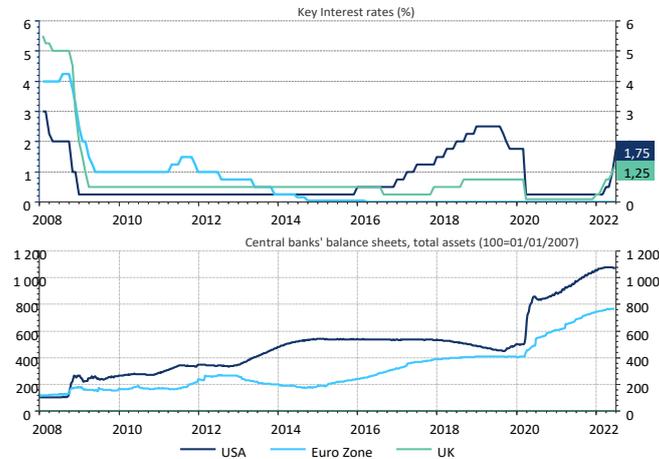
□ **A less accommodative policy mix due mainly to the normalisation of monetary policies**

The persistent and very high inflationary pressures have led most of the central banks affected to step up the implementation of monetary normalisation characterised in the developed countries by the end of quantitative easing (QE) and the zero interest rate policy. Given the different positions in the economic cycle, this process has been undertaken in different ways, at different speeds and with different timetables depending on the central bank in question.

Faced with high inflation (over 8% in May 2022) and a very low unemployment rate (3.8% in April 2022), the Bank of England was the first to embark on the path of normalisation by raising its policy rate four times from November 2021 onwards, bringing it to 1.25% in June 2022, despite the threat of recession in 2023. The central bank has also started to reduce its balance sheet since March 2022, after ending its asset purchase programme at the end of 2021. Given that the US economy is not directly exposed to the war in Ukraine and is close to full employment, the US Federal Reserve (Fed) also tightened its monetary policy strategy in response to rising inflationary pressures in the first half of 2022, with three rate hikes of 25, 50 and 75 basis points (bps). At the same time, the Fed ended its asset purchase programme ahead of schedule in March 2022 before halting reinvestment of maturing bonds in June, marking the beginning of a reduction in its balance sheet.

Initially more cautious given the essentially external origin of inflation and the fragility of activity in the euro area, the European Central Bank (ECB) has moved into the normalisation process by announcing two upcoming rate hikes in June 2022, the first of 25 bp in July, in the wake of the faster-than-expected end of the net purchase under the Asset Purchase Programme (APP), followed by a second –of 25 bp or more- in September 2022. However, the ECB does not plan to reduce its balance sheet in the short term and reserves the right to adjust its reinvestment of maturing bonds between different asset classes and states in order to avoid the risk of fragmentation in the euro area.

**Figure 9: Base interest rates and balance sheets of central banks**



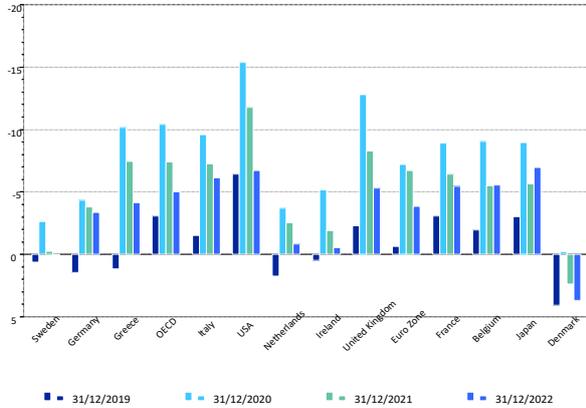
Source: ECB, Fed, BoE  
Last observation: 29/06/2022

The accommodative stance of fiscal and budgetary policies observed during the health crisis was confirmed in 2022. Given the impact of the war in Ukraine on the European economy, the suspension of the fiscal rules of the Stability and Growth Pact (SGP) was nevertheless extended again by one year in May 2022, until the end of 2023. Most European governments have thus been able to put in place accompanying measures to mitigate the inflationary shock to household purchasing power and business production costs. In France, in addition to the introduction of the pricing shield, the state-guaranteed loan (PGE) introduced at the time of the health crisis was extended by six months to 30 June 2022 and microbusinesses with cash flow problems will be able to benefit from an extension of the repayment period to 10 years. In addition to the state-guaranteed loan, companies facing cash flow difficulties as a result of the war in Ukraine, could also apply until the end of the first half of 2022 for a “Resilience PGE”, that covered up to 15% of their annual average turnover over the last three years. This added fiscal effort, which is now more targeted than when the health crisis broke out, is nevertheless significant and is estimated, according to the OFCE, at 1.7% of GDP in the case of France for the period 2021 and 2022.<sup>3</sup>

It should be noted that the implementation of automatic stabilisers during the health crisis and then of stimulus packages significantly pushed up public finance imbalances in 2020 and 2021 in the advanced countries (Figure 10). However, the return to growth and price increases, in a low interest rate environment, led to a reduction in public debt in 2021.

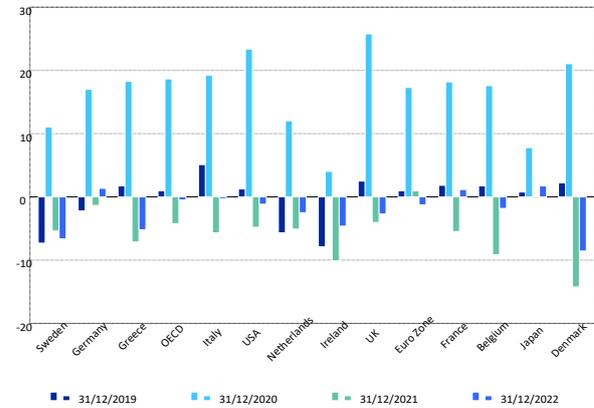
<sup>3</sup> OFCE Policy Brief 107, 9 June 2022

**Figure 10: Public deficit**  
(as a % of GDP, inverted scale)



Source: OECD

**Figure 11: Public debt trend**  
(as a % of GDP, yoy % change)

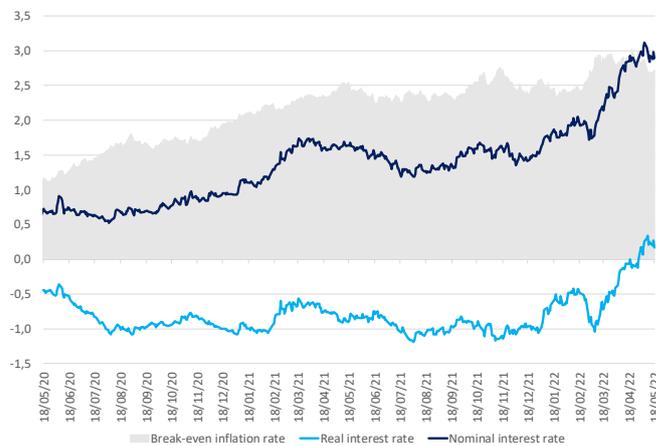


Source: OECD

**□ The financial environment is weighed down by inflationary pressures**

Inflationary pressures and the start of the monetary policy normalisation process led to a sharp rise in nominal 10-year sovereign bond yields in the first half of 2022. In the United States, they more than doubled in less than a year, rising from 1.2% in the summer of 2021 to 3.5% in mid-June 2022. Real interest rates became positive at the beginning of May 2022, which means that the debt burden of borrowers will ultimately increase (Figure 12).

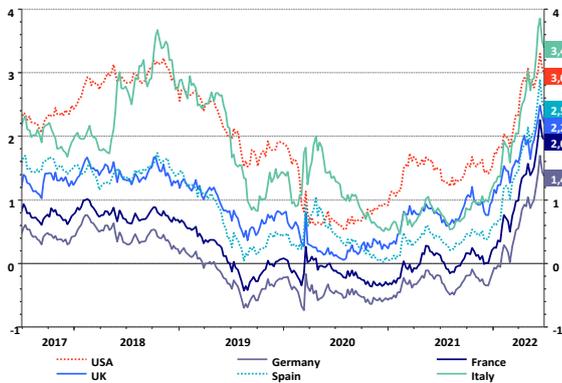
**Figure 12: Nominal and real yields of 10-year sovereign bonds in the United States**



Source: US Department of the Treasury  
Last observation 28/06/2022

Nominal sovereign rates are also rising in Europe, albeit to varying degrees depending on the country. The spread between Italian and German 10-year sovereign rates has recently widened to 250 basis points at the end of June 2022, double the level in mid-2021 (Figure 14).

**Figure 13: Change in 10-year sovereign bond yields (as a %)**



Source: Refinitiv  
Last observation: 29/06/2022

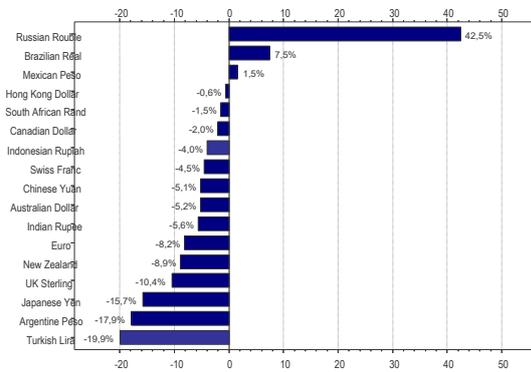
**Figure 14: Sovereign rate spreads compared with the 10-year Bund (in basis points)**



Source: Refinitiv  
Last observation: 29/06/2022

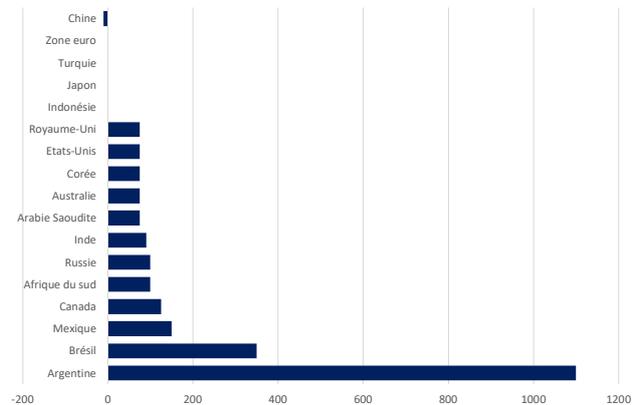
The Fed's tightening of monetary policy has contributed to the appreciation of the US dollar against most other currencies, thereby helping to reinforce short-term inflationary trends. The euro depreciated by over 8% during the first six months of the year.

**Figure 15: Change in currency/dollar exchange rates to the dollar (% change since beginning 2022)**



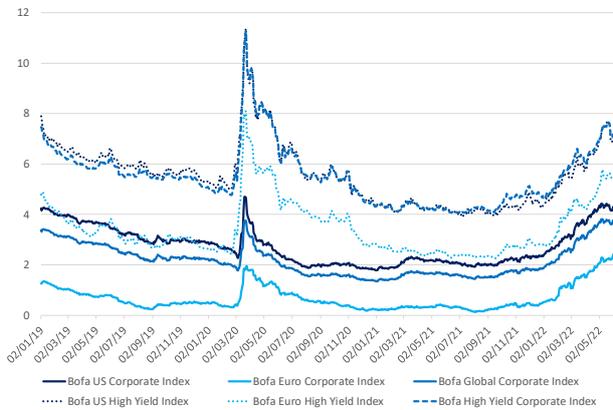
Source: Refinitiv  
Data at 29/06/2022

**Figure 16: Change in policy rates (since the beginning of 2022, in basis points)**



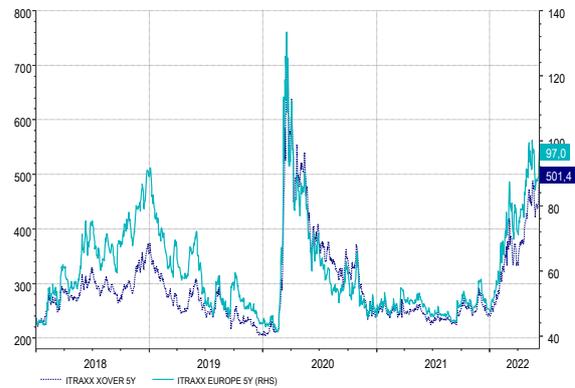
The financing conditions of private agents on bond markets have also deteriorated significantly since the beginning of 2022, regardless of their rating. For the highest-rated companies, bond yields in both Europe and the United States returned in May 2022 to the levels prevailing when the health crisis broke out in March 2020. Meanwhile, speculative bond yields reached very high levels, around 8%, suggesting possible future refinancing difficulties for some of these companies. At the same time, the perception of risk has deteriorated, as illustrated by the surge in Credit Default Swap premia (CDS) – (Figure 18).

Figure 17: Corporate bond rate (%)



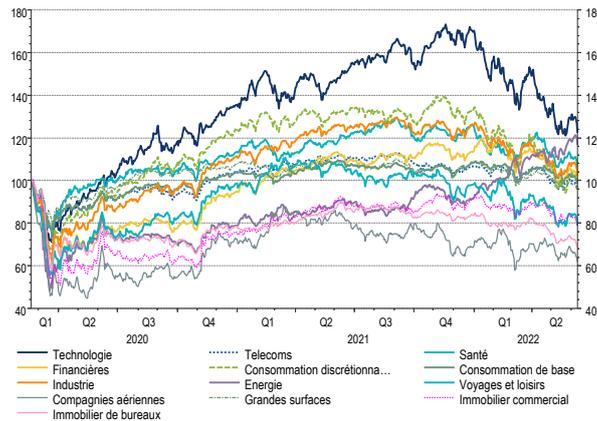
Source: Refinitiv  
Last observation: 28/06/2022

Figure 18: Corporate CDS indices in Europe (bps)



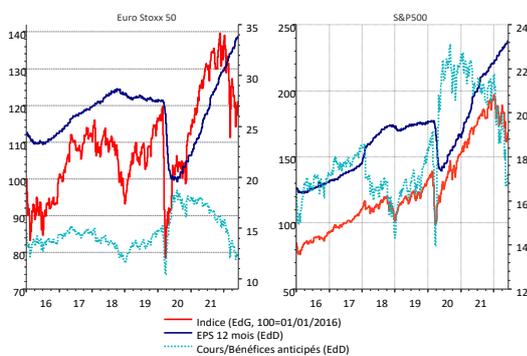
Despite the fact that corporate earnings are still on track, the weakening economic outlook and rising interest rates weighed on stock market performance in the first half of 2022, particularly for technology stocks, and contributed to increased volatility in the markets.

Figure 19: Stock market developments by sector at the global level (10/02/2020 = 100)



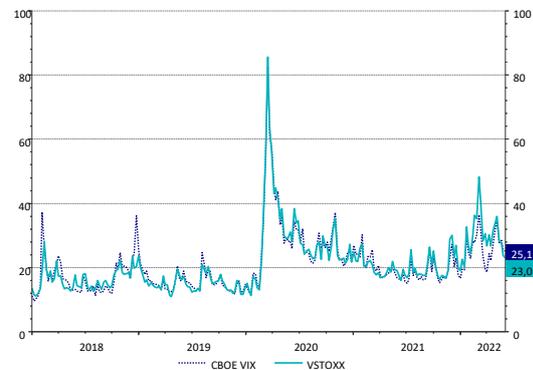
Source: Datastream Refinitiv; Last observation 29/06/2022

Figure 20: Expected earnings and stock market valuations



Source: Datastream Refinitiv; Last observation: 29/06/2022

Figure 21: Implied volatility indices

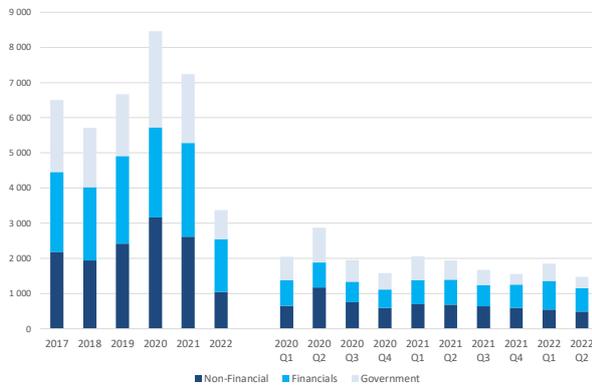


### 1.1.2 Primary markets

#### □ Bond markets

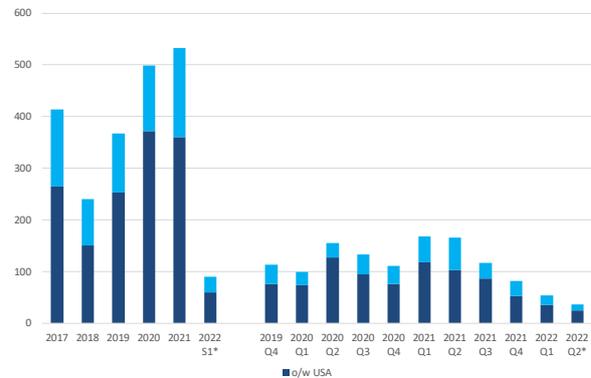
At global level, bond issuance remained very buoyant in 2021. Despite the deterioration in the macro-financial environment, primary market activity showed resilience in the first months of 2022. This is particularly true of sovereign issues, since governments need to finance spending on stimulus packages. On the private-sector debt market, although a deceleration was observed in the spring of 2022, it was primarily due to the high-yield segment (Figure 23). In Europe, high bond issuance in the first five months of 2022 was divided by three over one year. In France, they amounted to barely EUR 1 billion, compared with nearly EUR 12 billion over the same period of the previous year.

**Figure 22: Global bond issuance**  
(in EUR billion)



Source: Bloomberg

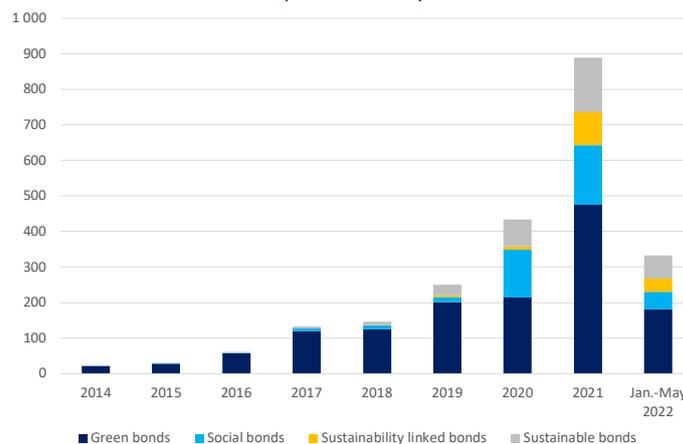
**Figure 23: High-yield bond issuance (non-financial corporations, in EUR billion)**



Source: Bloomberg  
\* Data at 15/06/2022

Bond issues by the best-rated companies fared better overall, reflecting a flight to safety, as did the entire market for sustainable bonds (sustainability and sustainability-linked bonds, social bonds or green bonds).<sup>4</sup>

**Figure 24: Bond issuance in the sustainable finance segment**  
(in EUR billion)



Source: Bloomberg  
Note: Prime Standard green bonds; social bonds and sustainability bonds aligned to the ICMA standard

<sup>4</sup> A sustainability bond is a bond for which the income contributes to the financing of new or existing projects with environmental, social, and/or governance (ESG) targets. A sustainability-linked bond is a bond loan that also has ESG targets, but whose characteristics, and in particular the financial characteristics, may vary depending on whether or not the targets are achieved. A social bond is a bond intended to finance projects that have a positive social impact on the target populations.

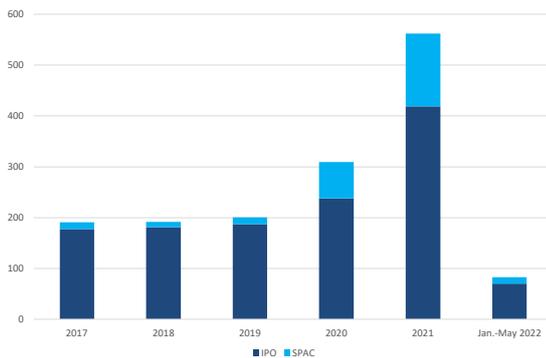
## □ Equity markets

After an exceptional year in 2021, IPO activity slowed from the end of the year and in the first months of 2022. In a less buoyant macro-financial context, characterised in particular by the return of volatility and a correction in stocks, the volume of transactions recorded worldwide fell by more than half in the first five months of 2022 to EUR 82 billion, a level comparable to that prevailing before the outbreak of the Covid pandemic.

Traditional IPOs were particularly sluggish in the US and Europe. The amounts raised over the first five months of 2022 in Europe did not exceed EUR 3 billion, ten times less than over the same period in 2021, and where the number of deals fell by two-thirds. The Paris market was no exception to this trend, with only five deals recorded in 2022 for relatively small amounts. In Asia, on the other hand, market activity was more buoyant, particularly in India, South Korea and China, where several large deals were registered. In China, this performance was partly due to the repatriation to the domestic stock markets of companies delisted from the US markets at the request of the Securities and Exchange Commission (SEC),<sup>5</sup> such as China Mobile, which raised more than USD 8 billion on the Shanghai market after having been listed on the NYSE until January 2021.

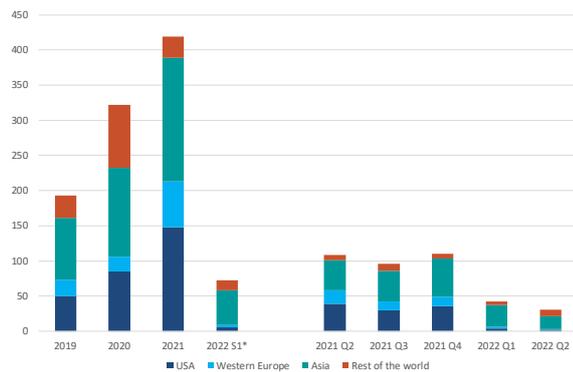
At the same time, Special Purpose Acquisition Companies (SPAC) segment activity has slumped since the beginning of 2022 (Figure 25). Over and above the deterioration of the financial landscape, this movement can also be largely explained by the SEC's intention to tighten the transparency obligations to which the sponsors of these vehicles<sup>6</sup> are subject, in order to increase investor protection.

**Figure 25: Global IPOs (capital raised in EUR billion)**



Source: Bloomberg

**Figure 26: IPOs excluding SPACs according to geographic zone\* (capital raised in EUR billion)**



Source: Bloomberg

\* Data at 15/06/2022

On the secondary market, issues by already-listed companies were dynamic for most of 2021, before slowing in the first months of 2022 worldwide. In the first five months of the year, the number of deals fell by 40% year-on-year and capital raised was halved, reflecting the slowdown in activity in the M&A segment and the rebound in market volatility. However, despite an environment that is not very conducive to fund raising, the companies most severely impacted by the health crisis continued to rebuild their equity capital, as in the case of Air-France KLM's EUR 2.3 billion capital increase in May 2022. This transaction, coupled with EDF's EUR 3.5 billion capital increase enabled the Paris financial market to buck the general trend: while the number of deals fell by more than 50% in the first five months of the year, volumes rose by 10% over the year.

Lastly, another item worthy of note is that after record activity in 2020 and 2021, and despite the increased volatility that traditionally favours these, convertible bond issuance also stalled in the first few months of 2022.

<sup>5</sup> Since the Holding Foreign Companies Accountable Act came into effect in 2020, the SEC can delist companies from foreign jurisdictions that do not meet current auditing standards.

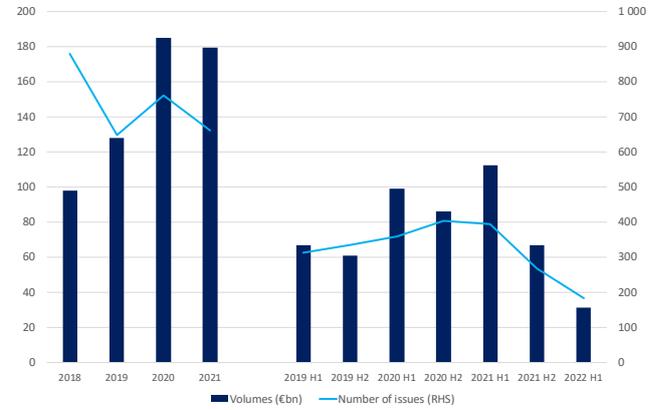
<sup>6</sup> See Section 1.2.3.

**Figure 27: Equity issuance excluding IPOs**  
(in EUR billion)



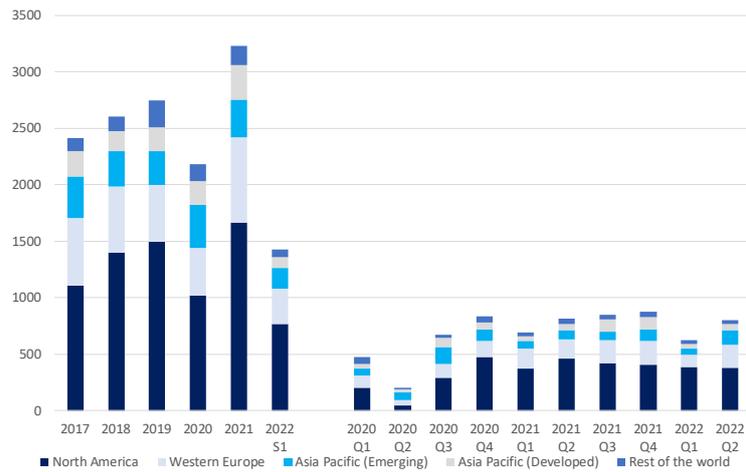
Source: Bloomberg  
\* Data at 31/05/2022

**Figure 28: Convertible bond issuance**  
(in EUR billion)



Source: Bloomberg

**Figure 29: Mergers and acquisitions market (total M&A value, in EUR billion)**



Source: Bloomberg

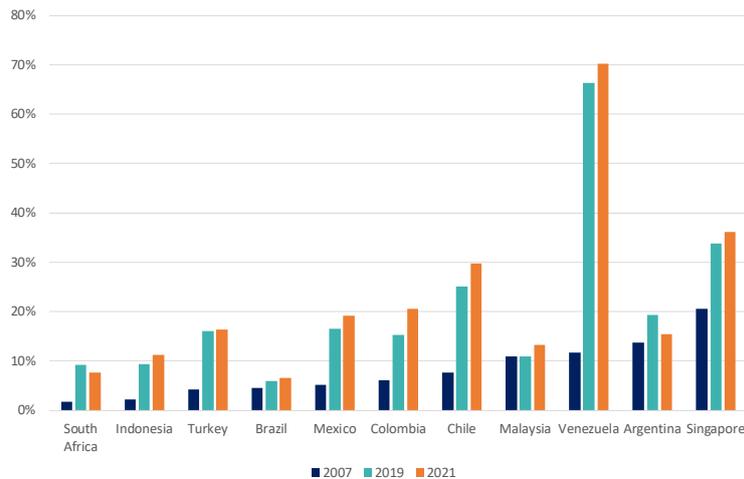
## 1.2 RISKS

### 1.2.1 The increase in US long-term interest rates could have adverse consequences for the global macro-financial environment

Faced with the spike in inflation, most major Western central banks have stepped up the process of monetary normalisation, thus managing to contain inflation expectations and limit the rise in long-term interest rates. However, the risk of an unanchoring of inflation expectations cannot be ruled out, particularly if the war in Ukraine were to drag on. This would result in a sharper than desired rise in long-term interest rates which, in addition to an induced deterioration in the financing conditions of economic agents, could itself lead to further stock market corrections. This risk appears to be higher in the euro area, insofar as inflation is essentially imported, but it could nevertheless be mitigated by the implementation of asset purchase policies in favour of the countries particularly affected.

Conversely, in emerging countries, an increase in US interest rates could rapidly translate into capital outflows and currency depreciation for countries whose central banks have chosen to maintain an accommodative policy. This would be particularly detrimental for countries with high levels of dollar-denominated external debt. This category of debt rose sharply in many countries after the 2007 financial crisis. This trend has been continued since the outbreak of the health crisis for some countries such as Colombia and Chile.

**Figure 30: Dollar-denominated debt in developing countries (total assets, as % of GDP)**

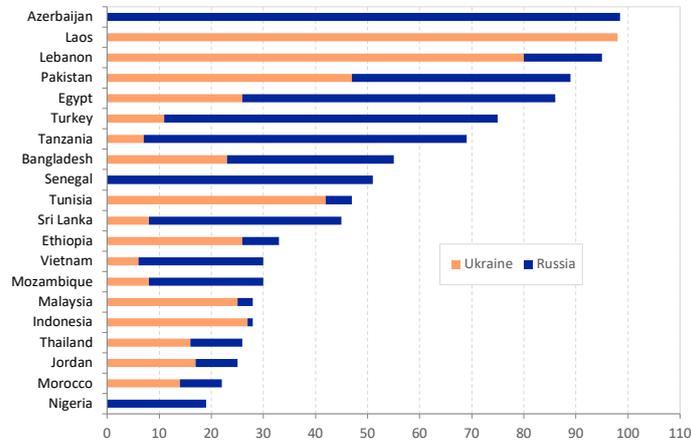


Source: BIS, Refinitiv – AMF calculations

In the short term, the depreciation of the currencies of emerging economies could also contribute to increasing inflationary pressures in commodity-importing countries, and thus the risk of a food crisis in emerging countries where there is a higher dependence on Russia and Ukraine for certain agricultural commodities (Figure 31).

This is the case in particular for Lebanon, which was already vulnerable at the beginning of the health crisis, or Egypt.

**Figure 31: Weight of wheat imports from Russia and Ukraine (%)**



Sources: International Trade Center and Moody's Investors Service

### 1.2.2 Heightened risk of insolvency for companies

Thanks to the highly accommodating policy mix in most developed countries, companies were able to absorb a large part of the health shock in 2020 and 2021, at the cost of increased debt. In France, this went hand in hand with the strengthening of cash holdings and a lengthening of debt maturities, although this macroeconomic trend should not mask the heterogeneity of individual or sector-related situations.

In spring 2022, the number of insolvencies worldwide remained at historically low levels, including for the riskiest companies. In France, the cumulative number of insolvencies over one year was close to 30,000, down 36% compared with the start of the health crisis.<sup>7</sup>

This situation could nevertheless change if the war in Ukraine were to continue or if the supply of Russian gas and oil were to be suspended, especially in the economies that depend more heavily on them (such as Germany, Italy and Austria) and in energy-intensive sectors such as the automotive industry. Companies could also be hurt by an excessive squeeze on their margins if they are not able to pass on a significant part of the higher cost of production in their sales prices.

Moody's rating agency estimates that more than half (45%) of the speculative-grade European companies rated B or below could face a significant deterioration in their credit quality in the event of a recession, linked to the worsening of the conflict in Ukraine and the possible cutting-off of Russian gas supplies. This proportion would be much lower for North American companies (23%), which are less exposed to the conflict.<sup>8</sup> S&P also estimates that the default rate for speculative-grade companies could reach 3% in Europe and the United States by March 2023 (compared with 0.7% and 1.4% respectively in March 2022), or even 5% or 6% under the worst-case scenario.<sup>9</sup>

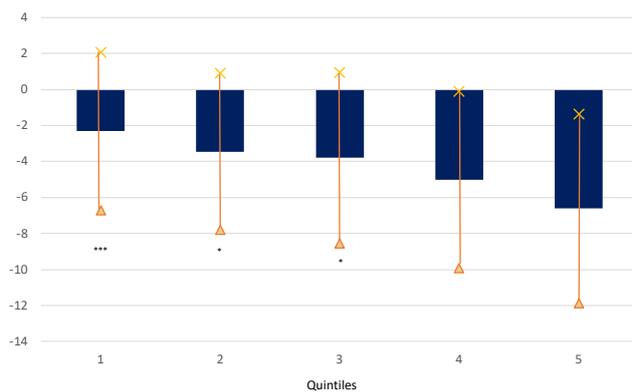
<sup>7</sup> Period April 2019-March 2020, Source: Insee, Monthly Insolvencies Monitor, April 2022.

<sup>8</sup> Moody's Investor Services: "Escalation in Russia-Ukraine conflict would hurt EMEA corporate credit quality", sector in depth, 25 April 2022 and "Global Macro Outlook", 17 March 2022.

<sup>9</sup> "The U.S. Speculative-Grade Corporate Default Rate Could Reach 3% By 2023 As Risks Continue To Increase" (19/05/2022); "The European Speculative-Grade Corporate Default Rate Could Rise To 3% By March 2023" (18/05/2022).

Moreover, corporate debt could also be a barrier to investment in the current context of monetary normalisation. The IMF (2022) estimates that a tightening of 100 basis points would slow down investment by the most indebted companies by 6.5% over two years, i.e. four points more than for the least indebted companies.<sup>10</sup> Although investment has picked up since the summer of 2020 in the advanced economies - particularly in Italy, where a catch-up effect is observed - it does not seem to have continued beyond the summer of 2021 in most euro area countries, including France (Figure 33).

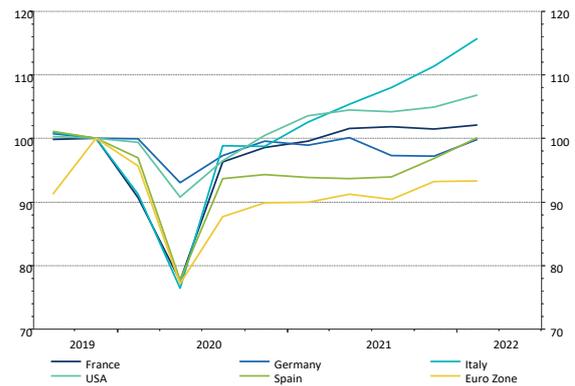
**Figure 32: Response of Corporate Investment by Leverage Quintile to Monetary Shock**



Source: IMF(WEO, Avril 2022)

Note: Estimated effect of a monetary policy tightening of 100 basis points, two years after the shock. Error bars denote 90 percent confidence intervals. Statistically significant differences between the highest leverage quintile and other quintiles at the 1 and 10 percent confidence levels are denoted, respectively, by \*\*\* and \*.

**Figure 33: Change in investments in volume**



Source : Refinitiv

#### ☐ Risks related to debt especially leveraged debt

Global leveraged debt issuance rose sharply in 2021 and is now at levels close to those prevailing before the global financial crisis (Figure 34). This debt is mainly defined by a high debt to equity ratio of the issuing non-financial corporations (NFCs).<sup>11</sup> Leveraged Buyouts (LBOs), where investment funds acquire unlisted companies with high leverage, play a central role in the issuance of this type of debt.<sup>12</sup> LBOs initially carry their debt through a special purpose vehicle (SPV or holding company) through which the fund invests in the target companies and refinances it through the target companies themselves (debt of the companies acquired and controlled by the funds).<sup>13</sup> Section 3.7.2 of Chapter 3 highlights the growing importance of LBOs in financing the economy.

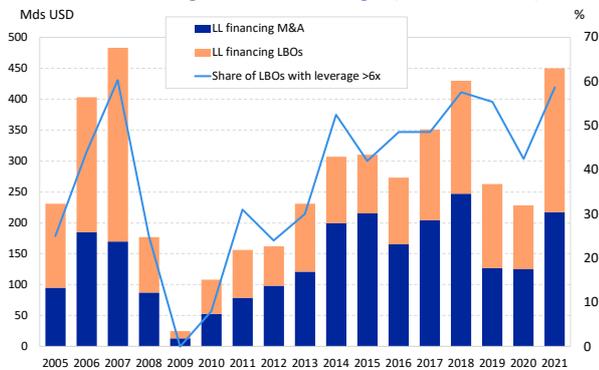
<sup>10</sup> "World Economic Outlook", Chap.2, April 2022.

<sup>11</sup> For example, the borrower's total debt ratio exceeds 4 times EBITDA (cf. [ECB guidance on leveraged transaction](#); May 2017).

<sup>12</sup> It is understood that the debt considered here is not that of the companies in which the fund has holdings, but that of the structure set up by the fund for investing purposes. The question of transparency on this type of debt is also raised.

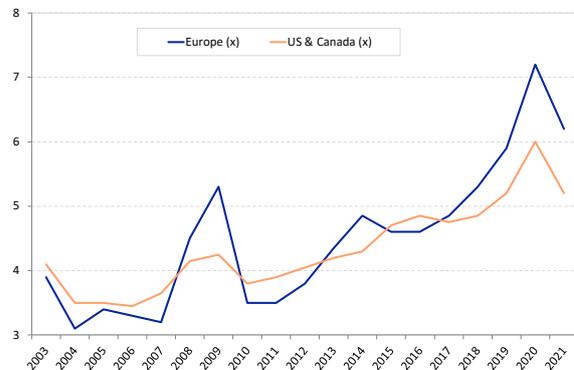
<sup>13</sup> See Chapter 3 of the AMF's 2020 Markets and Risk Outlook.

**Figure 34: Issuance of institutional leveraged loans to finance LBOs and other M&A transactions, and share of LBOs with a leverage ratio exceeding 6 (USD billion, %)**



Source: FMI (2021), S&P Global (2021), in Kundu (2022); *The anatomy of CLOs: On the origins of covenants and contract*. Note : M&A : opérations de fusion-acquisition (hors LBO) dont les emprunteurs sont sponsorisés par le private equity.

**Figure 35: Median leverage ratio**



Source: S&P Global ratings. Note: includes rated non-financial issuers in the US, Canada and Europe. Europe includes the European Union, the United Kingdom, Switzerland and the Scandinavian countries.

This leveraged debt of NFCs and the private equity funds that hold them raises a number of growing risks. These are reflected, first of all, by a deterioration in credit quality. This deterioration appears to be marginal, judging by the agencies' credit ratings, which show a slight distortion of the structure in favour of the highest (BB) and, above all, intermediate (B) ratings (Figure 37) and by the relative resilience of recovery rates<sup>14</sup> that these agencies anticipate for future speculative debt issuance (Figure 36). However, this deterioration can be measured by the increase in speculative debt outstandings and the pronounced trend towards a reduction in the contractual protections offered to investors (development of covenant-lite loans),<sup>15</sup> increasing complexity of loan contracts,<sup>16</sup> increased use of accounting ratio adjustment practices (e.g. EBITDA add-backs),<sup>17</sup> etc. It/This can also be seen in the increasing leverage of issuers,<sup>18</sup> with the median debt to EBITDA ratio of debt-issuing NFCs close to its historical peak of 2020, at more than six times in Europe (Figure 35). Risks also stem from the increasing sectoral concentration of debt issuance, especially in innovative sectors whose assets may raise concern about their valuation. Lastly, certain information asymmetries are likely to increase the conflicts of interest of financial intermediaries. In particular, the ECB's banking supervisor, the Single Supervisory Mechanism (SSM), has expressed concern about the inadequate monitoring and risk management of leveraged loans by some banks<sup>19</sup> that account for a significant share of leveraged lending in the European banking sector.<sup>20</sup> Similarly, institutional investors in search of high yields could be led to take excessive risks. Here, liquidity risks could amplify the impact of adverse market developments - e.g. in the event of an inflation-interest rate spiral, downward revisions of economic growth or valuations of certain sectors.

<sup>14</sup> The extent to which principal and accrued interest on outstanding debt can be recovered, as a percentage of the security's face value. It also refers to the residual value of a security following a default. For an interest rate of X%, the loss on default is therefore 1-X%.

<sup>15</sup> More than 80% of newly issued leveraged debt and Speculative Grade corporate issues only have covenants to meet specific events (incurrence covenants). This proportion was 20% before the 2008 financial crisis and almost zero in 2010. These "covenant lite" loans waive maintenance covenants ensuring that certain financial ratios - e.g. leverage or interest coverage (EBITDA over interest paid) - do not exceed set thresholds.

<sup>16</sup> For example, reflecting the flexibility given to issuers in terms of leverage, dividend payments and investment.

<sup>17</sup> Leveraged loans increasingly allow borrowers to make more or less discretionary upward adjustments to the calculation of the reference EBITDA (add backs), asset stripping.

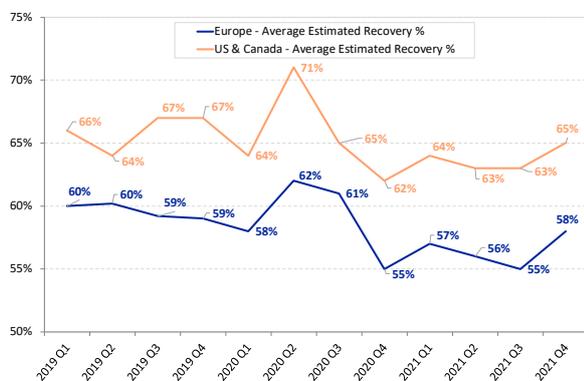
<sup>18</sup> According to S&P Global Ratings, the median debt ratio in Europe declined from the historical peak of 7.2 times in 2020 to 6.3 times in 2021. In the United States, the median debt to equity ratio dropped from an all-time high of 6.0 times to 5.3 times in 2021. NB: Adjustments to the benchmark EBITDA may reduce the level of this ratio.

<sup>19</sup> Credit institutions designated as Significant Institutions by virtue of [specified significance criteria](#): size (more than EUR 30 billion in assets); importance to the EU economy or the country concerned; cross-border activity (more than EUR 5 billion in assets and a ratio to total assets or liabilities of assets or liabilities in more than one Member State of more than 20%); public support (e.g. from the European Stability Mechanism or the European Financial Stability Facility); or if the bank is among the top 3 in a given country.

<sup>20</sup> ECB chair of the Supervisory Board (SSM) A. Enria [letter to the CEOs of significant institutions on banks on leveraged transactions](#); 28/03/22.

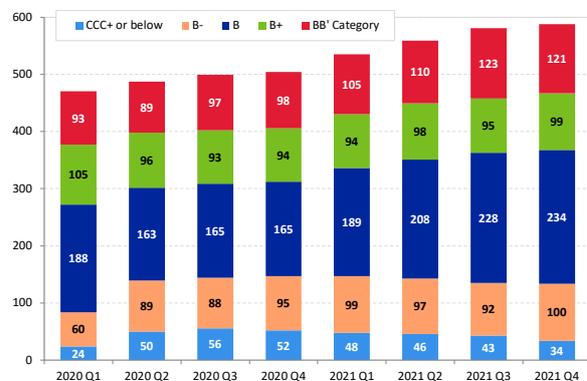
Aside from the risks for the investors concerned, these developments raise questions as to the ability to monitor the aggregate exposures and macro-financial risks associated with this debt adequately. As it stands, information on this debt and the vehicles that finance and recycle it remains limited and fragmented, despite the multiple and growing risks observed. There are currently technical debates about the transparency of unlisted leveraged debt and private securitisations (such as Collateralised Loan Obligations, or CLOs)<sup>21</sup> that recycle some of this debt.<sup>22</sup> Furthermore, there is an emergence of debt funds that increasingly finance/refinance this type of debt. The issue is all the more important as the debt issued by funds and their investment targets is often leveraged debt recycled through securitisation vehicles (CLOs) and increasingly financed by debt funds (see 3.7) whose lending competes directly with banking players (syndicates). This point therefore highlights the need to develop a vision covering both the activities of banking and non-banking service providers in this market and to take into account their respective specificities.

**Figure 36: Early recovery rate on new speculative-grade debt issues in the US and Europe**



Source: S&P Global ratings

**Figure 37: Speculative-grade debt outstanding by rating in Europe**



### 1.2.3 Primary markets: towards a normalisation of the SPAC market?

- After a peak in activity in early 2021, the SPAC boom is reaching its limits in the US, although the market remains dynamic in Europe

In 2020 and up to the beginning of 2021, SPACs<sup>23</sup> underwent a spectacular boom in activity worldwide and more particularly in the United States where 614 deals raised EUR 135 billion in 2021, a level comparable with traditional IPOs. In Europe, the capital raised in 2021 exceeded EUR 7 billion in 2021, despite the fact that the market had barely taken off the previous year.

After peaking in the first quarter of 2021, SPACs have had mixed fortunes since then. SPAC IPOs have significantly decreased in the US since the beginning of Q2 2021, with a drop of almost 70% in amounts raised. At the beginning of 2022, multiple SPAC IPO projects were even withdrawn by their promoters<sup>24</sup> and the 67 IPOs in the first five months of 2022 raised only EUR 10 billion, compared with nearly EUR 90 billion year-on-year. In Europe, a significant slowdown was observed in the summer of 2021, although things picked up substantially at the end of

<sup>21</sup> Collateralised Loan Obligations (CLOs) are a type of CDO (Collateralised Debt Obligations, securitisations backed by a diversified portfolio of market debt securities, originally mainly mortgage-backed). They are backed by corporate loans and/or leveraged loans financing mainly private equity transactions.

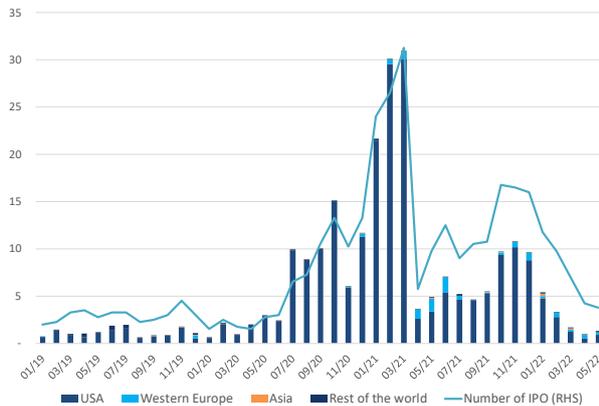
<sup>22</sup> In particular, the debate on transparency rules for private (unlisted) securitisations was launched by the [European Commission's public consultation](#) on the securitisation framework on 23 July 2021

<sup>23</sup> SPACs are vehicles without an operating purpose that are listed for the sole purpose of merging with an unlisted company (not yet identified at the time of the SPAC listing) in order to float it on the stock exchange. The term "SPAC IPO" is used for the IPO phase of the SPAC and "de-SPAC" for the merger with the unlisted company (Initial Business Combination - IBC - when it is a first acquisition). For more details, see L. Grillet-Aubert (2021) ; [SPAC : Opportunities and risks of a new way of going public](#) ; AMF Risk & Trends: July.

<sup>24</sup> For example, seven SPACs aiming to raise \$2.5 billion withdrew their IPO plans in the US in the first three weeks of 2022 vs. five in December 2021 and two in the first 11 months of 2021. Cf. *Rising number of SPACs call it quits before listing*; Financial Times; 21/01/22.

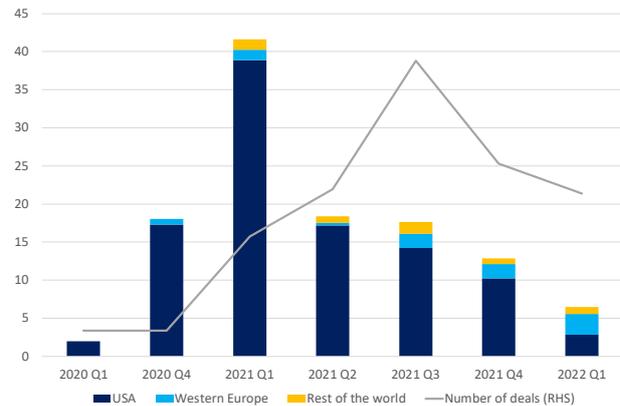
the year, until the outbreak of the Russian-Ukrainian conflict. It is worth noting that the market is also developing in Asia, with 17 SPACs newly listed in South Korea in 2021.

**Figure 38: SPACs: number of IPOs and amounts raised worldwide by geography (in EUR billion)**



Source: Bloomberg

**Figure 39: Mergers of US-listed SPACs by geographical area of the target (in EUR billion)**



Source : Bloomberg

The volume of SPAC mergers ("de-SPACs") in the US has also fallen drastically since the first quarter of 2021 (Figure 39). This amounted to barely EUR 12 billion in the first five months of 2022, compared with more than EUR 41 billion in the first quarter of 2021 alone, even though the number of SPACs seeking targets has increased significantly (see below). This trend has also been coupled with a geographical diversification of merger target companies. In Q1 2022, targets domiciled in Western Europe accounted for nearly 40% of the amounts.

Besides, the companies resulting from these mergers have underperformed on the stock market. For example, the De-SPAC index<sup>25</sup> of the 25 largest listed companies resulting from a merger with a US SPAC had fallen by 54.3% since the beginning of the year and by 72% year-on-year as of 7 June 2022. Since April 2020, the index creation date, the decline has been 64.2%, and the drop in the price of certain stocks has been particularly striking.<sup>26</sup> Such underperformance reflects a correction of some past (over)valuations. However, it also reflect revisions in earnings expectations, some of them spectacular, such as Virgin Galactic, which generated USD 3.3 million in revenue in 2021, compared with projections of USD 210 million. This is because, as a result of the SEC's initiatives, SPACs massively corrected their registration documents<sup>27</sup> in 2022, and 11% of the companies acquired by SPACs in 2020 and 2021 issued a bankruptcy risk notice.<sup>28,29</sup> According to Bloomberg,<sup>30</sup> 95% of the 186 mergers announced in 2021 and completed since then are trading below their initial price of 10 dollars, putting investors at risk of billions of dollars in losses. In comparison, 76% of stocks introduced through traditional IPOs have seen their prices fall since they were listed.

Given the economic context of revised macro-financial expectations (inflation, growth) and tighter financing conditions, the decline in trading volumes is the result of a combination of poor performance by de-SPAC

<sup>25</sup> A rule-based index, using equal-weighting methodology, of the 25 largest companies that went public in the United States following a merger with a SPAC. Promoted by Herculoid Group, created on April 10, 2020, it is based on 1000 on that date. It includes for example DraftKings, Virgin Galactic, QuantumScape, Lucid Group and SoFi.

<sup>26</sup> For example, as of 7 June 2022, the price of the credit company SoFi had fallen 72.7% from its peak of \$25.14 in January 2021; WeWork (shared offices) was down 46.0% (from -63.8% on 4 March 2022) from its peak on 13/10/21. BuzzFeed had dropped 77.1% since its listing on 01/12/21, Virgin Galactic 87.5% from its peak on 28/06/21.

<sup>27</sup> Audit Analytics quoted by "Blank-cheque companies restate accounts after US watchdog's warnings"; Financial Times; 24/05/22, reports that more than 500 firms have reclassified their shares and 600 have reissued financial statements of their warrants.

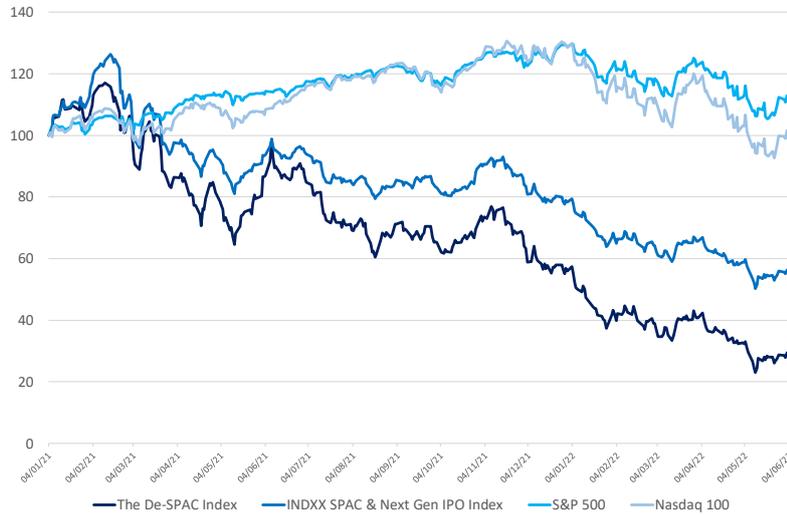
<sup>28</sup> See Audit Analytics quoted in La Tribune; "Sueurs froides à Wall Street : plus de 600 SPAC cherchent cible désespérément"; 4/06/22.

<sup>29</sup> Blankespoor E., B. Hendricks, G. Miller, D.J. Stockbridge (2022); *A Hard Look at SPAC Projections*; Forthc. in *Management Science* confirms the overly optimistic nature of SPAC earnings projections.

<sup>30</sup> *The multibillion-dollar risk driving big banks away from SPACs*; Bloomberg; 13/05/22.

companies, a sluggish<sup>31</sup> Private Investment in Public Equity (PIPE)<sup>32</sup> market, increased regulatory scrutiny, and growing investor distrust, which has significantly increased redemptions of SPAC shares. As a result, the prices of listed SPACs have also dropped significantly (Figure 40).

**Figure 40: Performance of SPAC IPOs and de-SPACs in the United States (base 100=01/01/2021)**



Source: Eikon

Methodology note: The INDXX SPAC & Next Gen IPO Index is a cap-weighted performance index of US-listed SPACs with more than 250 million dollars in market capitalisation traded at least 90% of the trading days over the past 3 months

From a more forward-looking perspective, the number of US-listed SPACs looking for a target to merge with is growing significantly (Figure 41).<sup>33</sup> Given their typical lifespan (usually 2 years), a significant proportion of them<sup>34</sup> will need to merge with a target company by the end of the first quarter of 2023 to avoid liquidation. At the current pace, and given their performance, it is likely that many of these SPAC mergers will not take place and that many SPACs will return their capital to their shareholders.<sup>35</sup> In this case, the main burden would be carried by the SPAC promoters, who would lose the USD 5-10 million in upfront fees and commissions required to set up a SPAC.

<sup>31</sup>PIPE transactions are often associated with de-SPAC transactions when the acquisition of a SPAC's target requires a higher amount of capital than that obtained when the SPAC was floated.

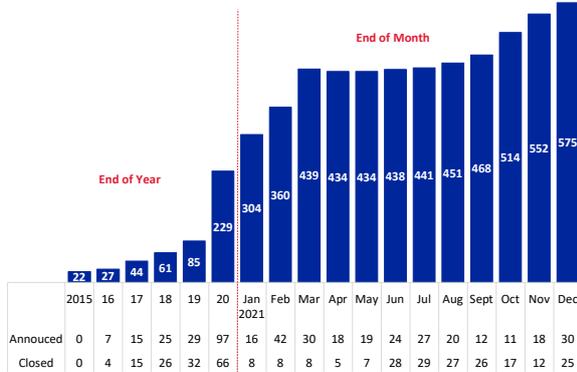
<sup>32</sup>PIPE transactions are often associated with de-SPAC transactions when the acquisition of a SPAC's target requires a higher amount of capital than that obtained when the SPAC was floated.

<sup>33</sup> According to the above-mentioned Tribune article of 4/06/22, it would be 606 by early June 2022 according to SPAC Research.

<sup>34</sup> 280 SPACs according to "Aux États-Unis, la bulle des SPAC se dégonfle"; Le Monde.

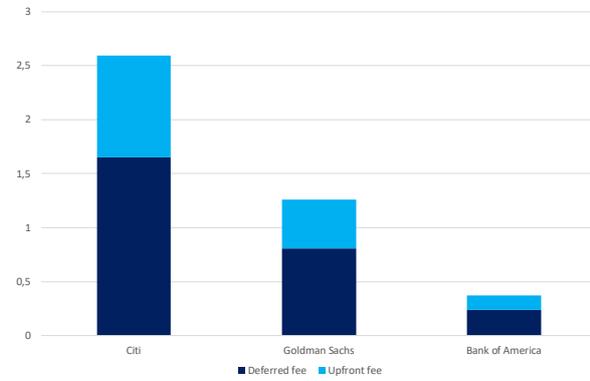
<sup>35</sup> There is still the possibility of a temporary extension of the life of the SPAC. However, this requires a favourable vote by the general meeting of shareholders and can be costly for the sponsor, as it often comes with an increase in the interest rate (currently at 2%) paid to investors to encourage them to remain in the SPAC.

**Figure 41: Number of SPACs looking for a target in the United States**



Source: Bain & Co

**Figure 42: Bank fees on SPAC transactions (as at 07/06/22)**



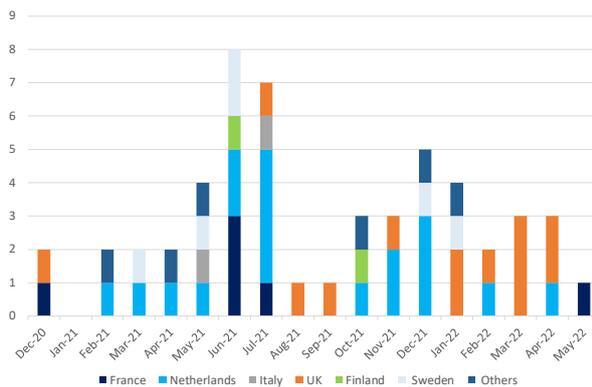
Source: SPACInsider; Bloomberg

In Europe, the market is still relatively young, since SPAC IPOs were still rare two years ago, which makes any systematic<sup>36</sup> analysis of the role of SPACs in European primary stock markets premature. However, despite the economic context, there have been some recent SPAC IPOs. For example, in Amsterdam, the British investment bank GP Bullhound listed a EUR 195 million SPAC GP Bullhound Acquisition in February 2022. In Paris the IPO of eureka, in the European healthcare sector, raised EUR 150 million in May 2022.

In the UK, the entry into force on 10 August 2021 of a new regime aimed at restoring the attractiveness of the City as a SPAC listing venue resulted, after a prolonged period of low activity, in the introduction of two SPACs in August and September 2021 and a further eight from January to April 2022. While Amsterdam was the most dynamic market place in terms of SPAC listings in 2021, in the first four months of 2022, it was overtaken by London. However, the amounts raised per IPO remain on average lower in the UK than in the other European markets - i.e. EUR 59.6 million per SPAC between January 2021 and April 2022 in London against EUR 230.4 million in Amsterdam, EUR 186.3 million in Paris and EUR 179.0 million in Milan.

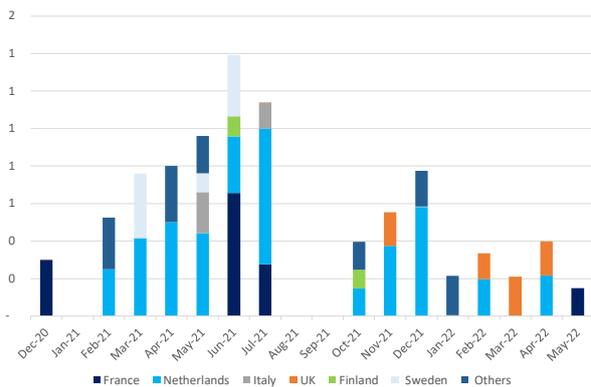
**SPAC IPOs in Western Europe by listing venue**

**Figure 43: Number of IPOs**



Source: Bloomberg; AMF calculations

**Figure 44: Amounts raised (in EUR billion)**

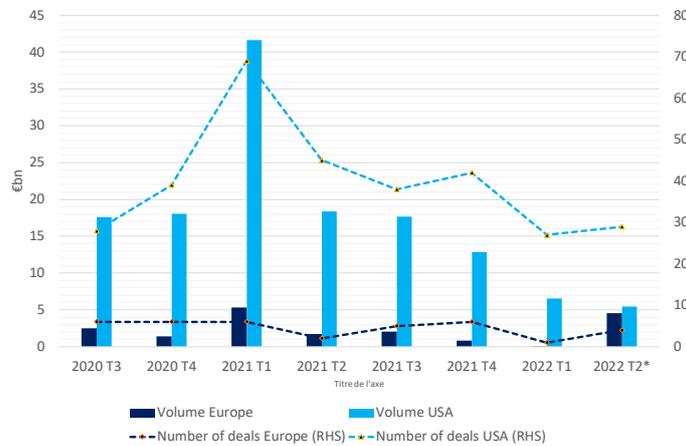


The number of SPAC mergers has started to rise, showing a relative dynamism compared with the US market (Figure 45). We can mention in particular the merger of DEE Tech with Deezer, but also the anticipated mergers of 2MX Organic with InVivo Retail (exclusive negotiations), or of Tikehau Capital's SPAC Pegasus with FL

<sup>36</sup>Along the lines of the study by Klausner M., M. Ohlrogge (2021) for the US.

Entertainment, an entertainment group (Banijay Group, Betclic Everest Group) which have signed a merger agreement.

**Figure 45: SPAC mergers: number and amounts invested by European and US SPACs (as at 07/06/22)**



Source: Bloomberg; AMF calculations

#### □ Market development is guided by regulatory changes

Since regulatory regimes remain very much rooted in the company law of each national jurisdiction,<sup>37</sup> the listing of SPACs remains a potential subject of regulatory competition. With this in mind, IOSCO has been working to coordinate market monitoring and regulatory approaches.<sup>38</sup> It appears that in recent years, most jurisdictions have amended or modified their listing or IPO regime to accommodate SPACs. While their regimes sometimes consist of a set of *ad hoc* rules, SPACs are not always explicitly defined and regulated. They fall under the existing listing regime, subject to more or less specific supervision. Their regime is thus often based on a set of disparate rules, which may also be applicable to IPOs and/or specifically to innovative sectors (e.g. technology), or to SMEs. The applicable regimes leave sponsors a fair amount of leeway when it comes to structuring SPACs.

There are major reforms underway in the US. As many retail investors are exposed to market performance, the regulatory debate has become politicised<sup>39</sup> and the SEC's Investor Advisory Committee has called for transparency obligations.<sup>40</sup> The academic debate also remains intense.<sup>41</sup> Against this backdrop, the SEC has taken a number of initiatives: it has cracked down on certain types of abuse<sup>42</sup> and undertaken to revise several aspects of the SPAC regime. After reclassifying the accounting treatment of warrants<sup>43</sup> issued by SPACs, it now requires<sup>44</sup> that SPAC

<sup>37</sup> The ESMA communiqué of 15/07/21 specifies the European disclosure requirements of the Prospectus Regulation applicable to issuers. The aim is to improve the comprehensibility and comparability of SPAC prospectuses, with a view to protecting investors.

<sup>38</sup> See [New IOSCO SPAC Network discusses regulatory issues raised by SPACs](#) ; 27/08/21 and [SPAC governance, transparency and pay packages need to improve, says IOSCO's Servais](#); 27/08/21.

<sup>39</sup> See, for example, [The SPAC Hack: How SPACs tilt the playing field and enrich Wall Street insiders](#); Office of Sen. E. Warren May 2022.

<sup>40</sup> "Recommendations of the Investor as Purchaser and Investor as Owner Subcommittees of the SEC Investor Advisory Committee regarding SPACs"; 09/09/21. The panel called for "further analysis of the actors at the different stages of SPACs, their remuneration, and their incentives" as a potential basis for additional recommendations.

<sup>41</sup> Rodrigues U., M. Stegemoller (2021), "SPACs: Insider IPOs", points to the illiquidity of SPACs and the lack of shareholder power, indicating insider domination of SPACs. Conversely, Gahng M., J. Ritter, D. Zhang (2022); SPACs point out that in order to make merger deals work, sponsors frequently give up a significant portion of their shares and warrants, often transferring them to investors as an incentive, thus shifting the SPAC structure towards a more sustainable form. Maupas P. L. Paugam (2021) present the literature on this subject.

<sup>42</sup> See press releases of 13/07/21: "SEC charges SPAC, sponsor, merger target, and CEOs for misleading disclosures ahead of proposed IBC (planned merger of Stable Road acq. company and space transportation company Momentus Inc.)", 29/07/21: "SEC charges founder of Nikola Corp. with fraud" and 27/10/21: "Post-SPAC music streaming reaches \$38.8 million settlement in ongoing fraud action".

<sup>43</sup> SEC, "Staff statement on accounting and reporting considerations for warrants issued by SPACs"; 12/04/21.

<sup>44</sup> "U.S. SEC cracks down a second time on SPAC equity accounting treatment" Reuters; 28/09/21.

equities be accounted for as mezzanine equity.<sup>45</sup> More recently, the SEC has proposed to amend the SPAC regime<sup>46</sup> to:

- improve transparency and provide additional protections for investors in SPAC IPOs and their merger transactions with target companies;
- reconsider the treatment of mergers involving shell companies and the requirements for their financial statements;
- clarify how projections are presented in registration documents to address concerns about their reliability; and
- clarify the conditions under which SPACs may be subject to the regulation of investment funds.

It should be noted here that the decision to strengthen the responsibility of intermediary banks in these deals has led a number of them to withdraw from this activity, despite the highly lucrative nature of their intermediation activity in this segment.<sup>47</sup>

There have been calls in Europe for SPACs to be more clearly reserved for professional investors and for regulatory developments similar to those in the United States to improve the transparency of sponsors and reduce their conflicts of interest. ESMA has taken up these concerns<sup>48</sup> by recalling the applicable provisions, which are mainly based on the requirements of the European MiFID and Prospectus Directives. Thus, MiFID rules apply to the product governance of shares and warrants issued by SPACs. Furthermore, given the complexity and risks involved, it is necessary to ensure that the investment is appropriate for all types of investor. ESMA retains the possibility to intervene (product intervention) and reiterates the scope of the information covered by the SPAC prospectus.<sup>49</sup> It has also called on the IFRS Interpretations Committee to clarify whether SPAC units should be accounted for as equity or liability<sup>50</sup> and stresses the importance of appropriate and uniform implementation of the texts. On this basis, ESMA recommends that competent authorities include information on the following in SPAC prospectuses:

- Future remuneration of sponsors and their possible role after the acquisition of the target company;
- Future involvement of sponsors and other related parties;
- Possible governance changes after the acquisition of the target company; and
- Details of possible scenarios if the sponsors are unable to find an acquisition target.

In this context, the AMF advocates<sup>51</sup> a view that balances the recognition of the benefits of SPAC financing, which establishes a link with private equity and may be useful for certain types of companies, with the adaptation of regulation and supervision to the risks actually observed. This leads, in particular, to limiting market access to retail investors and ensuring that the prospectus is appropriate. Based on this, the developments in the market tend to give credence to its ability to reconcile the views of the various stakeholders. However, there is a need for risk monitoring, particularly with regard to market valuations. It will still be important to assess the question of whether there is a need to revise the requirements for IPOs or to strengthen those covering SPACs. With pressure on US SPACs that are seeking to acquire targets, it will also be important to monitor the cross-border operations of these entities in Europe.

<sup>45</sup> On the Nasdaq, if their capital falls below the required level, SPACs are pushed into the international market segment.

<sup>46</sup> *SEC Proposes Rules to Enhance Disclosure and Investor Protection Relating to Special Purpose Acquisition Companies, Shell Companies, and Projections*; 30/03/22.

<sup>47</sup> In particular, Goldman Sachs and Bank of America have declared that they are withdrawing from this market. Other banks such as Credit Suisse and Citigroup have expressed their prudence in this area without discontinuing all activity. Investment bank fees are estimated at around 5% of transactions, two thirds of which are realised at the time of the merger. See for example, *Goldman Sachs pauses work on new SPACs after SEC takes tougher stance*; Financial Times; 9/05/22; *The multibillion-dollar risk driving big banks away from SPACs*; Bloomberg; 13/05/22; *L'Agefi*; *Les banques d'investissement lèvent le pied sur les SPAC*; 18/04/22.

<sup>48</sup> ESMA public statement: "[SPACs: Prospectus disclosure and investor protection considerations](#)"; 15/07/21.

<sup>49</sup> This includes: risk factors; the issuer's strategy and objectives; escrow accounts and reinvestment of proceeds; relevant experience and principal activities of the administrative, management and supervisory bodies; conflicts of interest; shares, warrants and shareholder rights; major shareholders; related party transactions; material interests; proceeds of the offer; the intention of certain persons to subscribe to the offer; and the offer price.

<sup>50</sup> *ESMA Letter to IFRS IC on classification of SPAC shares as equity or liability (IAS 32)*; 26/10/21.

<sup>51</sup> See [Speech by B. de Juvigny](#); AMF Secretary General, at the IOSCO SPAC Network Stakeholder Meeting; 16/12/21.

#### 1.2.4 The Ukrainian crisis has put sustainable finance back on the agenda

The war in Ukraine has underlined the need for Europe to ensure its energy independence without losing sight of its objective of achieving carbon neutrality by 2050, which implies in particular increasing investment in alternative energies to fossil fuels and in infrastructure. Proposed in March 2022, the REPowerEU plan intends to contribute directly to these objectives, in conjunction with existing tools such as the Recovery and Resilience Facility (RRF), created in 2021 to support post-Covid economic recovery. Given the massive investments required and the forthcoming tightening of fiscal constraints from 2024 onwards, achieving these objectives relies heavily on redirecting private capital flows towards financing sustainable projects. The identification of such projects presupposes the disclosure of good-quality non-financial information by the various economic players. These initiatives are taking place at a time when regulatory changes that will play a structural role are being implemented or finalised.

First and foremost, the improvement of non-financial transparency by stakeholders calls for the definition of standardised and audited information, which is at the heart of the Corporate Sustainability Reporting Directive (CSRD), but which is not expected to come into force before 2025. In the meantime, non-financial companies under the CSRD, like financial companies under the Sustainable Finance Disclosure Regulation (SFDR), will have to publish ratios aligning their activities with the criteria of the taxonomy regulation (turnover, operating and capital expenditure, etc.), based on data that is not yet standardised. This is the case for data on greenhouse gas emissions from suppliers and customers, which are not standardised or systematically disclosed. Thus, integrating them into indicators, measuring the carbon footprint for example - which reports emissions to turnover -, is likely to lead to unclear results (problems of accuracy of estimates) and very variable results depending on the company in question (problems of comparability). More generally, the decarbonisation of portfolios based solely on the carbon footprint does not make it possible to guarantee the financing of the transition to a low-carbon economy. Indeed, this strategy may lead to underweighting sectors that are essential for the energy transition (energy sectors, utilities in particular) and, paradoxically, to reducing the share of the portfolio's activity aligned with the taxonomy (companies in the utilities sector are among the most emissive but also have one of the highest green revenue share). Lastly, a decrease in the carbon footprint may not reflect a decrease in carbon emissions but rather an increase in the turnover of the companies concerned.<sup>52</sup>

The lack of standardisation and normalisation of non-financial data can only harm the quality and reliability of the data, even though the increase in mandatory regulatory reporting is helping to increase their dissemination through data providers and other associated services (ratings, advice, indices, etc.). In this regard, it is worth recalling the AMF's position in favour of the introduction of an appropriate regulatory framework.<sup>53</sup>

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<sup>52</sup> Le Guenegal et Roncalli (2022): Portfolio Construction with Climate Risk Measures and Le Guenegal et alii (2022): "Net Zero Carbon Metrics".

<sup>53</sup> See the AMF's response to the European Commission's public consultation on ESG ratings (2 June 2022) and AMF 2021 Outlook (pp. 28-29).





## **MARKET ORGANISATION AND INTERMEDIATION**

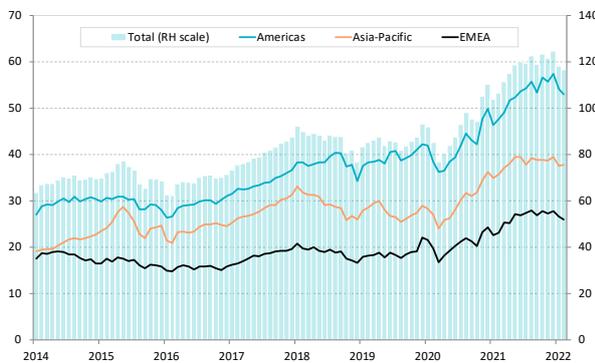
## 2.1 EQUITY MARKETS

### 2.1.1. The market capitalisations set new records in 2021

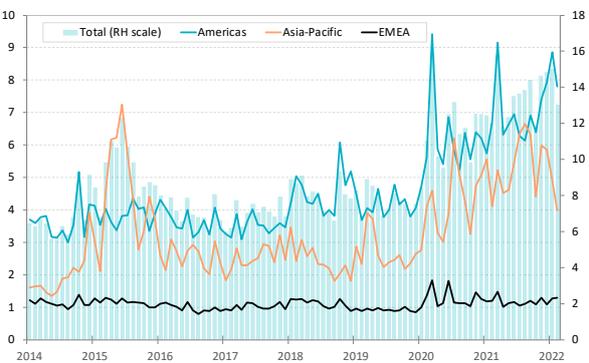
Global market capitalisation continued to increase in 2021, ending the year on a new record of \$124,510 billion, up 13% from the end of 2020.

This trend was common to all regions and is of the same magnitude for the Europe, Middle East and Africa region and the Americas region (around 15%). Only Asia-Pacific markets were slowed by the lockdown measures due to the pandemic crisis, leading to their contraction and then stagnation as of July 2021. In the first two months of 2022, capitalisation has declined in all three regions and stands at around \$88,000 billion, representing a 6% contraction.

**Figure 46: Market capitalisations**  
(in trillions of dollars)



**Figure 47: Equity trading volumes**  
(in trillions of dollars)



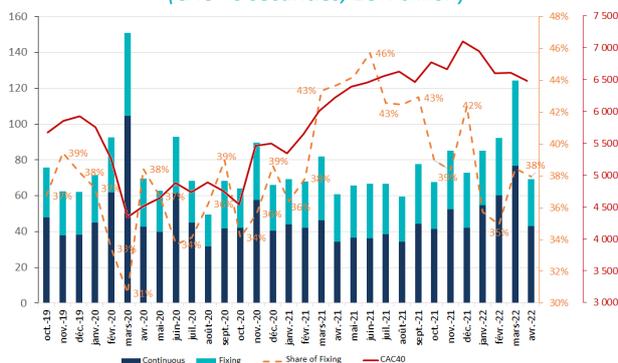
Source: WFE, AMF

Globally, equity trading volumes remained very high, at \$161,628 billion, 16% higher than in 2020. This strong growth mainly benefited the Asia-Pacific and Americas regions. In Europe, volumes have tended to stagnate following the peaks observed in 2020.

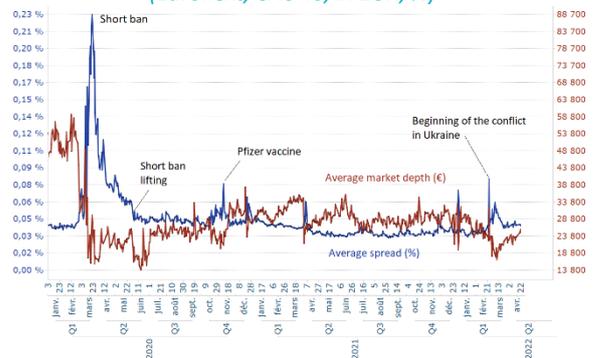
These volumes also experienced a contraction at the start of 2022 related to the war in Ukraine.

### 2.1.2. Market conditions deteriorated at the start of 2022

**Figure 48: Trading volumes on Euronext Paris**  
(CAC 40 securities, EUR billion)



**Figure 49: Change in equity market liquidity at the best limit**  
(Euronext, CAC 40, in EUR, %)



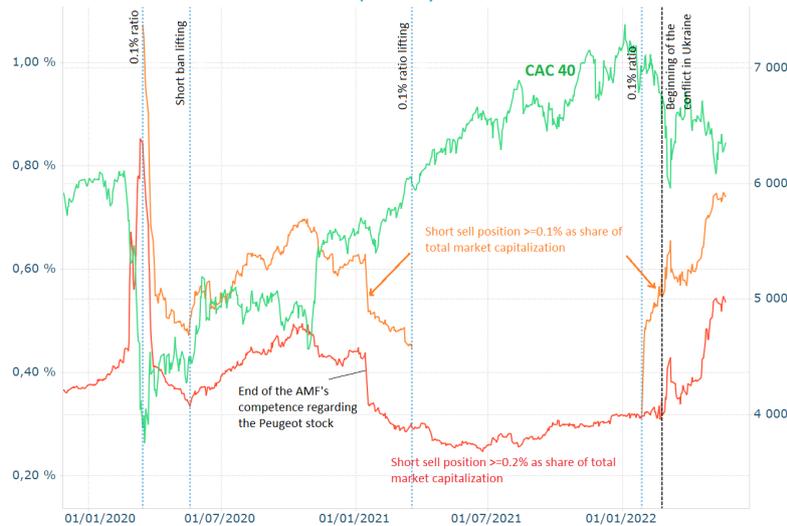
Source: Refinitiv, AMF, transaction reporting.

Trading volumes in CAC 40 securities remained fairly stable throughout 2021, representing a total of around €842 billion. The rise of the fixing auction continued in 2021, accounting for 41.5% of trading volumes, with a record level of 46% reached at mid-2021.

Following a drastic deterioration in 2020 due to volatility, CAC40 stock liquidity likewise remained relatively stable in 2021, as bid-ask spreads narrowed, returning to a level of 0.03%. The liquidity available at the best limits (depth), however, did not regain its pre-crisis levels, and ranged between €20,000 and €30,000 in 2021.

The Ukraine war led to a deterioration in liquidity conditions, with a spread peaking at 0.08% on 24 February and a depth which bottomed at €16,800. However, the levels of deterioration remain far less than those seen during the Covid crisis and seem to have recovered recently.

**Figure 50: Change in disclosed net short positions in French equities**  
(in EUR)



Source: Bloomberg, AMF, disclosure of net short positions.

NB: On 20 May 2022, the short positions disclosed to the AMF (exceeding 0.20%) represented about 0.55% of the total market capitalisation (red curve). The orange curve represents the cumulative short positions disclosed to the AMF as a proportion of the total market capitalisation when the threshold for disclosure was lowered temporarily to 0.10% (from 16 March 2020 to 19 March 2021) and then permanently since 31 January 2022.

The improvement in market conditions in 2021 was conducive to a fall in short positions disclosed to the AMF as a proportion of the total market capitalisation. This ratio remained relatively stable, at around 0.3%, until the stress caused by the war in Ukraine, when it gradually increased to 0.54% of the total capitalisation at mid-May 2022. However, once again, this level remains far lower than the peak of 0.85% reached in March 2020.<sup>54</sup> Moreover, although certain stocks, notably those most exposed to the economic sanctions imposed on Russia, were apparently subject to more short selling than usual. However, the levels of this short selling are not particularly worrying.

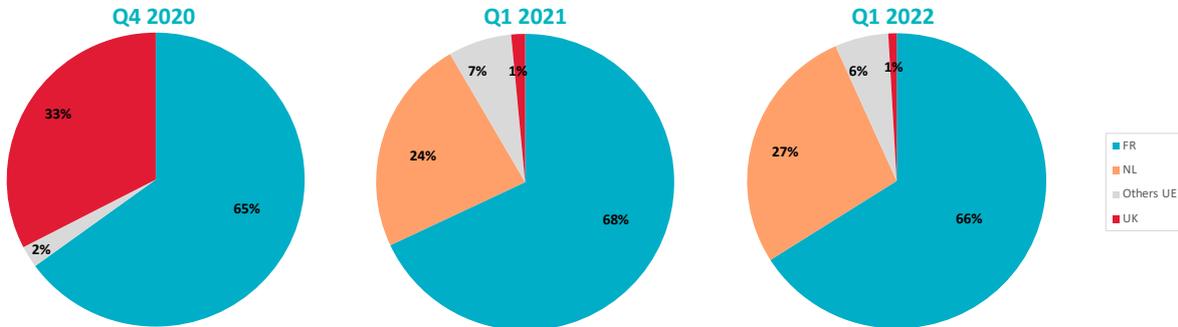
### 2.1.3. A European landscape significantly and enduringly impacted by Brexit

The Share Trading Obligation (STO) means the obligation to trade European equities on a regulated market, a multilateral trading facility or via a systematic internaliser. Due to the lack of an equivalence decision for UK trading venues, at the start of 2021 the entry into force of Brexit had caused a massive transfer of trading volumes from UK venues to European venues, located mainly in the Netherlands, and to a lesser extent in France. This trend strengthened over the rest of the year in favour of Dutch trading venues which accounted for a total market share of 27% in the second quarter of 2022, versus 2% in the fourth quarter of 2020.

The Cboe Europe venue, in particular, profited from these transfers. At the end of April 2022, it accounted for a total 22.5% market share of trading in French securities (versus 16.4% in January 2021), whereas Euronext saw its market share decrease from 66% in January 2021 to 63% in April 2022.

<sup>54</sup> The lowering of the threshold for disclosure of net short positions to the authorities to 0.1%, which had ended in the first quarter of 2021, was restored, moreover, from 31 January 2022 in order to increase the visibility of the competent authorities. Thus, positions exceeding this threshold represented 0.74% at mid-2022 (versus 1.07% at mid-March 2020).

**Figure 51: Breakdown of venues by country**  
*On French equities, multilateral trading (lit, dark and periodic auctions order books)*

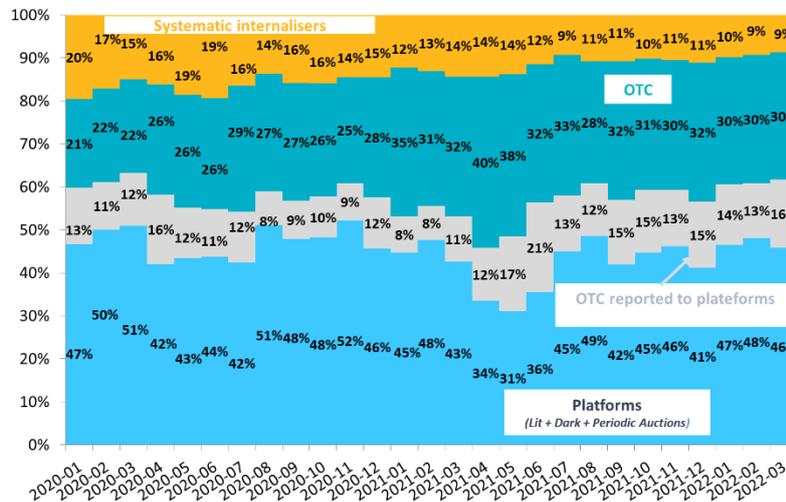


Source: Refinitiv MSR, AMF.

Following the United Kingdom's exit from the European Union, the equity market structure by major category of execution venues shows a marked increase in OTC activity at the expense of that on trading venues. The share of OTC trading increased from 25% to 30% between 2020 and 2021. This trend, which concerns the non-price-forming OTC market in particular, seems to be largely accounted for by the lengthening of intermediation chains following the creation of new EU entities, due to intra-group transfers between UK entities and EU entities.

There is therefore no real impact of Brexit on the market structure according to the execution venue, and in particular no deterioration in the process of price formation and transparency.

**Figure 52: Change in market share by execution venue**  
*(French market, market share in amounts traded)*



Source: Refinitiv, securities within French jurisdiction

### 2.1.4. Extreme spells of intraday volatility

In the volatile market environment of early 2022, certain spells of extreme volatility were observed. That is why, it is important to specifically analyse certain factors independent of the flow of fundamental information that could explain this type of phenomenon. The first analysis concerns a flash crash on the European equity markets, raising questions concerning the optimality of the risk management mechanisms at work. On a more exploratory level, the second analysis concerns the potential sources of equity market fluctuations resulting from the concentration of certain transactions in derivative markets.

#### □ The flash crash of 2 May 2022 on European markets

On Monday 2 May 2022, when the London Stock Exchange was closed for the Spring Bank Holiday, European listed equity markets opened in negative territory (-0.99% for the CAC 40) following the US market decline of the previous Friday. From 9.55 am, the losses on European markets suddenly steepened, marking the start of a flash crash. Thus, shortly after 10.00 am, the CAC 40 index, standing 0.23% below its opening level, fell abruptly, by as much as -2.49% relative to the opening level. It then recouped most of its losses and stood at -0.55% (relative to the opening level) at 10.11 am, nearly 15 min. after the start of the flash crash. In the end all of the European markets were impacted, and the magnitude of the price variations detected on the main European indices ranged from 1.5% to 7.4% (Table 1), before most of these declines were corrected. The sharpest declines were noted for the Nasdaq OMX indices OMXH 25 (Finland; -7.42%) and OMXS 30 (Sweden; -7.02%).<sup>55</sup> The share prices of 52 stocks in the SBF 120 lost 7.2% on average. The other stocks of the SBF 120 index were also impacted indirectly due to arbitrage, but less strikingly (-2.8% on average). Moreover, the CAC 40 Future fell 1.6% (daily low on 2 May, variation relative to the opening price) as a result of arbitraging by high-frequency traders between the futures contract and the stocks of the underlying index.

Citigroup Global Markets Europe AG was immediately identified (before the end of the flash crash) by traders and market supervisors as being the originator of these price fluctuations. Indeed, the event occurred following an operating error, of the "fat finger"<sup>56</sup> type, by one of the bank's traders in London: initiating the sale of a basket of European equities (*portfolio trade*), he set the quantity to be sold in million lots instead of specifying an amount of USD, generating a sharp drop in prices and losses in millions of dollars.

Figure 53: European indices on 2 May 2022



Source: AMF.

Table 1: European index declines during the flash crash

Index	Country/Region	Operator	Variation at opening	Variation following flash crash (vs opening price on 02/05/2022)	Variation at close
OMXH25	Finland	Nasdaq OMX	-0.72%	<b>-7.42%</b>	-1.58%
OMXS30	Sweden	Nasdaq OMX	-0.51%	<b>-7.02%</b>	-1.87%
OMXC20	Denmark	Nasdaq OMX	-0.48%	<b>-5.76%</b>	-1.58%
OBX	Norway	Euronext	-0.01%	<b>-5.01%</b>	-1.60%
AEX	Netherlands	Euronext	-1.19%	<b>-3.05%</b>	-2.33%
MIB	Italy	Euronext	-0.86%	<b>-3.00%</b>	-1.63%
STOXX 600	Europe	Pan-European operator	-0.47%	<b>-2.50%</b>	-1.46%
CAC 40	France	Euronext	-0.99%	<b>-2.49%</b>	-1.66%
IBEX	Spain	SIX	-0.79%	<b>-1.96%</b>	-1.70%
SMI	Switzerland	SIX	-0.39%	<b>-1.80%</b>	-1.29%
DAX	Germany	Deutsche Börse	-0.72%	<b>-0.56%</b>	-1.13%

Source: Refinitiv; AMF.

The dramatic fall in prices triggered a series of circuit breakers on all of the trading venues in Europe. On the Euronext markets, the trading suspension mechanisms worked as expected: For most of the suspended securities, the resumption of trading took place at prices on a sharp rebound, followed by rises, despite the continuation of

<sup>55</sup> Relative to opening prices. The losses of 8.08% and 8.13% sometimes quoted by certain media are relative to the previous close.

<sup>56</sup> In market jargon, a "fat finger" refers to a data entry error concerning an order. It is commonly characterised by an amount of orders concerned which magnifies the trader's intended entry.

Citigroup's sales. Only a few securities fell once again (briefly) when trading resumed, before starting their rebound. The suspensions of trading therefore seem to have enabled other market participants to analyse the situation and contribute more liquidity.

The differences in the impact of executions across stock markets seem to largely reflect the specific features of their trading suspension mechanisms.<sup>57</sup> In Paris, 19 suspensions were triggered on 15 SBF 120 stocks, including 10 in the CAC 40, all concerned by the execution of Citigroup's orders. These suspensions were triggered when prices reached so-called static suspension thresholds, situated 8% above or below the opening price for CAC 40 stocks and at +/-10% for other stocks. The suspension periods lasted between 3 and 18 minutes (median: 5 minutes). On the most severely impacted Nasdaq OMX markets (Finland, Sweden, Denmark), for example, the trading suspension mechanisms operate in a similar way to Euronext's. However, more suspensions were recorded (28, i.e. 44% of the 64 Swedish stocks of the EURO STOXX 600 index; 10, i.e. 56% of the 18 Finnish stocks) despite wider (static) thresholds (10% for blue chips; 15% for other equities) potentially due to the fact that Citigroup took time to realise its mistake and continued selling the securities in question. And yet, the shorter trading suspension periods, i.e. one minute, led to repeated suspensions and more significant declines in share prices. It would seem that a longer suspension period would allow members to better analyse the situation and avoid the ceaseless repetition of suspensions, which impair trust in an orderly resumption of trading.

Furthermore, this event raises the question of the control of trading transactions by ISPs,<sup>58</sup> which are subject to specific requirements,<sup>59</sup> including that of monitoring and, if necessary, suspending orders received from a client before sending them to the market. Compliance with these requirements lies within the competence of the authority of the jurisdiction in which the entity executing the orders is based. This incident appears to have cost close to 50 million dollars to the group according to Bloomberg.

#### □ 24 January 2022, a spell of volatility in US equity markets

A spell of high intraday volatility in US equity markets on 24 January 2022 was probably due to an acceleration of option hedge transactions to cover the risks of autocalls.

##### ➤ *An intraday variation in the S&P 500 and Nasdaq 100 indices unprecedented except in periods of crisis*

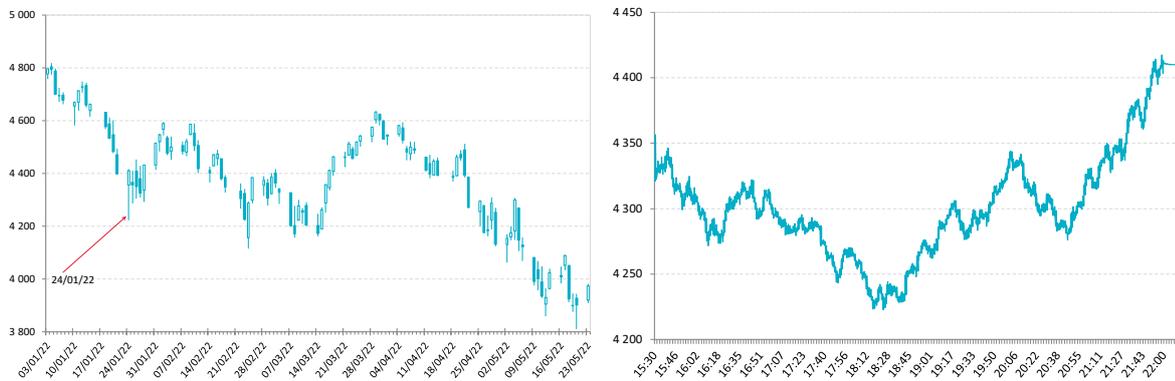
In the days following Thursday 20 January 2022, share prices of technology stocks posted a significant decline in the United States. Following this, a historic peak in the intraday volatility of share prices was noted on Monday 24 January 2022, when the VIX surged from 28 at the open to 38 at midday. In this case the peak was characterised by a 4% fall in the S&P 500 index (5% for the Nasdaq 100) on the morning of the 24<sup>th</sup>, which was more than corrected in the afternoon of the same day, with the S&P 500 index ending the trading session at +0.33% and the Nasdaq 100 at +0.63%. For the Nasdaq 100 index, for example, this level of intraday volatility was the highest since 2008 and, beyond that, in more than 20 years. The trading volumes for equities executed on the stock exchange also reached an unprecedented peak level of sales in the morning, and of purchases in the afternoon of that day – the periods of severe financial crisis (2000, 2008) set aside.

<sup>57</sup> Most of the securities traded by Citigroup were listed on Euronext.

<sup>58</sup> NB: Reuters; Citi to overhaul London trading team linked to 'flash crash'; 12/05/22.

<sup>59</sup> Cf. the provisions of Article 21 of [Delegated Regulation \(EU\) 2017/589 of 19/07/16](#) and of [RTS 6](#) supplementing the MiFID directive with technical standards specifying the organisational requirements applicable to investment firms using algorithmic trading.

Figure 54: Daily prices of the S&P 500 index: opening/maximum/minimum/closing



Source: Refinitiv; AMF.

➤ An interpretation focused on the impact of the unwinding and taking of positions in options

Given the lack of major fundamental information on that day,<sup>60</sup> the market participants propose several possible interpretations analysing the possibility of this phenomenon recurring.<sup>61</sup> The high level of interactions between option markets and underlying equities is nevertheless particularly striking in this respect. It seems, indeed, that in a pro-cyclical movement, on the morning of 24 January, traders competed to sell their purchase options (*calls*), and even buy sell options (*puts*), while the dealers acting as their counterparty likewise hedged their transactions by selling the underlying asset on the cash market, against a backdrop of weak market liquidity amplifying the load of these transactions on prices.

Here, the assumption is made that the option portfolios intended by their promoters to hedge against the risks of autocalls played a significant role in this episode. Autocalls are structured products which, in the United States, broadly refer to technology stocks, often single stocks. Promoted by banks, their market has recently grown strongly in the United States – notably thanks to their distribution to retail investors (cf. Chapter 4). The structure of autocalls is characterised by the existence of deactivating barriers, i.e. levels below which the autocall loses any protection of the capital. Dynamic management of risk hedging for autocalls therefore entails reducing the hedge when the price of the underlying asset approaches these thresholds, and cancelling it when they are crossed on the downside. We may specify here that non-linear effects amplify the phenomenon. The holding of option portfolios is managed actively according to its delta - i.e. its sensitivity to fluctuations in the price of the underlying asset. In mid-January, the delta of option portfolios stood at \$120 billion. After falling gradually, on 24 January it reached a trough of -\$2 billion. Meanwhile, the Vanna – which measures the sensitivity of delta to volatility - also became negative, in fact reaching its lowest level since 2017. In such cases, a rise in implied volatility reduces the delta of the option portfolio and leads to hedging adjustments.

Technical factors may also have been involved, such as the expiry of options on 20 January, which probably resulted in certain transactions by dealers on the following Monday, to finally unwind the hedges on the underlying markets.

However, it is still hard to explain the reversal of transaction flows and the massive purchases of the underlying asset in the afternoon of the 24<sup>th</sup>. A fundamental explanation by the transactions performed by contrarian traders seems insufficient. In any case, a few large transactions apparently consumed the available liquidity and contributed to the market turnaround.

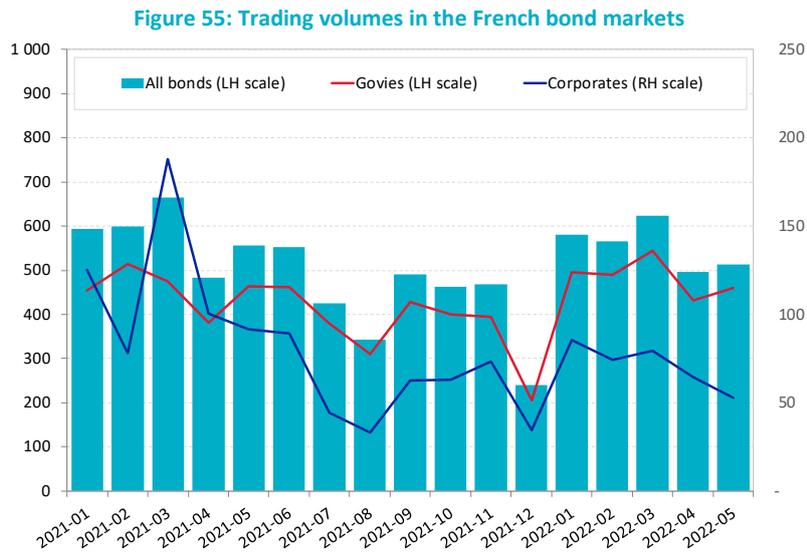
Lastly, other factors apparently amplified the market fluctuations, such as the implementation of systematic "trend follower" algorithmic strategies, or even pro-cyclical transaction flows from retail investors. Other types of transactions in futures markets, e.g. related to hedging by the counterparties of ETF swaps, could also partly explain the observed events.

<sup>60</sup> Announcements by technology stocks (e.g. Peloton and Netflix) had caused a fall in the prices of those stocks before this date, on 20 January.  
<sup>61</sup> Vanna and the Big Put: Unusual suspects in a market mystery; Risk.net; 22/02/14.

## 2.2 BOND MARKETS

### 2.2.1 A consolidating liquidity in bond markets

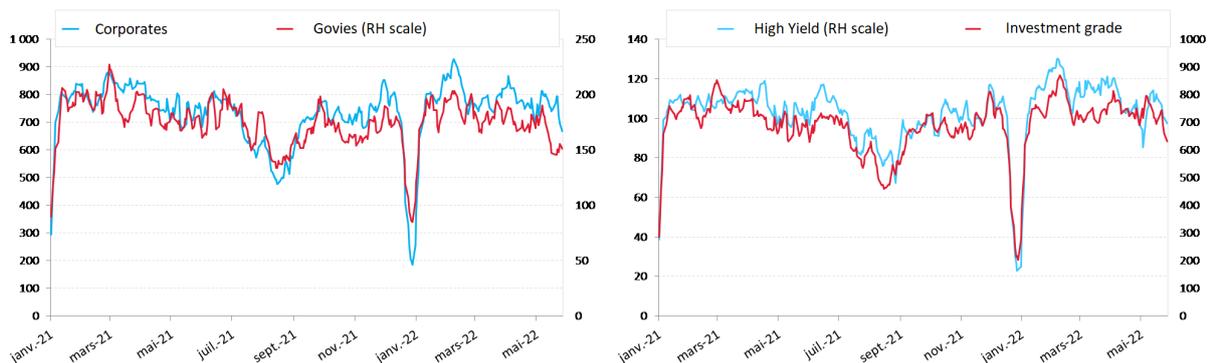
Bond market liquidity is assessed by analysing three indicators: the traded volume, the number of different bonds traded each day and the interquartile range of transaction prices observed over a day, which provides a measure of the dispersion of prices at which most liquid bonds were traded.



Source : AMF, transactions reporting

Monthly volumes traded in the French bond market have stabilized at between €500 and 600 billion in 2021. There was a significant drop in volumes in December, with only €250 billion traded. This slowdown in activity at the end of the year is a structural and momentary phenomenon, as the beginning of 2022 has brought trading volumes back to their early 2021 levels.

**Figure 56: Number of different bonds traded within the day**  
(10 days moving average)

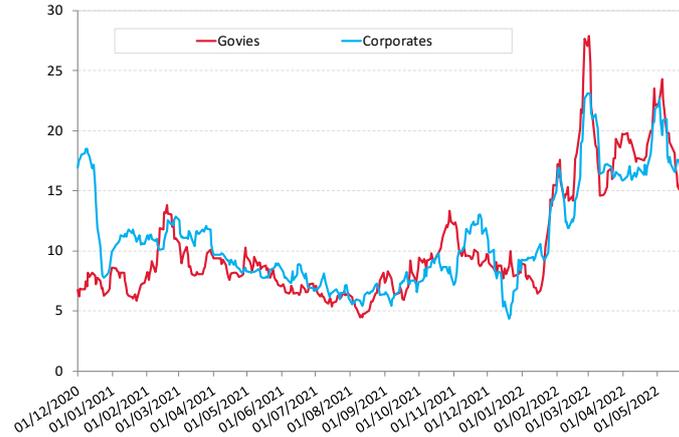


Source : AMF, transactions reporting

Excluding the declines traditionally observed in the summer and at the end of the year, the number of different bonds actually traded each day was also relatively stable during 2021, at around 1,000 securities, 80% of which were corporate bonds and 20% sovereign bonds. The most traded bonds are investment grade, representing more than 85% of French bonds traded.

The interquartile range of prices is a direct measure of the cost of consuming liquidity. Indeed, unlike a measure that would consider the spreads posted by market makers, this indicator is based on effective prices<sup>62</sup>.

**Figure 57: Median interquartile range of transaction prices of the 100 most traded stocks**  
(in basis point – 10-days moving-median)



Source : AMF, Transactions reporting

The analysis of this indicator reveals that bond transactions exhibited relatively strong liquidity in 2021. Sovereign and corporate bonds show similar levels of bid-ask spreads in 2021, between 7 and 12 bp (excluding summer and year-end). Nevertheless, the tensions that arose from February 2022 led to a sharp increase in the indicator to 25 bp, reflecting the deterioration in liquidity conditions in these markets since the beginning of the conflict. However, this deterioration remains much lower than that observed in March 2020.

### 2.2.2 The European repo market, new tensions observed at the end of 2021

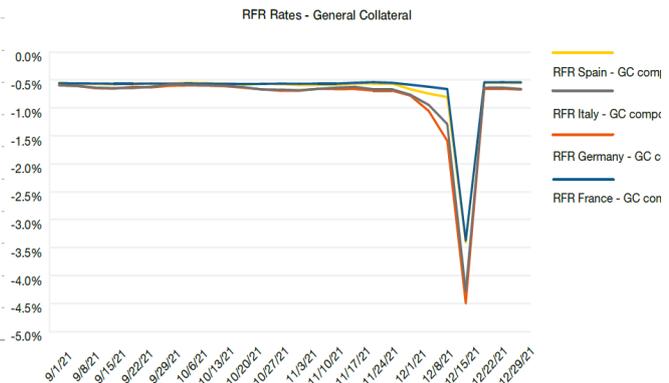
In a post-Covid year, the European repo market was particularly dynamic with total outstanding reaching a record level of €9,197 billion, up 11% on 2020.

**Figure 58: European repo market**  
(in billions of euros)



Source : ICMA, European Repo market Survey, Repo Rate Funds

**Figure 59: Repo fund rates in core European countries**  
(General Collateral)



Source : ICMA, European Repo market 2021 year-end, Repo Rate Funds

<sup>62</sup> See “Study of liquidity in French bond markets” 2015, AMF, Risk and trends, and “Measuring liquidity in the corporate bond market” 2019, AMF, Risk and trends.

According to the ICMA, market conditions remained relatively stable in 2021 with, nevertheless, a brief but strong tension observed at the end of the year. Indeed, market participants feared a scarcity of collateral supply, especially for non-core bonds. Italian and Spanish repo rates on general collateral fell to -4.19% and -3.41% respectively. Tensions have also spread to core countries, with the German rate falling to -4.5% and the French rate to -4.28% on December 15 2022, whereas, at the beginning of the month, these rates, both core and non-core, were all around -0.5%. The price of European collateral has never been so expensive since the peak at the end of 2016<sup>63</sup>. The particularity of this event lies in its timing and level. Indeed, it is common to see tensions on the repo market at the end of the year when banks, asset managers and companies are meeting their regulatory constraints. However, in 2021, the volatility seems to have crystallized in mid-December instead of the very last days of the year, due to monetary policy announcements. Indeed, it seems that players anticipated increasing rates, following the Fed’s announcements, and closed their collateral requirements a little early, leading to a significant spike in lending rates on December 15. Moreover, ICMA reports that participants in this market were very active from mid-October onwards and that, as of December 15, most trading activity had already been done for the year 2022. Thus, after this episode, repo rates quickly returned to their pre-peak level around -0.5%.

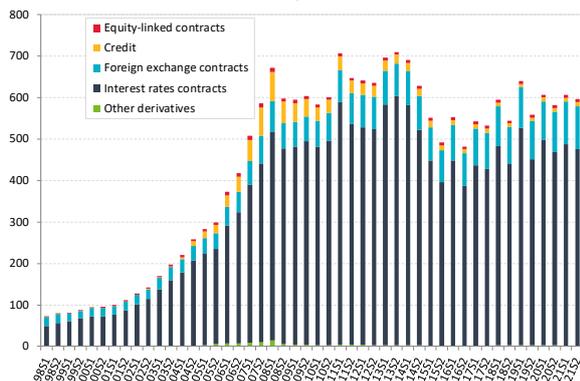
## 2.3 DERIVATIVES MARKETS

### 2.3.1 Amounts at risk which regain their 2019 levels

The total gross notional amounts of OTC derivatives worldwide remained relatively stable, at 598.416 trillion dollars at the end of 2021. Interest rate derivative contracts are still predominant among the notional amounts, and still represent 79% of the total, at \$475.271 trillion.<sup>64</sup>

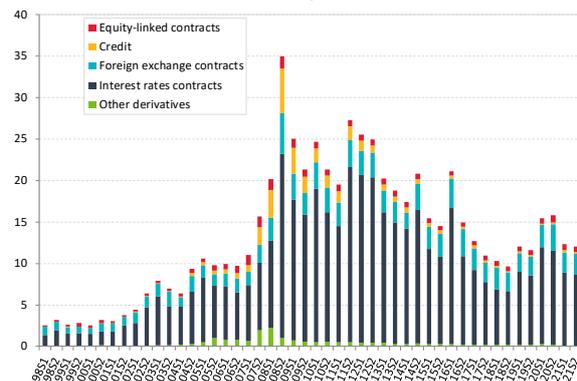
The gross market values, i.e. the sum total of the net asset values of these contracts, make it possible to measure the amounts at risk. They declined sharply in 2021, returning to their 2019 level, and stood at \$12.439 trillion at end-2021 versus \$15.783 trillion at end-2020. This return to the 2019 levels can be explained mainly by a reduction in the value of interest-rate and foreign-exchange derivatives. The strengthening US dollar may partly explain this contraction.

Figure 60: OTC derivatives - global notional amount (in trillions of dollars)



Source: BIS

Figure 61: Amounts in gross market value (in trillions of dollars)



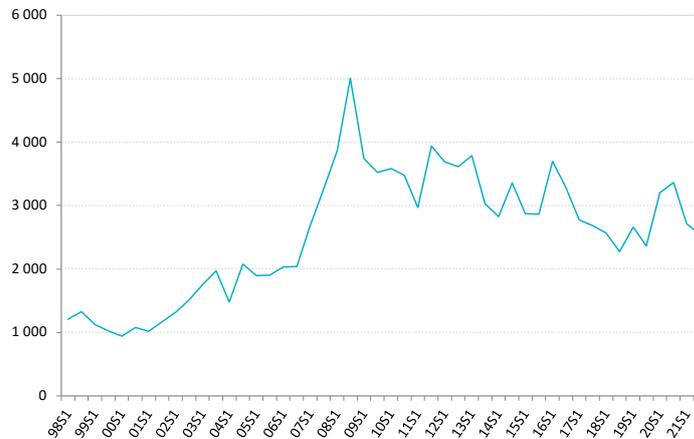
Source: BIS

Gross credit exposure – which adjusts gross market values for cross-exposures between financial institutions, thus representing an aggregate counterparty risk indicator for derivative positions that is not sensitive to compression – fell sharply and likewise returned to its 2019 level. It stood at \$2.500 trillion at end-2021, representing 20% of gross market values.

<sup>63</sup> 2017 AMF Markets and Risk Outlook.

<sup>64</sup> The growth in total notional amounts has displayed a seasonality effect since 2016, with a recurring decline between the first and second halves of the year. This seasonality effect could be accounted for by a reduction in positions related to a desire to manage end-of-year regulatory constraints.

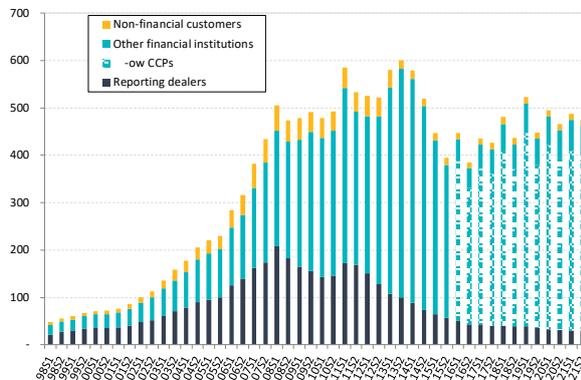
**Figure 62: Gross credit exposure**  
(in billions of dollars)



Source: BIS

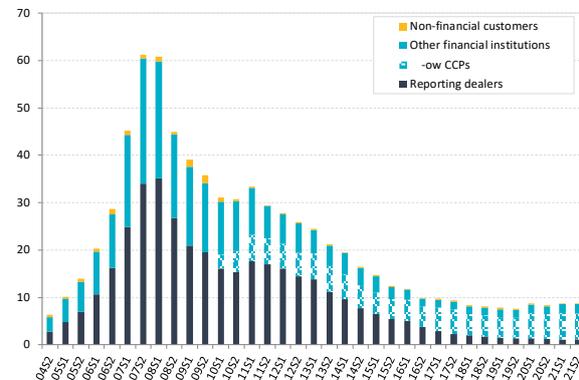
The value of interest rate derivatives cleared remained relatively stable in 2021, continuing to account for 78% of the total value of this asset class, i.e. \$370.157 trillion. The situation is similar for credit derivatives, where 62% (\$5.463 trillion) of the total notional amount was cleared in 2021.

**Figure 63: Global (notional) interest-rate derivative outstandings by type of counterparty**  
(in trillions of dollars)



Source: BIS

**Figure 64: Global (notional) credit default swap outstandings by type of counterparty**  
(in trillions of dollars)



Source: BIS

In the end, 2021 wiped out the rise in risk indicators relating to OTC operations which had been seen in 2020.

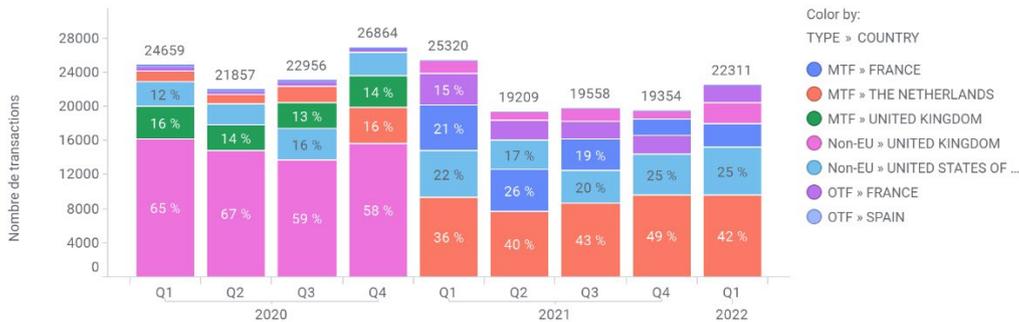
### 2.3.2 US SEFs strengthen their post-Brexit position in Europe

Initial research carried out in early 2021<sup>65</sup> had shown a migration of the volumes traded in derivatives subject to the Derivative Trading Obligation (DTO) to Dutch trading venues, but especially to US venues (*Swap Execution Facility – SEF*), which benefit from an equivalence both in Europe and in the United Kingdom.

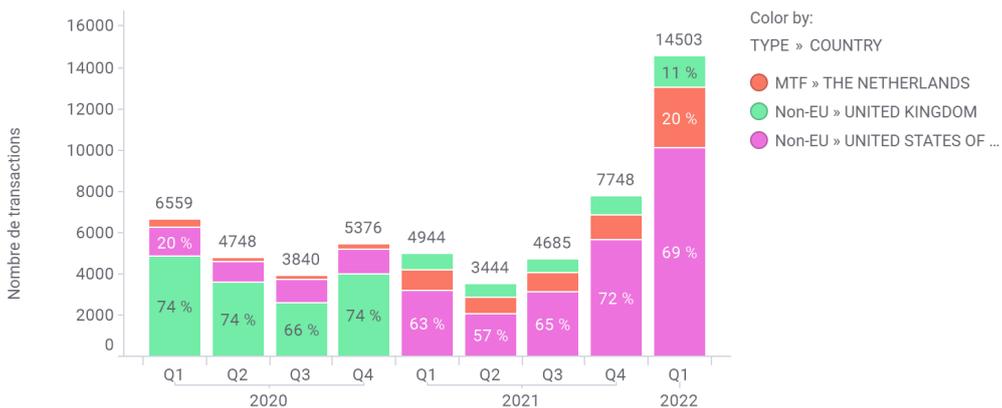
<sup>65</sup> 2021 AMF Markets and Risk Outlook.

**Figure 65: Activity of French ISPs on fixed- versus variable-rate interest rate swaps in EUR, GBP or USD and on index CDS (number of transactions)**

**Fixed-floating rate swaps**



**Credit derivatives**



Source: AMF, transaction reporting

Analysis of the activity of French investment service providers on interest rate derivatives swapping a fixed rate against a floating rate in the three currencies, EUR, GBP and USD, or euro-denominated indexed credit derivatives in 2021, shows that these movements strengthened throughout the year.

In detail:

- in the case of interest rate derivatives, we note that the transfer of a majority of trading to European trading venues benefited Dutch venues, whose market share is 42%, and outside Europe US SEFs which account for a total 25% market share;
- in the case of credit derivatives, the great majority of transfers took place to SEFs which further consolidated their position, with 69% market share.

Initially, moreover, it seemed that the transfer to US venues had taken place mainly for operations conducted from UK branches. The Paris establishments of the leading French institutions mostly use the Dutch trading venues. Now, most of the transactions of the Paris establishments of the leading French institutions are reported on US SEFs (accounting for 63% in Q4 2021 and 52% in Q1 2022).

### 2.3.3 Bilateral margins: a sharp increase in initial margins but a contraction in variation margins in 2021

The implementation of the initial margin and variation margin requirements for non-cleared derivatives began in February 2017 and was staggered over six phases, depending on the notional amounts traded annually by the counterparties. This process of implementation will be completed in September 2022 and every counterparty trading a notional amount of more than €8 billion per year will be covered by these requirements.

In 2021, these requirements concerned counterparties for which the average annual notional amount of transactions on non-cleared OTC derivatives exceeded €50 billion (phase 1 to phase 4).

At the end of 2021, the International Swaps and Derivatives Association (ISDA) estimated the total amount of margins collected by the 32 largest market participants at \$227.6 billion, up sharply by 53% from 2020 and even by 85% since 2019.<sup>66</sup> This result is boosted by the initial margins collected under regulatory requirements, which increased by 60% to \$219.2 billion. The initial margins paid under the same requirements followed this trend, standing at \$218.2 billion in 2021 versus \$138.5 billion in 2020. Margins received as discretionary payments remained relatively stable, increasing by only 5% to USD 84.9 billion. Margins paid in this context even decreased, slightly, to \$9.4 billion, versus \$10.6 billion at the end of 2020.

In 2021, variation margins contracted in the wake of the 2020 health crisis. Margins received decreased by 11% to €1,134.2 billion, driven by the decline in margins received in accordance with the regulations. The variation margins paid decreased even more, by 31%, to stand at only €795.8 billion. Both the regulatory mandatory and discretionary payments account for this result, since both show a reduction of about 30% in margins paid.

A further increase can be expected in 2022 due to the war in Ukraine and its repercussions, especially in commodity markets (see below)

**Table 2: Amounts of margins paid and received**  
(in USD billion, all jurisdictions combined)

Type of margin	Origin of payment	Sens	2021	2020	2019	2021/2020
Initial margins	Regulatory obligation	paid	218,2	138,5	112,3	58%
		received	219,2	136,6	111,2	60%
	Discretionary payment*	paid	9,4	10,6	11,0	-11%
		received	84,9	81,2	72,5	5%
Total initial margins		paid	227,6	149,1	123,3	53%
		received	304,1	217,8	183,7	40%
Variation margins	Regulatory obligation	paid	487,5	716,6	383,2	-32%
		received	579,1	713,7	465,3	-19%
	Discretionary payment	paid	308,3	432,6	371,5	-29%
		received	555,1	560,2	479,4	-1%
Total variation margins		paid	795,8	1 149,2	754,7	-31%
		received	1 134,2	1 273,9	944,7	-11%
Total		paid	1 023,4	1 298,3	878,0	-21%
		received	1 438,3	1 491,7	1 128,4	-4%

(\*) Payments made by entities or for contracts not coming within the scope of the regulatory obligation

Source: ISDA

The initial margins received in accordance with regulatory requirements consisted mostly of sovereign securities, for 73.6%. This proportion is much lower than in 2020 when there was 84% of sovereign securities. Also, cash, which was practically non-existent in this composition in 2020, represented 5.5% of these margins in 2021. Regarding the initial margins received within the framework of discretionary payments, the proportion of cash is 44%.

Variation margins, for their part, consist mostly of cash: 82% for regulatory margins and 69% for discretionary margins.

<sup>66</sup> Unlike in the 2020 survey, there were no new participants in the survey performed by the ISDA in 2021, so the growth noted between 2020 and 2021 is attributable solely to the increase in margins.

## 2.4 COMMODITY MARKETS

Derivatives markets propose contracts which can be used above all by producers and processors/distributors to limit uncertainties affecting the future prices for the sale of their production or the purchase of their procurements.

These are theoretically highly liquid markets because they enable a multitude of buying and selling interest to meet.<sup>67</sup> Given the weight of Russia and Ukraine in the global supply of commodities, the derivatives markets were among the first and the most heavily impacted by the war.

### 2.4.1 The war in Ukraine, a shock to already stressed markets

After the significant impact of the pandemic crisis in 2020, demand for commodities was strong globally in 2021 and even accelerated over the year to the extent of creating stress regarding the supply of certain sectors, energy and industrial metals in particular, which are still suffering supply-chain disruptions.

Against the backdrop of excess demand and depressed physical inventories, natural gas was the commodity for which the market was most stressed. The US benchmark price (NYMEX Natural Gas)<sup>68</sup> was multiplied by 2.5 between January 2021 and October 2021, finally ending the year on a 50% rise, similar to the trend for oil (WTI and Brent). Industrial metals were also the focus of attention, and aluminium, copper, zinc and nickel all increased by at least 20% year-on-year in 2021.

The war in Ukraine represented a further supply shock which fuelled the surge in prices: trade sanctions, a potential embargo on trade with Russia, the stoppage of the Ukrainian production systems and the risk of extension of the sanctions to countries supporting Russia (countries of the Eurasian Economic Union, China and India, in particular) are all factors that have weighed on prices and still do so.

The *Standard & Poors-Goldman Sachs* Commodity Index, the benchmark index (S&P GSCI) for commodity prices, posted an increase of 32.5% between 1 January 2022 and 20 April 2022, and even 18% in just the first two weeks of the war, in a rapid surge even though the index had already ended 2021 up 25.6%. There were significant rises for various types of energy, industrial metals and grains in 2021, and these moves gathered momentum after 24 February 2022, the starting date of the war, as can be seen from Figure 109 showing the prices of the main commodities forming the index.<sup>69</sup>

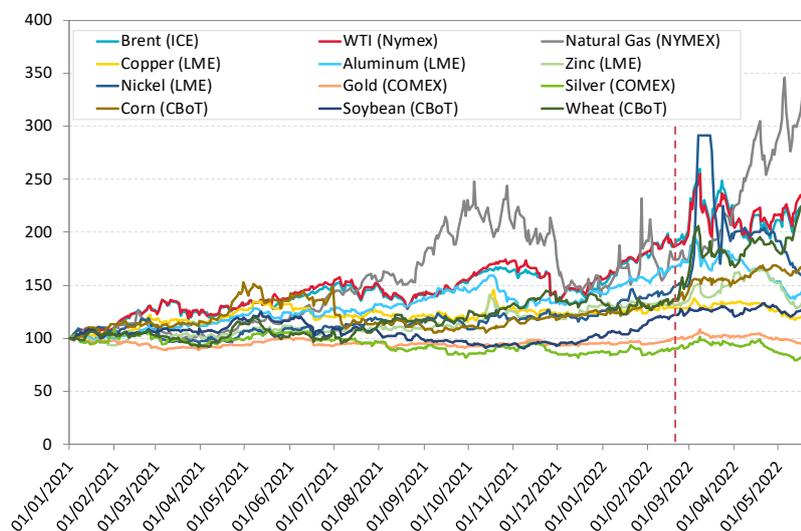
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<sup>67</sup> These are known as financialised commodities for which there exists a futures contract, i.e. a standardised contract with the commodity as the underlying asset. By instantly centralising all information regarding the markets, futures contracts have the necessary liquidity to offer reference prices for commodities where physical markets are too inflexible to adjust prices permanently. However, despite this all commodities are not financialised, because this financialisation is only possible if there is sufficient liquidity on the contract. That is why there is no benchmark futures contract for alumina or iron ore, but there is one for aluminium and steel, two products of these inputs, for which the contracts are liquid. Dealers can nevertheless hedge themselves against the price of non-financialised commodities by using forward contracts on over-the-counter markets or by using "cross-hedging" strategies, i.e. by hedging their positions on another contract showing a strong correlation between the price of the commodity to be hedged and that of the underlying.

<sup>68</sup> The NYMEX Natural Gas contract uses as reference point the price at Henry Hub, a gas distribution centre in Louisiana (United States).

<sup>69</sup> 12 of the 24 commodities and 72% of the S&P GSCI composition.

Figure 66: Prices of the main global commodities



Source: Datastream.

#### 2.4.2 Russia and Ukraine, major players in European markets

European energy markets were on the front line of the war in Ukraine due to Russia's preponderant weight in Europe's energy supplies. The region imported 155 billion cubic metres of natural gas from Russia in 2021, i.e. 45% of its gas imports and around 40% of its gas consumption.<sup>70</sup> The natural gas and electricity markets are especially concerned, because of the low level of natural gas inventories in Europe, which reached an all-time low in the summer of 2021, creating stress regarding inventory rebuilding in 2022 in order to prepare for the winter of 2022-2023. For example, the price of the Dutch natural gas contract for 1-month maturity, the European benchmark in this area, had already more than quadrupled between August and December 2021, exceeding €180 per megawatt/hour for the first time in its history. Despite a relatively mild winter and prices that returned to €70 MWh, the war again caused the contract price to triple, bringing it to a new record of €227 MWh on 7 March.

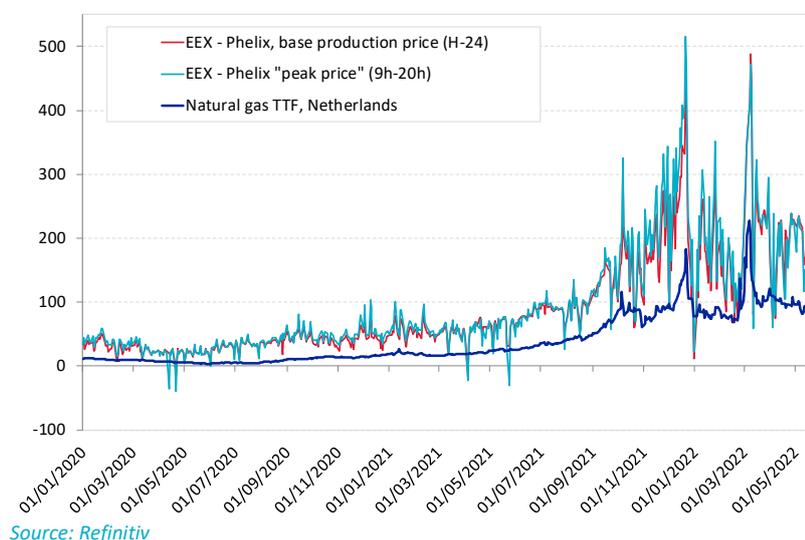
Since natural gas is the main input for electricity production in Europe apart from the nuclear sector, the European benchmark prices also surged for this sector. Prices for the constant production of electricity and for production between 9.00 am and 8.00 pm adjusted to the daily demand for electricity, and thus experienced fluctuations in the same proportions, reaching levels above €400/MWh at mid-December and at the start of the war.<sup>71</sup> The price of the electricity contract for constant production accordingly reached €487.57 MWh for the first time on 8 March, while the price of electricity between 9.00 am and 8.00 pm rose as high as €471.65 MWh.<sup>72</sup>

<sup>70</sup>Source: International Energy Agency.

<sup>71</sup> Note that the prices of electricity contracts can fall to negative levels, as was the case in March and May 2021 (Figure 110). This is because electricity production is downwardly rigid due to its "constant" production which is not easily storable. As a consequence, in the event of an unexpected fall in demand or excess production, especially if there is peak production in intermittent electricity production facilities (mainly solar and wind power), it may happen that the price of electricity becomes negative.

<sup>72</sup> However, this amount is not a record for the price of electricity between 9.00 am and 8.00 pm, because on 21 December 2021 the price had reached €515.47/MWh.

**Figure 67: Prices of electricity and natural gas in Europe**  
(monthly price in euros/MWh)



The repercussions of the war have also been felt on cereals. Russia and Ukraine account for 15% of the world's wheat production, and above all 28% of world wheat exports, according to the Food and Agriculture Organization (FAO) in 2020. The conflict may affect Ukrainian production or, at least, its ability to export its grain supply, while trade sanctions are also putting pressure on Russian exports. Thus, the wheat market may have to deal without potentially more than one-quarter of its supply. The European Union can be expected to suffer the direct consequences of the reduction in the global wheat supply, especially since Russia and Ukraine accounted for about 10% of its wheat imports.<sup>73</sup>

#### 2.4.3 Euronext, the French market for agricultural commodity derivatives, at the front line

Euronext is the leading market for wheat in Europe and the second largest in the world after the Chicago Board of Trade (CBOT). In addition to wheat, corn and rapeseed contracts are also traded there.

##### □ Heavily impacted trading volumes and prices

The grain derivatives markets, were largely exploited by market participants to hedge against price risks. On the French markets, for example, the three leading grain contracts traded on Euronext, namely the contracts for milling wheat, corn and rapeseed, each saw a surge of about 30% in their prices in the first two weeks of the war.

Trading volumes also increased sharply from the start of the war:

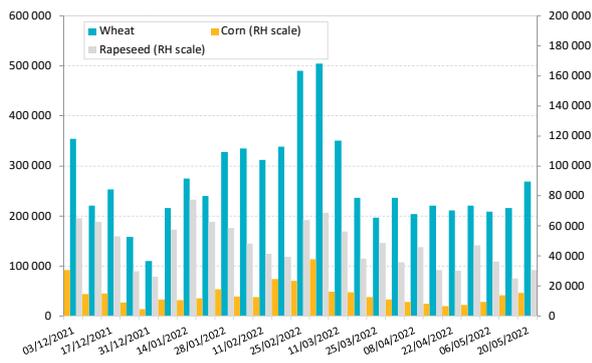
- For the wheat contract, which is by far the most heavily traded commodity contract on Euronext, volumes were already high before the start of the war, with 300,000 contracts traded each week, the sign of a stressed market. Over the first two weeks of the war, the number of contracts traded reached 500,000 per week (+67%). The increase was particularly strong in contracts with 6 months to 1 year maturities. Since mid-March, slightly more than 200,000 contracts have been traded each week.
- Rapeseed contracts also saw a significant increase in trading volumes, from 40,000 to 64,000 contracts between the week of 18 February and that of 25 February, i.e. a 60% increase. At the start of the year, major peaks had already been observed, e.g. in the week of 14 January when 77,000 contracts were

<sup>73</sup> The global supply of wheat could also suffer from the forecast low level of production in the Horn of Africa and in India where the spells of drought experienced in the spring of 2022 are expected to depress production.

traded. Since mid-March, volumes have again ranged between 25,000 and 50,000 contracts traded per week.

- On the corn market, which is the least liquid market, the number of contracts also increased sharply in the week of 4 March, with around 40,000 contracts traded.

**Figure 68: Trading volume in Euronext contracts (all maturities)**



Source: Refinitiv

**Figure 69: Price of Euronext contracts (in euros per tonne)**



□ **A market mostly dominated by commercial undertakings which trade there for the purpose of hedging<sup>74</sup>**

Commercial undertakings held 57% of the average daily positions in wheat contracts between 2018 and 2021 (53% of long positions and 60% of short positions). The remaining 43% was split among investment firms (17%), funds (4%) and other financial institutions (21%).

Moreover, 62% of the positions of commercial undertakings, or 35.4% of the total number of positions, were held for hedging activities. Lastly, these commercial undertakings held 58% of the position in the spot contract for wheat on Euronext and 56% of the position in the other maturities, very similar proportions which change relatively little during the period under review.

These results are significantly different from those found for the Chicago wheat contract, where commercial undertakings hold only 26% of the open interest position (21% of the position in the spot market and 30% for the other months) and financial firms 74% of the open interest position.

In line with their hedging position, which enables them to secure the future sale of their production, commercial undertakings generally hold net short positions in futures.

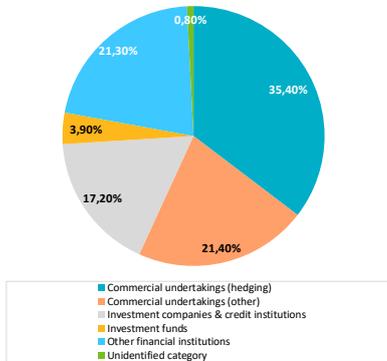
Investment firms generally also show net short positions. This positioning could reflect the activity of swap dealers offering their clients a long exposure to the market via a swap, covered by a short position in futures. Other financial firms, for their part, structurally provide liquidity for the former.

The rapeseed contract has very similar characteristics to the wheat contract. It is characterised by the domination of commercial entities (59% of long and short positions combined) while tending to hold short positions (66% on average). Conversely, investment funds and other financial institutions take long positions 72% and 90% of the time, respectively.

The corn contract differs from the other two in that it is less liquid and less deep. Trading in this contract is 20 times smaller and there are 10 times fewer open interest positions by comparison with the wheat contract. These conditions make it less attractive to all financial institutions and investment funds. Commercial undertakings together account for 75% of the total positions.

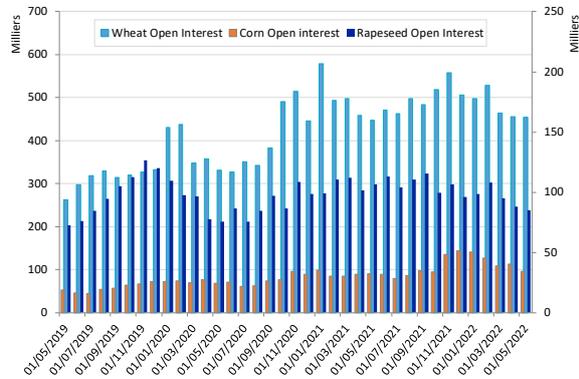
<sup>74</sup> MiFID II introduced limits and specific reporting requirements for positions in commodity derivatives instruments. The reporting thus obtained also makes it possible to obtain a view of the positions by category of position holders, similar to the Commitments Of Traders (COT) report established by the CFTC as of 1962.

**Figure 70: Average breakdown of positions (long and short) by category of market participants**



Sources: AMF and Euronext – analysis period 2018-2021

**Figure 71: Open interest positions and prices in Euronext contracts (all maturities)**

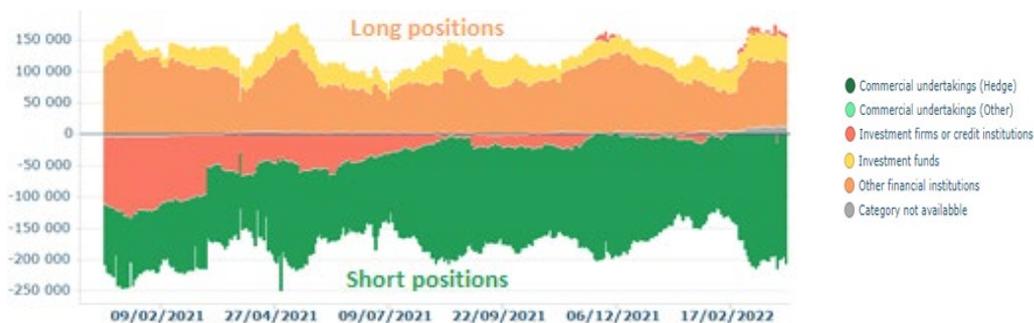


**□ Positions held for hedging increase with the outbreak of the war in Ukraine**

Short positions in futures contracts enable producers to offset a decline in their physical revenue. Conversely, any rise in prices takes place at the expense of commodity buyers who hedge their exposure by buying futures contracts. When prices rise, producers tend to reduce their futures contract sales to minimize their exposure to margin calls. Thus, we should have expected a change in the distribution of commercials’ net positions was to be expected.

With the outbreak of the war in Ukraine, although the positions contracted, the breakdown of open interest positions among the various categories of market participants remained relatively similar. The proportion of total positions held for hedging, for its part, increased to 40 % between 24 February and 25 May 2022. This trend in selling positions held for hedging was triggered from the second half of 2021 by rising the stress already observed in the markets, and was exacerbated by the outbreak of war.

**Figure 72: Net positions (long–short) in Euronext wheat contracts (futures and options, all maturities)**



Sources: AMF and Euronext

**2.4.4 Prices which are still high and very volatile three months after the start of the war**

On European energy markets, after the peaks and the record levels reached during the first two weeks of the war, prices have started to decline again slightly. However, prices remain extremely firm and none of them has returned to its pre-crisis level. At 17 May, electricity prices are still around €200/MWh, and the price of natural gas remains at a level of €100 MWh.

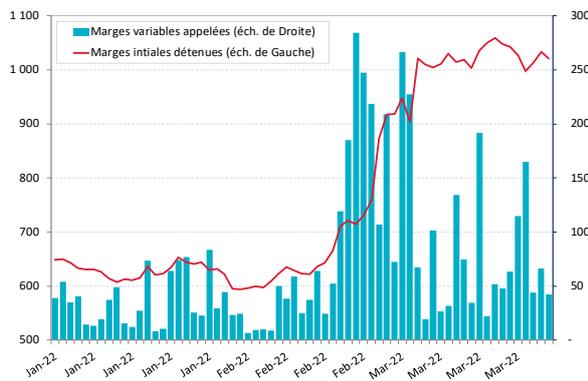
On agricultural markets, the prices of grain contracts have not declined; on the contrary, they increased again since mid-April at the unwinding of contracts for April delivery: the harvest season is starting with war still being waged and with no foreseeable prospect of a settlement for the medium and long term, engendering great uncertainty concerning the Ukrainian and Russian supplies. Moreover, the restriction on palm oil exports in Indonesia, which accounts for 57% of global production, has led to a further rise in the prices of agricultural products that can be refined into oil and used in biofuels. The price of the rapeseed contract fell at the end of April, however, due to the announcement of sustained production in the European Union and the estimated fall in imports. The prices of grain contracts therefore remain well above their pre-crisis level.

#### 2.4.5 Unprecedented margin calls

The supply shock has exacerbated volatility in the prices of commodity contracts (Figure 67 and Figure 69), engendering substantial initial margin and variation margin calls by clearing houses (CCPs) for market participants. For example, on LCH SA, on agricultural commodity contracts,<sup>75</sup> the initial margins held increased by around 63% between January and April 2022 for wheat contracts to €1 billion, and by around 47% for corn and rapeseed contracts to €338 million over the same period.

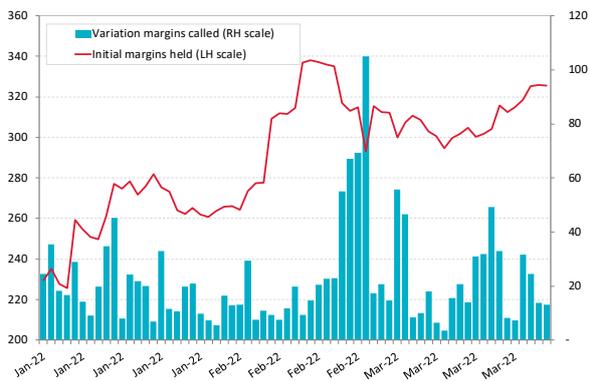
Daily variation margin calls, for their part, increased even more significantly, reaching €284 million, i.e. an increase by a factor of 7 on 25 February 2022 for the wheat contract and by 4 for corn and rapeseed contracts to more than €100 million on 1 March 2022.

Figure 73: Initial margins and variation margins - wheat contracts  
(in EUR million)



Source: LCH SA

Figure 74: Initial margins and variation margins - corn and rapeseed contracts  
(in EUR million)



Up to this stage, there have been no difficulties or delays in payment observed on margins in commodity markets traded in France. However, concerns have been expressed by these markets' main participants concerning their ability to keep honouring these margins if they were to remain so high.<sup>76</sup>

Moreover, these rising margins favour potential arbitrages : on the one hand, between regulated markets to the benefit of the ones with the lowest margins, but also, on the other hand, between regulated and OTC markets, where margin requirements are lower, with a significant impact in terms of transparency and commodity market stability (cf. Box 1).

<sup>75</sup> Contracts on commodities excluding agricultural products are cleared in other jurisdictions, mostly non-European, and it is therefore very difficult to obtain detailed statistics.

<sup>76</sup> <https://www.ft.com/content/6cdc4859-db8c-4137-8436-2a10cb50f579>

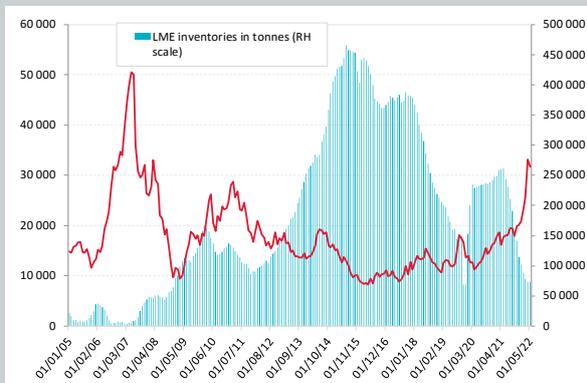
### Box 1: The nickel market

The repercussions of the war in Ukraine on commodities had heavy consequences on the nickel market, which crystallised attention. Russia is the third-largest producer of the metal in the world, accounting for 11.27% of global production. Its nickel is among the higher-quality grades and is used mainly in the production of stainless steel and electric vehicle batteries. Ukraine accounts for 15% to 20% of ferronickel production.<sup>77</sup>

#### **An already tight market**

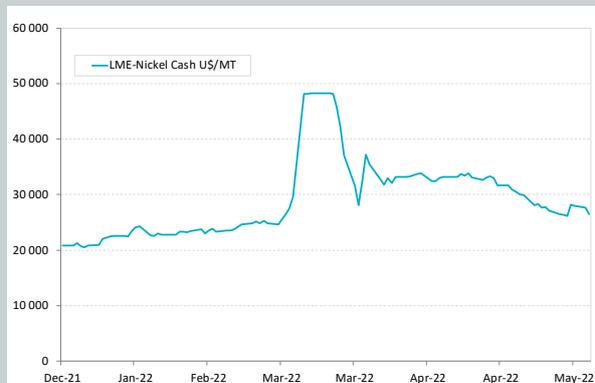
At the end of 2021 the LME inventories, which serve as a reference for world inventories, regained similar levels to those in the second half of 2019 when the restriction on exports decided on by Indonesia (the leading nickel producer) dried up reserves of the metal. Nickel prices had accordingly followed an upward trend, reaching \$20,000 per tonne in early 2022. The war therefore suspended the production of nickel in Russia and Ukraine in a global market that was already very tight. So this new supply shock fuelled a frenzied rise in the price of nickel on the London Metal Exchange (LME).

**Figure 75: Spot price of the nickel contract and nickel inventories of the LME**



Source: LME

**Figure 76: Spot price of the nickel contract**



#### **The impact of short positions on the LME**

With the announcement of the gradual return of the Indonesian nickel supply to the international market, in 2021 and until the start of 2022, several market operators bet on the fall in nickel prices in 2021 and until the beginning of 2022 by taking short sales positions.<sup>78</sup> This was the case for Tsingshan (the world's largest nickel producer), which accumulated large short positions on nickel for several months, notably on the LME, but above all over-the-counter. The size of its exposure was estimated at 150,000 tons, far more than the total volume available in the LME's storage facilities (Figure 118). This reflects the fact that the LME has only a limited view of its members' exposure outside the organized markets, which explains why players such as Tsingshan were able to continue to trade on its market.

This participant did not only suffer from increasing prices in early March, but also had to meet margin calls that increased with the price, for all futures sellers<sup>79</sup>. The surge in prices, particularly on March 7, immediately left him unable to meet the margin calls from his position. Tsinghan was forced to liquidate at least 100,000 tons of nickel, equivalent to 3.7% of the world's supply and far more than the Chinese company produced. Its losses are estimated at \$2 billion, putting pressure on its creditors. China Construction Bank has to settle margin calls of several hundred million dollars.<sup>80</sup>

<sup>77</sup> A ferroalloy with a nickel content of less than 15%, a metal of lower quality.

<sup>78</sup> Short selling involves agreeing to sell at a future date an asset which is not owned at the time of the sale agreement. The strategy entails the sale of a futures contract for a quantity of nickel that is not yet owned. It may be either because a producer wants to set beforehand the price of their future production, or because a market player expects a fall in prices and thinks it will be able to buy back the contract at a lower price before the contract expires.

<sup>79</sup> To cancel its position, the producer would have had to buy back futures contracts.

<sup>80</sup> An agreement was finally reached between Tsingshan and the LME. The producer agreed to repay part of its debt in physical nickel, and more precisely by offering a nickel of higher quality to reduce the total debt.

### ***The surge in prices continued until trading on the LME was suspended***

Tsingshan and the other futures net sellers had no choice but to reduce their exposure on futures markets by acquiring the underlying, i.e. nickel, in the physical market. Nevertheless, the size of Tsingshan's position pushed the market into a short squeeze where the producer could not find sufficient supply to cover its position in the futures market. The subsequent increase in demand exacerbated the price surge. The 3-month nickel contract<sup>81</sup> rose to \$101,365/t on March 8, up from \$29,609/t on March 4 and even below \$25,000 on February 28.

As a result, for the first time in its 145-year history, the LME took the decision to suspend trading and cancel the transactions executed on March 8, i.e. to cancel nearly \$4 billion in trades. This intervention, which is extremely rare, was strongly criticized because it cancelled the losses, but also the gains made on the day. Trading did not resume until March 16 at a price of €48,211/t, with trading limits at +/- 5%<sup>82</sup> of the previous closing price. The level of open interest positions in the nickel contract fell to its lowest since 2013 and the price fell to \$26,450/t by May 16, 2022.

A joint investigation by the Financial Conduct Authority (FCA) and the Bank of England (BoE) has been underway since April 4 to examine the management of the suspension and resumption of nickel trading on the LME in order to learn the lessons from this event. The FCA and the UK Prudential Regulation Authority (PRA) will also assess the risk management and the governance of companies that held significant positions in the nickel market. For its part, the LME has also announced that it will increase the visibility of OTC trades by requiring its members to disclose, in a document to be published each week, all their positions in the main metals offered for trading on the exchange (aluminium, copper, nickel, tin and zinc) and not cleared on LME Clear, the group's clearing house.

### **2.4.6 Markets under pressure in a situation of backwardation**

Since the start of 2021, commodity markets have had to cope with low inventory levels in the energy, agricultural and metals sectors. This situation has placed most of these markets in a backwardation configuration, with prices of short-dated contracts exceeding the prices of longer-dated contracts (cf. Box 2). Effectively, in the current situation, the market tends to grant a premium to ownership of the asset in the short term, which causes the price of shorter-dated contracts to increase relative to the price of longer-dated contracts.

#### **Box 2: Contango-Backwardation**

Futures prices in commodity markets are either in backwardation, or in contango. In a contango market, futures prices are higher than spot prices in order to compensate for the cost of carrying inventory and the cost of insurance until expiry of the futures contract. Thus, for a longer contract maturity, the cost of carry will potentially be correspondingly higher<sup>83</sup>. This is known as a contango market. The term structure of prices in a contango market then takes an ascending concave shape, as shown for the gold contract traded on the New-York Commodity Exchange (COMEX) on 14 April 2022. This situation is characteristic of high levels of inventory in the physical market.

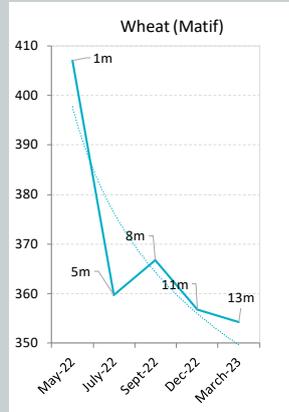
In contrast, in a market in which inventories are tight, a premium may be attributed to ownership of the physical commodity, placing the market in question in a situation of backwardation, with short-term prices higher than long-term prices. The term structure of prices then takes an ascending convex shape, which can be observed on the contract for milling wheat traded on Euronext, or again for Brent traded on the Intercontinental Exchange (ICE) on 14 April 2022.

<sup>81</sup> The 3-month futures contract is the closest maturity and serves as a spot price proxy.

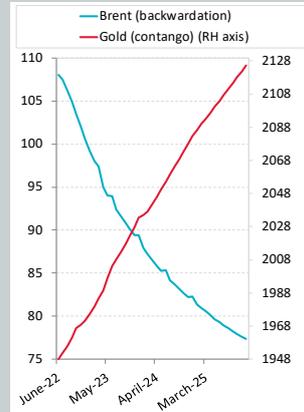
<sup>82</sup> The LME established a limit of 15% on the price variation for the other metals listed there, but given the price volatility and the limit of 17% established at Shanghai (the leading market for the Asia region), the LME decided to maintain a tighter limit.

<sup>83</sup> Up to a certain point: above certain long maturities, specific to each sector, the inventory carrying cost stagnates, because the maturity refers to commodities which have not yet been produced or extracted.

**Figure 77: Term structure of futures contracts for underlying commodity assets as at 14 April 2022**



Source: Refinitiv, Euronext



Source: Refinitiv, ICE, CME

Widespread backwardation on several commodities – what's more, commodities that are key for economic activity in the energy, metals and agricultural sectors – is an exceptional market condition. Such backwardation common to more than one-third of the commodities in the *Bloomberg Commodity Index* has occurred on only three occasions since 1997 and has never lasted more than two years.

**Consequences of a market in a backwardation situation:**

- **The most conventional inventory carrying strategies (straightforward cash-and-carry) to acquire exposure to a physical asset are no longer profitable in this market situation.** These arbitrage strategies, which are in practice very common, consist of taking advantage of the positive price difference between the underlying asset and its corresponding derivative (mispricing).<sup>84</sup> At 14 March 2022, for example, this strategy generated a negative annual performance of 4.47%.<sup>85</sup>
- **However, this market situation offers the prospect of profiting from positive position rolling,** in other words when a contract is close to maturity, it is possible to generate a gain by carrying that long position over to contracts having more distant maturities and thus roll one's exposure over to a new maturity. The benefit of this type of strategy is based on the fact that, at expiry, futures prices will tend to trend towards the spot price. This strategy is often presented as being risk-free, although one should not overlook the cost of funding for this type of highly leveraged transaction. Moreover, if the backwardation situation was to diminish, or if the market was to switch to a contango situation, this would turn out to be a losing strategy. The volatility of the difference between the spot price and the futures price thus becomes another component of risk management for investors in commodity futures contracts.

*Example:* On the wheat contract (Figure 78), an investor can roll over their position in the May-2022 maturity to carry over his exposure by buying the July-2022 contract. He will thereby profits from the difference between the two prices: €47.25/tonne (407-359.75).

After 10 May (the date of expiry of the May contract), the July contract will become the nearest price at maturity. If the backwardation persists, the investor could sell his contract again by 10 July and buy another contract for a more distant maturity while profiting from the difference between the two prices.

The strategy will offer an almost-certain profit as long as the market remains in a backwardation situation and as long as the investor finds a counterpart to offset its long position. Thus, the investor maintains its exposure to wheat while systematically reselling the contracts that he holds. In this way he never has to take delivery of the underlying asset.

<sup>84</sup> These arbitrage operations, which are in practice very common, are necessary to maintain market cohesion.

<sup>85</sup> According to Société Générale (Risk.com).

□ **Super-backwardation markets?**

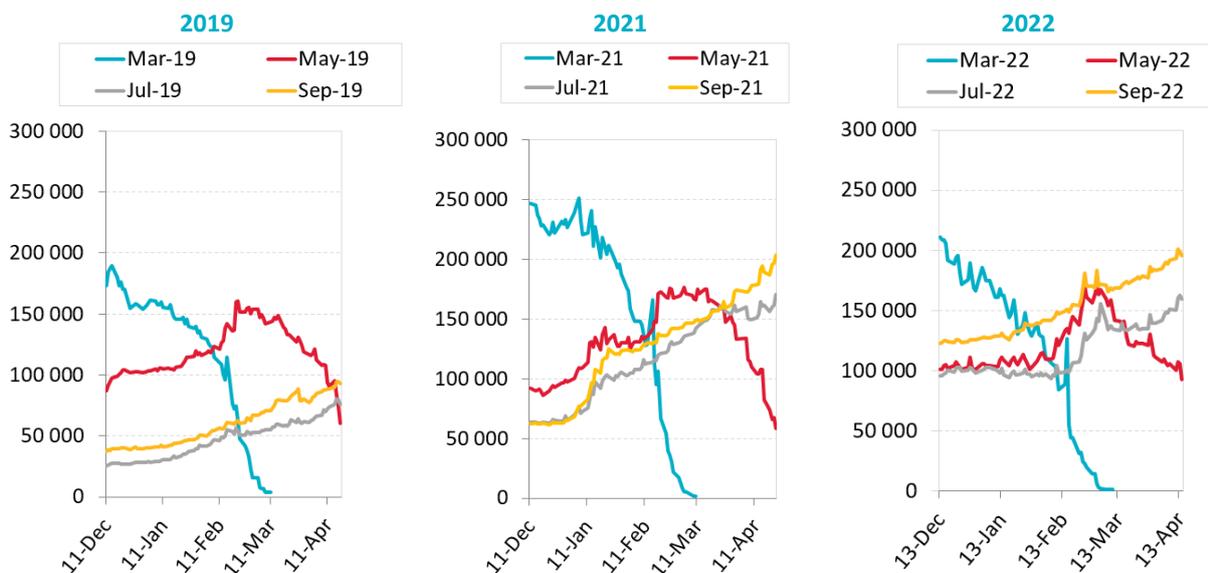
On the three grain contracts, it can be seen that the number of open interest positions, which had increased from March 2020 in an environment of great uncertainty due to the pandemic crisis, and which remained high over the same period in 2021 due to delays in harvesting and position rolling strategies that were attractive for investors, has not experienced the same upward trend at the start of 2022 despite the Russo-Ukrainian crisis (see above).

By focusing the analysis on wheat contracts and distinguishing between futures according to their date of expiry, it can be seen that, in March 2019, a pre-pandemic year which here serves as a benchmark, the contracts expiring in March were rolled over to the following maturity date in May. From mid-April, the highest open interest position became the September maturity. In March 2021, the number of open contracts was far higher, in a market in a backwardation situation and endeavouring to hedge against price rises for the ultimate owners. Thus, the May contract is the one which has the highest open interest position, but the July and September contracts gain importance in proportion to all the open contracts in wheat as of the month of January.

In 2022, in a context of significant backwardation and high price stress, the phenomenon was exacerbated as investors searched for longer maturities. It can be noted, for example, that from the start of February, the September contract accounted for the largest volumes at the expense of the May maturity. The Ukraine war has apparently even amplified the backwardation configuration to the extent of creating a situation of "super-backwardation" in which strong demand for derivative products is considered unconventional. The result is a greater steepening of the term structure of futures contracts, as shown by Figure 78, and the difference between the spot price and the futures price has reached new records.

The specific feature of this market in the current environment is that uncertainty is such that the combination of high volatility and the subsequent increase in margins may have influenced the decline in the number of contracts cleared. It therefore appears that the position rolling and hedging strategies that should theoretically be expected to increase during the period are not materialising. Among these possible explanations, it could be attributed to higher price volatility or to the risk of insufficient liquidity when rolling a significant position on contracts of short- or medium-term maturity.

**Figure 78: Open interest positions in Euronext milling wheat contracts in**



Source: Refinitiv, Euronext

### 2.4.7 The carbon trading market: a market that is rapidly expanding but is very volatile

The emissions trading system for greenhouse gases, also known as the "carbon market", is a regulatory tool designed to contribute to greenhouse gas emission reduction targets. An emission allowance entitles its owner to emit one tonne of CO<sub>2</sub>. Established since 2005 in Europe, its supply depends on the emission allowances determined by the public authorities, which may be distributed free of charge or via auctions held by the European Energy Exchange (EEX) in Germany. They can subsequently be traded via futures contracts.

In the primary market, between June 2020 and December 2021, ESMA<sup>86</sup> estimates that slightly less than 1 billion tonnes of CO<sub>2</sub> were auctioned, for a total of €41.8 billion (€120 million every day). In 2021, ESMA recorded 48 participants in the auctions: 14 financial companies and 34 non-financial companies.

Amounts traded amounted on average to €57 billion per month between June 2021 and December 2021. Three trading venues share the market: the ICE Endex, in the Netherlands, dominates the market with a total of 85% of gross open interest positions, followed by the EEX in Germany for 15% and the Nasdaq Oslo in Norway for a marginal number of positions (0.03%).<sup>87</sup>

**Figure 79: Price of the futures contract for European CO<sub>2</sub> emission allowances**  
(in euros per tonne)



Sources: Refinitiv

The price of emission allowances (EA) has increased sharply since 2018, whereas until then it had fluctuated in the region of €10 per tonne. Growth in the price of emission allowances accelerated in 2021: the price per tonne increased from 30 to 80 euros year on year.

The price dynamic was therefore influenced by the effect of the pandemic crisis on economic activity. In 2020, the contraction of international trade and supply chain disruption slowed manufacturing activity and CO<sub>2</sub> emissions.

Conversely, the economic recovery in 2021 led to an increase in demand for emission allowances which pushed prices up to €96 in February 2022. Among other, more structural, reasons that could account for the sharp increase in prices in recent years, ESMA reported the tightening of EAs supply since 2019 and the announcement of stricter climate targets by European governments. ESMA also emphasizes the role of demand, particularly from financial companies seeking exposure to this market. As evidence of this appeal, four exchange-traded products (ETPs)

<sup>86</sup> ESMA, [Final report on emission allowances and associated derivatives](#), March 2022

<sup>87</sup> The EEX and the ICE Endex propose, in particular, futures contracts of daily maturity, commonly called spot contracts, but also futures and options with longer maturities.

investing in the carbon market have been launched in the second half of 2021, bringing their number to 6 in March 2022.

At the start of 2022, the war in Ukraine and potential further supply chain disruption following the lockdown imposed by China can be expected to lead to a contraction in manufacturing activity and hence a fall in emissions. For example, the emission allowance price per tonne fell by more than 38% during the first two weeks of the war, going from €95 – its record level – on 23 February to €58 on 7 March. Since then it has fluctuated between 80 and 90 euros per tonne and remains very volatile.

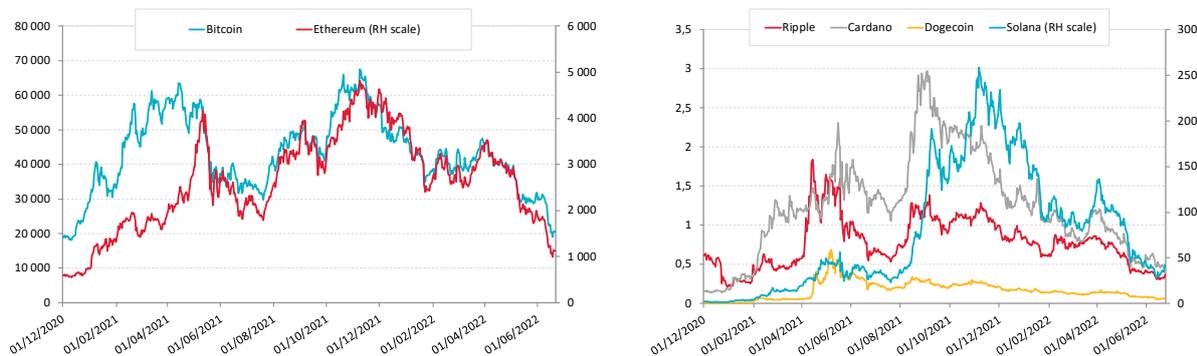
## 2.5 CRYPTO-ASSET MARKETS

### 2.5.1 A record year in 2021 for crypto-assets, which nevertheless are undergoing periods of steep decline

#### □ A year marked by volatility

Bitcoin reached a new peak of \$67,567 on 8 November 2021 while Ethereum also reached \$4,812 for the first time. The other currencies also set records. For example, Solana peaked above \$250 at the start of November, Cardano traded at \$3 in September and Ripple at \$1.8 in April. Since the end of 2021, however, there have been steep falls, which were exacerbated at the start of April 2022: the prices of Bitcoin and Ethereum fell more than half relative to their records. They were even divided by five for Solana and six for Cardano.

Figure 80: Crypto-asset prices in US dollars



Source: CoinMarketCap

#### □ An initial price reversal in prices in May and December 2021

In May 2021, first of all, the Chinese government reaffirmed that it intended to prohibit payments in bitcoin on its territory; this was a reminder following its first statement on the subject in 2019. The country has accused cryptocurrencies of funding unlawful activities and stresses their incompatibility with the attainment of its environmental goals. China also stated that virtual currencies were not real currencies and warned its investors against speculation in these assets. Previously, however, the country had been one of the leading miners in the world. There was an immediate reaction, as the Bitcoin fell 15% in value between 20 and 23 May. In that same month, Elon Musk announced on Twitter that Tesla would no longer accept any more payments in bitcoin, sending a negative signal from one of the proponents of the crypto-asset. On 12 May the bitcoin ended the day down more than 13% from the day before.

In September 2021 the Chinese Central Bank laid the foundations for price weakening by prohibiting the mining of crypto-assets by adding it to the list of sectors, areas and enterprises restricted or prohibited to investors. The regulatory pressure increased, moreover, in few days at the end of 2021. On 6 November 2021, the enactment of the infrastructure plan in the United States imposed new requirements regarding the tax reporting of blockchain companies and of the holders of crypto-assets executing transactions exceeding €10,000. On 17 November, India

announced the prohibition of all transactions in crypto-assets. On 23 November, the IMF once again declared itself opposed to the adoption of bitcoin as a second official currency by Salvador.<sup>88</sup> On 24 November, it was Sweden's turn to announce that it wanted to prohibit mining on its territory.<sup>89</sup> In all, between 8 November (bitcoin's record price level) and 26 November, or within just three weeks, the crypto-asset lost 21% of its value.

Bitcoin's fragility was reflected in a flash crash on Saturday 4 December 2021, a day during which bitcoin lost 74 of the 895 billion dollars, its market capitalisation just the day before. The crypto-asset then went below \$50,000, falling more than 8% in a single day.

#### □ The influence of recent market tensions and of the monetary policy adjustment at the start of 2022

Bitcoin lost 60% of its value between 1 April and 18 June 2022, on which date it fell back below \$20,000 for the first time since the end of 2020, it is even a 70% drop from its November highs. Bitcoin is not the only crypto-asset concerned since, over the past three months, Ethereum lost two-third of its value to fall back below \$1,000. The price of Dogecoin has contracted by 55% against the dollar, those of Ripple and Cardano by 60% while Solana has erased three-quarters of its value within the same time. This collapse is almost generalized and moved in line with more conventional markets (and in particular US equity markets), being influenced by:

- US monetary policy, with rising interest rates reducing investors' capacity for borrowing to operate in financial markets and also increasing the attractiveness of the bond markets ;
- The fact that the change in monetary policy is taking place at a time when the war in Ukraine persists and when there is little prospect of its resolution in the near term. Therefore, as for equity markets, investors are tending to stay away from the riskier assets ;
- The possible transmission of the instability that has appeared in "stablecoins", in which confidence has collapsed, as shown by the recent fall of Terra(LUNA) (see Box 3).

Thus, crypto-assets show an increasing correlation with the US stock markets, but this does not mean that they impact them. Indeed, the fall seen in crypto-assets has not spread to stock markets, and did not have an impact on the other components of the financial system either. However, recent events highlight that crypto-assets and stocks can react to the same fundamentals such as monetary policy and geopolitical tensions.

#### 2.5.2 Europe is the region where the largest volume of crypto-asset transactions is executed

According to the latest estimates by *Chainalysis*<sup>90</sup>, on crypto-assets trades by "peer to peer" platforms<sup>91</sup> the countries of central, northern and western Europe make up the region which received the largest volume of crypto-asset transactions in the world between July 2020 and June 2021: with more than \$1 trillion in transactions, that is 25% of the global value of crypto-assets traded across country. This leading position can be explained, in particular, by the slowdown in crypto-asset flows which previously went to the East Asian countries. Transactions in this region have declined sharply as a result of the implementation of various measures designed to strongly limit trading in Bitcoin, especially in China.

France, moreover, is the No. 2 European country with around \$123 billion in transactions traded in crypto-assets between July 2020 and June 2021, just behind the United Kingdom which accounts for a total of \$170 billion received.

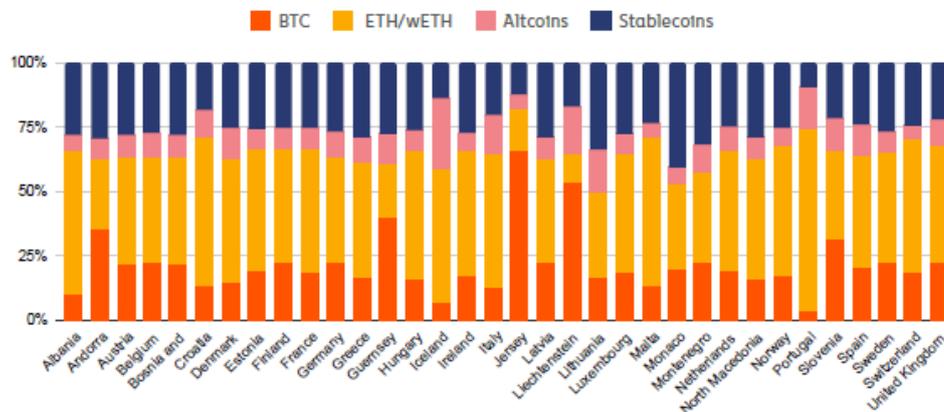
<sup>88</sup> <https://www.20minutes.fr/high-tech/3180903-20211124-le-salvador-construira-la-premiere-bitcoin-city-au-monde>.

<sup>89</sup> At the start of 2022, another leading actor in this activity, Russia, also decided to prohibit crypto-asset mining on its territory.

<sup>90</sup> Chainalysis is private company specialized in tracking crypto asset transactions. Figures presented in this section come from its annual report on international crypto-asset trade flows through peer-to-peer platforms (Geography of cryptocurrency 2021).

<sup>91</sup> Crypto-asset trading platform that directly connects buyers and sellers of crypto-assets, without any intermediary. In this case, the buyer can choose his counterparty, unlike a platform where the execution is automated. Fees are, in theory, lower and the customer is totally free to choose any counterparty and any terms of payment – in crypto-assets and via a particular payment system (such as Paypal for example). Moreover, peer-to-peer platforms are not under the authority of any legislation and are, therefore, not exposed to regulatory risks. Nevertheless, liquidity risks are important, as well as the counterpart risk since, in the absence of regulation and supervised transactions, clients can create false profiles. Bybit and Binance are among the most popular peer-to-peer platforms.

**Figure 81: Transactions of central, northern and western European countries by category of crypto-assets**



Source: Chainalysis, *Geography of crypto-asset 2021*

The transactions involving European participants in the crypto-asset market are mostly concentrated on Ethereum assets or using the technology of the same name, highlighting the popularity of this ecosystem in crypto-assets transactions, whether they take place via centralised finance (CeFi) or decentralised finance (DeFi) protocols. Note, too, the surge in trading in "stablecoins", which account for more than 25% of trading for a great majority of countries.

### 2.5.3 Stablecoins: a market which has experienced/seen severe turmoil

Stablecoins are crypto-assets designed to maintain a stable value by having their price pegged to another asset, usually the dollar (which is the case for the USDT (the "Tether") and the USD Coin, for example), but also potentially to baskets of assets or commodities. By being indexed to another asset, the objective of a stablecoin is to reduce the volatility that first generation crypto-assets display, because its value is supposed to remain constantly pegged to that asset. In practice, the degree of stability may in fact vary, and will depend on how the value of the stablecoin is pegged to its benchmark asset, the nature and level of the reserves established in order to ensure this stability, and its governance.

#### □ Centralised (CeFi) "stablecoin"

A crypto-asset is said to be a centralised "stablecoin" when its value is guaranteed by assets outside the crypto-asset ecosystem. The reserves of the issuing company are held directly in fiat currencies, especially in dollars, or in other assets that are thus described as off-chain. In which case, a distinction should be made between reserves in cash and liquid sovereign securities, and reserves which may comprise corporate bonds or other types of securities, which are less liquid and which could mean that an issuer cannot effectively guarantee the value of its "stablecoin". It is in this category that Tether and USDC stablecoins can be found.

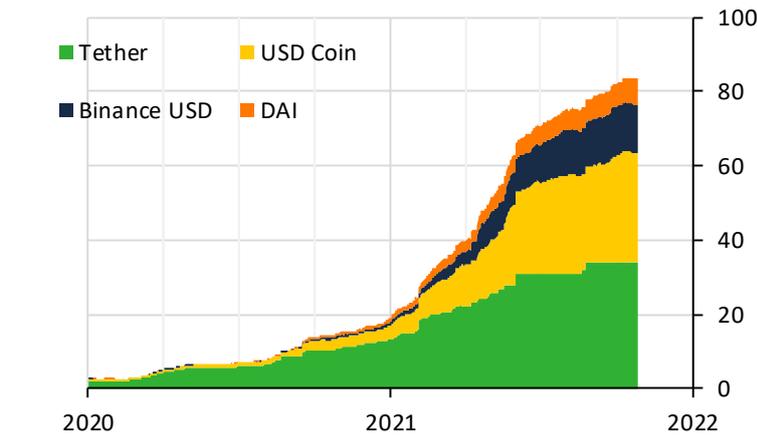
#### □ Decentralised (DeFi) "stablecoin"

The value of a "stablecoin" can also be pegged to other crypto-assets, while maintaining its objective of parity with a fiat currency. We then talk about a decentralised "stablecoin". In this case, the issuer has no fiat currency reserves capable of guaranteeing the value of the crypto-asset, but it is guaranteed by other crypto-assets. Nevertheless, because of the nature of the collateralisation, the "stablecoin" is exposed to share risks inherent to the assets that make up its reserve, especially in terms of volatility and governance. It is possible to identify two subsets:

- On the one hand, a decentralised "stablecoin" collateralised by other crypto-assets. DAI is the most popular "stablecoin" of this category, as of June 2022, its collateral consisted of 50% USDC and 11.6% Ethereum while offering a collateralisation rate of 128%.

- On the other hand, an algorithmic “stablecoin” whose operation is based on smart contracts that adjust the number of “stablecoins” in circulation, upward (by issuing tokens) or downwards (by “burning” tokens) as soon as a deviation occurs in the parity that the crypto-asset defend. This is how Terra “stablecoin” operates (see Box 3).

**Figure 82: Market capitalisation of the main second-generation digital assets, stablecoins (USD billion)**



Source: Bloomberg

#### ❑ Strong appeal of stablecoins for investors

Stablecoins experienced spectacular growth in 2021, with a market capitalisation climbing from \$20 billion at the start of 2021 to more than \$80 billion at end-December 2021.

The growth of stablecoins went hand-in-hand with the growth of crypto-asset trading venues such as Binance or Coinbase. Tether is the leading stablecoin in terms of market capitalisation (\$32 billion at end-2021). The USD Coin and Binance USD are the stablecoins of Coinbase and Binance respectively, and offer new solutions for payment directly in crypto-assets. Lastly, DAI’s growth is due to the specific features of its reserves, which consist of crypto-assets, mostly Ethereum.

Although stablecoins cannot take the place of fiat currencies, they are key to crypto-asset trading. When a transaction is executed on a crypto-asset trading venue, investors have a choice between retrieving the value of their asset in currency and then reinvesting that amount in a new crypto-asset, and performing the same transaction but intermediated by a stablecoin. In the first case, the investor must incur the costs of conversion to fiat currency, whereas in the second case these costs are not incurred because they are denominated in stablecoins.<sup>92</sup>

#### ❑ Assets which remain risky - the Terra UST case

However, stablecoins cannot be assimilated to fiat currencies, which have an intrinsic value and are issued under the authority of a central bank. Indeed, despite their reserves, stablecoins do not offer the guarantees of a legal

<sup>92</sup> International transfers in stablecoins do not require currency conversion either, and are compatible with international payments systems, which can also reduce trading costs.

currency. Crisis and destabilisation on “stablecoins” occur in different ways depending on their nature:

- Destabilisation of CeFi « stablecoins » occurs when the holders no longer have confidence in the crypto-asset issuer to defend its reserves.
- Destabilisation of DeFi « stablecoins » occurs when the decline in the value of collateral-backed crypto-assets leads to the activation of smart contracts and to a mechanism of massive liquidation, causing the stablecoin to lose all its value, as was the case in May 2022 for the Terra UST (see Box 3).

Moreover, as for any crypto-asset, the anonymity surrounding stablecoins can make them means for money laundering or for funding unlawful activities. Lastly, most tokens (a family which includes the stablecoins) are issued by trading platforms which are also positioned as counterparty for their clients.<sup>93</sup> This context generates a risk of conflicts of interest and raises questions concerning the integrity of a system in which disturbances specific to the platform could have knock-on effects on the stability of these assets, and vice versa.

#### ❑ Assets that are not very transparent

The fall in the price of Terra in May 2022 is not the first time the market for stablecoins has become unstable. In October 2021, the publication of the composition of Tether's reserves by Bloomberg revealed that the stablecoin was not entirely pegged to the dollar, contrary to the company's assertion. Its reserves also consisted of unsecured loans and digital assets. As a consequence, the CFTC fined Tether \$41 million for misrepresentations and a lack of professional audits of its reserves.<sup>94</sup> Tether now publishes the aggregate composition of its reserves quarterly, which is validated by a professional audit. In this it follows the model of the USD Coin, the stablecoin issued by Circle and Coinbase, for which the value of its reserves in cash and US short-term sovereign bonds has been published every month since July 2021.

#### Box 3: Fall in the price of the Terra UST

Despite their goal of keeping volatility in check, it can happen that stablecoins deviate significantly from that goal.

##### ***Massive triggering of smart contracts***

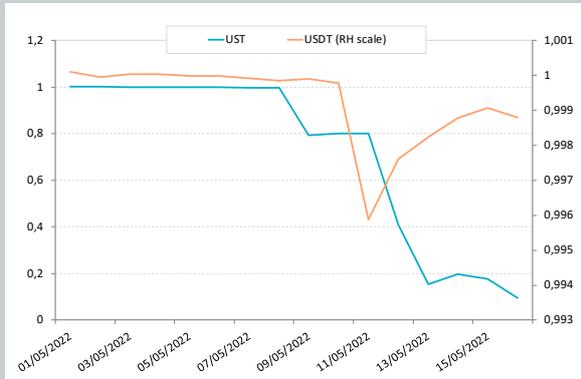
The UST is a stablecoin supported by a public algorithm mechanism based on the Terra blockchain to ensure its peg to the dollar. Its satisfactory functioning relies on arbitrage between the price of the UST and the dollar. When the price of the UST is less than one dollar, arbitragers can trigger the Terra blockchain's smart contract to eliminate (burn) the UST in order to obtain a dollar. Thereby, the total supply of USTs decreases so as to cause its value to rise until there is a return to equilibrium. However, this relationship is not so linear and direct. UST investors indeed obtain a smart contract, but one which offers them the possibility of exchanging USTs not for dollars but for the value of a dollar in the Luna crypto-asset (of the same Terra blockchain). Thus, an investor who wants to retrieve a dollar must again sell the Luna tokens obtained.

Consequently, following the Fed's announcements regarding US interest-rate hikes and the rise in the US dollar exchange rate, all the cryptocurrencies plunged as investors preferred direct exposure to the US currency. The UST deviated from its parity, resulting in the massive triggering of smart contracts which, in theory, were designed to restore the dollar peg. However, the price of the Luna also dropped under the downward pressure and the influx of investors wanting to sell the Luna tokens obtained through triggering of the smart contracts. On 9 May, the Luna Foundation Guard which endeavours to defend parity with the dollar took out a loan of \$1.5 billion to acquire bitcoins as reserves. The loan permitted a sharp rise in the price of the Luna, which had already lost 52% of its value between 28 March and 9 May. As of the next day, however, the bitcoin reserves established proved insufficient to be sold in exchange for USTs, completely wiping out investor confidence. The Luna lost all its value and the UST, as a consequence, shed more than 90% of its value on 19 May and was now worth only 9 cents.

<sup>93</sup> <https://www.sec.gov/news/speech/gensler-remarks-crypto-markets-040422>

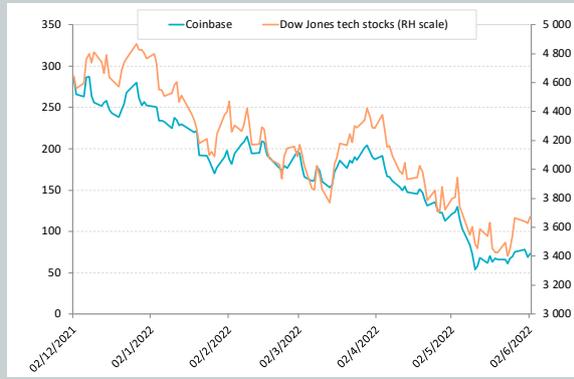
<sup>94</sup> Meanwhile iFinex, a platform belonging to the same group, had to pay a fine of \$1.5 million.

Figure 83: Price of the UST and of Tether (USDT)



Source: CoinMarketCap

Figure 84: Dow Jones Index, technology stocks



Source: Refinitiv

### A loss of trust in stablecoins

The fall of the UST caused a loss of trust in stablecoins. The uncertainty regarding the ability of the stablecoins to guarantee their peg spread to Tether, the leading stablecoin by capitalisation, which fell to \$0.996 on 11 May, a level seldom reached previously. However, the stablecoin's price swiftly recovered, returning to \$0.999 at the start of the following week.

The stock prices of actors in the crypto-asset sector, such as Coinbase or even Robinhood which propose these securities, and in the high-tech and innovation sector, were impacted: by 19 May, the Dow Jones index of technology stocks had declined by 22% since 1 January 2022, and Coinbase's stock/share price had fallen 75%. The share price of Robinhood declined by around half over the same period

### Implications for funds that have invested in crypto-assets

The Singaporean speculative hedge fund Three Arrows Capital has also suffered the full force of the fall in the price of crypto-assets and particularly that of "stablecoins". According to one of its two founders, Kyle Davies, the fund had invested \$200 million in UST, and never managed to recover from its losses on the crypto asset. On June 22, when Three Arrows Capital defaulted on the payment of the equivalent of \$310 million in bitcoin and \$350 million in USDC.

## ❑ Crypto asset investment platforms that cannot honour asset withdrawal requests

The fall in the price of crypto-assets has had strong repercussions for crypto-asset investment organizations. Celsius Network, a centralized platform (CeFi) offering crypto-asset investments, has, for example, suspended withdrawals, exchanges and transfers for its clients since Monday, June 13.

Centralized platforms store their clients' crypto-assets in exchange for a fee. Their model is thus similar to that of a bank that distributes interest to its depositors but without the guarantees and regulatory framework that ensures its customers can withdraw their deposit at any time. Celsius offers high returns, up to 18% annual return.

The known weaknesses of Celsius lie, in part, in its decision to devote part of its customers' deposits in Ethereum to immobilize them in smart contracts. The crypto-assets thus invested are then no longer available to the platform, which obtains, in exchange, new tokens, namely staked Ethereum (stETH) with a unit value with Ethereum. The stETH were supposed to allow Celsius to meet the customers' requirements during the loan period. However, during the month of June, stETH also experienced instabilities and a loss of investor confidence that caused it to deviate from its parity with Ethereum and degraded its liquidity. Celsius found itself unable to meet its customers' withdrawal requests, leading to the suspension of withdrawals, exchanges and transfers since then. Celsius' decision is especially damaging because it applied to all of its members, including those who did not invest in Ethereum or in investment programs with more moderate returns and risks.

## 2.5.4 Crypto-asset correlations and co-movements

### □ Assets showing significant co-movement

The crypto-asset sector historically shows significant co-movement, making the arbitrage and diversification of investments problematic. The 2021 Markets and Risk Outlook showed strong positive correlations between six major crypto-assets,<sup>95</sup> suggesting that risk diversification was limited between 2020 and early 2021.<sup>96</sup> In the remainder of this section we analyse the co-movement shared by a group of 29 crypto-assets consisting of first-generation crypto-assets, DeFi crypto-assets, including stablecoins, as shown in the following table.

**Table 3: List of crypto-assets by category<sup>97</sup>**  
(Capitalisations in euros)

First-generation crypto-assets		CeFi and Defi crypto-assets			
Name	Market capitalisation (in euros)	Stablecoins		Other	
		Name	Market capitalisation (in euros)	Name	Market capitalisation (in euros)
Bitcoin (BTC)	545 665 944 282	Tether (USDT)	70 041 164 519	Binance Coin (BNB)	47 381 370 175
Ethereum (ETH)	231 027 327 894	Dai Stablecoin (DAI)	6 163 859 008	Avalanche (AVAX)	7 923 430 875
Ripple (XRP)	19 254 975 717			Lido Staked ETH (STETH)	7 841 627 535
Cardan (ADA)	17 228 402 073			Polygon (MATIC)	4 992 621 121
Solana (SOL)	17 001 094 269			Cronos (CRO)	4 702 314 349
Dogecoin (DOGE)	10 870 933 995			Uniswap (UNI)	3 482 305 214
Polkadot (DOT)	9 513 515 249			ChainLink (LINK)	3 177 623 016
Tron (TRX)	6 845 974 349			Maker (MKR)	1 334 802 983
Shiba (SHIB)	6 234 477 285			Pancake Swap (CAKE)	1 280 615 795
Litecoin (LTC)	4 771 490 672			Aave (AAVE)	178 221 635
Near protocol (NEAR)	4 038 711 656			Terra (LUNA)	977 000 170
Ethereum classic (ETH_c)	2 657 097 531			Compound (COMP)	453 332 921
EOS (EOS)	1 240 934 295			Synthetic (SNX)	293 080 799
				Yearn.finance (YFI)	331 700 551

Source: CoinMarketCap

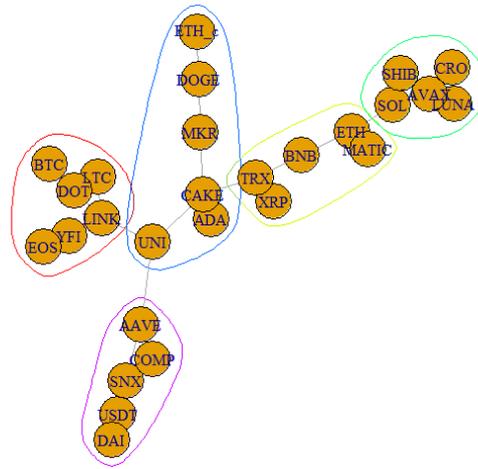
We offer to examine the correlation of our sample group of crypto-assets by performing a network analysis. To do so, we calculate the correlations between each pair of crypto-assets and convert them into distances in order to build a graph linking all the crypto-assets with one another, whenever a non-null distance exists. In order to highlight the key role played by certain crypto-assets in price diffusion, we choose to show only one connection for each crypto-asset, namely that which represents the smallest distance (i.e. the highest correlation). We obtain a graph-based minimum spanning tree.

<sup>95</sup> Bitcoin, Ether, Ripple, Cardano, Binance Coin, Dogecoin

<sup>96</sup> Virtually all the crypto-assets shared a strong upward movement in early 2021. After correcting for these trends, the correlations found proved slighter and sometimes not significant, although still positive.

<sup>97</sup> In the following analysis, we select only two “stablecoins” even though there are far more with large market capitalisations (e.g. USD Coin). Since the leading stablecoins are pegged to the dollar, introducing more of them would have skewed the correlation analysis of these assets and overestimated their importance in the network of crypto-assets thus defined. Therefore, only Tether (the leading capitalisation) and Dai (for its functional role which links the “stablecoin” to the value in Ethereum of one dollar) are selected.

Figure 85: Correlation between crypto-assets

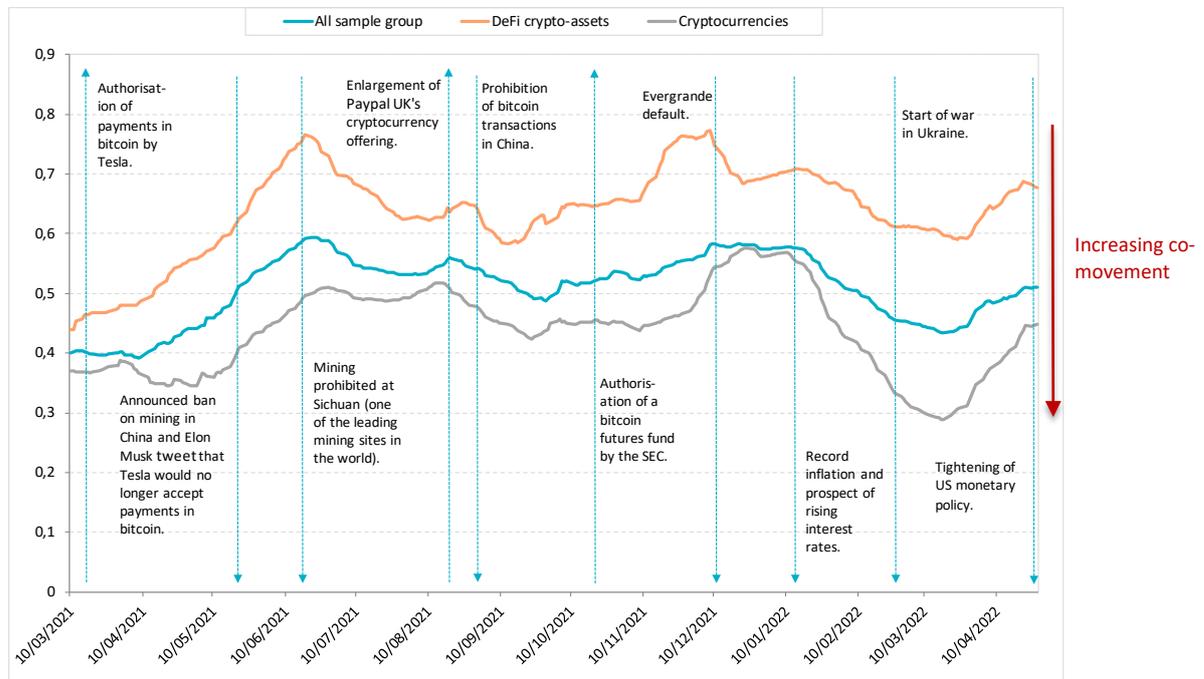


Sources: Refinitiv, CoinMarketCap

The analysis shows five distinct groups of crypto-assets showing a high correlation with one another when they belong to the same group (i.e. a small distance). It is worth noting that the Ethereum crypto-asset, which is the blockchain most used by DeFi crypto-assets, is strongly correlated with Polygon (MATIC) and Binance Coin (BNB), two assets encoded in this environment. Likewise, the Bitcoin is strongly correlated to the Litecoin (LTC), a crypto-asset using the Bitcoin technology. In the group located at the bottom the graph, we find, not surprisingly, the USDT and DAI, which are both pegged to the dollar but also mostly DeFi assets, which therefore resonate more strongly with one another.

Once the links existing between the crypto-assets have been identified, it is appropriate to examine the degree of integration of the market for crypto-assets, i.e. their tendency to move together (known as "co-movement"). We develop an indicator corresponding to the total minimum distance connecting all the crypto-assets (called "normalised length"). The smaller this total distance, the higher co-movement between the crypto-assets, and vice versa. Thus, a decrease in the indicator indicates that the tendency of a crypto-asset to share the same price dynamics is increasing (their evolution are close to each other), while an increase in the indicator reflects price behaviour that diverge more.

Figure 86: Analysis of co-movement between crypto-assets<sup>98</sup>



Sources: Refinitiv, CoinMarketCap.

The blue arrows reflect the direction of the price dynamic: upward or downward.

It can be seen from Figure 86 that the first-generation crypto-assets have far greater co-movement than DeFi crypto-assets. Their market is more integrated. Analysis the indicator's movement shows, moreover, that co-movements, for both types of crypto-assets, are more or less great and change significantly over time, depending on the announcements or events impacting their markets.

In 2021, for example, the DeFi crypto-assets were highly sensitive to announcements by China. After having announced that it wanted to gradually prohibit the crypto-mining in May 2021, the Chinese government took action at mid-June 2021 in the region of Sichuan, one of the world's leading crypto-mining sites. On the day of this announcement, DeFi crypto-assets began to show an increasingly significant co-movement until September with China's prohibition of bitcoin transactions. The co-movement started increasing again at the end of 2021, at a time when the weaknesses of the Chinese real estate giant Evergrande spread to crypto-assets. This is because numerous stablecoins use debt securities to guarantee their value. The leading stablecoins such as Tether announced that they held no Evergrande securities, but the fall of the Chinese giant had repercussions on all Chinese securities.

By comparison with DeFi crypto-assets, the co-movement of first generation crypto-assets remained relatively stable between June 2021 and December 2021.

The end of 2021 and start of 2022 was marked by the war in Ukraine, a record level of inflation in many developed economies, and the announcement of an interest-rate hike in the United States, having a direct impact on crypto-assets. Note that the co-movement has been exacerbated at the start of the war in Ukraine, at the end of February when crypto-assets could have been seen as a way for Russia to get around international sanctions.

<sup>98</sup> On the y-axis, we find the value of the minimum distance of the minimum weight spanning tree, i.e. the translation into Euclidean distance of the sum of the strongest correlations of the crypto-assets in the panel. This value is relative and cannot be interpreted as such, nevertheless, it provides an analytical framework for identifying the evolution of the co-movement of crypto-assets.

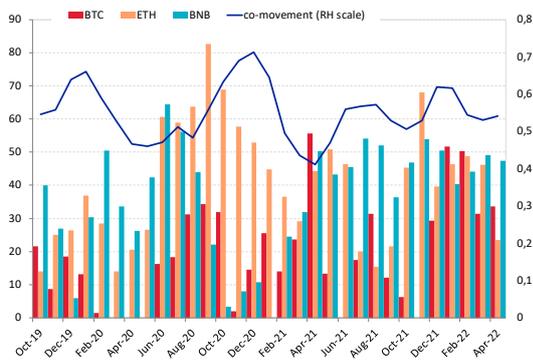
□ **Main crypto-assets strongly influenced the market as well as recent market events and changes in monetary policy**

In the analysis that follows, we reduce the sample to 16 crypto-assets<sup>99</sup> so as to cover a broader period of analysis, starting from 10 October 2019. The aim here is to measure the correlation between the crypto-assets but also with external factors (such as macroeconomic factors) in order to understand how prices change over time. To do this we use a centrality measurement which captures the degree of correlation between a given factor and the crypto-assets. The higher a factor's centrality, the greater its influence on the price of crypto-assets.

We first consider the influence of each crypto-asset on the price of the other crypto-assets. Accordingly, a centrality indicator is calculated for each of the 16 crypto-assets of our sample. Figure 130 shows the monthly averages of this centrality indicator obtained for the three crypto-assets showing the greatest centralities on completion of the analysis: Bitcoin (BTC), Ethereum (ETH) and Binance Coin (BNB).

Then, we consider the effects related to external macroeconomic factors taken separately, namely: the influence of a market index (the S&P 500), of US monetary policy (captured via 10-year US Treasury notes), the US dollar exchange rate and the price of gold (as a safe haven proxy). Figure 131 presents the results obtained.

**Figure 87: Crypto-asset centrality indicators**



Sources: Refinitiv, CoinMarketCap, Fed

**Figure 88: Macroeconomic centrality indicators**

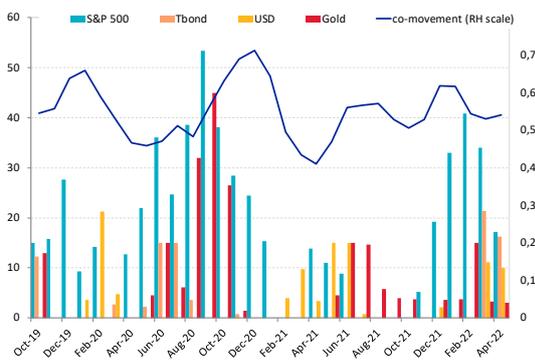


Figure 130 illustrates the preponderant influence of Ethereum and its blockchain on crypto-asset prices. It appears that this crypto-asset is that which has the greatest centrality on average over the analysis period. Its blockchain is also, by far, that most used by non-mineable crypto-assets<sup>100</sup> and DeFi assets. It is therefore not surprising to see it displaying generally stronger correlations than the Bitcoin. On the other hand, Binance Coin has the greatest proximity with the crypto-assets of the sample group from the second half of 2021. This result confirms the increasing importance of Binance, whose trading platform and “stablecoin”, Binance USD, are two assets highly linked to the CeFi and the DeFi.

Moreover, the moments when co-movement is strongest correspond to the phases in which Bitcoin, Ethereum and Binance Coin show the greatest centralities, i.e. when these three crypto-assets have the strongest correlations. It is possible that in more unstable market phases these three crypto-assets, which are very liquid and well established, centralise a large proportion of investor information in these markets and that the price information then spreads from these assets to the others.

Figure 131 shows that the macroeconomic indicators have a centrality level lower than that of the three leading crypto-assets. The centralities for these factors were extremely strong in the summer and autumn of 2020, in the first quarter of 2022 and, to a lesser extent, at end-2019 and in the spring of 2021:

<sup>99</sup> The 16 crypto-assets selected correspond to those whose price has been available since 10/10/2019. We accordingly select 9 first generation crypto-assets (BTC, ETH, XRP, ETH\_c, LTC, ADA, DOGE, EOS and TRX), 1 “stablecoin” (USTD) and 6 other DeFi crypto-assets (BNB, MKR, LUNA, LINK, CRO and MATIC).

<sup>100</sup> Cryptocurrencies are said to be non-mineable when they do not have their own blockchain and use one that is already established.

- The S&P 500 market indicator shows a significant correlation with crypto-assets in 2020, especially at the end of the first lockdown when the economic recovery also coincided with a phase of rising crypto-asset prices. This correlation has also been significant for the sample in the most recent months, reflecting an increasingly strong correlation between crypto-assets and conventional financial assets. However, this correlation does not necessarily imply a causal relation but rather reflects the fact that all the crypto-assets react to the same factors.
- The influence of US monetary policy, captured by interest rates, has increased since the start of 2022, due to the Federal Reserve's interest-rate hikes.
- The relationship with the dollar was fairly volatile during the analysis period, leaving little room for interpretation.
- Gold showed an especially significant centrality of correlations in the summer of 2020, when the search for investments in safe havens or at least outside equity markets may have had repercussions on crypto-assets.

To conclude this analysis of the correlations between crypto-assets, it would appear that, despite their disparities, crypto-assets are frequently highly dependent on one another. On the one hand, this points to low potential for diversification and, in particular, a very unstable diversification over time for crypto-assets investment strategies. At the same time, such levels of correlation arouse fears that a shock affecting a crypto-asset could have repercussions on the whole sector. In precise terms, there is the risk of a shock affecting crypto-assets having their own blockchain, which could have repercussions on first generation crypto-assets or DeFi assets employing the same blockchain technology.

### 2.5.5 Towards European regulations

Europe has decided to establish a regulatory framework designed to take advantage of the potential offered by the emergence of crypto-assets and to better regulate this ecosystem. Accordingly, on 24 September 2020, the European Commission published a proposal for a regulation on crypto-asset markets, *Regulation on Markets in Crypto-assets*, the so-called MiCA Regulation.

It basically covers four areas:

- Initial coin offerings and the admission of tokens to trading, with the exclusion of stablecoins;
- Public offerings and admission of stablecoins to trading, and organisation and good conduct rules for the issuers of these stablecoins;
- The provision of crypto-asset services by service providers;
- The prevention of market abuse regarding crypto-assets.

The sections relating to token offerings and the provision of crypto-asset services by MiCA service providers are directly inspired by the French regime introduced by the PACTE Law, the difference being that MiCA establishes a regime that is compulsory as opposed to optional.

The most recent events seen on crypto-asset markets, their relative opaqueness and their high degree of correlation and the risks entailed show that their regulation is proving necessary. The proposed regulation is currently still under discussion and in any case, will probably not come into force until 2024.

#### Box 4: Proposed “Stable Coin” Regulation in MiCA

The MiCA regulation identifies two categories of “stablecoins”:

- Asset-referenced tokens which aim to maintain a stable value against a basket of *fiat* currencies, one or more commodities, crypto-assets or a combination of such known as off-chain assets.
- Electronic money tokens (e-money), which aim to maintain a stable parity with a single fiat currency.

##### **Asset-referenced tokens**

The issue of asset-referenced tokens will only be possible for entities established in the European Union. The issuance will be conditional on the prior approval of a white paper describing specific rules to be respected in terms of transparency concerning information provision, conflict of interests, governance, capital requirement, reserve management and custody arrangement. The white paper will also have to provide standards as regards of the withdrawal of the crypto-asset.

##### **Electronic money tokens**

The issuance of e-money tokens will be restricted to credit institutions, electronic money institutions or specifically authorized institutions. The holders of e-money tokens will have a right to redeem at any moment. The issuance of e-money token will also underlie the approval of a white paper governing rules of conduct, reserve management, custody arrangement and capital requirement.

##### **Significant “stablecoins”**

“Stablecoins” could be qualify as “significant” by the EBA, which would then take over their supervision. The criteria used to identify them are the size of customer base, the value of their capitalisation, the number and the size of transactions, the significance of cross-border activities and the interconnectedness with financial system. In that case, they would be subject to more stringent liquidity and risk management requirements and have to post higher capital.

Although the supply of euro “stablecoins” is currently low, it is likely to grow: the capitalization of the Tether Euro (EURT) reached around 400 million euros as of June 22, 2022 and Circle, issuer of the USDC, the second “stablecoin” in terms of capitalization, announced the launch of the Euro Coin (EURC) on American platforms from June 30, 2022.



## ASSET MANAGEMENT

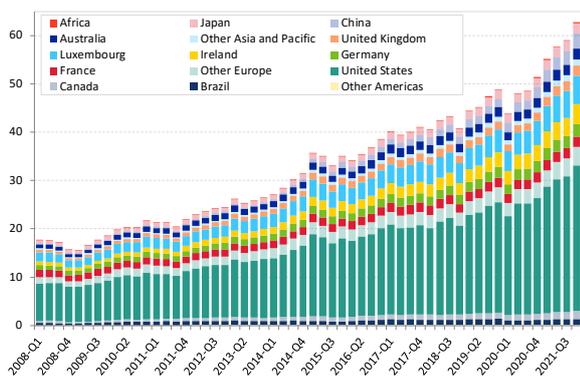
### 3.1. 2021 REVIEW OF COLLECTIVE INVESTMENT SCHEMES WORLDWIDE

#### 3.1.1. Assets under management (AuM) rose sharply in 2021, +22% year-on-year, crossing the EUR 60 trillion mark for the first time at the end of December 2021

According to the European Fund and Asset Management Association (EFAMA), open-ended funds (excluding funds of funds) managed EUR 62.7 trillion at the end of 2021, compared with EUR 51.4 trillion a year earlier, representing annual growth of 22% (compared with 5.2% in 2020). This strong growth is mainly explained by a valuation effect (EUR 8.0 trillion) and, to a lesser extent, by an inflow effect (+ EUR 3.3 trillion). This very high valuation effect can be explained by the rise in financial markets in a context of post-crisis recovery and contrasts with last year's results, where the inflow effect dominated.

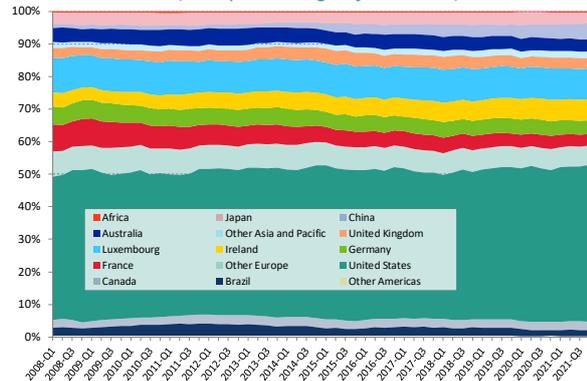
Figure 89: Net assets of worldwide collective investment schemes (excluding funds of funds), by major fund domicile jurisdiction

Figure 89.1: Net assets by major fund domicile jurisdiction (trillions of euros)



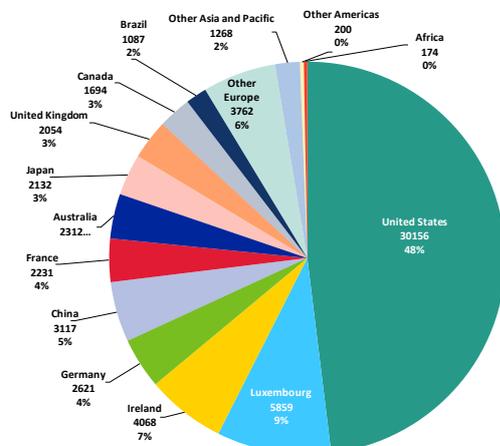
Source: EFAMA, Worldwide Historical Public Report Euro 2021-Q4

Figure 89.2: Weight of net assets of each major fund domicile jurisdiction (as a percentage of the total)



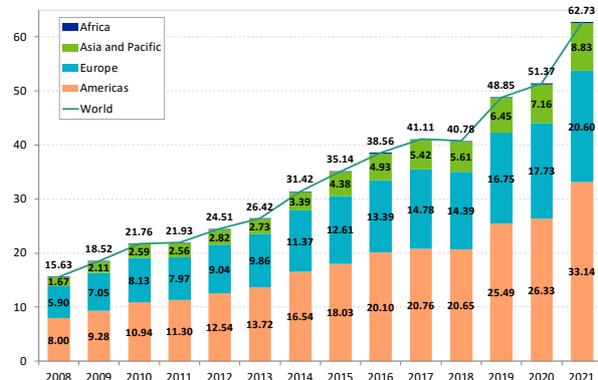
The geographical structure of the market (in terms of domiciliation) remains unchanged

Figure 89.3: Breakdown of assets under management in Q4-2021



Source: EFAMA, Worldwide Historical Public Report Euro 2021-T4

Figure 89.4: AuM by major fund domiciliation region (trillions of euros)

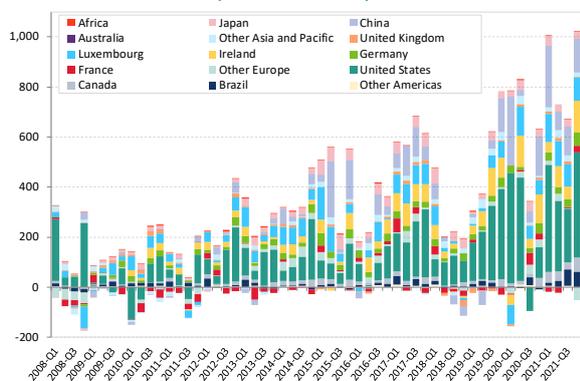


### 3.1.2. Global inflows rose by EUR 1 trillion in 2021

Although the increase in assets under management in open-ended funds was mainly due to valuation effects, inflows remained robust in 2021. In particular, compared with the levels recorded in 2020, net subscriptions increased by EUR 1.0 trillion (from EUR 2.3 trillion in 2020 to EUR 3.3 trillion). Investors mainly focused on US funds, which posted positive net flows in all four quarters of 2021, totalling around EUR 1.3 trillion in 2021. The number of subscriptions to European funds was also higher than in 2020: EUR 830 billion in 2021 compared with EUR 620 billion in 2020. Last, Chinese funds recorded an increase in subscriptions of around EUR 570 billion in 2021 (of which nearly EUR 250 billion in Q1 2021).

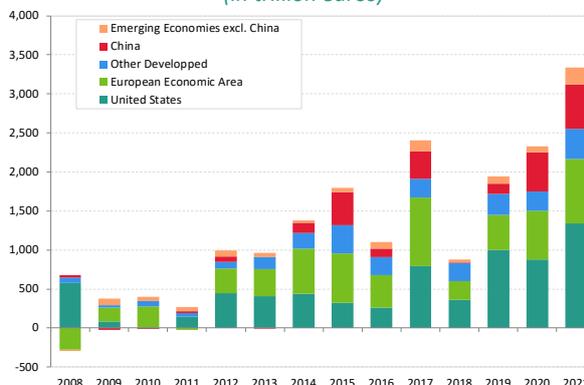
Figure 90: Net flows of subscription

Figure 90.1: Net flow of subscriptions and redemptions by country (in billion euros)



Source: EFAMA, Worldwide Historical Public Report Euro 2021-T4

Figure 90.2: Net flows of subscriptions and redemptions by domiciliation area (in trillion euros)

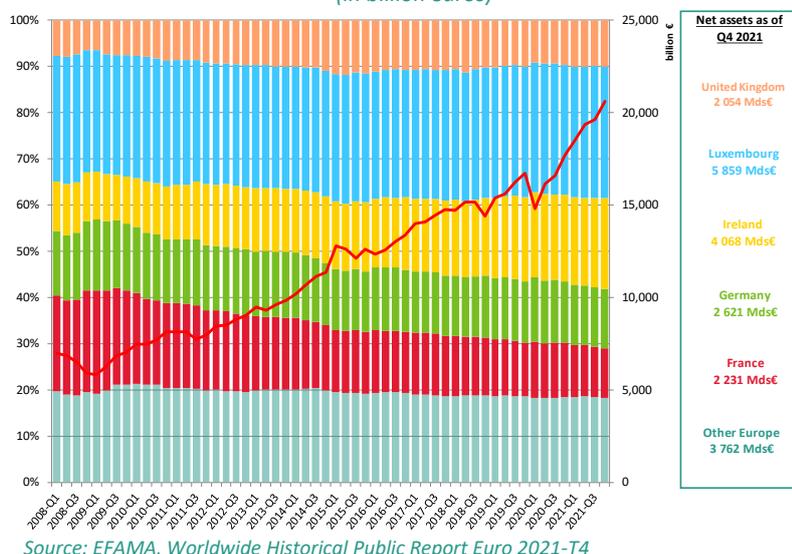


## 3.2. BREAKDOWN OF THE MARKET IN EUROPE

### 3.2.1. European collective investment set a new record, with more than EUR €20 trillion in assets under management

Assets under management in European funds increased by EUR 2.3 trillion in 2021 and exceeded EUR 20 trillion in net assets under management at the end of 2021 (compared with EUR 17.7 trillion in 2020). In terms of domicile, the ranking has remained unchanged from recent years: Luxembourg-domiciled funds manage approximately 29% of European AuM (i.e. EUR 6 trillion), Ireland accounts for around 20% of the market, while Germany accounts for around 13%. France follows with 11% and the UK with 10%.

**Figure 91: Net assets of funds domiciled in Europe and breakdown by jurisdiction**  
(in billion euros)



Irish-domiciled funds saw the highest growth in AUM in 2021 (+22%) with an additional EUR 740 billion under management. Luxembourg-domiciled funds recorded the highest growth in absolute terms, with EUR 890 billion more at the end of 2021 than in 2020 (up 18%). UK domiciled funds posted an increase in assets under management of EUR 340 billion in 2021 (+20%) while German funds showed an increase of EUR 250 billion over the same period (i.e. a growth of around 11% in assets under management). Lastly, French funds recorded a growth of around 8% in their AuM (i.e. EUR 164 billion, including around EUR 90 billion in Q4 2021 alone).

### 3.3. FOCUS ON FRENCH FUNDS

This section looks at funds domiciled in France, i.e. governed by French law. For our analysis, we used the aggregated series of the Banque de France (monthly and annual data) for the long historical view. For the detailed view of the beginning of 2022, we used the granular supervisory data submitted to the AMF.

### Box 5: Conflict in Ukraine: the impact is limited at this stage, although monetary tightening must be closely monitored

The sanctions imposed by the international community against Russia and its Belarusian ally, as well as the countermeasures adopted by Russia, have made it extremely difficult to value certain assets. Moreover, the closure of markets<sup>101</sup> and the prohibition on investors buying or selling certain securities issued by many Russian and Belarusian issuers<sup>102</sup> have made it impossible to dispose of and value these securities.<sup>103</sup>

However, prior to the war, there were relatively few French funds whose portfolios included securities with ISIN codes associated with Russian, Belarusian or Ukrainian entities, or exposed to the currencies of these countries.<sup>104</sup>

At the end of 2021, only 86 funds held such securities. The cumulative total net assets of these funds was less than EUR 50 billion (2.2% of total AuM), and the securities in question (mostly bonds) represented EUR 1.5 billion and 9.3% of the portfolio of the funds concerned at most.

When we undertake a first level of look-through analysis of the investment funds held in French funds' portfolios, we find that (direct and indirect) exposure to ISIN-coded securities linked to Russia, Belarus and Ukraine remains very minimal (EUR 1.8 billion, i.e. EUR 300 million of additional exposures identified by look-through), even though the number of funds exposed increases significantly (747 funds). The maximum exposure remains at 9.3% of the portfolio.

Table 4: Share of Russian, Belarusian and Ukrainian ISIN listed securities in the portfolio of exposed French funds

	Without any look-through analysis								
	2019			2020			2021		
	Obs.	Avge	Max.	Obs.	Avge	Max.	Obs.	Avge	Max.
<b>EQUITY</b>	25	2.7%	9.1%	32	1.8%	8.8%	19	2.7%	7.2%
<b>BOND</b>	30	2.8%	12.0%	24	2.8%	9.9%	35	2.9%	9.3%
<b>DIVERSIFIED</b>	28	1.5%	9.7%	23	1.8%	8.7%	27	2.4%	8.0%
<b>MMF</b>	2	1.0%	1.5%	1	3.8%	3.8%	1	3.0%	3.0%
<b>OTHER</b>	3	1.1%	2.7%	4	0.6%	1.0%	4	0.5%	1.4%

	After a first stage of look-through								
	2019			2020			2021		
	Obs.	Avge	Max.	Obs.	Avge	Max.	Obs.	Avge	Max.
<b>EQUITY</b>	67	1.3%	9.1%	120	0.7%	9.0%	73	1.1%	7.2%
<b>BOND</b>	44	2.0%	12.0%	77	0.9%	9.9%	79	1.4%	9.3%
<b>DIVERSIFIED</b>	312	0.3%	9.7%	636	0.3%	8.7%	537	0.4%	8.0%
<b>MMF</b>	2	1.0%	1.5%	1	3.8%	3.8%	1	3.0%	3.0%
<b>OTHER</b>	19	0.3%	2.8%	21	0.3%	1.9%	19	0.3%	2.2%
<b>REAL ESTATE</b>	2	0.1%	0.1%	1	0.2%	0.2%	3	0.2%	0.2%
<b>RISK</b>	35	0.2%	1.5%	40	0.2%	2.5%	35	0.3%	1.4%

Source: Banque de France, CIU portfolios

Following major indices providers' decision to withdraw Russian securities from their benchmarks, the vast majority of asset managers chose to value the assets concerned at zero, which automatically lowered the net asset value of the funds exposed. Discussions currently take place at ESMA to develop guidance in this type of situation.

Unlike during the Covid crisis, when money market funds had to face more than EUR 48 billion in redemptions within two weeks, French funds as a whole did not experience massive waves of redemptions (despite an increase in outflows from certain investors active in the energy sector, in particular, who had to face significant margin calls). The only funds affected were bond funds, with a moderate outflow of EUR 17 billion (6% of net assets) between 1 January 2022 and 20 May 2022.

<sup>101</sup> For example, the Moscow stock exchange was closed for about one month.

<sup>102</sup> See <https://www.consilium.europa.eu/fr/policies/sanctions/restrictive-measures-against-russia-over-ukraine/history-restrictive-measures-against-russia-over-ukraine/> for an exhaustive view of the measures imposed by the EU.

<sup>103</sup> ESMA, for example, has issued a statement ("[Actions to manage the impact of the Russian invasion of Ukraine on investment fund portfolios](#)") aimed at promoting convergence between investment funds regarding the valuation of Russian, Ukrainian and Belarusian assets as well as allowing the implementation of side pockets.

<sup>104</sup> NB: Other assets, not reported in the Banque de France's portfolio database, may have exposure to the three countries or their currencies: this is the case of many OTC derivatives (for synthetic exposures), as well as certain certificates (or receipts) such as American Depositary Receipts or Global Depositary Receipts (ADR/GDR). ADR/GDRs are (negotiable) instruments issued by banks (American, European, etc.) representing baskets of shares of foreign companies, generally located in emerging countries.

The other fund categories were mainly affected by falling stock prices. As a result of these valuation effects, equity funds recorded a decrease in net assets of around EUR 52 billion over the same period, which corresponds to around 16% of net assets at the beginning of 2022.

Consequently, two synthetic ETFs with a thematic focus on Russia and managed by a French management company were forced to suspend redemptions in March (total cumulative net assets of less than EUR 15 million).<sup>105</sup> In April, a money market fund with less than 3% of its total net assets exposed to a Russian player also had to suspend redemptions while it set up a side pocket to ring-fence the securities in question. Lastly, a thematic fund suspended redemptions temporarily at the beginning of March due to the high volatility of nickel.

The war has pushed up energy and food prices, increasing inflationary pressures and prompting central banks to end their accommodative monetary policies. The current interest rate hikes will have an impact on the valuation of all portfolio securities. Special attention should be paid to bond funds, the maturity of which has increased in recent years in order to achieve yields in a context of very low or even negative rates.<sup>106</sup> Valuation shocks (unrealised losses) could prompt some investors to redeem their units, which could force managers to sell portfolio securities and realise the losses (with an additional deterioration in fund performance). This effect could be more pronounced for funds with exposure to high-yield lower liquidity bonds. More generally, long established funds will suffer from competition from new funds that do not have to manage a stock of older low-yield bonds.

Money market funds could also experience a temporary drop in performance as interest rates rise. However, the limited duration of their assets and the credit quality of corporate issuers on the short-term debt market should limit the short-term impact.

On the other hand, real estate funds combine a number of risk factors. In addition to the ESRB's warning about tensions in the residential property market in France (June 2019),<sup>107</sup> commercial real estate is facing difficulties as a result of the pandemic. The rise in interest rates, combined with the tightening of credit terms for households at the beginning of 2022,<sup>108</sup> could lead to a reduction in demand and price falls in areas under pressure, in which real estate funds are heavily invested.

### 3.3.1. Money market funds: a moderate outflow recorded in 2021

In 2021, French money market funds (MMFs) posted a decline of EUR 14.9 billion in assets under management (i.e. around 3.5%), according to statistics published by the Banque de France. More than 87% of this change in assets under management was due to net redemptions, which returned to pre-crisis levels at EUR 13 billion. With regard to the monthly breakdown of the change in assets under management, we observe the presence of the traditional quarterly cycle of subscriptions/redemptions. This is because redemptions are habitually more pronounced at the end of the quarter due to withdrawals made by investors in order to "pay quarterly charges or to reinforce cash assets in the balance sheets they publish".<sup>109</sup> For example, in 2021, the month with the most outflows was September, when approximately EUR 29 billion of redemptions were recorded, which is still far below the record negative flows recorded in March 2020 (around EUR 52 billion), followed by June with EUR 22 billion outflows. These examples clearly illustrate that there is a subscription/redemption cycle. Furthermore, between the end of December 2021 and the end of March 2022, we observe that total net assets of MMFs gradually decreased by around EUR 39 billion (i.e. approximately 10% of assets under management at the end of 2021).

<sup>105</sup> Only one of these two funds is domiciled in France. The second is domiciled in Luxembourg.

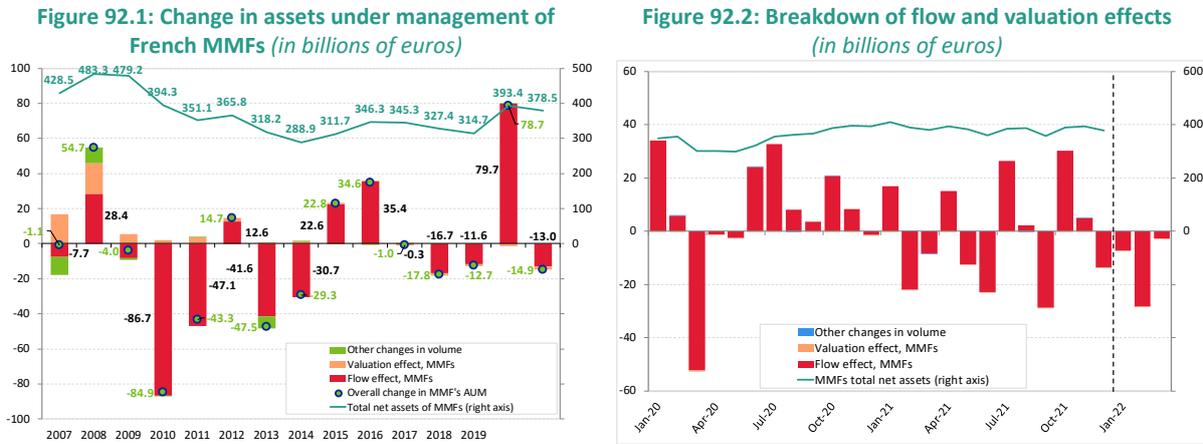
<sup>106</sup> The ECB's (2021) "[Financial Stability Review](#)", November 2021 shows that bond funds have increasingly moved into risky, long maturity bonds.

<sup>107</sup> See ESRB (2019). [Warning of the European Systemic Risk Board of 27 June 2019 on medium-term vulnerabilities in the residential real estate sector in France](#), published in the OJEU of 31 October 2019.

<sup>108</sup> See HCSF (2021). [Décision n°D-HCSF-2021-7 relative aux conditions d'octroi de crédits immobiliers](#) of 29 September 2021.

<sup>109</sup> AMF (2021). [2021 Markets and risk outlook](#). *Risks and Trends*, July 2021.

Figure 92: Change in French MMFs

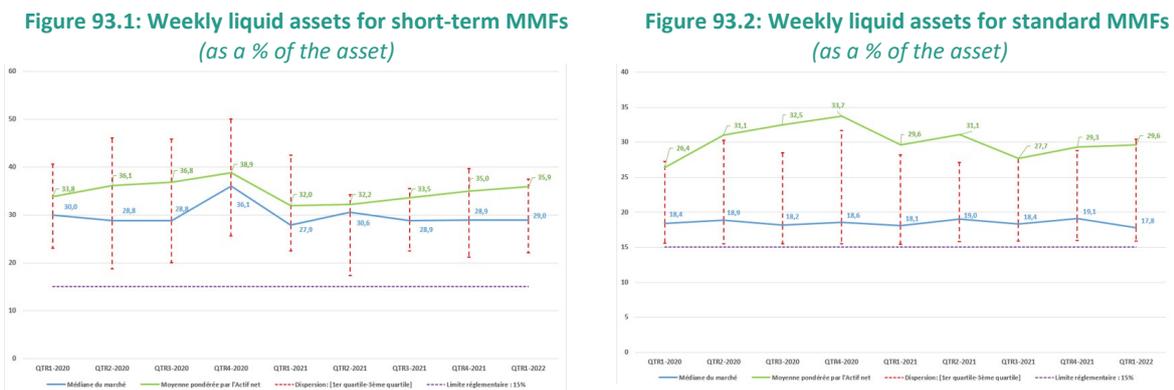


Source: Banque de France, Performance of CIUs, AMF

Note: The right-hand chart shows the valuation and the inflow effects between January 2020 and end-March 2022. The dashed line represents end-year 2021. Before this date, the data used comes from the Banque de France (Performance of CIUs database). In contrast, for the first months of year 2022, AMF's supervisory data was used. NB: The scope of the two data sources is not exactly the same.

In order to analyse the liquidity risk of French MMFs, in Figure 93 we show the quarterly trend of the average, weighted by net assets, of their weekly liquid assets (WLA) as well as the trend of the median and the dispersion of the buffers. We observe that, compared with end-2020, both short-term MMFs and standard MMFs have reduced their weekly liquid assets,<sup>110</sup> even though these remain above regulatory thresholds.<sup>111</sup> The average WLA of short-term MMFs is 35% of net assets at the end of 2021 (compared with 39% at the end of 2020) and that of standard MMFs is 29% (compared with 34% at the end of 2020). Lastly, we note that the weighted average is systematically higher than the median (and often even the third quartile for standard MMFs), which indicates that the largest MMFs have larger weekly liquid assets.

Figure 93: Weekly liquid assets



Source: AMF, MMFR data

<sup>110</sup> A similar trend can be observed for daily liquid assets (DLA).

<sup>111</sup> Set at 15% for weekly liquid assets and 7.5% for daily liquid assets.

### Box 6: Summary of international work and MMFR review

The previous editions of the AMF's Market and Risk Outlook commented on the massive redemptions suffered by money market funds (MMFs) during the peak of the COVID-19 crisis. In France, for example, according to the AMF (2020),<sup>112</sup> a total of EUR 46.4 billion was withdrawn from MMFs (more specifically from standard VNAV<sup>113</sup> in March 2020. Redemptions were even higher in the other two main European jurisdictions where MMFs are domiciled (Ireland and Luxembourg, whose money market funds have a much shorter maturity and are predominantly denominated in foreign currencies).

This box provides an overview of the various recommendations made by European and international organisations (FSB,<sup>114</sup> ESRB<sup>115</sup> or ESMA<sup>116</sup> in particular) to increase the resilience of MMFs in the future, highlighting the points of convergence or disagreement between the various proposals.

#### □ Recommendations on MMF assets

By offering investors daily liquidity and investing in securities with a longer maturity, MMFs perform a liquidity transformation. Too large a mismatch between the liquidity of assets and liabilities can lead to substantial fire-sale discounts in a stressed market, or even force the fund to suspend redemptions if the assets cannot be sold or are difficult to value. It should be noted, however, that despite the massive flows, all European MMFs were able to satisfy the redemption requests. In order to limit this risk, the various institutions are currently making proposals to increase portfolio liquidity, but they sometimes differ on the means to be used to achieve this:

- The FSB is assessing several possible reforms, among which we can find the introduction of more restrictive criteria on the securities that MMFs can have in their portfolios (eligible assets) and an increase in the share of short maturity or more liquid securities. Another option would be to introduce minimum liquidity buffer thresholds with a maximum maturity of two weeks.
- In Europe, ESRB proposes a reasonable increase in the size of daily liquid assets (DLA),<sup>117</sup> but with the inclusion of a mandatory public debt quota. It recommends easing the minimum requirements in times of crisis, to ensure that the buffers are usable at such times.
- ESMA recommends an increase in the minimum liquidity ratios in VNAV funds while leaving the current limits for LVNAV funds unchanged.<sup>118</sup> Unlike ESRB, ESMA does not recommend that all MMFs be required to invest in government debt. Instead, public debt securities with a maturity of less than 190 days could be included in the composition of weekly liquid assets for VNAV funds, just as it is currently possible for LVNAV funds only. ESMA's proposal provides for the strengthening of the "usability" of liquid assets in times of stress, which is already provided for in the regulations.

#### □ Recommendations on MMF liabilities

These proposals cover the use of liquidity management tools, as well as techniques for valuing MMF units.<sup>119</sup> The recommendations are all aimed at limiting the first-mover advantage and its self-fulfilling effects.

Increasing the ability of managers to implement liquidity management tools is a widely agreed measure. This is because, in the absence of such tools, initial redemptions may lead to portfolio distortion or losses for investors remaining in the fund, leading to the emergence of a run risk favoured by a first-mover advantage. In particular, tools that ensure outgoing investors bear the cost of the liquidity they seek (swing pricing, anti-dilution levies (ADL), liquidity fees) would make it possible to limit preventive redemptions when market conditions start to deteriorate and to encourage disposals that are proportional to the overall portfolio's composition (vertical slicing), rather than based on the decreasing liquidity of instruments (waterfall).

- The FSB sees the adoption of swing pricing or an equivalent measure to pass on the costs associated with the resulting sales of securities to outgoing investors as a possibility. A graduated approach to the use of the various liquidity management tools is also mentioned, with activation requirements if liquidity thresholds are

<sup>112</sup> AMF (2020) [2020 market and risk outlook. Risks and Trends](#), July 2020. See also AMF (2021). [2021 Markets and risk outlook. Risks and Trends](#), July 2021.

<sup>113</sup> Standard VNAVs are money market funds that are allowed to invest in money market instruments with a residual maturity of up to 2 years (compared with 397 days for other types of money market funds) and that value the assets at market prices.

<sup>114</sup> FSB (2021) "[Policy Proposals to Enhance Money Market Fund Resilience](#)". Final report.

<sup>115</sup> ESRB (2021) "[Recommendation of the European Systemic Risk Board on reform of money market funds](#)", ESRB/2021/9.

<sup>116</sup> ESMA (2022) "[Final Report: ESMA opinion on the review of the Money Market Fund Regulation](#)".

<sup>117</sup> In contrast, the minimum thresholds for weekly liquid assets would remain unchanged.

<sup>118</sup> A LVNAV (low volatility net asset value) fund is a money market fund that is allowed to invest in securities other than government debt and which, under certain conditions, offers a constant net asset value.

<sup>119</sup> According to the FSB, another proposal could be the introduction of a capital cushion or a minimum balance at risk to absorb potential losses related to portfolio valuation. However, both US and European regulators agree that this recommendation would not be viable.

crossed downwards. For example, liquidity fees or swing pricing would be activated first before being able to enforce gates.

- In a similar vein, ESMA and ESRB recommend that each European MMF introduce in its regulatory documentation at least one liquidity management tool that allows the cost of liquidity to be passed on (liquidity fees, adjustable rights vested in the fund<sup>120</sup> or swing pricing). ESMA insists that managers should be free to activate these tools at their discretion.

Some regulatory provisions concerning US MMFs invested in private debt and European LVNAV funds are likely to have had destabilising effects, by more or less automatically linking the crossing of liquidity thresholds to the imposition of liquidity fees or gates), thereby generating a threshold effect. According to certain studies,<sup>121</sup> during the COVID-19 crisis, this regulatory linkage encouraged some investors to redeem their shares before the minimum liquidity thresholds were crossed, thereby accelerating the crossing of the threshold. The elimination of regulatory links between minimum liquidity thresholds and the imposition of liquidity fees or redemption gates is supported by public authorities and other stakeholders (investors, managers).

Moreover, in Europe, threshold effects related to LVNAV<sup>122</sup> valuation techniques also seem to have played a role in encouraging redemptions.<sup>123</sup> The recommendations include the prohibition on valuing assets at amortised cost (an accounting method that allows LVNAVs to display a constant NAV for their units). This recommendation by ESMA and ESRB would not eliminate the LVNAV designation however, since the other constraints (related to liquidity buffers, maximum portfolio maturity, etc.) would remain in place and should automatically limit the volatility of the NAV. The FSB also suggests prohibiting funds from displaying a constant NAV, without specifying that this option concerns only LVNAVs.

Other recommendations for improved monitoring of MMF risks are mentioned, including, for example, finer calibration of stress tests or more granular data reporting. It is also necessary to study potential measures to improve the functioning of the commercial paper and certificate of deposit market, which constitute a large part of MMFs' assets (though the reflection on this subject is still in its early stages<sup>124</sup>).

In the United States, the SEC has made similar recommendations.<sup>125</sup> In particular, it proposes to: i) remove the link between liquidity fees or gates and minimum liquidity thresholds, ii) impose a swing pricing requirement for institutional prime and institutional tax-exempt money funds and iii) increase the daily and weekly liquid asset minimum requirements to 25% and 50% of the portfolio respectively (compared with 10% and 20% for short-term VNAV funds, 10% and 25% for standard VNAV funds and 15% and 45% for LVNAV funds according to the ESMA's recommendations).<sup>126</sup>

To conclude, even if European MMFs managed to cope with significant redemption requests during the COVID-19 crisis, the review of the MMF Regulation provided for by the texts in July 2022 is welcome since the literature shows that some aspects of the current regulation may have created destabilising threshold effects.

<sup>120</sup> Anti-dilution levies or ADLs, allow the fund's net asset value to remain unchanged and to "charge outgoing (incoming) investors for the selling (respectively buying) costs incurred when the portfolio is rearranged" (Darpeix, P-E, Le Moign, C., Môme, N. and Novakovic, M. (2020) "[Overview and inventory of French funds' liquidity management tools](#)" AMF *Risks and Trends*, July 2020.

<sup>121</sup> Dunne, P. and Raffaele, G. (2021) "Do liquidity limits amplify money market fund redemptions during the Covid crisis?" "*SRB Working Paper*". Li, L., Li, Y., Macchiavelli, M., and Zhou, X. (2021) "Liquidity restrictions, runs, and central bank interventions: Evidence from money market funds" *The Review of Financial Studies*, 34(11):5402–5437.

<sup>122</sup> This is because an LVNAV is allowed to value its assets at amortised cost and to round the value of its units up or down to two decimal places. These mechanisms allow it to display a constant NAV as long as the difference between this constant NAV and the NAV that the fund would have if it valued the assets at market price does not exceed 20 basis points (corridor). If this threshold is no longer adhered to (either downwards or upwards), the fund can no longer have a constant NAV and has to value its units at market price, which gives the investor an incentive to redeem his units before the switch (an action that makes the switch even more likely).

<sup>123</sup> It has been shown that as the gap between the constant and variable NAV widens, the fund will face larger outflows (ECB (2021). "[How effective is the EU Money Market Fund Regulation? Lessons from the COVID-19 turmoil](#)" *Macprudential Bulletin*, 12: April 2021). Baes et al. (2021) ("[Regulatory constraints for Money Market Funds : the impossible trinity?](#)", *Working Paper*) also demonstrate that the existence of the corridor limits the ability of LVNAV funds to deal with redemptions. Conversely, in the French case, where the market only includes funds with variable NAVs, the strong redemptions suffered by standard VNAVs are not explained by variations in the NAV (Darpeix, P-E. (2021) "[Econometric Analysis of the Determinants of Redemption Flows on French Money Market Funds during the 2020 Crisis](#)", *Risks and Trends*, July 2021).

<sup>124</sup> See Darpeix, P-E. (2022) "[The market for short-term debt securities in Europe: what we know and what we do not know](#)", *Risks and Trends*, March 2022 for an overview of the European short-term debt securities market.

<sup>125</sup> SEC (2021) "[Money Market Fund Reforms](#)", Proposed rule. The comment process is ongoing, and the comment period ended on 11 April 2022.

<sup>126</sup> To calculate the weekly liquidity buffers, managers would also have the option to include a maximum of 5% of public debt with a maturity of less than 190 days (i.e. one quarter of the buffer required for short-term VNAV funds) and 10% respectively (i.e. 40% of the buffer required for standard VNAV funds).

### 3.3.2. Equity funds: record increase in net assets under management in 2021 as valuations rise sharply

2021 turned out to be a record year for equity funds, with assets under management up by EUR 64.3 billion (or about 19%) from the level recorded in 2020. Net assets thus exceeded the EUR 400 billion mark for the first time, reaching a level of EUR 406 billion (compared with EUR 342 billion at the end of 2020). This is the second largest increase since 2007 (assets under management increased by EUR 66 billion between end-2008 and end-2009).

This sharp increase can be explained mainly by significant valuation effects (around EUR 73 billion recorded in 2021). The monthly data shows 9 months with positive valuation effects in 2021. On average, the monthly valuation effect amounted to about EUR 6 billion. Inflows and outflows were relatively modest during 2021. Equity funds experienced net redemptions for 8 months in 2021 (which averaged EUR 1 billion, or 0.33% of net assets at the end of 2020).

However, analysis of the daily series shows that since the beginning of 2022 and until end of March 2022, equity funds have suffered a decline in assets under management (down EUR 33 billion, i.e. 9% of assets under management) due to devaluation effects in the wake of the war in Ukraine. On a daily basis, the largest valuation declines are around 3% of net assets.

Figure 94: French equity funds

Figure 94.1: French equity funds' assets under management (in billion euros)

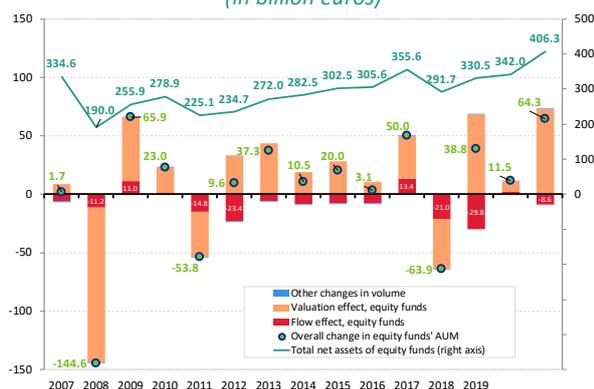
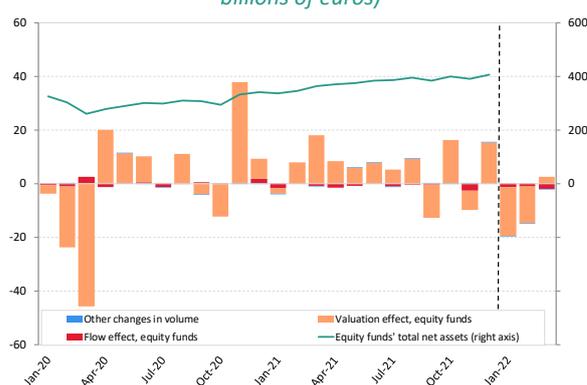


Figure 94.2: Breakdown of flow and valuation effects (in billions of euros)



Source: Banque de France, Performance of CIUs, AMF

Note : The right-hand chart shows the valuation and the inflow effects between January 2020 and end-March 2022. The dashed line represents end-year 2021. Before this date, the data used comes from the Banque de France (Performance of CIUs database). In contrast, for the first months of year 2022, AMF's supervisory data was used. NB: The scope of the two data sources is not exactly the same.

### 3.3.3. Bond funds: modest growth in assets under management in 2021 despite a negative valuation effect

In 2021, assets under management in bond funds increased by EUR 7.2 billion, from EUR 289 billion at end-2020 to EUR 297 billion at end-2021. In contrast to equity funds, this increase in net assets is explained by subscriptions of around EUR 10 billion, despite a negative valuation effect in 2021 of approximately EUR 2 billion.

The monthly statistics confirm the annual pattern described. On average, bond funds benefited from inflows of around EUR 800 million each month. On the other hand, valuation effects averaged -EUR 150 million per month, which partially offset the increase in assets under management.

The war in Ukraine also had negative effects on French bond funds. Between the beginning of the year and the end of March 2022, bond funds lost about 4.3% of their net assets (i.e. about EUR 12 billion) due to investor redemptions (accounting for EUR 6 billion) and negative valuation effects (EUR 6 billion).

Figure 95: Change in French bond funds

Figure 95.1: Change in assets under management of French bond funds (in billions of euros)

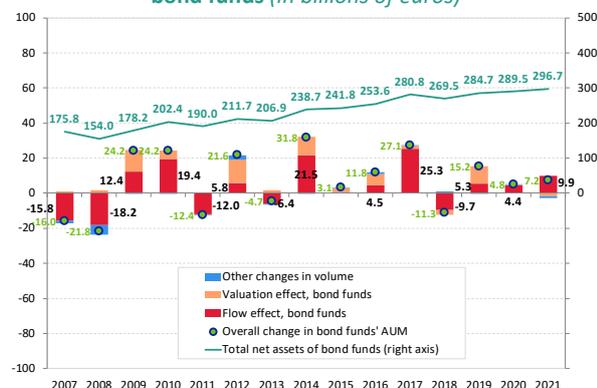
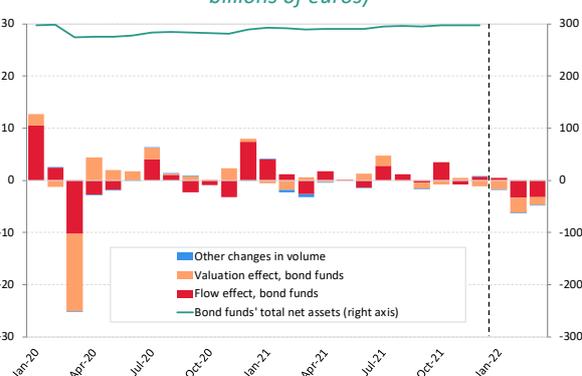


Figure 95.2: Breakdown of flow and valuation effects (in billions of euros)



Source: Banque de France, Performance of CIUs, AMF

Note : The right-hand chart shows the valuation and the inflow effects between January 2020 and end-March 2022. The dashed line represents end-year 2021. Before this date, the data used comes from the Banque de France (Performance of CIUs database). In contrast, for the first months of year 2022, AMF's supervisory data was used. NB: The scope of the two data sources is not exactly the same.

### 3.3.4. Diversified funds: strong growth in assets under management in 2021 due to valuation effects

Assets under management in bond funds increased by 9% in 2021, from EUR 351 billion at the end of 2020 to EUR 383 billion at the end of 2021.

As with equity funds, this increase in net assets is mainly due to a strong valuation effect and to a lesser extent to subscriptions. Monthly statistics show that diversified funds benefited from average monthly subscriptions of around EUR 500 million, which represents a quarter of the average monthly valuation effect recorded in 2021 (approximately EUR 2 billion).

The correction in the value of assets managed by diversified funds domiciled in France led to a decline in assets under management at the beginning of 2022. The AMF's daily data shows that between the end of 2021 and the end of March 2022, diversified funds had to deal with a decline in assets under management of around EUR 28 billion (or 6% of their assets under management at the end of 2021), EUR 3.5 billion of which was attributable to redemptions.

Figure 96: Change in French diversified funds

Figure 96.1: Change in assets under management of French diversified funds (in billion euros)

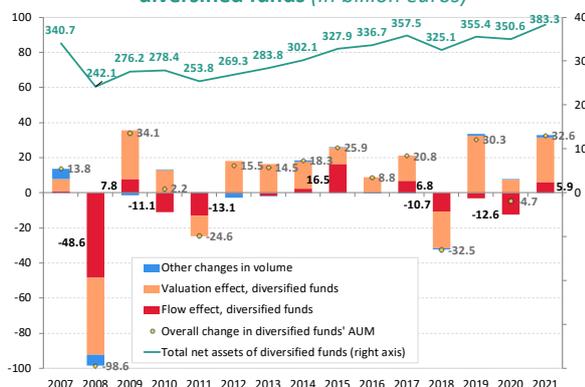
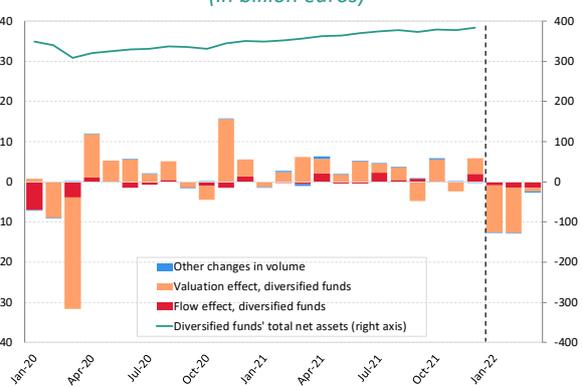


Figure 96.2: Breakdown of flow and valuation effects (in billion euros)



Source: Banque de France, Performance of CIUs, AMF

Note : The right-hand chart shows the valuation and the inflow effects between January 2020 and end-March 2022. The dashed line represents end-year 2021. Before this date, the data used comes from the Banque de France (Performance of CIUs database). In contrast, for the first months of year 2022, AMF's supervisory data was used. NB: The scope of the two data sources is not exactly the same.

### 3.3.5. Other funds: sharp increase in assets under management in 2021 driven by rising markets

In 2021, other types of French funds<sup>127</sup> recorded strong growth, going from EUR 354 billion at the end of 2020 to EUR 395 billion at the end of 2021 (+EUR 41 billion, or 11% growth compared with the end of 2021). Over the course of the statistical series, this represents the largest increase in net assets under management (both in relative and absolute terms).

Once again, this increase in amounts outstanding is mainly explained by strong valuation effects during 2021. Indeed, in 2021, "other" funds benefited from EUR 37 billion in valuation increases, which represents more than 12 times the amount of net subscriptions recorded in 2021 (around EUR 3 billion). Looking at the monthly data, we see several months of strong valuation increases (February, August and December show valuation effects of EUR 7-8 billion), but still below the record level observed in November 2020 (EUR 13.6 billion). With regard to inflows, the highest inflows (around EUR 6 billion) were recorded in Q2, linked to profit-sharing and incentive payments that are often distributed to company savings plans between April and June.

Figure 97: Change in other French funds

Figure 97.1: Change in assets under management of other French funds (in billions of euros)

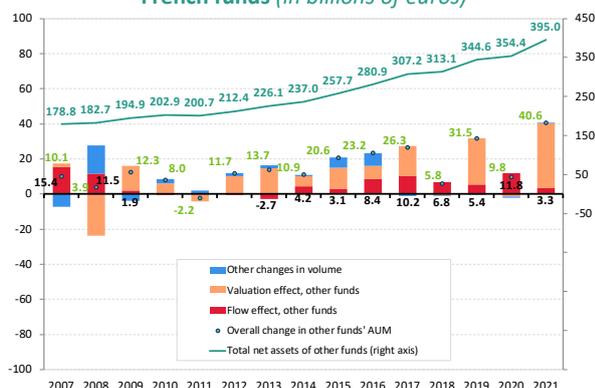
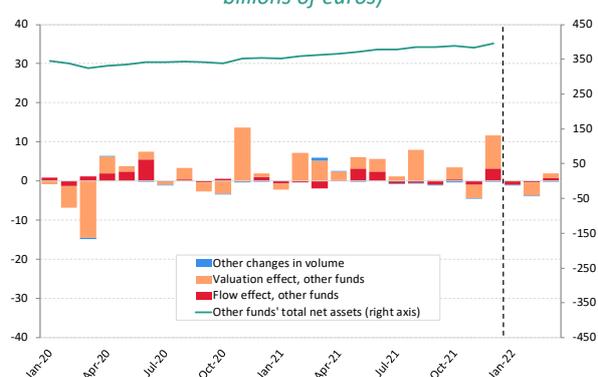


Figure 97.2: Breakdown of flow and valuation effects (in billions of euros)



Source: Banque de France, Performance of CIUs, AMF

Note : The right-hand chart shows the valuation and the inflow effects between January 2020 and end-March 2022. The dashed line represents end-year 2021. Before this date, the data used comes from the Banque de France (Performance of CIUs database). In contrast, for the first months of year 2022, AMF's supervisory data was used. NB: The scope of the two data sources is not exactly the same.

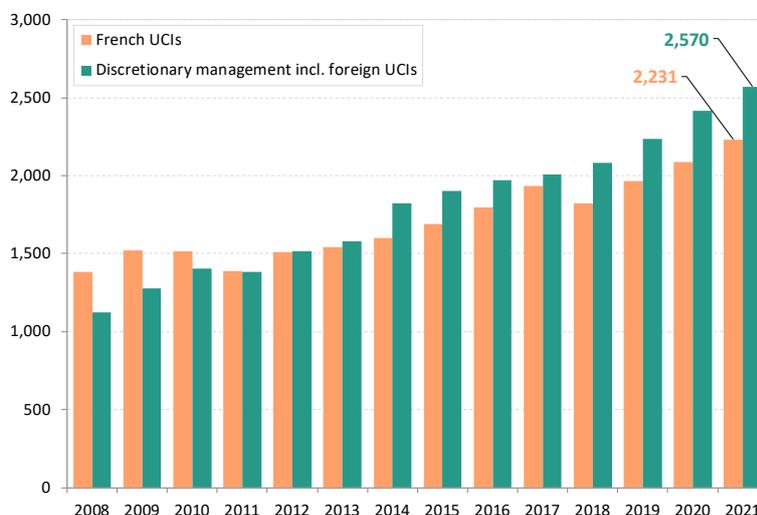
### 3.3.6. French market: focus on discretionary management

The French asset management industry includes collective management (i.e. funds domiciled in France, whether they are managed by French or foreign asset management companies) and management mandates entrusted to French asset managers. Clients may be either institutional investors or retail clients (usually high net-worth individuals). According to the statistics of the French Asset Management Association (AFG), total assets under discretionary management mandates reached EUR 1,740 billion at the end of 2021.<sup>128</sup> Lastly, the financial management in France of funds governed by foreign law, which has historically been included in the figures for "discretionary management" even though these CIUs come under a different legal regime, was close to EUR 830 billion.

<sup>127</sup> "Other" funds are mainly composed of employee savings funds, but also include real estate funds and private equity funds. A more marginal component of "other" funds is made up of structured funds and hedge funds.

<sup>128</sup> See AFG (2022). [Panorama du marché de la gestion pour compte de tiers](#).

**Figure 98: French asset management market: collective management (French funds) and discretionary management (French AMCs) (in billions of euros)**



Source: Association Française de la Gestion Financière (AFG)

### 3.4. THE WEIGHT OF INTERMEDIATION IN THE DISTRIBUTION OF FRENCH FUNDS – FOCUS ON INSURANCE

Insurers are major institutional investors in the French financial landscape. Their business can be roughly divided into two main segments (or branches): life insurance on the one hand, and non-life insurance on the other.

The non-life branch is sometimes referred to as P&C (for “Property and Casualty”), but it also includes complementary health insurance.

Life insurance is more like an investment product, and benefits from significant tax advantages (reduced taxation of capital income after a given holding period and exemption from inheritance tax). These advantages, historically linked to the investment of guaranteed capital contracts (profit-sharing contracts, or “Fonds euro”) in the French government’s sovereign debt, have been maintained despite the sustained reorientation of life insurance towards unit-linked investments in which the policyholder alone bears the market risk. Unit-linked policies are most often shares in investment funds whose net asset value (NAV) is used as a reference to calculate the value of the policyholder’s contract. Even if the policyholder is not legally the owner of the underlying fund units (he only owns a claim on the insurer for an amount equal to the value of the fund units that the insurer has bought with the money entrusted by the policyholder), in practice this is an intermediated investment in the fund.

In any case (whether it is non-life or life insurance, and within life insurance, whether we consider profit-sharing contracts or unit-linked contracts), the insurer collects money immediately from its clients and disburses payments in the future. This is known as a reverse production cycle. The sums collected are invested in financial assets until they are claimed by the policyholders.

According to the Banque de France, insurers’ investments in the economy at the end of 2021 exceeded EUR 2,800 billion,<sup>129</sup> equivalent to 113% of French gross domestic product (GDP).<sup>130</sup> Non-life investments accounted for a little under 10% of the total.

<sup>129</sup> See Banque de France (2022). [Financial investments of insurance corporations – France – 4<sup>th</sup> Quarter 2021](#). *Stat Info*. (8 April 2022).

<sup>130</sup> For 2021, the [Insee](#) estimates French GDP at EUR 2,482 billion (current prices). See France Assureurs (2021). [Les placements de l’assurance](#). November 2021 (3 p.).

Thanks to data sent to the AMF by the French supervisor of the insurance sector (Autorité de Contrôle Prudentiel et de Résolution – ACPR), it is possible to cross-check the regulatory reporting of funds and insurers to estimate the weight of insurance on the liability side of French investment funds.<sup>131</sup>

Thus, as at 31/12/2021, French insurers had invested EUR 871 billion directly in collective investment schemes (regardless of domiciliation). The non-life branch represented EUR 48 billion and the life branch EUR 823 billion (divided almost equally between *Fonds euro* and unit-linked contracts).

ACPR reporting gives an idea of the domiciliation of the funds held in French insurers' portfolios.<sup>132</sup>

**Table 5: Breakdown of CIU units in the portfolio of French insurer by ISIN code**

Number	Non-life	Life		Total	€bn	Non-life	Life		Total
		Euro	UC				Euro	UC	
FR	2,039	5,684	19,415	27,138	FR	31	277	291	599
LU	624	1,813	20,309	22,746	LU	6	51	88	145
IE	78	223	2,616	2,917	IE	3	11	6	20
Other	71	323	1,180	1,574	Other	1	15	12	28
Invalid ISIN	555	1,771	323	2,649	Invalid ISIN	7	60	11	79
<b>Total</b>	<b>3,367</b>	<b>9,814</b>	<b>43,843</b>	<b>57,024</b>	<b>Total</b>	<b>48</b>	<b>415</b>	<b>408</b>	<b>871</b>

Source: ACPR reporting

By matching the ISINs of mutual funds in insurers' portfolios with the AMF reference database (BIO), we identify 5,098 distinct French funds in insurers' balance sheets, for a total of EUR 580 billion (compared with the EUR 599 billion of funds with ISINs beginning with FR in the table above). If we relate these figures to the EUR 2,231 billion of French funds according to EFAMA (or to the EUR 1,919 billion for 10,450 funds according to BIO), we can say that French insurers directly represent at least 25-30% of French funds' liabilities.

1,528 French funds (i.e. 15% of the population) were more than 95% owned by insurers. Among these funds, 890 funds were more than 95% owned by unit-linked funds (cumulative holdings of EUR 87 billion).

These are initial estimates that the AMF hopes to supplement with more detailed identification of funds held by insurers based on additional information provided by the ACPR (such as the fund's name reported by the insurer and the fund's investment strategy).

The interconnections between the asset management and insurance sectors are receiving increasing attention from macro-prudential authorities as they work to better understand how shocks are propagated in the financial sector. In the absence of reliable data on the liability structure of investment funds, the analysis of the holdings of major institutional investors is a very valuable source of information. Knowing the investors' typology enables to make assumptions about their subscription and redemption behaviour, and thus to fine-tune liquidity risk management.

<sup>131</sup> An initial analysis of this type was published in 2021 on the basis of data at the end of June 2020. See Darpeix, P-E. and Mosson, N. (2021). [Identification of funds distributed through life insurance policies or insurer investment vehicles: new data collected and first analysis in terms of liquidity management tools](#). *AMF Risks and Trends* (June).

<sup>132</sup> The first two letters of the ISIN code indicate in principle the country of domicile of the issuer's parent company (for details on the construction of the ISIN code, see <https://www.isin.org/fr/isin/>). This method only works as a first approach, however, because in practice some codes do not indicate jurisdictions as such, funds that change domiciliation during their lifetime do not necessarily change their ISIN code, and finally not all securities in the portfolio have a proper ISIN (in particular, real estate investment trusts, but also some securitisation bodies, venture capital funds, etc.).

### 3.5. LIQUIDITY MANAGEMENT TOOLS FOR FRENCH FUNDS

Liquidity management tools (LMTs) are devices that funds can implement to improve their liquidity management, increase their resilience and ensure fair treatment of unit holders. They supplement the manager's day-to-day monitoring of liquidity.

LMTs include:

- mechanisms aimed at capping (gates) or suspending (suspensions) redemptions in times of crisis;
- mechanisms aimed at ensuring incoming/outgoing investors bear the effective cost of the transactions that their movements impose on the fund, particularly in situations of market stress where bid ask spreads widen (swing pricing, anti-dilution levies (ADL), redemption fees);
- the segregation of hard-to-value or even fraudulent assets (side-pockets);
- redemption in kind.

The fact that French regulations allow for the use of these tools<sup>133</sup> does not necessarily mean that all funds can de facto use them when needed. In fact, with the exception of side-pockets, LMTs must be clearly disclosed in the fund's regulatory documentation in order to be implemented. This requires an active approach by the fund manager, which may be accompanied, depending on the case, by specific information for investors and the possibility of exiting free of charge. Lastly, even when the tools are available, managers may still choose not to activate them if the circumstances or the way the tool operates do not call for it.

Despite the AMF's and the Banque de France's efforts to educate the public, and despite pressure from European and international organisations (FSB, ESRB, ECB), the adoption of LMTs remains relatively limited. Asset managers point to operational and commercial complexities in implementing them, while some institutional investors are opposed to the introduction of these tools, which they perceive only as limiting the liquidity of their investments.

#### 3.5.1. Dynamic analysis of the introduction of LMTs in funds

To improve the detection of LMTs in the regulatory documentation of French funds (in the absence of standardised reporting on these devices), the Banque de France and the AMF have developed and industrialised a computer programme for automated reading of prospectuses (text-mining technology).<sup>134</sup> This has made it possible to track the progress of funds' introduction of LMTs over time, depending on their type of management, underlying assets, marketing specificities and legal nature.

Aside from the general observation that there is a gradual increase in the introduction of LMTs in French funds, the analysis highlights a number of stylised facts. For example, if we focus on tools that have the economic effect of ensuring outgoing investors bear the cost of the liquidity they draw, we find that ADLs are much less widespread than swing pricing in absolute terms (1.5% versus 6% in terms of net assets at the end of June 2021). If we break down the analysis by underlying assets, we see a relatively balanced presence of the two tools for equity funds (in terms of net assets, 7.5% had ADLs while some 9% had introduced swing pricing), but very different for other types of funds: more than 21% of bond funds (again in terms of net assets) and more than 5% of diversified funds had implemented swing pricing, whereas ADLs were almost non-existent in these types of funds. As for gates, they concerned between 10% and 20% of equity, bond and diversified funds, but were mentioned in a quarter of real estate funds and in 60% of hedge funds (as a percentage of net assets).

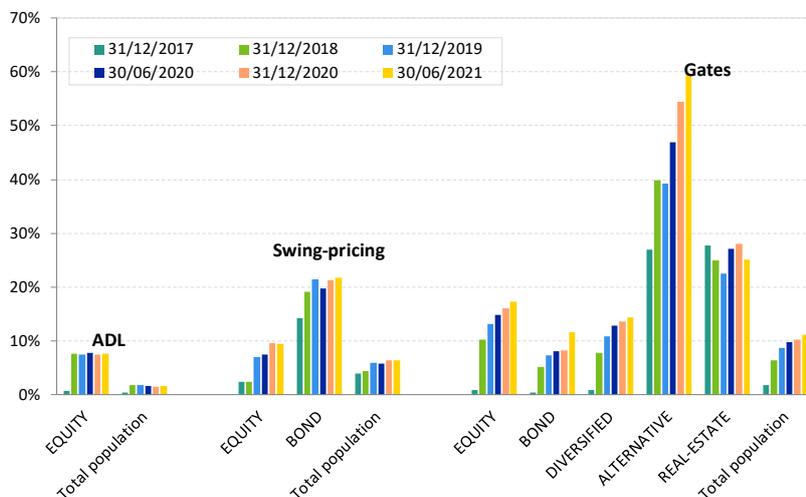
<sup>133</sup> See for example ESRB (2020). [A review of macroprudential policies in the EU in 2019](#) (April) and in particular table 4.3.1 (p.114)

<sup>134</sup> This tool developed, as part of an initial joint study published in July 2020, was standardised and could be applied to various successive versions of the documents archived by the AMF (in total, over 1.8 million PDF pages were screened).

See: (1) Darpeix, Pierre-Emmanuel, Caroline Le Moign, Nicolas Mème, Marko Novakovic (2020). [Overview and inventory of French funds liquidity management tools](#). *Risks and Trends*, AMF: Paris (July), and

(2) Darpeix, Pierre-Emmanuel, Nicolas Mème, Natacha Mosson, Marko Novakovic (2021). [Overview and inventory of French funds liquidity management tools: dynamic view since 2017 and update as at mid-2021](#). *Risks and Trends*, AMF: Paris (November).

Figure 99: Prevalence of some LMT among French funds (as a % of net assets)



Source: Analysis of prospectuses, AMF-Banque de France

It can also be observed that equity, bond and diversified funds that were marketed almost exclusively as unit-linked life insurance funds tended to have fewer ADLs, swing pricing and gates than those for which unit-linked funds represent a smaller share of liabilities. This seems to confirm the reluctance of institutional investors to adopt LMTs.

### 3.5.2. Forthcoming regulatory changes

The international work that aimed at drawing lessons from the crisis caused by the Covid pandemic-19 has emphasised the need for widespread adoption of LMTs, while urging that the threshold effects resulting from their potentially automatic activation (or perceived as automatic by investors) be kept to a minimum.

In the case of MMFs (Box 6), the focus has been on those LMTs the economic effect of which is to ensure outgoing investors bear the cost of the liquidity they draw from the fund (ADL, swing pricing, redemption fee). These mechanisms are aimed primarily at treating unit holders fairly (insofar as they seek to prevent first movers from being repaid through the sale of the most liquid securities in the portfolio to the detriment of the remaining investors, who would inherit a distorted and less liquid asset pool), and make it possible to limit the first mover advantage. While they do not prevent redemptions, they would reduce self-fulfilling strategic incentives. At the European level, both ESRB and ESMA suggest that the Commission reform the MMFR to require that MMF managers have at least one such tool available.<sup>135</sup> Both the ESMA and ESRB insist that the activation of LMTs should remain in the hands of the managers to avoid any threshold effect and any risk of pre-emptive redemption. However, a Commission delegated act could specify the circumstances in which such activations would be advisable.

More generally, the draft reform of AIFMD (and harmonisation of UCITSD) published by the Commission in November 2021 and currently under negotiation, plans to provide all open-ended funds with the option of temporarily suspending redemptions, and to require the introduction of at least one other liquidity management tool (including gates, redemption notice and redemption fees).<sup>136</sup>

<sup>135</sup> See ESRB (2022). [Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds](#) (ESRB/2021/9). See in particular Recommendation C p. 6.

See ESMA (2022). [Final Report – ESMA opinion on the review of the Money Market Fund Regulation](#) (ESMA34-49-437). See in particular proposed reform A.2.1 p. 16.

<sup>136</sup> See European Commission (2021). [Proposal for a directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds](#). The recitals state that: “Fund managers of open-ended funds would be able to suspend the repurchase or redemption of AIF or UCITS units or shares temporarily. They would also be required to choose at least one other

### 3.6. LEVERAGE IN AIFM REPORTING

Alternative Investment Funds (AIFs) are governed by the Alternative Investment Fund Managers (AIFM)<sup>137</sup> Directive, which aims to "establish common requirements for the authorisation and supervision of AIFM in order to provide a consistent approach to such risks and their impact on EU investors and markets"<sup>138</sup>.

AIFs include real estate funds, private equity funds, hedge funds and many other funds that do not fall under the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive.<sup>139</sup>

According to the Directive, management companies are subject to certain obligations, such as the implementation of liquidity risk management or the transmission of reports to the regulator.<sup>140</sup>

A significant portion of the AIFM regulation is devoted to leverage<sup>141</sup> (both the different methods of calculating leverage and the methods of supervision by the competent authorities). In particular, Article 25 of the AIFM Directive provides that the competent authorities "shall assess the risks that the use of leverage by an AIFM with respect to the AIFs it manages could entail" and that they may impose limits to the level of leverage that can be used. However, the implementation of this provision at European level required some harmonisation. In 2017, ESRB therefore asked ESMA to operationalise Article 25 of the Directive<sup>142</sup> and the European authority published guidance in 2021 detailing, among other things, the procedures to be followed in order to assess the individual and systemic risk associated with the use of leverage.<sup>143</sup>

Under the AIFM Directive, leverage can be calculated using two methods: the gross method and the commitment method.<sup>144</sup>

$$\text{Gross Leverage} = \frac{\text{Asset Value (without derivatives)} + \text{derivatives converted into their equivalent underlying positions (without netting and hedging)} + \text{Borrowings} - \text{Extended cash}}{\text{Net Asset Value}}$$

$$\text{Commitment Leverage} = \frac{\text{Asset Value (without derivatives)} + \text{derivatives converted into their equivalent underlying positions (with netting and hedging)} + \text{Borrowings}}{\text{Net Asset Value}}$$

where extended cash includes the value of cash and cash equivalents in the main currency of the AIF.

The tables below describe the distribution of commitment leverage of AIFs managed by French-domiciled management companies (for which the AMF receives AIFM reports), according to their strategy in Q4 2021. For these tables, we have taken into account the leverage values, expressed as percentages of NAV.<sup>145</sup> We consider the statistics calculated on the basis of commitment leverage because gross leverage does not allow for netting between derivatives and by construction the values can be particularly high in the presence of many high nominal derivatives (e.g. short interest rate arbitrage strategies). Additionally, we did not observe any significant change in distributions between end 2019 and end 2021, and consequently, the analysis proposed considers the latest available reporting date for the commitment leverage.

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liquidity management tool, without imposing which one, thus leaving fund managers with the final decision, which they could activate should circumstances so require. " The provisions are described in Article 1-6 (for AIFM) and Article 2-4 (for UCITS).

<sup>137</sup> [Directive 2011/61/EU of the European Parliament and of the Council on Alternative Investment Fund Managers](#), published on 8 June 2011.

<sup>138</sup> Recital 2 of the AIFM Directive.

<sup>139</sup> [Directive 2009/65/EC of the European Parliament and of the Council on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities \(UCITS\)](#), published on 13 July 2009.

<sup>140</sup> The frequency of these reports differs according to the amount of assets under management.

<sup>141</sup> Article 4 of the AIFM Directive defines leverage as "any method by which the AIFM increases the exposure of an AIF it manages whether through borrowing of cash or securities, or leverage embedded in derivative positions or by any other means".

<sup>142</sup> ESRB (2017) "[Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds](#)".

<sup>143</sup> ESMA (2021) « [https://www.esma.europa.eu/sites/default/files/library/esma34-32-701\\_guidelines\\_on\\_article\\_25\\_aifmd.pdf](https://www.esma.europa.eu/sites/default/files/library/esma34-32-701_guidelines_on_article_25_aifmd.pdf) ».

<sup>144</sup> See Le Moign, C. and Siempis, K. (2019) "[First results from AIFM reporting](#)" for further details.

<sup>145</sup> Given that by construction the commitment leverage cannot be less than 100%, we replaced the leverage level with 100% for funds that reported a commitment leverage of less than 100%. We also eliminated unrealistic extreme values.

**Table 6: Descriptive statistics of commitment leverage for AIFs, by strategy:  
Distribution of net leverage by strategy, as of Q4 2021 (as a % of NAV)**

	Average	Median	Q1	Q3
<b>Hedge Funds</b>	475	100	100	174
<b>Private Equity</b>	100	100	100	100
<b>Real estate funds</b>	161	111	100	173
<b>Fund of funds</b>	103	100	100	100

Source: AIFM reporting

Note: The value of 100 (Q1) for hedge funds indicates that 25% of commitment leverage observations are below this value. The value of 174 (Q3) for hedge funds indicates that 25% of commitment leverage observations are above this value.

Hedge funds are the most leveraged of all the strategies represented. For example, in the fourth quarter of 2021, the average commitment leverage for hedge funds was 475%<sup>146</sup> of NAV, compared to 161% for real estate funds, 103% for funds of funds and 100% for private equity funds. Likewise, the third quartile commitment leverage is above 150% for hedge funds and real estate funds, compared with 100% for private equity funds and funds of funds. We also observe that for both private equity and fund-of-funds, the dispersion of commitment leverage values around the mean is very low.<sup>147 148</sup> Our results show that hedge funds are the most leveraged (with some hedge funds showing very high levels of leverage)<sup>149</sup> and the values remain comparable with those of Le Moign and Siempis (2019) who analysed data from 2015 to 2017 included. Similarly, our results on hedge funds indicate that the level of leverage of funds managed by French management companies is not very different from that of funds managed by European management companies as the whole. According to ESMA (2022),<sup>150</sup> the third quartile of leverage is around 220%<sup>151</sup> in 2020 compared to 187% in 2020 for funds managed by French management companies. Furthermore, according to ESMA (2022), the median or third quartile leverage of hedge funds managed by European management companies remained broadly unchanged between 2018 and 2020.

In conclusion, although some hedge funds need to be subject to enhanced supervision due to their high level of leverage, it remains stable over time. Furthermore, the risks arising from high leverage appear to be low for other AIFs. However, there are other risk factors besides leverage that deserve to be monitored, such as liquidity risk, or high market sensitivity.

A final category of AIFs, the “other funds”, includes funds with more traditional strategies that can be classed according to their main underlying assets. Thus, of the 3,063 other funds identified at the end of 2021, 687 were equity funds, 656 were bond funds and 1,586 were “other” funds.<sup>152</sup> Table 4 shows that there is no significant difference in the use of leverage between these three strategies. Funds classified as “other” have on average a commitment leverage of 126% of NAV, compared with 112% for equity funds and 109% for bond funds. On average, these funds do not use leverage significantly.

<sup>146</sup> The average leverage weighted by net assets is 1576% for hedge funds, indicating that larger funds are more leveraged. For the other fund types, the weighted average is close to the simple average, reported in Table 6 (100% for private equity funds, 140% for real estate funds and 105% for funds of funds).

<sup>147</sup> However, when the calculations are repeated with only leveraged funds (leverage >100%), the third quartile is 109% for private equity funds and 117% for funds of funds, which remains below the values reported by the other fund types.

<sup>148</sup> The low leverage values reported by private equity funds and funds of funds may in fact hide a higher leverage effect. It is worth remembering that for funds of funds, leverage is not calculated transparently and that for private equity funds, debt is rarely taken on directly by the fund but by an intermediary structure in which the fund invests. For these types of funds, leverage can therefore be found in underlying investments.

<sup>149</sup> Some funds have a net leverage of more than 5000% of NAV.

<sup>150</sup> ESMA (2022) “EU Alternative Investment Funds”

<sup>151</sup> ESMA (2021) calculates leverage as gross leverage minus interest rate and currency derivatives.

<sup>152</sup> Of the 1,586 observations of ‘other’ funds, approximately 1,110 are not domiciled in France (it is therefore impossible to identify their asset class. This is because the scope of AIFM reporting covers funds managed by French management companies, even if these funds are not domiciled in France), 50 are equity funds, 260 are mixed funds and about 70 are bond funds.

**Table 7: Descriptive statistics of commitment leverage for other AIFs:  
Commitment leverage by main strategy, as of Q4 2021 (as a % of NAV)**

	Average	Median	Q1	Q3
<b>Equity funds</b>	112	100	100	100
<b>Bond funds</b>	109	100	100	104
<b>Other funds</b>	126	100	100	103

*Source: AIFM reporting*

Changes in leverage levels should continue to be carefully monitored by national supervisors so that they can take the necessary action in the event of excessive risk-taking. The possibility provided by Article 25 of AIFMD for competent authorities to cap the leverage of a fund or family of funds is a valuable tool for financial stability. However, the decision to impose a leverage limit should be based on a prior assessment of the risks associated with the use of leverage. Thus, ESMA (2021) has provided a two-step methodological framework that allows authorities to assess the systemic risks associated with leverage. The first step is to assess leverage (level, source and different uses of leverage) in order to identify the riskiest AIFs. The second step consists of an assessment of the systemic risks posed by the use of leverage for the funds identified in the first step.<sup>153</sup>

### 3.7. PRIVATE EQUITY AND PRIVATE DEBT: THE BOOM CONTINUES, WHILE VALUATIONS RAISE QUESTIONS

#### 3.7.1. Very strong and renewed global growth of private equity funds

##### □ Global growth in private equity funds continues, driven by private equity

As the effects of the pandemic recede, private equity fund inflows - a concept that encompasses unlisted asset funds (e.g. unlisted equity and debt, real estate and infrastructure)<sup>154</sup> - have reached new highs, rising by almost 20% between 2020 and 2021 to a record high of almost USD 1.2 trillion. With an equivalent valuation effect, annual growth in global assets under management has risen to 34.1% in 2021 (vs. 22.0% for all collective investment management, see 3.1.1),<sup>155</sup> bringing assets under management from 7,344 billion in 2020 to a new historical peak of USD 9,845 billion in 2021 (Figure 100).

In the private finance sector, private equity assets grew by 40% to USD 6,294 billion in 2021. They therefore represent 63.9% of private finance, compared with 61.2% in 2020 and 59.5% in 2019. Although the assets of leveraged buyout (LBO) funds increased by 31.5% on an annual basis, their share of the private equity universe continues to shrink, from 50.6% in 2020 (53.6% in 2019) to 47.6% in 2021. Conversely, venture capital (VC) increased its share in terms of assets under management from 27.6% in 2020 to 29.1% in 2021. In Europe, LBOs nevertheless remained dominant (Figure 100), with a share of total private equity assets of 73.4% (74.3% in 2020 and 75.3% in 2019), compared to 55.5% in the US (59.8% in 2020 and 65.0% in 2019). Within private equity, an intermediate category of funds<sup>156</sup> between VCs and LBOs, that of growth equity (GE) funds, has also emerged in recent years (Figure 101), with growth in assets under management of 47.3% in 2021 (+194.5% since 2018). These

<sup>153</sup> According to the recommendations made by ESMA (2021), in order to determine systemic risks, competent authorities should include in their assessment the risk of market impact, the risk of fire sales, the risk of direct contagion effects on financial institutions and the risk of interruption of direct credit intermediation.

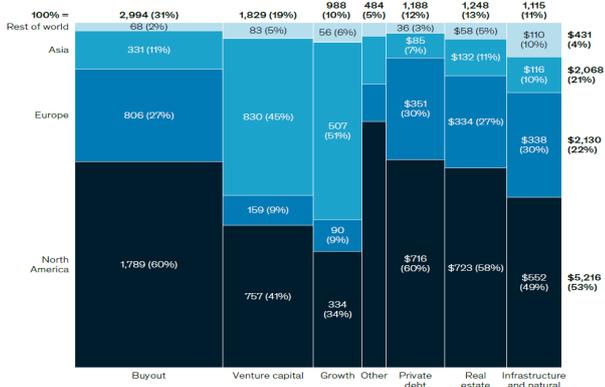
<sup>154</sup> See discussion of this definition in the AMF's 2020 Markets and Risk Outlook.

<sup>155</sup> Sources: McKinsey (2021) for data on private equity funds. As in previous years, these aggregate data should be used with extreme caution. In Europe, industry associations do not publish data on assets under management. Market data (from consultants and data vendors) do not allow comparison with monitoring data. The data on collective management is from the IIFA. In the United States, the SEC has also undertaken to improve its data collection and transparency on private finance (see Section 3.7.3 below).

<sup>156</sup> Growth equity finances more mature and larger companies than venture capital. The expected sources of return are in principle linked to the firms' ability to grow their scale of production, with execution and management risks, whereas the VC focuses on a profitable launch of commercially viable products or services in new markets, which is generally riskier. Growth equity tends to invest for shorter terms (3-7 years) than venture capital (5-10 years).

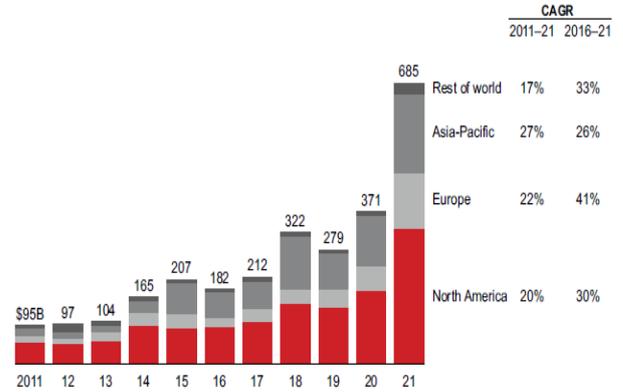
funds now account for almost double VC's global AUM (1,829 billion vs. 1 trillion), with similar proportions in the US (757 billion vs. 334 billion) and Europe (159 billion vs. 90 billion).

**Figure 100: Global assets under management in private equity funds (USD bn, as at 30/06/21)**



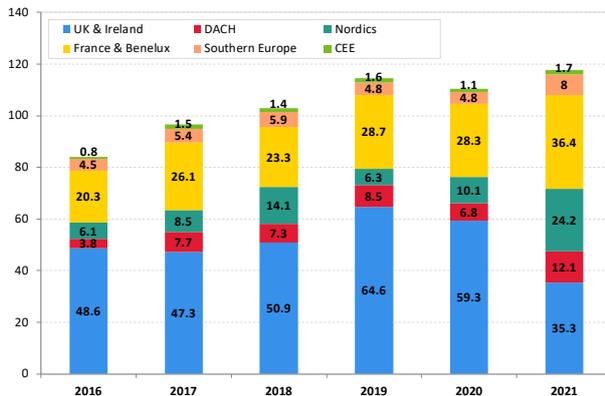
Source: McKinsey, Preqin.

**Figure 101: Amount of transactions carried out by growth equity and "late stage" venture capital funds (USD bn)**



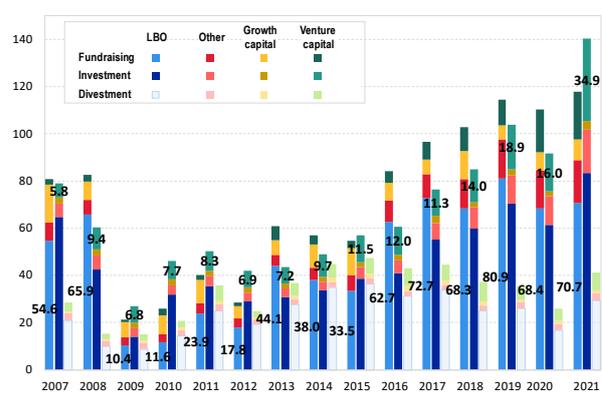
Source: PitchBook, Bain.

**Figure 102: Capital raised by geographical area in Europe (EUR bn)**



Source: Europe Invest, AMF.

**Figure 103: Funds raised and divestment of European private equity funds (EUR bn)**



Source: Europe Invest, AMF.

The upturn in private equity activity (+40.0% annual growth in assets under management) in Europe (+42.1%) was on the same scale as in the United States (+39.5%).<sup>157</sup> This leads to three main observations:

- After a dip in 2020, fundraising rebounded by 6.7% in 2021 (+15.8% compared with the previous 5-year average) to reach an all-time high of EUR 118 billion (Figure 102). This increase is mainly attributable to fundraising by venture capital, growth equity and other funds (+12.2%), while LBOs, which account for 60% of flows, maintained its modest growth (3.3%). The strong growth in assets under management, although also driven by inflows, therefore would seem to be mainly attributable to asset valuation effects.
- The amounts invested reached a record high of EUR 140.3 billion in 2021 (+53.0% over one year, +78.8% compared with the 2007 peak), exceeding the amounts raised for the first time since 2015. Divestments (sales of fund assets) also increased, to EUR 41.2 billion, from the lows of 2020 (EUR 25.8 billion) but remained below the level of the years between 2014 and 2017 and far below the capital raised. Since investments could not be fully financed by fundraising, it can be assumed that excess cash reserves to be invested (dry powder) in Europe will be reduced, contrary to the global trend.

<sup>157</sup> Between mid-2021 and mid-2021, the increase in assets under management in Europe in dollars was overestimated by 5.6% due to the rise in the EUR/USD rate.

- The growth of European private equity reflects heterogeneous developments by geographical area: the increase in fundraising came primarily from France and the Benelux countries (their share of funds raised rose from 23.8% in 2020 to 31.0% in 2021), with the rest of the EU as a secondary source. Conversely, the UK's share fell from 12.5% to 8.5% and that of the rest of the world from 42.7% to 32.0% (from 26.6% to 18.8% for the US). Moreover, the EUR 8.9 billion of investment by non-EU funds in Europe was more than offset by the EUR 11.4 billion invested by EU funds in the rest of the world, with 88.0% of their investments (EUR 83.2 billion) made in Europe - 54.9% of which were cross-border (Figure 102).

French supervisory data confirms the revival of venture capital activity in 2021: fund assets under management (Table 5) grew by 17.0% year-on-year at the end of 2021, with the proportion of professional private equity funds (FPCI) assets remaining stable at 86.0%. The number of funds marketed increased by 91 in 2021, driven by a sharp rise in fund creations. The share of products aimed at non-professional investors, notably evergreen (FCPRs open to subscription/redemption),<sup>158</sup> decreased to 27 new funds, compared with 45 in 2020. The 16 launches (with AMF approval) of private equity management companies in 2021 represented a fairly stable share (since 2017) of two fifths of new management companies. In 2020, 72% of new private equity management companies were created by entrepreneurial initiatives. In 2021, half of these launches were initiated by groups, both financial and non-financial.<sup>159</sup>

**Table 8: Assets under management of French private equity funds\* (EURm)**

	2020	2021	Mars-21	2021/2020 (%)
<b>Retail venture capital investment funds</b>	68,242	79,880	69,399	17.1
<b>Retail private equity investment funds</b>	1,844	2,616	2,095	41.9
<b>Specialised Professional Funds (FPS)</b>	3,714	4,824	3,955	29.9
<b>Retail venture capital investment fund</b>	3,104	3,159	3,108	1.8
<b>Retail local investment fund</b>	2,509	2,439	2,533	-2.8
<b>Total</b>	<b>79,412</b>	<b>92,919</b>	<b>81,090</b>	<b>17.0</b>

Source: AMF. \* Note: excluding Free Partnership Companies (SLP).

### □ Strong growth in debt and infrastructure funds

In the previous context, we note in particular the strong growth of debt and infrastructure funds. Debt funds developed in the wake of the 2008 financial crisis, when banks withdrew from the leveraged loan market (e.g., in Europe, Royal Bank of Scotland, then the leading lender to LBOs). According to data provider PitchBook,<sup>160</sup> they raised USD 191.2 billion in 2021, 12.1% more than in 2020, close to the historical high of USD 201.7 billion in 2017. Their assets under management reached \$1,293 billion in 2021 (Figure 104), approaching that of the venture capital in the United States. These funds implement a variety of investment strategies,<sup>161</sup> but are characterised above all by their investment in unlisted debt securities and/or their granting of credit - previously a more specifically banking activity. In France, these debt funds typically take the form of specialised

<sup>158</sup>These funds generally have a 99-year life span. Two were created in 2021 compared with 6 in 2020, bring the total to 12.

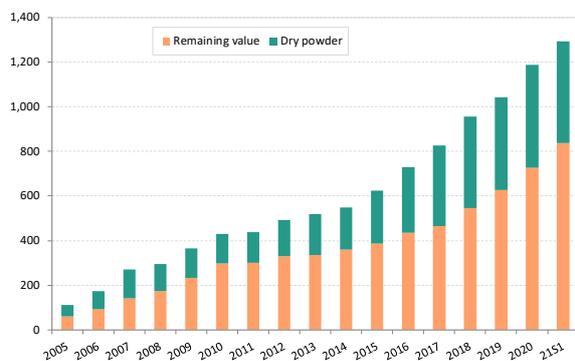
<sup>159</sup> See AMF 2021 annual report.

<sup>160</sup> PitchBook; 2021 Annual Global Private Debt Report; 15/02/22. Note the divergence in McKinsey's estimate of debt fund assets under management based on Preqin (1,188bn, Figure 100) and that of PitchBook (1,293bn, Figure 104) at mid-2021.

<sup>161</sup>According to Munday S., W. Hu, T. True, J. Zhang (2018); Performance of private credit funds: A first look; The Journal of Alternative Investments 21-2, 31-51 private credit funds "can include business development companies (BDCs), mezzanine funds, distressed funds, special situations funds, direct lending funds, and various other strategies like structured credit vehicles or multi-credit strategy funds, among others. Definitions of private credit can also be expanded to include syndicated leveraged loan funds, venture debt and peer-to-peer lending platforms (...)". BDCs are investment funds subject to the Investment Company Act in the United States, which are designed to invest (at least 70% of their assets) in SMEs with a capitalisation of less than USD 250 million. These vehicles often use leverage and are generally listed on a stock exchange.

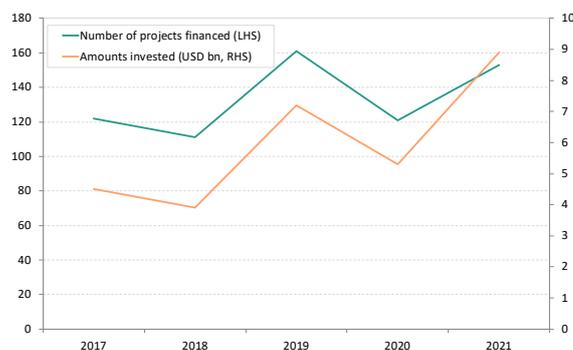
professional funds, professional private equity funds and financing organisations (securitisation vehicles or specialised financing vehicles) that can grant loans to companies,<sup>162</sup> categories of AIFs that can originate credit.<sup>163</sup>

**Figure 104: Private debt funds –assets under management and capital raised to be invested (dry powder) (USDbn, as at 30 June 2021)**



Source: PitchBook.

**Figure 105: French infrastructure fund activity (USDbn)**



Source: France Invest.

In 2021, globally, infrastructure and natural resources funds also set records for inflows (USD 137 billion in 2021)<sup>164</sup> and transactions (USD 446 billion). Driven by commodity markets, their performance also contributed to bringing their assets under management to USD 1,116 billion in 2021 (up 28.3% over the year). (Figure 100). Infrastructure funds were driven by two trends. One relates to sector allocations, with ESG and technology criteria playing an increasingly important role. In 2021, 50% of transaction volumes concerned alternative energy and information technology compared with 30% in 2007. Furthermore, the concept of infrastructure is spreading to new, sometimes "unconventional" sectors (cleantech, infratech, service provision, modular medical care units, airport security systems, etc.). The other shift has been in the industry, with specialist managers giving way to the large traditional private equity players, targeting a broader institutional client base, expecting higher and shorter term returns.

In France, boosted by a highly concentrated industry (38 management companies), infrastructure funds raised EUR 17.2 billion, compared with an average of around ten over the last four years (five in 2020) (Figure 105).

#### □ Institutional demand continues to drive growth in the sector

With the search for yield and the structural evolution of the economy's financing needs, institutional investors, faced with the promotion of new products and alternative structures by the main sponsors,<sup>165</sup> have significantly increased their allocations to private equity funds.<sup>166</sup> According to CEM Benchmarking, their average allocation to private markets has increased from 12.5% to 18.5% between 2012 and 2020. This increase in allocations also comes

<sup>162</sup> Possibility introduced by Article 27 of the Amending Finance Act 2015, specified by Decree 2016-1587 of 24/11/16. The conditions for carrying out the activity of granting loans are specified by the Monetary and Financial Code ( Articles L. 214-154 (professional specialised investment funds), 214-160 (professional private equity funds), L. 214-169 as drafted from 01/01/16 to 02/01/18 (securitisation vehicles), L. 214-175-1, V (securitisation vehicles) and L. 214- 190-1, V (specialised financing vehicles) as drafted since 03/01/18, 214-203-1 to R. 214-203-9 (professional specialised investment funds), R. 214-206-1 (professional private equity funds), R. 214-234 (securitisation vehicles) and R. 214-240-1 (specialised financing vehicles), the AMF General Regulation and AMF Instruction 2016-02 "Organisation of asset management companies for managing loan-granting AIFs", published on 27 June 2016 and updated on 17 December 2019.

Articles 423-36-2 to 423-36-4 applicable to professional specialised investment funds and, by reference to Article 423-56, to professional private equity funds and, by reference to Article 425-A, to securitisation vehicles.

<sup>163</sup> Based on the findings of a series of SPOT inspections, the AMF found that the quality of the loan-granting arrangements in place at the five portfolio asset management companies audited was diverse, depending on the conditions under which the companies operate in this market. Generally speaking, the management processes are in place and are implemented diligently, however the inspections identified areas for improvement, ranging from procedural adjustments and improved traceability to bringing certain practices into line with regulatory requirements. [Summary of SPOT inspection on loans granting](#) of 27 October 2021.

<sup>164</sup> This growth in funds raised has been particularly pronounced in Europe.

<sup>165</sup> See 2021 Markets and Risk Outlook

<sup>166</sup> According to the American Investment Council, 9% of US public pension funds allocated 9% of their assets to private equity in 2020. See "Private equity returns help public pension funds" in Pension & Investments; 12/07/21.

from a growing population of institutional investors, including public and private pension funds and insurance companies.<sup>167</sup> These institutional allocations are reflected in greater exposures to the information technology, healthcare and infrastructure sectors.<sup>168</sup> They are also reflected in more active management.<sup>169</sup> As a result of these developments, investor commitments to fund capital calls - i. e. the amount of capital to be invested by funds (dry powder) - reached a record USD 3.4 trillion in 2021, including USD 1 trillion for LBO funds alone (Figure 107). Moreover, these commitments come from increasingly old LBO funds (their average age rose from 19 to 25 months between 2019 and 2021),<sup>170</sup> which shows how difficult it is to identify investment targets.

### 3.7.2. Private equity funds: multiple risks yet to be fully assessed

At a time when public information on private equity funds and the underlying asset markets is still very patchy, their development raises questions about the risks for investor protection. They are less strictly regulated and supervised, while their risk management is largely based on the due diligence of institutional investors. Their development also involves risks to financial stability, particularly in the current economic climate. Below are some of the risks identified:

- Difficulties in valuing assets, which highlight difficulties in measuring performance: the illiquidity of assets and the specific structure (e.g. irregular cash flows) of private equity funds make it difficult to measure returns and compare them with other asset classes. They use a variety of indicators: Internal Rate of return (IRR), "multiples" such as (Total Value to Paid In or TVPI)<sup>171</sup> and Public Market Equivalent (PME). They raise specific methodological issues and must therefore be interpreted with caution.<sup>172</sup> With this caveat, the long-term increase in LBO acquisition multiples has continued into 2021 in the US (to 12.3 times EBITDA), with a slight downward shift in 2021 to 11.9 times in Europe. These figures appear to be mainly due to valuation effects, with higher revenues and improved margins being of secondary importance in this respect.<sup>173</sup> An increase in interest rates could therefore put pressure on asset valuations at the same time as (inflationary) pressure on costs and margins is exerted on the revenues derived from them. This vulnerability could be increased by sector effects such as those that affected technology stocks in the first five months of 2022.
- Liquidity risks: a fall in unlisted share prices would also expose private equity investors to liquidity risk (asset-liability mismatch) (Figure 106). On the assets side, it would reduce fund returns (e.g. IPO opportunities, asset sales to secondary funds, etc.)<sup>174</sup> and investment opportunities (credit conditions). On the liabilities side, it would generate liquidity demands of investors (less funding capacity). Some hedge funds are also proposing to hedge these extreme risks.<sup>175</sup>
- Risks related to debt: LBOs maximise their expected returns by refinancing high levels of debt<sup>176</sup> with the acquired companies.<sup>177</sup> This is poorly covered by AIFMD reporting,<sup>178</sup> but plays a major direct role in the performance of the funds concerned. The potentially systemic issue involves above all the leveraged

<sup>167</sup> Moreover, private markets are gradually opening up to retail investors, in particular via life insurance. See the AMF's 2021 Markets and Risks Outlook.

<sup>168</sup> According to the Natixis IM 2022 Global Institutional Investor Outlook survey conducted in October-November 2021, the most attractive private market sectors in 2022 are above all information technology (45%), healthcare (41%) and infrastructure (40%).

<sup>169</sup> Jenkinson, Kim, Weisbach (2021) states that this plays out in particular in favour of debt funds over CLOs.

<sup>170</sup> Source: Bain (2022); Global private equity report based on data from Preqin.

<sup>171</sup> IRR is the discount rate that sets the net present value of the fund's cash flows to zero. TVPI equals the sum of the distributions paid and the estimated value of the portfolio, relative to the total amount invested. IRR and fund multiple are also known as Internal Rate of Return (IRR) and Multiple of Money (MoM) respectively.

<sup>172</sup> See Phalippou L. (2020a, 2020b).

<sup>173</sup> See the CEPRES Market Intelligence analysis cited by Bain (2022).

<sup>174</sup> It should be noted that the extension of the life of private equity funds beyond the commitments made at launch is already the subject of work by the AMF (see press release of 23/02/22) (see [news release of 23/02/22](#)).

<sup>175</sup> See Tom Leake, Head of Solutions at Capstone Investment Advisors, a hedge fund specialising in derivatives and volatility, quoted by "The \$1 trillion shortfall if private equity bets turn sour"; Risk.net; 21/04/22.

<sup>176</sup> It is understood here that the debt is not that of the companies held by the fund, but rather that of the structure it establishes to invest. There is also the question of transparency on this debt.

<sup>177</sup> See Chapter 3 of the AMF 2020 Market and Risk Outlook.

<sup>178</sup> NB: the implementation of the AIFMD provisions in this regard however continues disparate. For example, real estate funds in France include this type of debt in their AIFMD reporting, although this practice has not been harmonised at the European level.

debt<sup>179</sup> issued in this context, which is often recycled in securitisation vehicles (CLOs) or debt funds, vehicles about which information remains very thin and patchy. However, the information available indicates a rise in credit risk. Although it is not particularly visible in the ratings of the credit rating agencies, it can be observed in the growing indebtedness of issuers<sup>180</sup> and the pronounced trend towards decreased protection for investors in loan contracts (increasingly complex<sup>181</sup> covenant lite<sup>182</sup> loans, etc.). These issues also show an increasing sector concentration, e.g. in certain innovative sectors.

In fact, in Europe, the ECB (the Single Supervisory Mechanism, SSM) has expressed concern about the insufficient monitoring and risk management of leveraged loans by (systemic) banks which specialise in their intermediation.<sup>183</sup> Symmetrically, the search for yield by institutional investors could lead to excessive risk-taking. Lastly, the liquidity risks mentioned above, compounded with debt-related risks, could increase the impact of adverse market developments - e.g. inflationary spiral and rising interest rates, downward revision of economic growth, valuations of certain sectors, etc. - on the financial markets.

### 3.7.3. Implications for market regulators

The first difficulty in risk assessment is related to the fragmentation and incompleteness of data sources, which are largely limited to certain data vendors, industry associations of financial intermediaries and rating agencies. These private sources are, by their very nature, not intended to serve the needs of market supervision. In view of this, the SEC has proposed a revision of private fund reporting in the United States (Form PF)<sup>184</sup> to expand the scope of reporting requirements to include information on fund strategies, their use of leverage, the vehicles through which they invest, and the financing of target companies. The proposal would also require the fund managers concerned to immediately inform the competent authorities of exceptional events affecting them, which may be of systemic significance.<sup>185</sup>

In Europe, the AIFM Directive applies in principle to private equity but does not cover all types of private funds. A precise reconciliation of the types of legal entities covered by the different sources of information on funds and the private equity industry would be required here, taking into account the specific nature of the various national private equity-like vehicles. In any case, AIFMD reporting, initially designed to capture hedge fund risks, can be improved for private equity. For example, it does not specifically identify LBOs as an investment strategy, since this type of transaction is included in a residual category. In fact, some indicators currently required by the SEC are still poorly assessed in Europe. They include indicators that measure leverage or that concern certain operations likely to be implemented by funds (e.g. secondary transactions, etc.).

<sup>179</sup> For example, debt where the issuer has an overall debt to EBITDA ratio of more than 4 times (see also [ECB guidance on leveraged transaction](#); May 2017).

<sup>180</sup> According to S&P Global Ratings, the median debt ratio in Europe dropped from the historical peak of 7.2 times in 2020 to 6.3 times in 2021. In the US, it fell from an all-time high of 6.0 times to 5.3 times in 2021. NB: adjustments to the benchmark EBITDA may reduce the level of this ratio.

<sup>181</sup> For example, reflecting the flexibility granted to issuers in terms of debt, dividend payments and investment.

<sup>182</sup> More than 80% of newly issued leveraged debt and speculative-grade corporate issues only have covenants to meet ratios on specific events (incurrence covenants). This proportion was 20% before the great financial crisis and practically zero in 2010. These "covenant lite" loans have less restrictive maintenance covenants ensuring that certain financial ratios - e.g. leverage and/or interest coverage (EBITDA over interest paid) - do not exceed set thresholds.

<sup>183</sup> ECB chair of the Supervisory Board (SSM) A. Enria [letter to the CEOs of significant institutions on banks on leveraged transactions](#); 28/03/22.

<sup>184</sup> *SEC Proposed Amendments to Form PF*; 22/01/26.

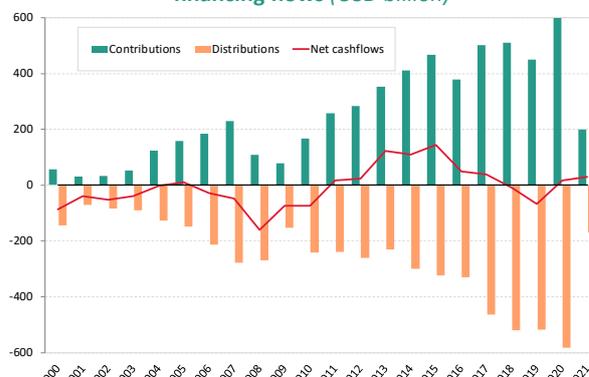
<sup>185</sup> Furthermore, the SEC ([The SEC proposes to enhance private fund investor protection](#); 09/02/22) proposes, with specific provisions for private equity, new transparency rules for investors, notably on hedge fund performance, fees, management company expenses (standardised quarterly reporting), and requiring annual audits.

**Table 9: Forecast of changes in asset allocation by institutional investors in 2022**

Alternatives	Increase	No-Change	Decrease
Infrastructure	53%	44%	3%
Private Debt	43%	48%	9%
Private Equity	41%	50%	9%
Absolute Return Strategies	34%	55%	11%
Real Estate / REITs	33%	52%	7%
Cryptocurrency	28%	62%	10%
Other	25%	75%	NA
Commodities	23%	66%	11%
Gold/Precious Metals	22%	67%	11%

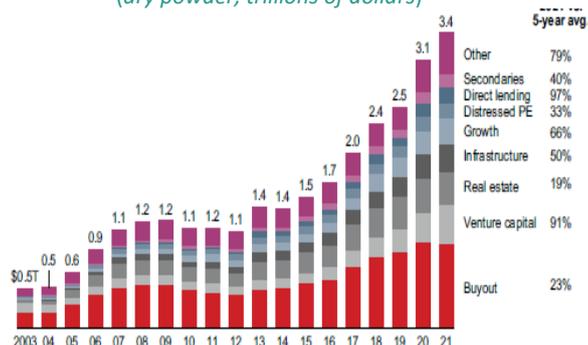
Source: Natixis Investment Managers 2022 Global Institutional Investor Outlook. Survey of 500 institutional investors from 29 countries in North and Latin America, Europe, Asia and the Middle East conducted by CoreData Research in 2021 Q4.

**Figure 106: Private equity: fundraising, distributions and net financing flows (USD billion)**



Source: Pitchbok, Preqin, Capstone IA, cited by "The \$1 trillion shortfall if private equity bets turn sour"; Risk.net; 21/04/22

**Figure 107: Amounts of capital raised remaining to be invested (dry powder, trillions of dollars)**



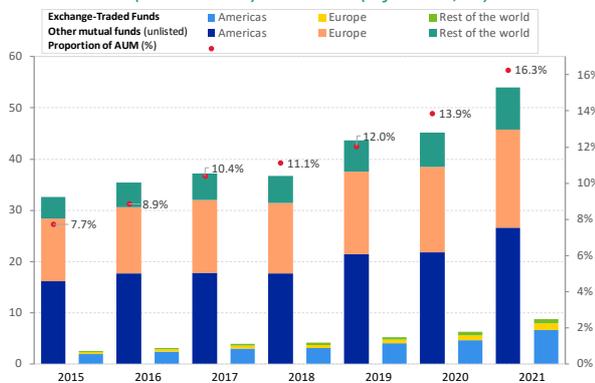
Source: Preqin; Bain & Co. (2022). Notes: "Other" category includes fund-of-funds, natural resources and mezzanine. LBO includes buyout, balanced, co-investment funds, including multi-manager funds.

## 3.8. ETFs CONSOLIDATE THEIR ROLE AT THE HEART OF ASSET MANAGEMENT

### 3.8.1. Record inflows underpin the increase in ETF assets under management

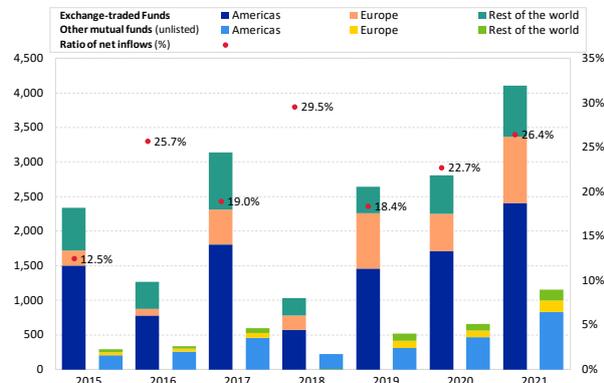
Globally and throughout 2021, net inflows into Exchange Traded Funds (ETFs), the listed index funds covered by the International Investment Funds Association's statistics, (Figure 108 and Figure 109) grew by 69.9% year-on-year to a record high of EUR 1,083 billion. The high level of inflows therefore contributed significantly to the annual increase in global ETF assets under management from EUR 2,514 billion to EUR 8,776 billion by the end of 2021, i.e. up 40.2% compared with the end of 2020. ETF inflows in 2021 accounted for 26.4% of the inflows into (unlisted) mutual funds, bringing their assets under management to 16.3% of those of these funds (compared with 13.9% in 2020).

**Figure 108 : ETF vs. mutual funds: global assets under management (USD trillion) and ratio (left scale, %)**



Source: IIFA, AMF calculations

**Figure 109 : ETF vs. mutual funds: global inflows (USD billion) and ratio (right scale, %)**



Source: IIFA, AMF calculations

In 2021, this net inflow of ETFs represented 26.4% of that of all collective investment funds (excluding ETFs). As a result of these developments, the proportion of global ETF assets under management to unlisted mutual funds is still rising steeply: from only 7.7% in 2015, it reached 16.3% in 2021. From an industry perspective, a global player such as Fidelity has strategically taken advantage of these developments. By aggressively pursuing the development of ETFs - e.g. by adopting fee-free pricing policies in the US - it doubled the assets under management of its index management subsidiary Geode in two years. This enabled it to post USD 4.5 trillion in assets under management by the end of 2021, thus overthrowing the world's third largest fund manager, State Street Global Advisors (USD 4.1 trillion), which is also an index management specialist. This trend also led, as pressure mounted on management fees, to conversions of traditional management funds into ETFs: for example, between April and June 2022, JP Morgan converted the USD 9 billion in assets of four active management funds<sup>186</sup> that had lost USD 2 billion in assets in one year (at the end of November 2021) into ETFs. Dimensional Fund Advisors also converted a USD 7.8 billion fund to ETFs on 9 May 2022, bringing its mutual fund conversions in 2022 to USD 9.8 billion.<sup>187</sup>

However, active management funds also benefited from a favourable environment in 2021. The economic situation - questions about the end of accommodative monetary policies, the health crisis and the Russian-Ukrainian crisis - had asymmetrical impacts, varying according to the sector and the specific characteristics of each firm. Added to this were the structural effects of sustainable investment criteria and geopolitical strategies on energy markets. These factors therefore led to portfolio (re)allocations that were conducive to stock picking.

At the end of 2021, BlackRock managed USD 2,606 billion in actively managed equity and bond funds and USD 3,267 billion in ETFs<sup>188</sup> (38.3% of global ETF assets and 44% of the European market).<sup>189</sup> In the same year, revenues from its active equity funds grew by 48% to USD 2.6 billion, from its bond funds by 12% to USD 2.2 billion<sup>190</sup> and from its ETFs (all categories) by 27% to USD 5.9 billion. Emerging Portfolio Fund Research (EPFR) points to a more general interest in active strategies, with actively managed equity funds, for example, recording their highest inflows for over 20 years. In terms of inflows (Table 10), BlackRock's data seems to confirm the hypothesis of a polarisation between active management ( USD +257.9 billion)<sup>191</sup> and ETFs ( USD +305.5 billion)<sup>192</sup> to the detriment of traditional index management, which suffered outflows of USD 117.8 billion.

<sup>186</sup> The Inflation Managed Bond Fund (USD 1.3 billion in assets); the Market Expansion Enhanced Index Fund ( USD 1.2 billion); the Realty Income Fund ( USD 1.8 billion) and the International Research Enhanced Equity Fund ( USD 4.8 billion).

<sup>187</sup> Dimensional completes largest mutual fund to ETF conversion, and JP Morgan starts converting USD 938 million mutual fund to ETF; ETF.com; 06/05/22.

<sup>188</sup> The remainder of the USD 10.0 trillion in assets under management by BlackRock is made up of USD 3.4 trillion in index funds excluding ETFs and USD 746 million in mainly money market funds.

<sup>189</sup> Source: Les Echos; Amundi n°2 des ETF en Europe; 05/01/22.

<sup>190</sup> Revenues from alternative investment activities, including hedge funds, private equity, infrastructure, real estate and private debt, jumped 21% to USD 1.5 billion.

<sup>191</sup> Active management in the broadest sense - including hedge funds and asset allocation advice.

<sup>192</sup> Note the increase in the proportion of active ETFs, particularly in the US.

**Table 10: BlackRock – Revenue structure**

	2021		2020		Revenue YoY, %
	bn USD	%	bn USD	%	
ETFs	5.9	35.7	4.6	33.6	27%
Non-ETF index	1.2	7.6	1.1	8.2	10%
Other active	8.8	53.8	7.2	52.4	23%
Cash management	0.5	2.9	0.8	5.7	-41%
<b>Total</b>	<b>16.4</b>	<b>100.0</b>	<b>13.7</b>	<b>100.0</b>	

Source: annual report

**Table 11: BlackRock – Structure of assets under management**

	2021		2020		Net Inflows bn USD	2021/2020 YoY, %
	bn USD	%	bn USD	%		
ETFs	3,267	32.6	2,669	30.8	305.5	22%
Non-ETF Index	3,372	33.7	3,068	35.4	-117.8	10%
Other active	2,616	26.1	2,273	26.2	257.9	15%
Cash management	755	7.5	666	7.7	94.0	13%
<b>Total</b>	<b>10,010</b>	<b>100</b>	<b>8,677</b>	<b>100</b>	<b>539.7</b>	

In Europe, Lyxor's ETF assets under management reached EUR 102 billion (up 30%), while Amundi's assets under management reached EUR 87 billion (up 36%), making the merger of Amundi and Lyxor the second largest in the sector in Europe, with a market share of 13.5%. The increase in assets under management was 32% for BlackRock and the German firm DWS, who are the first and third largest asset management companies respectively by assets managed according to Trackinsight. The French group is aiming for growth of more than EUR 30 billion (+11%) per year in its passive management assets. The surge in retail investors' interest in ETFs (Chapter 4), in a European market that has been mainly institutional until now, could contribute to such developments.

### 3.8.2. Some ETFs that weathered the storm in 2021, have been affected by the Ukrainian crisis.

In Europe, in the volatile markets of the first quarter of 2022, ETFs had inflows of EUR 42.7 billion (up 25% compared with Q4 21). These flows benefited equity ETFs (up EUR 29.3 billion), but not ETFs (up EUR 5.1 billion). They also benefited ETCs<sup>193</sup> (+EUR 6.9 billion vs. +EUR 0.7 billion in Q4 21), particularly gold-pegged. ESG ETFs<sup>194</sup> had inflows of EUR 13.0 billion (vs. EUR 27 billion in Q4 21), or 30.4% of total net inflows vs. 79.0% in Q4 21. Thematic ETFs inflows stood at EUR 0.6 billion (vs. +2.1 billion in Q4 21), the first inflow of less than EUR 1 billion in 3 years. Lastly, smart beta ETFs recorded inflows of EUR 7.3 billion (value and dividend strategies). Thus, despite the drop in prices, ETF assets under management remained stable at EUR 1.4 trillion from Q4 22 to Q222. ESG ETFs remained unchanged at EUR 227 billion (16% of the total), while thematic ETFs decreased to EUR 35.0 billion vs. EUR 37.8 billion in Q4 21. Only ETP assets under management increased over the period, from EUR 103 billion to EUR 123 billion.

While the market remained favourable to ETFs until the first quarter of 2022, it was not entirely unrestricted. On the one hand, ETFs with exposure to Russia - which had attracted a surge of inflows at the start of the conflict with Ukraine,<sup>195</sup> to take advantage of the drop in prices that were deemed temporary and/or linked to short selling - were affected by the sanctions affecting this country (Figure 110). Where institutional investors held some USD 170 billion of Russian assets at the end of 2021,<sup>196</sup> JPMorgan, BlackRock, Amundi,<sup>197</sup> UBS, BNP Paribas, Abrdn, Schroders and Pictet have all frozen their funds exposed to Russia since the conflict. The stock market suspensions have been endorsed by the major index producers (FTSE Russell, MSCI<sup>198</sup>, S&P Dow Jones) who have removed Russian components from their emerging indices.<sup>199</sup> Similarly, JP Morgan and ICE excluded Russian corporate and sovereign debt from their bond indices on 31 March 2022. JP Morgan's indices, in which Russian debt weighed between 1.6% and 5.0%, were then the benchmark for more than USD 650 billion of assets under management.<sup>200</sup> Since then, several asset management companies, such as Danske, Nordea and Jupiter, have taken steps to

<sup>193</sup> Exchange-Traded Commodity: listed structured debt that invests (with any diversification requirements) in commodities.

<sup>194</sup> Whose benchmark indices include Environmental, Social and Governance criteria.

<sup>195</sup> 15 Russian equity ETFs took in USD 89.5 million from 14 to 21 February 2022, equivalent to 3.1% of their EUR 2.9 billion assets, according to TrackInsight. VanEck Vectors Russia had inflows of USD 61.3 million, while iShares MSCI Russia recorded USD 20.6 million. Covering 38 ETFs and mutual funds (USD 8.7 billion in assets) with at least 50% exposure to Russia, FactSet reported net inflows of USD 69.7 million from 10 to 17 February. See ETF investors pile into Russian equities and defence stocks; Financial Times 23/02/22.

<sup>196</sup> ETF investors pile into Russian equities and defence stocks; Financial Times 23/02/22.

<sup>197</sup> In view of the suspension of the listing by Euronext, Borsa Italiana and DB AG of the Russia ETFs, and the suspension of their index securities, Lyxor decided, in the interest of investor protection, to suspend the valuation (NAV), subscription and redemption of Lyxor's Russia ETF units until further notice as from 04/03/22. Management fees (TER) will not be charged during this period.

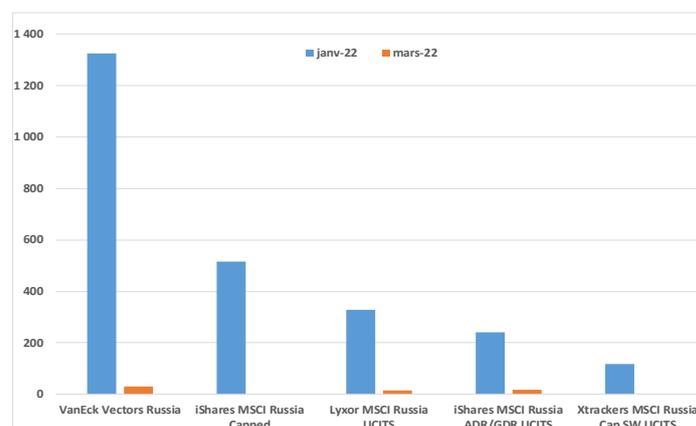
<sup>198</sup> MSCI consulted on this matter on 28/02/22. Russia accounted for 2.2% of the emerging market index replicated by USD 60 billion of ETFs.

<sup>199</sup> On 07/03/22 for FTSE Russell, on 09/03/22 for MSCI.

<sup>200</sup> Russia represented 0.83% of the JP Morgan Emerging Markets Bond Index (EMBI), replicated by USD 415 billion of assets under management.

permanently close their funds with significant Russian exposure. This process can be lengthy in view of the time required to liquidate assets and raise legal risks.<sup>201</sup> Some players, such as Danske, have announced that they will bear the costs of liquidation. Some funds will remain open for redemptions but closed to new subscriptions.

Figure 110: AUM of the top five Russian ETFs (USD million)



Source: Risk.net; 21/03/22.

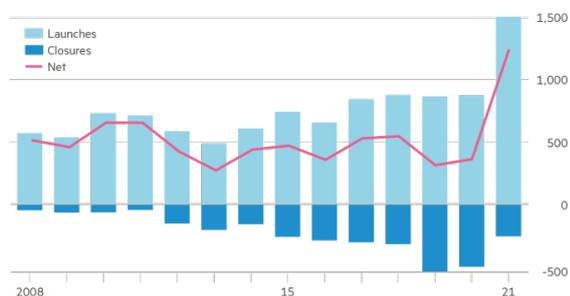
There is also an increased sensitivity of subscription flows to market developments: in April 2022, ETF inflows fell drastically from USD 117. billion to USD 27.4 billion (from USD 76.2 billion to USD 2.8 billion for equity ETFs). The phenomenon primarily affected the iShares Core S&P 500, SPDR S&P 500 and Vanguard S&P 500 ETFs, all of which recorded net outflows of between USD 10 billion and USD 12 billion over the month. Some market participants argued that there was technical arbitrage between ETFs and S&P 500 futures in favour of futures. However, very few ETF categories saw significant positive inflows, with sovereign bond ETFs - characteristic of the flight to safety - being the exception, with USD 15.9 billion of inflows.

### 3.8.3. ETFs, vehicles for accelerated innovation

The search for targeted exposures and sources of return, and for protection against market uncertainty, encouraged active use of ETFs and was an unprecedented driver of innovation in 2021. 1,503 ETFs and ETCs were launched in 2021, well above the 2018 record of 873 (Figure 111). Driven by equity market performance (Chapter 1), 70.4% of ETFs recorded positive inflows in 2021 (Bloomberg), an all-time high. As closures often occur when a new ETF does not reach the level of assets under management to make it profitable, a low since 2014 of 264 ETF disappearances (144 liquidations, the rest from mergers) was thus recorded (compared with 510 in 2020). Thus, the (net) growth of 1,239 in the ETF population almost doubled the 2010 record of 656.

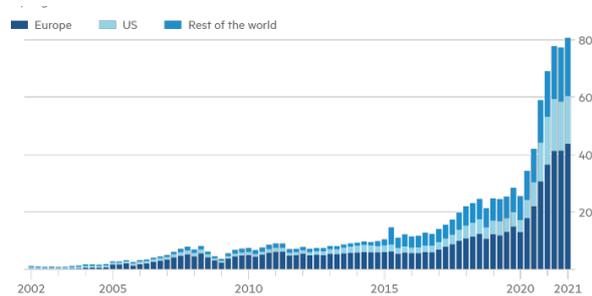
<sup>201</sup> See "ETF issuers face dilemma with frozen Russian funds. To liquidate or not to liquidate? BlackRock, VanEck and Lyxor risk lawsuits if they wind down ETFs"; Risk.net; 21/03/22.

Figure 111 : Number of ETF launches and closures



Source: Morningstar.

Figure 112: AUM of thematic funds (USD billion)



Source: Morningstar.

The market's growth is partly linked to the development of the Chinese domestic market (281 new equity ETFs, e.g. sector and theme ETFs), but above all it reflects accelerated innovation, which is different on both sides of the Atlantic. In Europe, it primarily concerns ESG ETFs - which could also take the form of bonds (e.g. green bonds, see 1.1.2 in Chapter 1), and thematic ETFs.<sup>202</sup> Globally, the assets of thematic funds tripled from USD 255 billion to USD 806 billion between 2019 and 2021 (Figure 111). At the end of 2021, Europe accounted for 55% of the assets in these funds, the United States for 21%, despite the much-publicised success of ARK Invest (Figure 112).<sup>203</sup> In the United States, active ETFs accounted for 60% of ETF launches in 2021. They sometimes reflect conversions of unlisted funds or similar strategies. Another innovation concerns structured ETFs, such as "defined outcome" ETFs, which offer certain protections against losses, but cap gains in return.<sup>204</sup> These ETFs are specific to the United States, where 150 ETFs of this type have USD 10 billion in assets under management, but have little equivalent in Europe, where banks tend to market this type of product over the counter in the form of structured debt (e.g. autocalls, see Chapter 2).

These changes pose two types of risk for investors. The first is the risk of identification, as the term ETF can lead to confusion. On the one hand, it is often incorrectly used<sup>205</sup> to designate products that are not collective investment funds but listed debt instruments, ETCs (commodities) or ETNs (notes). These other types of products do not have the protections of a UCITS (e.g. diversification, counterparty risk management, liquidity management). On the other hand, the index replication that traditionally characterised them disappears as soon as they are actively managed. A second risk involves the comprehensibility of the products, since innovation can involve complex structuring. While a policy has been defined in France to define complex products,<sup>206</sup> they are only currently under review in the United States.<sup>207</sup>

Lastly, the structural increase<sup>208</sup> in the use of bond ETFs and the concentration of assets under management in a limited number of ETFs, raises questions about the risks in the event of a market shock.

<sup>202</sup> Although some themes may overlap e.g. Energy Transition ETFs, this category is distinct from ESG ETFs.. It should also be noted, especially in the United States, the importance of active management ETFs among thematic ETFs (cf. e.g. Ark Invest ETFs).

<sup>203</sup> See analysis of thematic ETF risks in Section 3.7 of the AMF's [2021 Markets and Risk Outlook](#).

<sup>204</sup> For example, the Innovator S&P 500 Power Buffer ETF, launched in early 2021, protects against 15% of losses over the next 12 months, but caps gains at 9.75%. The ceiling and protection levels are revised periodically (annually).

<sup>205</sup> In the United States, even major ETF promoters have expressed concern about the lack of clarity in designations (see for example, [Know what you own: advancing ETP classification](#) and the relay by the SEC Asset Management Advisory Committee [Preliminary Recommendations of ETP Panel](#);

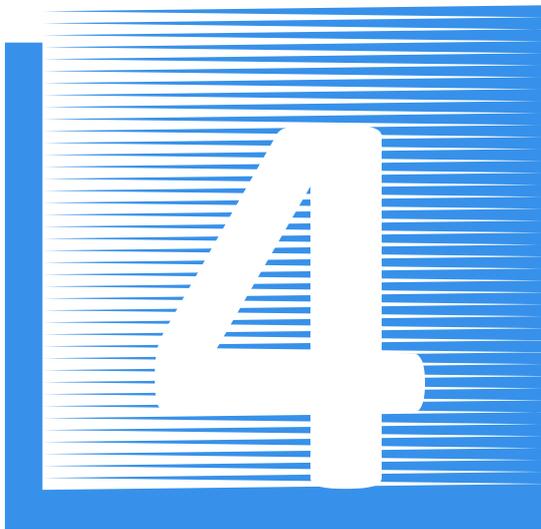
16/09/20). In the EU, the name of an ETF must include the wording UCITS ETF and "A UCITS which is not a UCITS ETF (...) should use neither the 'UCITS ETF' identifier nor 'ETF' nor 'exchange-traded fund'" ([ESMA Guidelines for competent authorities and UCITS management companies](#) of 18/12/12). On this last point, we observe in practice that improper designations are frequently used.

<sup>206</sup> See [Classification of financial instruments as 'simple' or 'complex' as regards organisational rules for asset management companies: the AMF updates its policy](#); 31/01/18 and AMF Position on [Marketing of complex financial instruments](#); DOC-2010-05; amended on 8/10/18. Demartini A.; N. Mosson (2020); [The complexity of structured products marketed in France. What impact has the AMF's action had](#) assesses the effects of this policy on market practices.

<sup>207</sup> US regulatory scrutiny of 'complex' ETFs prompts fears of crackdown; Financial Times; 06/05/22. The complex products cited by FINRA in its [consultation](#) include defined outcome ETFs, cryptocurrency, leveraged and inverse ETFs and volatility or oil-related ETPs.

<sup>208</sup> In the United States, certain accounting rules now allow insurance companies to classify bond ETFs as bonds rather than equities, which reduces capital provisions for solvency reasons and encourages the use of bond ETFs.



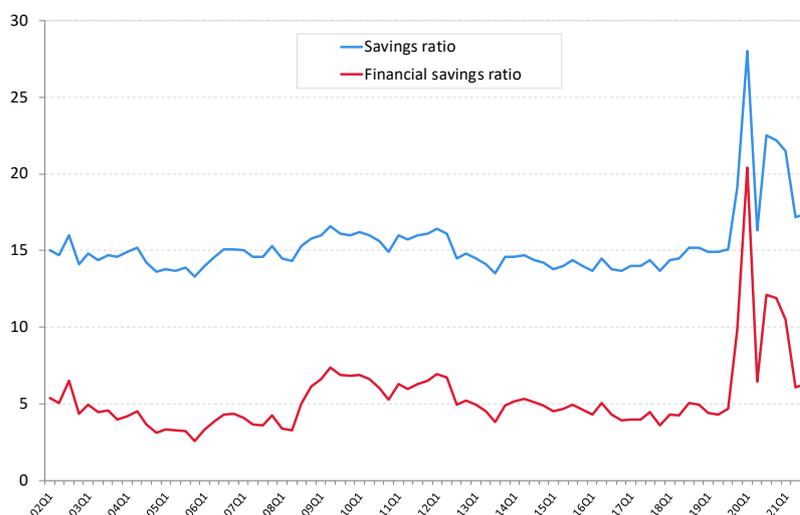


## HOUSEHOLD SAVINGS

#### 4.1. SAVINGS REMAIN HIGH IN 2021

The household savings ratio fell back below 20 percent at the end of 2021, after peaking at 27 percent in the first quarter of 2020 and remaining above 22 percent at the end of 2020 (Figure 113). This exceptional level reflected the impact of the pandemic-related shock on households' consumption capacity. The ratio has not returned to its pre-pandemic level, however. It stood at 17 percent at the end of 2021, having hovered around 15 percent for the previous 20 years. The lockdowns and disruption of supply chains continued to restrict consumption capacity in 2021, and there were also factors of uncertainty that likely increased precautionary savings. The financial savings rate experienced a similar trend, increasing fourfold between the end of 2020 and the first quarter of 2021. It halved between the end of 2020 (12.1%) and the end of 2021 (6.3%), but remained above its pre-pandemic level. The surplus in household financial savings is estimated at €62 billion in 2021,<sup>209</sup> a supply that has built up primarily during the first half of the year. Since the beginning of 2020, the total surplus has increased to €175 billion (Banque de France).

Figure 113: Household savings and financial savings ratios (as a % of gross disposable income)



Source: National financial accounts, base year 2010, AMF calculations.

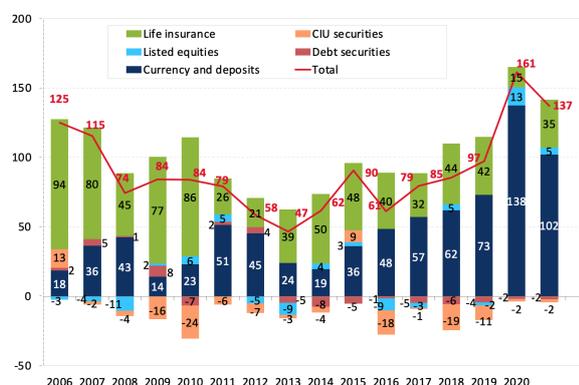
Note: Households excluding self-employed individuals and non-profit institutions serving households.

The reduction in savings flows mainly affected bank investment flows, down by €36 billion to €102 billion, but still well above their pre-pandemic level (€73 billion in 2019). Deposits were the first item affected by the reduction in savings flows: they only attracted €89 billion compared with €125 billion in 2020. However, they still account for 90% of liquid investment flows (“cash and deposits”, Figure 114). Contractual savings, on the other hand, practically disappeared in 2021. They were only €0.8 billion, compared with €17 billion in 2017 and €6 billion in 2020 (Figure 115). After a sharp drop to €15 billion in 2020, life insurance inflows rebounded to €35 billion in 2021, although still well below the average annual inflows of €43 billion between 2015 and 2019. However, compared to other European countries, life insurance continues to be the largest component of French households' financial savings structure. Indirect holding of equities and investment funds through life insurance also helps explain the particularly low levels of direct holding of these instruments in France (Figure 118).<sup>210</sup> Although in the higher range of flows in recent years, household investment in listed equities did fall back slightly in 2021 and remain slight at €5 billion. This is quite a contrast to the renewed activity of individuals in these products (see below).

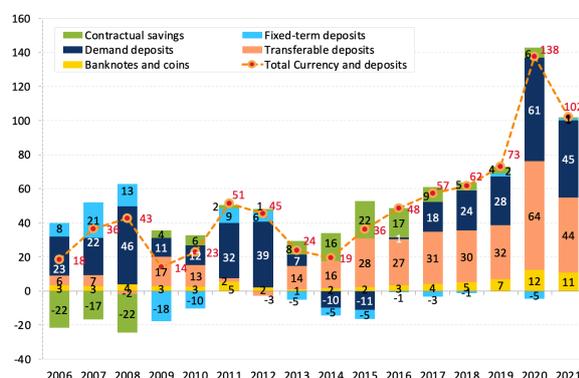
<sup>209</sup> The difference measured by the Banque de France between observed financial savings flows and flows estimated based on the pre-Covid trend.

<sup>210</sup> The [AMF Household Savings Observatory Newsletter - No. 48](#) highlights the increased promotion of life insurance in 2021.

**Figure 114: Net flows of household financial investments**  
(in billions of euros)



**Figure 115: Breakdown of investment flows into “cash and deposits”**  
(annual flows, in billions of euros)



Sources: Banque de France, national financial accounts, base year 2010, AMF calculations. Note: Households excluding self-employed individuals and non-profit institutions serving households (NPISH). Excluding unlisted equities and other holdings.

Although their share in household financial assets remains small (they are included in CIUs in Figure 119), the amounts held in employee savings plan investment funds (FCPEs) have risen significantly. They increased significantly in 2021, from an initial level of €140 billion, and even exceeded €160 billion for a time. They were still at a high level (€155 billion) at the end of the first quarter of 2022.<sup>211</sup> Equity funds represent 12.7% of these assets. They benefited from a 10.6% valuation effect – or €2 billion in absolute value (Figure 118). Funds that invest in the securities of the company sponsoring the employee savings plan<sup>212</sup> make up 35.4% of total FCPE assets under management. In 2021, they enjoyed a return of 17.5% (€8 billion), but with almost no net inflows. This strong performance may reflect investors’ high exposure to the risk of adverse changes in their company’s share price.<sup>213</sup> Diversified funds, which account for 25.4% of FCPE assets under management and 60.1% of their inflows in 2021, posted near-zero performance (+0.2%). Only bond funds, which had a negative return of 4.9% (-€1 billion), experienced/saw a net outflow (-€14 billion). The total assets under management of French FCPEs increased by 14%, adding a 9% valuation effect to the 5% inflow effect.

Assets under management in real estate funds (Figure 116) have also risen significantly in recent years. After growth in the net assets of real estate collective investment undertakings (OPCIs) open to retail investors and of real estate investment companies (SCPIs) to €23.9 billion and €64.3 billion respectively, assets under management in these products, primarily aimed at retail investors, have grown moderately since 2019. Investment in OPCIs for institutional investors has been a source of growth: after a continuous average increase of 14.1% from 2014 to 2020, the assets under management of these products recorded spectacular growth of 44.6% to €81.5 billion in 2021. The difficulties involved in valuing real estate assets and, structurally, their low liquidity, are likely to amplify the impact of an economic downturn on these markets, which have benefited from favourable valuation effects.<sup>214</sup>

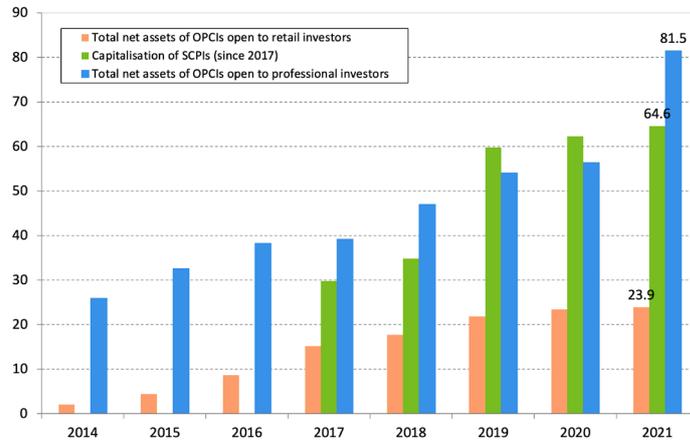
<sup>211</sup> As employee savings are mainly fed by statutory and discretionary profit-sharing bonuses, the figures for 2021 reflect companies’ poor results (and postponement or cancellation of bonuses) in 2020. The better results of 2021 should foreshadow an increase in 2022.

<sup>212</sup> With some exceptions that have no impact on the analysis, these funds invest at least 33% in securities issued by the plan’s sponsor company.

<sup>213</sup> The concern is that there is limited risk diversification related to the exposure that employees have to the uncertainties affecting the company that employs them. In his doctoral thesis, Bekrar Y. (2017) states: “For employee savings as a whole, the concentration in company shares is only a special case of the under-diversification problems that consistently affect individual investors”. Much academic work analysed this issue before and in the early 2000s, but there is very little recent work.

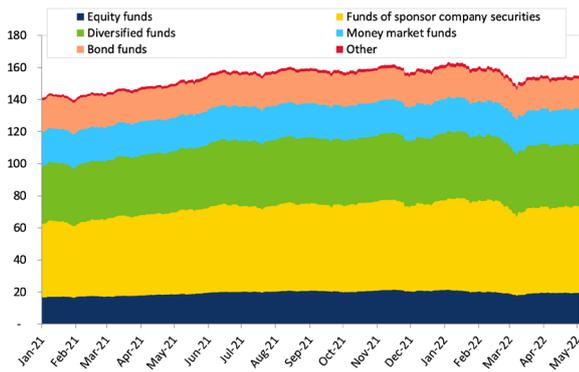
<sup>214</sup> See Box 5 in Chapter 3 on the risks to real estate markets from tighter monetary policies.

**Figure 116: Assets under management in French real estate funds (in billions of euros)**



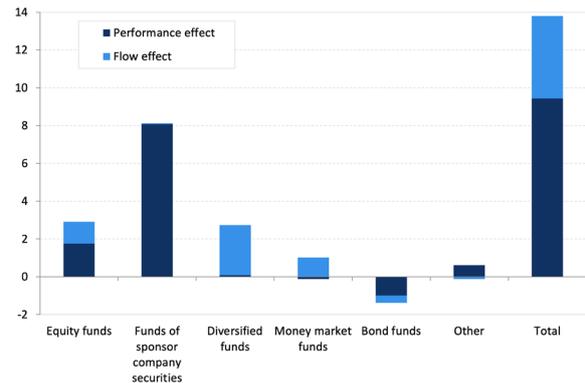
Source: AMF

**Figure 117: Net assets of FCPEs by fund type (in billions of euros)**



Source: AMF

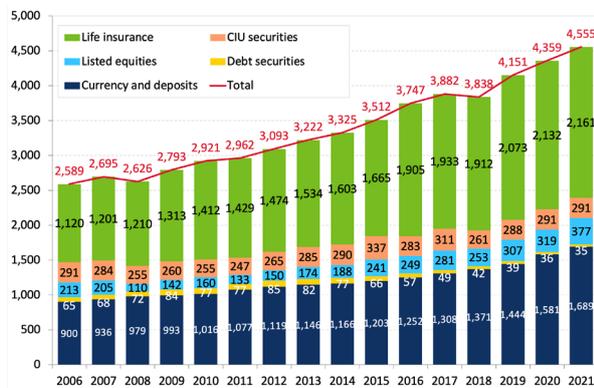
**Figure 118: Breakdown of the change in net assets of FCPEs (from January 2021 to March 2022, in billions of euros)**



Source: AMF

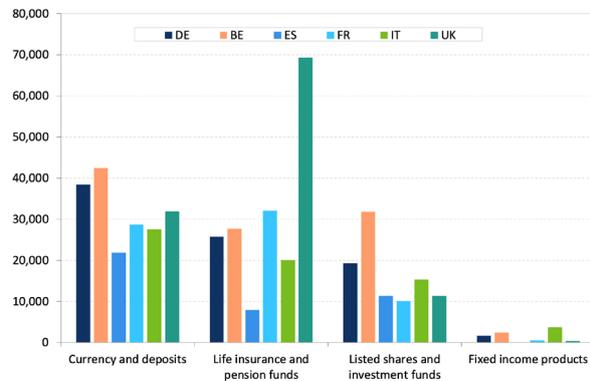
Households' abundant financial savings (Figure 119) therefore continue to be concentrated primarily in risk-free, low-return products, although the trend towards converting euro-denominated life insurance policies into unit-linked policies tempers this observation. At the end of 2021, households' financial assets totalled €4.555 trillion, of which 47.5% was life insurance and 37% were liquid assets (cash and deposits).

**Figure 119: Households' net financial wealth**



Source: Banque de France, national financial accounts, base year 2010, AMF calculations. Note: Households excluding self-employed individuals and non-profit institutions serving households (NPISH).

**Figure 120: Financial wealth per capita (in thousands of euros, end Sep. 2021)**

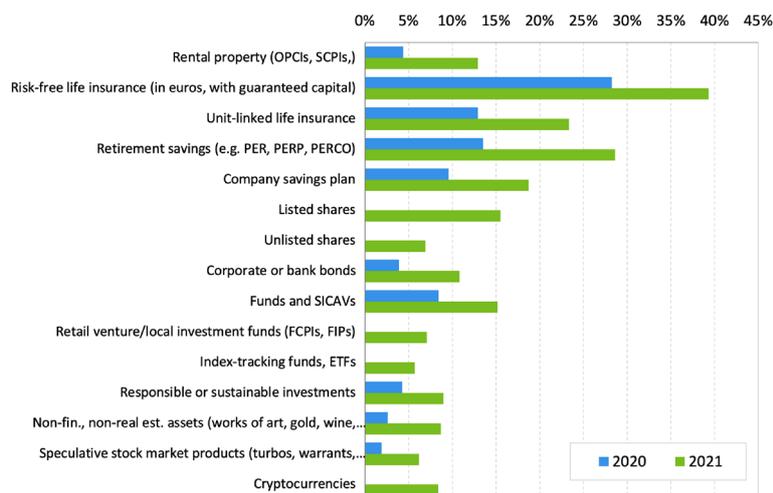


Source: National accounts; European Savings Observatory.

In this context, the AMF's Savings and Investment Barometer (Figure 121) notes the diversity of investment products held in French households. However, it confirms that the French favour life insurance. 39% declare that they hold guaranteed capital contracts in euros and 23% unit-linked contracts. In addition, 29% of respondents said they have a retirement savings plan in their household.

The AMF Savings and Investment Barometer also shows that French people are keen to invest in low-liquidity securities. Some 7% say they hold unlisted shares, of which 38% made an investment less than three years ago – 17% in the past year. Another 9% say they invested in non-financial and non-real estate assets such as art, gold and wine. They also seem to be moving into risky assets. A full 6% say they invested in speculative stock market products such as turbos, warrants, options and the like.

**Figure 121: Financial wealth of French households in 2021**



Source: AMF/Audirep Savings and Investment Barometer, 2021. Note: Online survey of a representative sample of 2,000 French adults conducted from 17/09/20 to 24/09/20 and from 24/09/21 to 08/10/21. Question: Indicate from the list the savings and investment products and assets that you hold in your household.

## 4.2. FOCUS ON CIUs HELD THROUGH LIFE INSURANCE

Section 3.4 describes the weight of French insurers' policies in French fund liabilities. ACPR data can be used to assess French households' indirect investment in CIUs and to identify the underlying assets. It is assumed that life insurance is mainly marketed to individuals (i.e. that life insurance policies are ultimately held by households) and that the vast majority of life insurance policies held by French households are underwritten by French insurers.

Of the €871 billion in fund units held by French insurers at the end of 2021, €823 billion involved life insurance and can therefore, under our assumptions, be considered as household investment intermediated by insurers. €408 billion was invested in unit-linked policies – policies that expose end-investors directly to market fluctuations – and €414 billion in euro-denominated policies – for which the insurer offers a capital guarantee (and, historically, guaranteed returns). It should be noted here that insurers decide on the asset allocation of their euro-denominated funds, while policyholders choose their unit-linked funds (guided by an adviser). These orders of magnitude are much higher than the direct holding of fund units by households (€291 billion estimated by the Banque de France, Figure 119).

**Table 12: Breakdown of French insurers' investment in CIUs (all CIU domiciles combined)**

€ billions Category	Non-life	Life Insurance		Grand Total
	Insurance	euro	unit-linked	
1_Equity	7	69	140	216
2_Bond	10	81	33	124
3_Diversified	8	75	150	233
4_Money Market	7	68	15	90
5_Real Estate	8	57	41	106
6_Private Equity/Debt	4	40	2	46
7_Hedge	1	6	5	12
8_Other	3	18	22	43
<b>Grand Total</b>	<b>48</b>	<b>414</b>	<b>408</b>	<b>870</b>

*Source: ACPR base data, AMF calculations*

The aggregate data in Table 12 shows that, apart from their direct investment in bonds, insurers boost returns on euro-denominated funds through a wide range of collective investment strategies. In addition to bond, equity and diversified funds (€225 billion; 84% of total assets under management), these portfolios include €40 billion of private equity funds (in the broad sense, including infrastructure, private debt and securitisation funds), and almost €60 billion of real estate funds.

French households' direct exposure to risky assets through unit linked life insurance includes €140 billion in equity funds, €150 billion in diversified funds and €41 billion in real estate funds. Smaller amounts (€5 billion) are invested through unit-linked policies in private equity and hedge funds.

The figures below highlight the marked difference in terms of risk diversification of household investment in CIUs through unit-linked products.

### Structure of CIU investment through life insurance

Figure 122: Euro-denominated funds

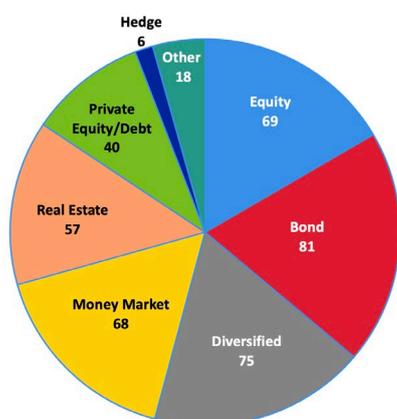
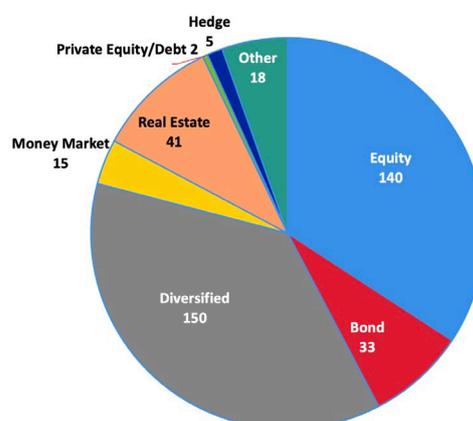


Figure 123: Unit-linked funds



Source: ACPR, AMF calculations

However, this aggregate data masks insurers' wide variety of allocations, as the distribution of the proportion of several fund categories in 79 French insurers' unit-linked funds shows (Figure 124, Figure 125, Figure 126).

### Proportion of fund categories in insurers' unit-linked portfolios

Figure 124: Proportion of equity funds

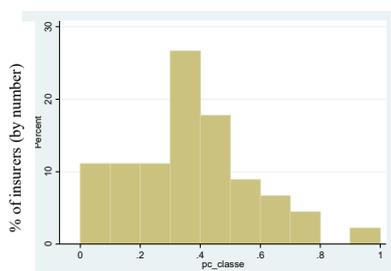


Figure 125: Proportion of diversified funds

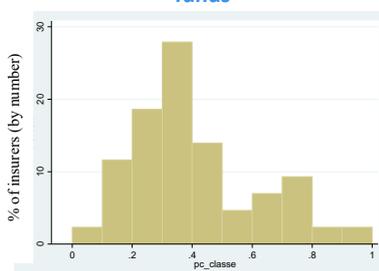
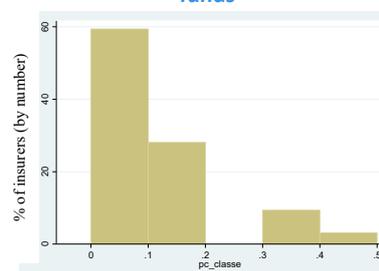


Figure 126: Proportion of real estate funds



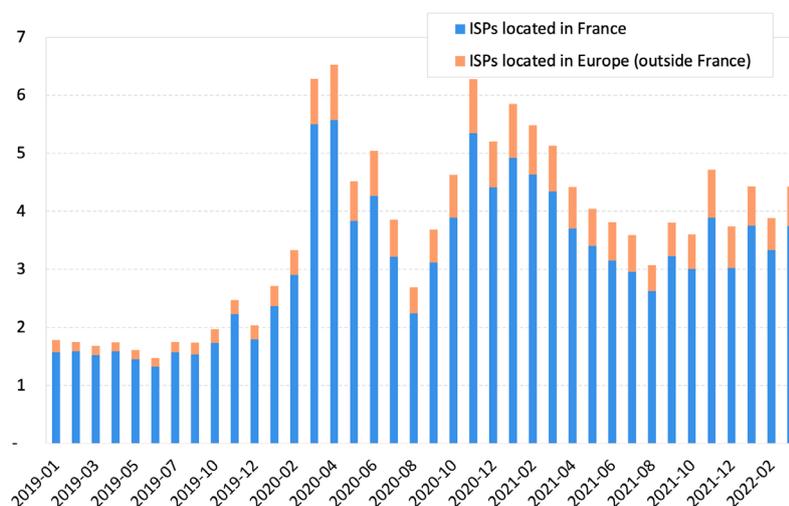
Source: ACPR, AMF calculations. Note: For more than 25% of insurers, equity funds made up between 30% and 40% of the total funds distributed in unit-linked form.

## 4.3. RETAIL INVESTORS ARE STILL VERY ACTIVE IN THE STOCK MARKET

After an explosion in the number of retail investors trading in listed equities in 2020,<sup>215</sup> this number fell back to a lower but nevertheless high level in 2021. The number of transactions in securities under French jurisdiction carried out by French retail investors through European investment services providers (ISPs) remains at higher levels than before 2020. The number of monthly transactions by retail investors has remained above three million since then, whereas it rarely exceeded two million in 2018 and 2019. Retail investors typically carry out some four million transactions per month (Figure 127).

<sup>215</sup> See the AMF 2021 Markets and Risk Outlook.

Figure 127 : Number of transactions in French equities by French retail investors by location of ISP (millions)



Source: AMF

The data in Figure 127 does not provide a fully comprehensive picture of French retail investor activity. The European transaction reporting mechanism, TREM,<sup>216</sup> only covers trades made in EU countries and redirects information about transactions in a given security to the relevant national authority only when that authority has jurisdiction over the security. For example, a transaction in a German security executed through a German ISP by an individual resident in France is not reported to the French authorities. Routing all transactions executed by retail investors in a given European Union jurisdiction to the authorities of that jurisdiction would therefore give them a more comprehensive view of their trading activity. This matter is of growing importance: the AMF has observed a surge in transactions by foreigners in French securities and assumes that transactions by French nationals in foreign securities have similarly increased. The AMF has therefore expressed its desire to extend the scope of TREM exchanges in the European Union so that the competent authorities in one jurisdiction can obtain a complete picture of the transactions in European securities by nationals of that jurisdiction. However, such a move leaves open the issue of visibility for European authorities of the activity of EU-based investors outside Europe, particularly in North American securities. These securities are, nevertheless, highly popular with retail investors.

<sup>216</sup> Managed by ESMA, the Transaction Reporting Exchange Mechanism (TREM) covers the requirements for reporting transactions to competent authorities under Article 26 of MiFIR and the related technical standards. Under MiFID, national authorities have jurisdiction over transactions in securities for which the most liquid market is located in their jurisdiction. TREM establishes and technically implements the transmission of reporting in one jurisdiction on securities over which national authorities do not have jurisdiction to authorities in other European Union countries with jurisdiction over these securities.

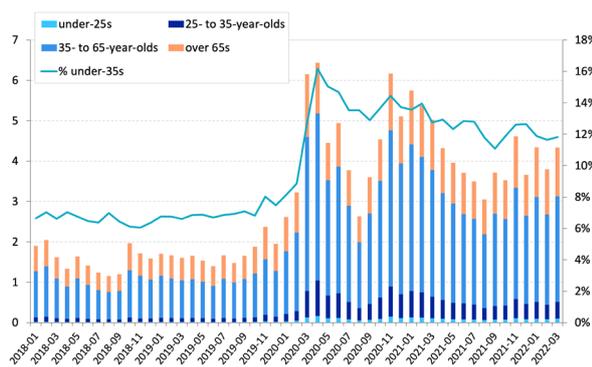
### 4.3.1. Confirmation of shift to younger investors

Figure 128, which breaks down retail investor transactions by age category, confirms that there has been a shift to younger investors since 2020. Moreover, this trend would seem to be stabilising at a level where 11% of retail transactions in French equities come from investors under the age of 35.

The increase in the number of transactions is reflected in more dynamic activity by retail investors. Since 2020, the number of French people making at least one transaction per month has almost doubled. On average, 427,000 French investors made at least one transaction per month between March 2020 and March 2022, which is 62% more than the average of 263,300 between January 2018 and February 2020 (Figure 129).

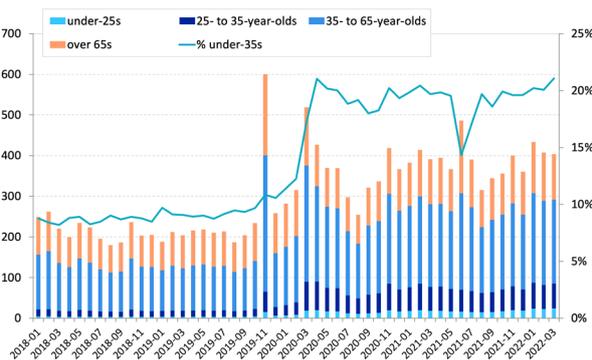
The increase in the number of transactions by retail investors is mainly due to the increase in the activity of younger investors,<sup>217</sup> those aged under 35 and even under 25. Historically, investors under the age of 35 accounted for only a marginal share of the volume traded because they had limited investment capacity compared with older investors. They now account for 12% of monthly retail trading compared with 6% previously. Monthly retail trading among the under-25s was practically zero before March 2020, whereas now it is equivalent to the trading carried out by the under-35s in 2018 and 2019. Even more remarkable is the fact that among the French people who make at least one transaction per month, nearly 20% are under 35. These developments point to an overall trend towards a much younger population of stock market investors.

Figure 128: Number of transactions in French equities by French retail investors (millions)



Source: AMF

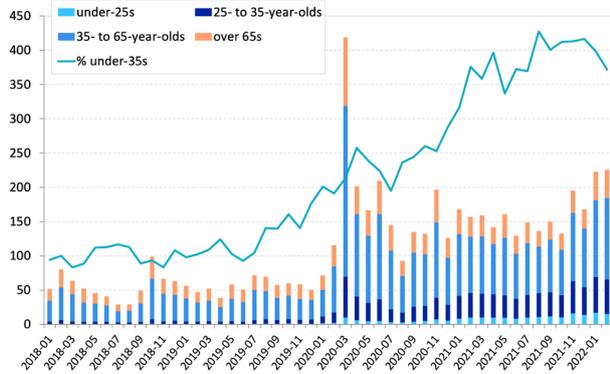
Figure 129: Number of French retail investors making at least one transaction per month in French equities (thousands)



The rise in stock market values in 2021 – a year of economic recovery that saw the CAC 40 rise by 29% to over 7,153 points and reach an all-time high of 7,376 on 5 January 2022 – was very attractive to retail investors. In this environment, investing in ETFs deserves particular attention. The number of ETF transactions exceeded 200,000 per month in January and February 2022, compared with around 50,000 transactions before March 2020. The number of investors making at least one transaction per month also tripled between January 2021 and early 2022 (Figure 131). Younger investors are playing an even more prominent and growing role than they are in equities. The percentage of under-35s trading in ETFs rose from 10% to 30% between 2018 and 2022. This age group accounts for nearly 40% of investors making at least one transaction per month in ETFs.

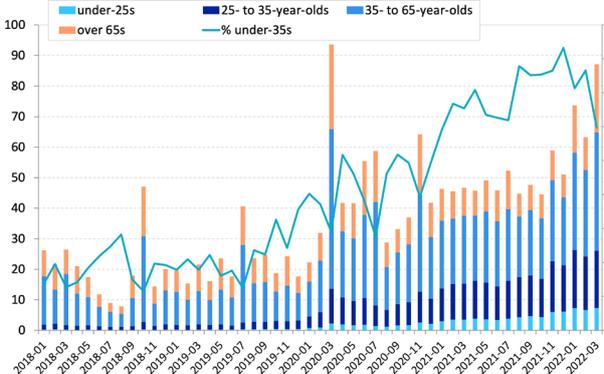
<sup>217</sup> French retail equity transactions are captured separately in the AMF's transaction reporting data and age categories are set at the following thresholds: 25, 35 and 65 years. Joint accounts are excluded when determining the age of individual investors.

**Figure 130: Number of transactions in French ETFs by French retail investors (millions)**



Source: AMF

**Figure 131: Number of French retail investors making at least one transaction per month in French ETFs (thousands)**



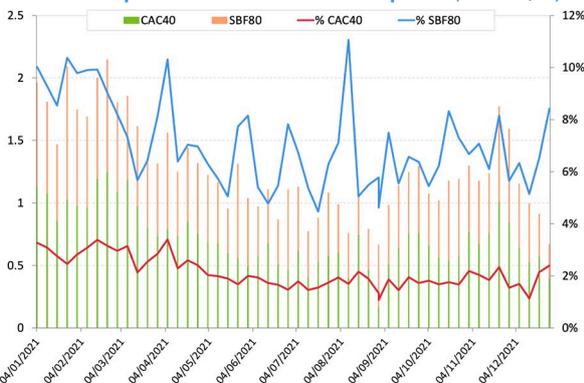
However, reporting on ETFs under French jurisdiction does not provide a complete picture of retail activity in these products, especially since a wide range of ETFs are offered in other European jurisdictions, most notably Luxembourg. Nevertheless, the figures presented in Figure 130 and Figure 131 seem to indicate a growing interest in these assets in recent months.

#### 4.3.2. Retail investors in France: less CAC 40 stocks?

French retail investors continue to invest mostly in CAC 40 stocks, but they are increasingly investing in SBF 80 stocks (i.e. SBF 120 stocks excluding CAC 40 stocks) (Figure 132 and Figure 133). Furthermore, retail investors account for between 6% and 8% of the volumes traded in SBF 80 stocks, whereas they account for only 2% of the volumes traded in CAC 40 stocks. In 2021, retail investors were mostly sellers of CAC 40 stocks (53% of trading volume) and buyers (51%) of SBF 80 stocks.

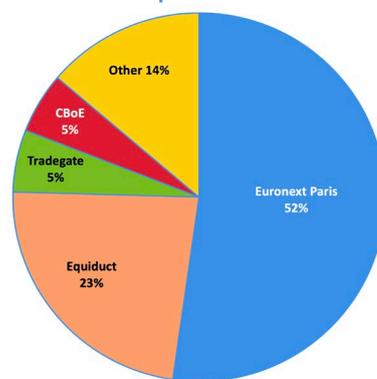
In terms of execution venue (Figure 133), 52% of French retail investors' transactions in SBF 120 stocks take place/are made on Euronext Paris. Equiduct comes next with the second largest market share of 23%. This platform, which offers volume-weighted average price execution of the best bid and ask prices offered on 16 benchmark trading venues (including Euronext Paris) focuses on executing retail investors' order flow. CBOE and Deutsche Börse's Tradegate execute 5% of SBF 120 equity trading volumes, with all other execution venues having no more than a 1.5% market share.

**Figure 132: Breakdown of retail investor transactions in SBF 120 equities: CAC 40 vs SBF 80 equities (€ billion, %)**



Source: AMF

**Figure 133: Retail trading in SBF 120 shares by execution platform**

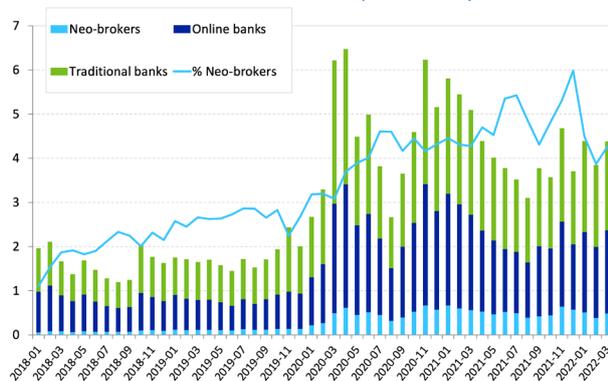


## 4.4. EMERGENCE OF NEO-BROKERS

#### 4.4.1. Neo-broker: a concept that needs defining

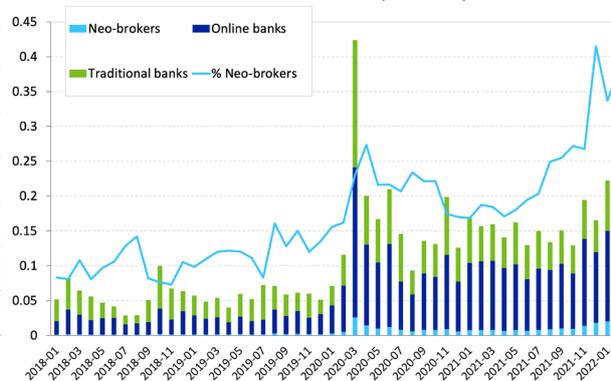
The growth of retail activity in France coincides with the emergence of a new breed of brokers and market intermediaries whose investment trading services are specifically targeted at retail investors, capturing nearly 20% of new investors in listed equities and even more of new investors in ETFs (and Figure 135). Known as neo-brokers, their market share in this segment has grown spectacularly in the United States, spurred by the success of the broker, Robinhood. In Europe, the situation is different, not only from a regulatory point of view but also because investors are risk averse (which is more acute in France, for example). However, a boom in neo-brokers has also been observed. The proportion of trades carried out by these players has continued to grow. In France, in the space of just two years, retail transactions through neo-brokers have risen from 6% to 11% for equities and from 4% to 12% for ETFs<sup>218</sup>. The rapid growth of these market participants has also been apparent since the first quarter of 2020, pointing to a supply-side effect in response to demand from retail investors.

Figure 134: Number of transactions in French equities by French retail investors (thousands)



Source: AMF

Figure 135: Number of transactions in French ETFs by French retail investors (millions)



Without a specific regulatory status, defining neo-brokers raises some questions, especially as there are so many of them and they have so many different business models. Although some of them have a banking status, the characteristics described below make them different from traditional banks and online banks that have been operating in France for many years.<sup>219</sup> However, more positively, neo-brokers may also be defined in terms of what they offer, which includes the following specific features (or at least most of them):

- Digitalised financial services characterised by simplified interfaces and various types of automation of investment practices;
- Low (or no) cost access to stock market trading venues, with the order execution service typically backed by agreements to resell retail order flow to other market counterparties (known as payment for order flow or PFOF);
- Access, especially cross-border access,<sup>220</sup> to trading in specific ranges of speculative financial and non-financial instruments, which typically include shares or fractions of shares,<sup>221</sup> ETFs, derivatives, structured products, cryptoassets, commodities, etc.;

<sup>218</sup> NB: these figures do not take into account investments in shares and ETFs outside France (e.g. American). They therefore probably underestimate the investment in this type of product.

<sup>219</sup> Although a certain number of neo-brokers have a banking status, the concept differs in particular from that of neo-bank discussed by the ACPR (2020); Neobanks in search of profitability; Analysis and synthesis no. 113 and Dufour T., M. Vileyn, O. Fliche, J. Doriencourt, G. Clément (2022); Digital transformation in the French banking sector; ACPR Analysis and synthesis. In April 2021, the ACPR also reminded fintechs that they are not allowed to call themselves neo-banks in their official communications without the necessary credit company authorisation ([Reminder of the rules for using the term “neo-bank”](#)).

<sup>220</sup> These ISPs provide their investment services under the freedom to provide services. They are authorised and their rules governing organisation and conduct are supervised by a European counterpart without any right of review by the authorities of the country where the service is provided.

<sup>221</sup> The marketing of fractional shares involves very different legal structures, particularly in terms of whether derivatives are used or not. The risks and rights attached to the investment may therefore vary significantly from one offer to another, without investors necessarily having an adequate understanding of them.

- Use of alternative information services and promotion channels, in particular social media networks.

Looking at the transactions that execution venues report to the AMF under the MiFID requirements applicable to stock markets, there are three categories of transaction, namely those intermediated by neo-brokers, traditional banks and online banks. Since there is no regulatory definition, intermediaries are categorised based on lists of intermediaries that have been “positively” identified as belonging to the category in question using their Legal Entity Identifier (LEI) and the identification criteria mentioned above.<sup>222</sup> Table 13 lists the neo-brokers that have been accordingly identified, and this forms the basis for the statistics on neo-brokers presented and analysed below.

**Table 13: Selection of neo-brokers available to French investors**

	Jurisdiction
ActivTrades	GB
Bitpanda Fin. Services	AT
BUX Fin. Services	GB, NL
CMC Market UK	GB
DeGiro Bank	DE, NL
EToro	CY, GB
FXPRO Fin. Services	CY
IG Index/Europe	DE, GB
Plus500	CY, GB
Top FX	CY
Trade Republic	DE
Trading 212	CY, GB
XTB SA	PL

Source: AMF

#### 4.4.2. A digital offer targeting online users, mostly young people

##### □ A digital offer...

Neo-brokers target online investors who are receptive to a range of simple and/or intuitive applications accessed via a smartphone, making it easier to access and trade financial instruments and other assets (e.g. cryptocurrencies). Like online banks, neo-brokers are investment companies that operate entirely electronically and do not offer investment advice but only execution services. It usually takes only a few minutes to open and fund an account on these platforms. More generally, the interfaces they develop are designed to make it easier to access the market and execute financial transactions. Ozik et al. (2021)<sup>223</sup> show that these “fintech” innovations – the new applications provided by brokers, in particular neo-broker Robinhood – have been a significant factor in the growing interest of retail investors<sup>224</sup> in the US equity markets.

Neo-broker platforms thereby tend to technically combine a (variable) range of financial services, including various execution and back office services for the products offered and investment services with automation features. For example, some have modernised the practice of scheduled investment, which involves automatically investing savings periodically (e.g. monthly) in financial securities initially selected for this purpose. Some neo-brokers even provide features that replicate the strategies of other platform clients – including professionals – whose investments have performed well. It matters here to stress the heterogeneity of the product offer and what it covers. For example, the notion of fractional share can relate to very different practices<sup>225</sup>. In some cases, a neo-broker asks the investors concerned to agree to their allocations being used and replicated by their other clients,

<sup>222</sup> Following the methodology implemented by Chatillon E., M. Degryse, S. Frenay (2021); [Retail investors and their activity since the COVID crisis: younger, more numerous and attracted by new market participants](#); AMF study; Nov 2021.

<sup>223</sup> Ozik, G., R. Sadka, S. Shen (2021). [Flattening the illiquidity curve: Retail trading during the COVID-19 lockdown](#). *Journal of Financial and Quantitative Analysis*, 56-7, 2356-2388.

<sup>224</sup> Without presuming that this increase in the involvement of retail investors will be beneficial.

<sup>225</sup> Fractions of shares cover very different legal structures, in particular depending on whether they use derivatives or not. The risks and rights attached to the investment can then vary significantly from one offer to another without the holders' understanding being necessarily adequate. See [Fractions of shares: points of attention and pitfalls to avoid](#); AMF; 05/27/21.

and pays them in return. The neo-broker is therefore acting as an intermediary, linking clients looking for investment strategies with others who are turning their trading activity into a profitable venture by offering to replicate their strategies. The platform then builds a network of successful traders that is as large as possible to meet all the needs of its clients, who must be sufficiently numerous to provide attractive remuneration to traders with replicated investment strategies. Based on this, social trading is generally defined as offering features that use social media so that a platform’s clients can follow other traders and the performance of their strategies (their “statistics”), receive notifications on their trades and communicate with them. More specifically, copy trading refers to systems that automate replicating trades from one trader to another. Providing these systems is considered a third-party management service and is subject to the relevant regulatory requirements (cf. section 4.4.3). By contrast, social trading, which is generally an integral part of neo-brokers’ business models, is less well defined overall, and the way it operates, including its use of social media, is more problematic in terms of how it fits in with the regulations.

□ ... promoted by offering low transaction fees...

In a break with what traditional banks offer, neo-brokers have set themselves apart by offering low-cost stock market order execution services: €1 per order and even “zero commission”. This approach also applies to securities under American jurisdictions, both equities and ETFs, for which traditional players typically charge high fees. This competitive approach enables them to target retail investors, particularly those under 35 with lower purchasing power, who have not previously tapped into the financial markets. Commission-free trading frequently uses payment for order flow (PFOF). This practice involves an intermediary passing on the order flow from its clients, in this case retail investors executing their orders on its platform, to other intermediaries for a fee. This allows neo-brokers to offset the low unit commissions received from their clients with remuneration from market counterparties (e.g. trading venues or market makers) on which they execute their orders on a priority basis, possibly with the benefit of secure liquidity. The practice of PFOF is the subject of some debate, especially in Europe, where the current draft revision of MiFIR is considering banning it.<sup>226</sup> Box 7 lists some of the recent work that has contributed to this debate.

**Box 7: Payment for order flow: incompatible with the best price execution rule?**

In the United States, where market rules differ on this point from those in Europe, Robinhood makes massive use of PFOF – which accounts for 80% of its income<sup>227</sup> – to offer zero-commission trading. The neo-broker therefore faces a conflict of interest, since its main clients are no longer the investors trading on its platform, but the market counterparties to which it submits its orders for execution.<sup>228</sup>

In Europe, more specifically, PFOF has attracted the attention of regulators because of its potential incompatibility with MiFID II’s “best execution” rule. MiFID II states that investment companies must obtain the best price available on the consolidated market for the security concerned when executing client orders. However, PFOF creates an incentive to break this rule by channelling orders to platforms regardless of the competitiveness of the buy and sell prices they offer. ESMA<sup>229</sup> and some national competent authorities (the AMF<sup>230</sup> and the Dutch AFM,<sup>231</sup> to name two) have warned investors of this risk.

**Neo-broker industry studies...**

Several recent studies have attempted to identify whether PFOF is contrary to the objectives of MiFID or beneficial to end clients. Funded by the neo-broker Trade Republic, Meyer et al. (2021)<sup>232</sup> analysed a sample of transactions from 100,000 clients using their platform that executes 2.2 million transactions, to investigate this issue. Trade Republic is a German neo-broker that has offered trading services (for 8,500 equities and ETFs and 300,000 derivatives) since 2019 in Germany and 2021 in France. It conducts all its trading via a PFOF agreement on the Lang & Schwarz (L&S) trading venue in Hamburg. The authors compared the execution price of an order on L&S with that offered at the same time on Xetra (Deutsche Börse), the

<sup>226</sup> See [ESMA Assessment and recommendations on the European Commission’s MiFIR review proposal](#); 15/03/22. Given the differing interpretations of European legislation, the AMF has taken a position in favour of banning PFOF.

<sup>227</sup> Ernst T., C. Spatt (2022); Payment for Order Flow And Asset Choice; NBER Working Paper 29883.

<sup>228</sup> As with many digital services, the idea that “the customer is the product” is also evident here.

<sup>229</sup> [ESMA warns firms and investors about risks arising from PFOF and from certain practices by “zero-commission brokers”](#); 13/07/21.

<sup>230</sup> [Speech by Robert Ophèle, AMF Chairman; Rosenblatt Securities 11th Annual European Market Structure Conference](#); 25/03/21.

<sup>231</sup> [Assessing the quality of executions on trading venues: The “Comparative Pricing Model”](#); January 2022 and March 2022 (version 2).

<sup>232</sup> Meyer S., C. Uhr, L. Johanning (2021); [Private investors and the emergence of neo-brokers: Does PFOF harm private investors?](#)

main German stock exchange, and concluded that: (i) less than 1% of transactions on L&S have a poorer execution price compared with Xetra; and (ii) the average effective spread on L&S, compared with that of a hypothetical execution by Xetra, is improved by 42.9%. On average, for every €1,000 invested, customers would therefore save €0.52 compared with Xetra. Based on this, the authors argued in favour of using PFOF to reduce transaction costs for retail clients. The significance of these results remains unclear given that only one reference market was taken into account (Xetra), the securities traded are often American and their reference market is usually outside Germany (e.g. in the USA). A disaggregation of the results by product type (e.g. isolating ETFs from equities) would also help in interpreting the results.

***... are at odds with those of national regulators***

The conclusions of an AFM study conducted in January 2022 are significantly different from the results presented by these authors. The AFM study looked at two platforms using PFOF and compared the execution prices for Dutch securities transactions on these two platforms with 10 reference platforms, whenever a transaction is also recorded there, simultaneously. Based on MiFIR reporting data for the period 1 January to 1 July 2021, the study concluded that, compared with the reference platforms, the price of executed retail transactions is degraded in about 70% of cases for the first platform using PFOF and in more than 80% of cases for the second. The theoretical cost of the distortion is €0.48 and €1.15 for an investment of €1,000 on each of the two platforms.

Over the same period, the Spanish authority (CNMV) analysed 41,444 trades in 82 securities under its jurisdiction and compared, again for trades executed simultaneously, the execution prices of a platform using PFOF with those of the 10 most liquid platforms for each of the securities in question. The study concludes that 86.4% of trades on the platform using PFOF offer a degraded price, with an average price deterioration of 0.11%, or €1.09 per €1000 traded. Only 3.3% of trades offered more competitive prices.

***PFOF does not only apply to equity trades***

Ernst & Spatt (2022)<sup>233</sup> show that, in the US market, PFOF on equity trades is limited and that retail investors benefit from improvements in execution prices on these products. By contrast, in options markets, the study highlights the scale of PFOF and the lower execution quality of retail trades. Focusing the debate on listed equities therefore runs the risk of overlooking the fact that retail investors are increasingly likely to invest in derivatives and other categories of financial instruments.

***An offer from execution venue for the retail trading flow***

Best of Book (BoB) is an order execution service on Euronext designed specifically to improve the execution quality of retail investor orders compared with those on the market order book. In April 2020, 36% of retail order flow on Euronext was executed on the BoB service. An AMF study in March 2022<sup>234</sup> found that the BoB service improved execution prices in 35% of cases compared with the Euronext central order book.

Equiduct offers brokers a no-execution-fee service (Apex) at the Volume Weighted Best Bid Offer (VBBO), which is the volume-weighted average of the best bid and ask prices available on 16 reference platforms (including Euronext Paris, but excluding BoB). According to the results of the AMF study, execution prices on Equiduct appear to be marginally more attractive than those on the Paris stock exchange in many cases, once explicit transaction costs (which are not zero on Euronext) are included in the comparison. However, the difference is very small (a few tens of cents for average trades of €4,000) and essentially insignificant when compared with other criteria for evaluating the execution of retail orders on the stock market.

<sup>233</sup> Ernst T., C. Spatt (2022); *Payment for Order Flow And Asset Choice*; NBER Working Paper 29883.

<sup>234</sup> AMF (2022); [Analysis of the execution of retail investor orders in the first months of the Covid-19 crisis](#); March

□ ... targeting mostly young people...

Neo-brokers are distinctive in that they promote their services to younger generations, often not previously interested in the financial markets, while the older, more experienced generations tend to favour traditional or online banks. For example, the under-35s make up more than 30% of their clients (Figure 136), twice that of online banks (Figure 137) and more than three times that of traditional banks (Figure 138). Unlike other intermediaries, neo-brokers consider the under-25s to be a category of investors in their own right.

Trading volumes of French retail investors in French equities by age group and type of intermediary

Figure 136: Neo-brokers

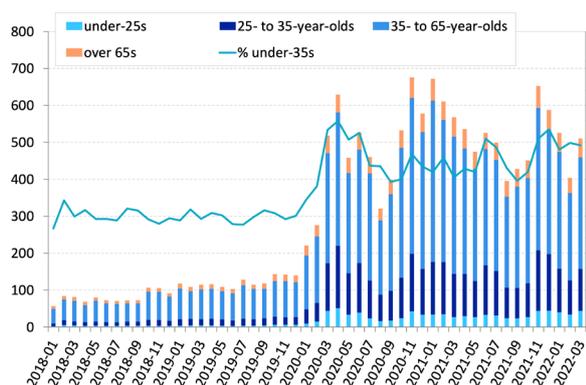


Figure 137: Online banks

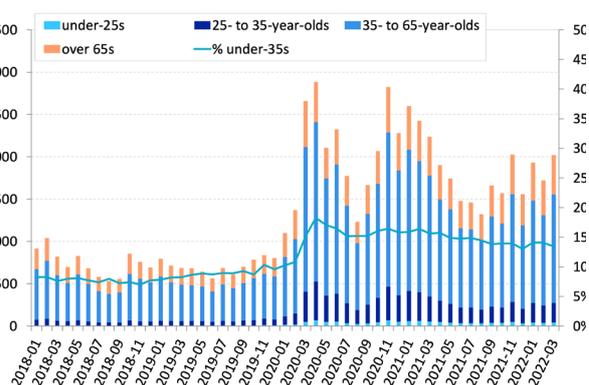
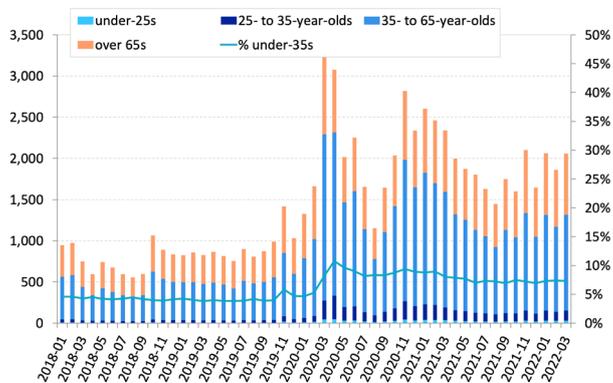


Figure 138: Traditional banks



Source: AMF

□ ... primarily online using social media

Given their specific target group of investors, and the value of using this as a lever in their marketing strategy, neo-brokers use certain communication channels extensively – in particular social media – to promote their services and smartphone applications. They allocate significant marketing budgets to sports sponsorship,<sup>235</sup> for example, to reach their target audience, and buy media space, for example, to display multiple banners linking to their smartphone applications. Some neo-brokers also actively collaborate with finance-focused influencers (“finfluencers”) on social media platforms.

While social media platforms provide an opportunity for execution venues to promote their services, they also play an important role for neo-brokers’ clients, where appropriate mediated by neo-brokers themselves. They run the

<sup>235</sup> The Israeli neo-broker eToro, for example, is one of the biggest sponsors of European football. eToro’s marketing spend more than doubled from \$229 million to \$524 million between 2020 and 2021. See eToro posts 2021 Revenues of \$1.23B, Net Loss \$265M; Forex News; 07/03/22.

risk of being considered as sources of information prior to investment, with all the issues raised by the "good tips", including related to the liability of those who offer them, and to the risk of herding behaviour such as that observed in the Gamestop episode. For example, Eaton et al. (2021)<sup>236</sup> confirm that retail investors are more likely to trade in the most highly exposed securities. Other recent publications also suggest that retail investor social media feeds are poorly informed and overreact to public information. Barber et al. (2021)<sup>237</sup> show that Robinhood investors are particularly active in securities that receive the most media coverage but end up with negative returns from their stock market activity. Ozik et al. (2021) also identify a positive externality: retail trading made a 40% contribution to reducing illiquidity in equity markets during the health crisis.

#### 4.4.3. Regulatory implications?

##### A young target audience, often newcomers and potentially more vulnerable

Offering services to a younger audience, often newcomers to investing and therefore less well informed, raises questions about the need to adapt practices and/or the applicable regulatory framework. At the end of 2021, the AFM reiterated the rules for promoting investment services, stating that the function of brokers is to make it easier for people to invest in financial markets and that they must therefore remain neutral and transparent. In particular, the influencers on social networks are, in most cases, far from being financial market professionals.<sup>238</sup> Their status raises questions about whether their activities should be considered as investment advice.<sup>239</sup> In principle, their role is not to act as a substitute for professional investment advisers. However, the AFM has observed practices involving influencers promoting risk assets (to their followers).<sup>240,241</sup>

There is also a risk that neo-brokers' application interfaces will encourage inappropriate gamification of their clients' investment activities and trivialise the dangers of their investments. Neo-brokers' interfaces tend to use mechanisms inspired by features that video games use to create addiction in their users. These features typically include setting investment objectives and/or pitting users against each other (tournaments, etc.), reward and loyalty mechanisms (awarding points, ranking lists, lotteries, etc.), and suggestions and incentives that guide choices depending on the behaviour observed.<sup>242</sup> It is important to note that social trading may also require investors to deal with complex products such as derivatives or contracts for difference (CFDs). In the United States, Robinhood was forced to remove from its application the animation that celebrated the execution of large orders with a shower of confetti on the screen, for example.<sup>243</sup> In 2020, the same neo-broker was criticised for using a lottery-style feature to distribute fractional free shares to its new members, often young and inexperienced investors.<sup>244</sup> The SEC in the state of Massachusetts also filed a complaint against these aggressive strategies to find new investors.<sup>245</sup>

##### Cross-border supervision is needed

It is worth noting (Table 13) that, unlike the traditional banks and the vast majority of online banks operating in France, none of the neo-brokers known to be active in France is registered in that jurisdiction. eToro is an Israeli company operating in Europe from Cyprus. De Giro is Dutch and Trade Republic is German. This observation

<sup>236</sup> Eaton G., T. Green, B. Roseman, Y. Wu (2021); *Zero-commission individual investors, high frequency traders, and stock market quality*. *High Frequency Traders, and Stock Market Quality*; Jan.

<sup>237</sup> Barber B., X. Huang, T. Odean, C. Schwarz (2021); Attention induced trading and returns: Evidence from Robinhood users; *Journal of Finance*, Forthc. This article is a follow-up to the seminal paper: Barber B., T. Odean (2008); *All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors*. *The Review of Financial Studies*, 21-2, 785-818.

<sup>238</sup> A number of them are in fact from the world of reality TV.

<sup>239</sup> The concerns also apply to investment recommendations. ESMA stresses that those making investment recommendations must present them objectively and transparently and disclose their identity, and the AMF encourages investors to question the credibility of opinions shared online and to base their investment decisions on reliable information. See [Investment recommendations on social media: the AMF backs ESMA's reminder](#); 28/10/21.

<sup>240</sup> [AFM reminds 'influencers' of rules for online posts on investing](#); 21/12/21.

<sup>241</sup> NB: At a minimum, they must comply with consumer law, i.e.: i) state explicitly whether they are remunerated; ii) have balanced risk/benefit communication; iii) not resort to misleading communication, e.g. which would hide the risks or other major elements (misleading "zero fee").

<sup>242</sup> How fintech is driving engagement through gamification; *Mind Fintech*; 22/09/21.

<sup>243</sup> [Robinhood to scrap confetti animation on app after 'gamification' criticism](#); 31/03/21.

<sup>244</sup> [Robinhood has lured young Traders, sometimes with devastating results](#); The New York Times; 25/09/21.

<sup>245</sup> On the legal consequences, see [Massachusetts Securities Division Lawsuit a Bullseye for Robinhood](#); The National Law Review; 06/04/22.

highlights the need for effective convergence of supervision at the European level and an appropriate division of competences between the investment service's home country and its host country<sup>246</sup>. In particular, it raises questions about the practical difficulties of the recourse available to an individual from a given country in a foreign jurisdiction, whether it be an out-of-court redress mechanism – here to an Ombudsman with a different language and culture – or before the court of a foreign jurisdiction.

More specifically, an analysis of transaction reporting shows a sharp increase in transactions in French securities – which are under the AMF's jurisdiction – made by European retail investors located outside France. This suggests that transactions by French retail investors in European securities that do not currently fall under the AMF's jurisdiction have also increased. Moreover, compared with transactions in French securities made by European retail investors outside France, French investors seem more inclined to invest in complex instruments (22.2% vs 17.9%) and appear to be much more active (5.9 vs 2.0 transactions per month). The AMF has therefore asked the European Securities and Markets Authority (ESMA) to give national authorities access to information on domestic investors' trading in foreign securities.<sup>247</sup>

#### □ **Social trading and provision of third-party asset management services**

Some neo-brokers require social trading portfolios to comply with certain risk management criteria such as diversification and specifying an investment horizon. However, this practice begs the question of whether social trading should be classified as an asset management service, with ESMA's MiFID Q&A<sup>248</sup> establishing that:

- when orders are executed by investment service providers (ISPs) on behalf of clients in response to signals from successful traders, this amounts to copy trading, i.e. a practice that amounts to portfolio management and, under Articles 16(2) of MiFID II and 21(1)(d) of Regulation 2017/565, the ISP must ensure that portfolios of financial securities are managed by a competent professional;
- when there is no automatic execution of orders and the client gives his consent each time, this amounts to another investment service e.g. reception and transmission of orders (RTO).

In both cases, brokers must assess clients' knowledge and experience of the products or services to which they want to subscribe (Article 25(2) of MiFID II), which covers the risk of investors copying portfolio management that includes products that they are not entirely familiar with. Furthermore, brokers must ensure (Article 16 of MiFID II) that there is no conflict of interest that could harm the interests of their clients, which points to a need to regulate the activity of traders offering their portfolios for social trading.

## **4.5. SOME RETAIL INVESTORS ARE SUSCEPTIBLE TO FINANCIAL SCAMS**

The distribution of reports, complaints and enquiries that retail investors send to the relevant AMF departments highlights the growing importance of cryptocurrencies and the continuing high proportion of foreign exchange (forex) products – typically involving unregulated intermediation – in the problems that investors face during their investment journey.

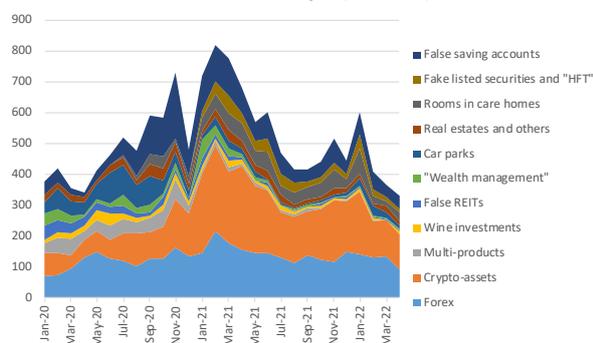
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<sup>246</sup> Amending the framework of the MiFID directive to rebalance the powers between home and host authorities is a strong request from the AMF (see [AMF position to encourage the participation of savers in the EU capital markets](#) of 5/10/22).

<sup>247</sup> Transactions outside Europe are not covered by MiFID reporting anyway.

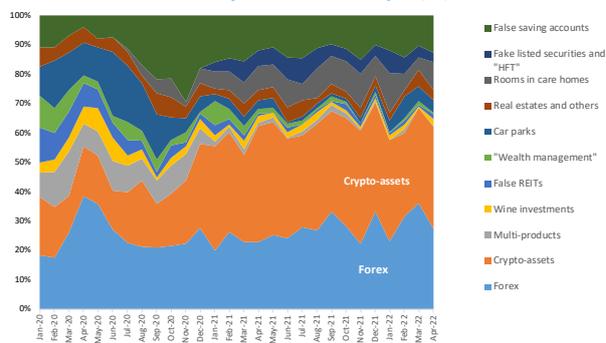
<sup>248</sup> [Questions and Answers on MiFID II and MiFIR investor protection and intermediaries topics](#); ESMA 19/11/21.

**Figure 139: Number of requests to Epargne Info Service by investment topic (number)**



Source: AMF, Epargne Info Service

**Figure 140: Distribution of requests to Epargne Info Service by investment topic (%)**



Source: AMF, Epargne Info Service

In 2021, the low return on traditional (e.g. regulated) savings and a surplus of savings fuelled by multiple lockdowns led to an increase in the number of people affected by investment scams, despite the fact that 84% of French people are aware that they exist. Scams are becoming increasingly sophisticated and take on an ever wider variety of forms, driven in particular by the digitalisation of exchanges. They are therefore affecting an increasingly broad audience – young people, the elderly, small investors and so on. As part of its remit to protect investors, the AMF conducted a study to assess the extent and diversity of the phenomenon. The survey, conducted by BVA for the AMF,<sup>249</sup> shows that 61% of French people have been exposed to an alternative investment proposition and that satisfaction with the world of investments in general and the support provided by traditional banks is low. Some 3% end up subscribing to these offers, of which 1% have probably been victims of scams.

There are many factors that affect how susceptible retail investors are to scams: there is no standard profile, and people of all genders, ages and socio-professional categories (SPCs) can fall victim to scams. In general, victims seem to have the following characteristics:

- The desire to make money quickly and easily;
- Dissatisfaction with the traditional banking system (low returns, lack of relevance of the advice received, unsuitability of the offer for young people, difficulty in contacting the bank, etc.);
- An interest in speculative financial investments – stock market, cryptocurrencies, etc. – but with little knowledge of the financial world and single-handedly managing their savings.

Furthermore, the investment is often triggered by an email or call, through contacts on social media (which reach an increasingly large and young target group) or by sharing contact details on a website or platform, or as a result of (false) promises (of “profit”, “speed”, “simplicity”, “freedom”, “flexibility”, etc.) and sales pitches intended to reassure sceptics (official-looking papers with fraudulent use of logos, such as the AMF’s, etc.). The people involved in these scams appear to be available, active and friendly, before they suddenly disappear, leaving victims with feelings of disappointment, anger, guilt and helplessness.

<sup>249</sup> [Survey on “Investment Scams”](#) published in December 2021.

## 4.6. STRUCTURED PRODUCTS: INNOVATIVE BUT RISKY PRODUCTS GROWING STRONGLY IN FRANCE AND THE UNITED STATES

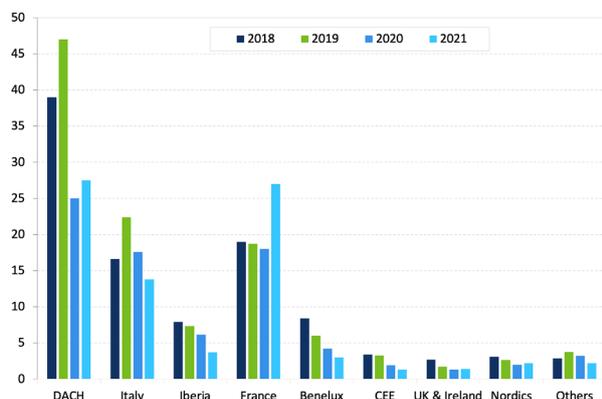
### 4.6.1. France leads the European market for structured products, with autocalls predominating

Structured products are investment products that offer a predefined return by reference to the price of one or more underlying assets or indices. These are most often equities, but may also be currencies, commodities or even credit and interest rate instruments. Depending on the structure proposed (type of underlying, optionality, complexity,<sup>250</sup> etc.), their promoters make trade-offs between the constraints of the applicable rules and the planned distribution methods in order to choose a legal form suited to their requirements. They are then marketed as funds, debt securities, certificates, deposits or within life insurance products. In Europe, four of the top five distributors are banks: Société Générale with a 20% market share of volumes, Barclays 13%, BNP Paribas 8% and UniCredit 7%. A specialised Swiss distributor, Leonteq, with 2%, is in fifth place.<sup>251</sup>

According to a November 2021 Structured Retail Products (SRP) survey of European distributors of structured products, sales of these products declined to varying degrees in all geographical areas surveyed between 2019 and 2020 (Figure 141). In 2021, sales flows in Europe rebounded, but this did not halt the small but continuous erosion of the assets under management in these products observed since 2018 (from \$510 billion to \$480 billion). However, there were mixed trends in 2021. In the “Germanic” countries (Germany, Austria and Switzerland, or “DACH”), sales stabilised in 2021 at \$27 billion – far below the \$43 billion average that was seen in 2018-2019. In contrast, they grew strongly in France, with the result that annual sales were the same in both areas, at \$27 billion (Figure 141). France has seen a steady expansion of this market since 2018.

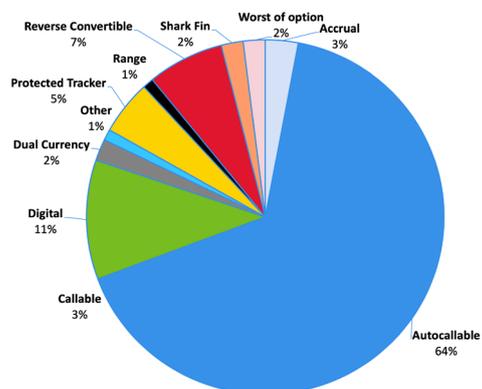
A question about which products will be most attractive in terms of returns over the next 12 months clearly shows that distributors think this will be autocalls (Figure 142). These products are therefore likely to retain their central position among structured products.<sup>252</sup>

Figure 141: Total structured product sales by geographical area (\$ billion)



Source: SRP (Euromoney Global Ltd). Note: Based on 704 responses from structured product distributors to the Nov 2021 SRP survey. Note: DACH refers to Germany, Austria and Switzerland; Iberia refers to Spain and Portugal; Nordic refers to Denmark, Finland, Sweden and Norway.

Figure 142: Most attractive returns expected by distributors in their market over the next 12 months



Source: Structured Retail Products (Euromoney Global Ltd)

<sup>250</sup> On the concept of complexity, see for example Célérier C., B. Vallée (2016); Catering to investors through product complexity; ESRB Working Paper 14; Demartini A., N. Mosson (2020); [The complexity of structured products marketed in France: what impact has the AMF's action had?](#).

<sup>251</sup> Source: SRP. In France, the top five are: Société Générale 24%, BNP Paribas 14%, Natixis 10%, Amundi 7% and Leonteq Securities 1%.

<sup>252</sup> Section 3.6 of Chapter 3 notes the contrast with the United States, where the expansion of structured products is being driven primarily by listed products (ETFs). This difference reflects the significance of bank networks as a distribution channel in Europe.

#### 4.6.2. Strong growth in the US market, driven by three distribution platforms

Actively promoted in bank distribution networks on this side of the Atlantic, structured products have always enjoyed greater growth in Europe than in the United States.<sup>253</sup> However, rapid innovation and the search for attractive returns has led to the recent rapid growth in the distribution of structured products to retail investors in the United States. Three new distribution platforms have played an important role in this acceleration: Luma, which targets private bank clients; Simon, which targets independent financial advisers; and Halo, which targets asset management companies.<sup>254</sup> These platforms alone were responsible for 81% of the increase in US structured product sales from \$58 billion to \$105 billion between 2019 and 2021. They automate a wide range of functions – from legal documentation to product selection – and include analysis tools – for example, pricing tools and online tutorials for the most complex products – and post-trade management tools. They make it easier to distribute these typically complex products and reduce their costs. Citi claims that a fivefold increase in the sales of structured products in the United States in three years is down to these platforms alone.<sup>255</sup> Distribution to retail investors is estimated based on the decrease in average transaction size.<sup>256</sup> Their demand is mainly for autocalls, products that allow investors to ride the wave of a benchmark financial instrument or market with a cap on profits and some downside protection, but without protection against the risk of extreme losses.<sup>257</sup> While demand has tended to focus on products whose underlyings are single stocks or baskets or indices of technology stocks, some products that are popular in Europe are becoming popular in the United States, such as those linked to thematic baskets, decrement indices or indices with risk-adjusted returns. These platforms could increase competition between promoters and squeeze their margins.<sup>258</sup> More importantly, however, they make the value chain that underpins the strong growth of the market more efficient and robust, leading to an increased ability for promoters to achieve economies of scale. It remains to be seen whether this type of platform will have similar success in Europe, where traditional bank distribution networks currently prevail.

#### 4.6.3. Many risks for both investors and promoters

The **vulnerability of risk hedging**<sup>259,260</sup> by the promoters of these products has been noted many times in the past.<sup>261</sup> The vulnerability stems from the increased sensitivity of their exposures to parameters such as volatility, dividend payout, correlation and convexity during dramatic changes in equity prices. Furthermore, the risk-hedging transactions carried out by structured product sponsors can also have significant and possibly destabilising market impacts (see Section 2.1.4 of Chapter 2). The difficulties of pricing and managing the risks associated with these products are concentrating the industry around a few market participants who can both develop the appropriate infrastructures and diversify.

Multiple risks to **investor protection** have also been identified. Firstly, they relate to the **understandability** of products, especially when they incorporate many complex factors. It is especially important to note that, as a result

<sup>253</sup> According to SRP, global structured product assets under management over the past five years stand at just under \$2 trillion. Half of this is in Asia-Pacific; the other half is evenly split between Europe and the Americas.

<sup>254</sup> Platforms launched in 2011, 2012 and 2015 respectively. Simon, originally an internal Goldman Sachs platform, is now owned by Barclays, Credit Suisse, Goldman Sachs (minority), HSBC, JP Morgan Chase, Prudential and Wells Fargo and is open to the general public.

<sup>255</sup> See Platforms bring structured products to the masses; Risk.net; 02/05/22.

<sup>256</sup> In section 3.7, we also note the expansion in the United States of structured ETFs, e.g. “defined outcome” indices capping gains in return for protection against losses.

<sup>257</sup> See description of autocalls in section 2.1.5 of the [AMF 2020 Markets and Risk Outlook](#). As a reminder, the failure to hedge the risks of these products, which are highly sensitive to dividend payments, led to heavy losses for some promoters, resulting in the withdrawal of some of them from the market. This also led to the use of decrement indices as an underlying. These indices provide immunity from the dividend payment risks of the underlying equities (indices), but raise important questions about the ability of investors to understand how they work and the effects of using them.

<sup>258</sup> Some industry representatives doubt this – see for example *Meet Simon, Luma and Halo (they trade structured products)*; Risk.net; 24/04/19.

<sup>259</sup> Some developers are using this as a marketing argument to promote risk management tools (see for example Murex: As Covid-19 impacts the autocallables business, solutions to navigate new challenges are crucial; Risk.net; 20/09/16).

<sup>260</sup> Operational risk is also high, as demonstrated by Barclays’ \$600 million loss due to its erroneous issuance of autocalls far in excess of SEC-approved limits in the US (see Barclays hit by \$600mn structured note loss; SRP; 28/03/22).

<sup>261</sup> For example, in 2015, the 40% fall in the HSCEI index, the underlying of Korean autocalls, cost their sponsors around \$300 million. In 2018, the volatility of the HSCEI and the Korean Kospi forced Natixis, after a loss of \$290 million, to withdraw from the market. In 2020, the COVID-19 crisis led to significant losses, notably due to the failure to hedge the dividend risk on the Euro STOXX 50 index. See the AMF 2020 Markets and Risk Outlook.

of promoters' trade-offs between the risk and return of the products offered, it is difficult for investors to assess the structures being promoted.<sup>262</sup> For example, American investors (unlike French investors) have invested significantly in autocalls linked to technology stocks or baskets of technology stocks, whose promises of high returns are proportionate to the risks taken in return. While no direct performance information is available, it is likely that, given the characteristics of the products marketed there (poorly diversified underlyings, 10% coupons, levels of barriers deactivating capital protection, etc.), exposures to technology sectors (which have experienced adverse trends, see Chapter 1) have had significant negative impacts on the performance of autocalls in the United States (e.g. lack of coupon or even capital loss).

On this side of the Atlantic, particularly in France, there is evidence of a perceived resurgence in the promotion of structured products to retail investors.<sup>263</sup> The fear is that investors' search for yield will lead those who are overly sensitive to past performance to take ill-considered risks. For example, promoters of listed structured products<sup>264</sup> reported an average annualised return of +7.81% from October 2020 to October 2021 for all structured products combined, highlighting that more than 85% of them posted an annual return of 5% or more and only 0.5% a negative return. Looking forward, however, and in the current climate (Chapter 1), it is particularly important to emphasise that past performance is not necessarily an indicator of future performance. Marketing based on information about the recent past performance of this type of product could be misleading. This is especially important given that distribution networks tend to encourage reinvestment of profits in new products of the same type.<sup>265</sup>

More generally, it is worth highlighting the importance of information asymmetries between promoters of structured products (especially autocalls) and retail investors. The very structure of these products depends on the specification of a large number of criteria (trigger and capital protection thresholds, specification of payment flow amounts, etc.), and this determines their complexity (see Box 8). It is regrettable that investors do not in practice receive information on the probability of loss generated by the formula. Furthermore, the valuation of products remains, even for their promoters, an expensive and difficult exercise. In particular, the cost of the structure – the expected risk-adjusted return and the in-built costs – is difficult, if not impossible, for investors to assess. Moreover, the sheer number and nature of the criteria that characterise the products makes it extremely difficult to compare them. In practice, it would be impossible for a retail investor to assess the probability of an autocall – even a “standard” autocall – posting a lower return than their Livret A savings account. Ultimately, the understandability of these products tends to be limited, reflecting the analysis carried out by the AMF.<sup>266</sup>

This is all the more important given that there is a worrying trend towards increased risk (with promises of higher returns), leading to the increasing use of non-standard and risky benchmarks (e.g. poorly diversified equity baskets, etc.) as underlyings for these products. For example, to hedge their dividend risk, autocall promoters have tended to use proprietary indices such as “decrement” indices<sup>267</sup> as autocall underlyings instead of traditional stock indices.

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<sup>262</sup> Dolle (2019); La réalité des risques des produits structurés est-elle bien comprise par les investisseurs finaux ? (Is the reality of the risks of structured products fully understood by end investors?); Banque & Stratégie; 16/12/19.

<sup>263</sup> This is borne out in discussions with financial intermediaries and banks, as well as in the AMF's mystery shopping visits to distribution networks. On the practices of distributors, see [Results of the two “risk-averse” and “risk-loving” mystery shopping campaigns conducted under MiFID II](#); AMF; Sep. 2019.

<sup>264</sup> These products are however different from autocalls.

<sup>265</sup> We note, however, that a reduction in the maturity of products tends to significantly reduce their sensitivity to market developments (particularly to volatility, dividend payments, etc.) and increase their predictability.

<sup>266</sup> [“Formula-based investments”: Clarity and understandability of documentation by retail investors](#); AMF; October 2018.

<sup>267</sup> Synthetic indices and proprietary indices that detach dividends from total return, as they are based on assumptions about the amounts of dividends that will be paid. The use of these indices has become widespread following losses suffered by promoters (\$955 million overall for banks) who did not hedge their dividend risk when the health crisis occurred in 2020.

#### Box 8: AMF policy on complex products: applying it to autocalls

The policy on marketing structured products with a risk of capital loss of more than 10% of the amount invested and which are sold to the general public,<sup>268</sup> in the form of structured funds or complex debt securities for example, specifies four criteria for assessing whether there is a risk with a financial instrument that retail clients will not understand it or the risks inherent in it:

- Criterion 1: Poor written or oral presentation of the product's risks and/or profit/loss profile;
- Criterion 2: The target client's unfamiliarity of the product's underlying asset(s);
- Criterion 3: The product's profit/loss profile is dependent on the simultaneous fulfilment of several conditions on different asset classes;
- Criterion 4: The number of mechanisms in the formula for calculating the gains or losses of the financial instrument.

If one of these criteria is not met, the financial product is likely to be inappropriately marketed.

Criterion 4 is particularly important for autocalls. A 90% guarantee threshold and marketing to retail clients are the conditions for triggering a count of the number of mechanisms. If there are more than three different calculation mechanisms used to determine the overall return of the product, the competent authorities (the ACPR and the AMF) consider that investors will not find it easy to understand the product.

As Demartini & Mosson (2020) point out, eight categories of mechanisms are used to assess criterion 4:

- Category 1: Basic formulas, such as the issuance of a series of fixed coupons or sharing in the performance of the underlying asset;
- Category 2: Use of leverage;
- Category 3: Selection of certain securities of the underlying asset (selection or exclusion of the best/worst performing securities, etc.) or addition of conditions on the underlying asset;
- Category 4: Capital guarantee conditional on the performance of the underlying asset;
- Category 5: Possibility of adjusting the coupon's characteristics (changing a fixed coupon into a variable coupon, or vice versa);
- Category 6: Time constraints (deferred coupons, performance defined as an average of returns over a sub-period, etc.);
- Category 7: Possibility of early repayment;
- Category 8: Exotic conditions (e.g. when the condition necessary for the issuance of the coupon must be fulfilled at any time or varies over time, etc.).

The degree of complexity is increased by one for each of the categories that characterise the formula. For example, the count carried out by Demartini & Mosson (2020) is based on the general principle (with some exceptions) of the work carried out by the AMF's authorisation and supervision departments. The main exception is that the absence of a capital guarantee is not taken into account in the counting of mechanisms in the supervisory practices of the AMF and the ACPR.

These elements of policy were modified in 2017,<sup>269</sup> with the result that complex elements present in the underlying asset (e.g. index) to which the performance of the financial product is indexed were included in the counting of mechanisms.

It is also important to note that the use of ESG criteria may impair the intelligibility of products. The risk of greenwashing has led the AMF to clarify its policy on asset management.<sup>270</sup>

<sup>268</sup> [AMF Position DOC-2010-05](#) applicable as of 09/12/21.

<sup>269</sup> [Marketing complex financial instruments to retail investors: the AMF updates its policy](#) – 12/01/17.

<sup>270</sup> [Sustainable finance and collective management: the AMF updates its policy on collective investments incorporating non-financial criteria](#); B. de Juvigny, P. Sourlas, B. Rosspopoff; Press conference 11/03/20.

## LIST OF ACRONYMS

ACPR	<i>Autorité de contrôle prudentiel et de résolution</i>
ADR	American Depositary Receipts
ADL	Anti-Dilution Levies
AFG	<i>Association française de la Gestion Financière</i>
AFM	<i>Autoriteit Financiële Markten</i>
AIF	Alternative Investment Funds
AIFMD	Alternative Investment Fund Managers Directive
APP	Asset Purchase Programme
BDC	Business Development Companies
BNB	Binance Coin
BoB	Best Of Book
BTC	Bitcoin
CBoE	Chicago Board Options Exchange
CBOT	Chicago Board of Trade
CCP	Central Counterparty Clearing House
CDO	Collateralized debt obligation
CDS	Credit default swap
CeFI	Centralised finance
CFD	Contract for Difference
CFTC	Commodity Futures Trading Commission
CLO	Collateralized Loan Obligations
CNMV	<i>Comisión Nacional del Mercado de Valores</i>
COT	Commitment of Trader
CSRD	<i>Central Securities Depositories Regulation</i>
DeFI	Decentralised Finance
DLA	Daily Liquid Assets
DTO	Derivative Trading Obligation
EA	Emission allowance
EBA	European Banking Authority
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
ECB	European Central Bank
EEEX	<i>European Energy Exchange</i>
EFAMA	European Fund and Asset Management
EPFR	Emerging Portfolio Fund Research
ESRB	European Systemic Risk Board
ESMA	European Securities and Markets Authority
ESG	Environmental, Social, Governance
ETC	Exchange Traded Commodities
ETF	Exchange Traded Fund
ETH	Ethereum
ETN	Exchange Traded Note
ETP	Exchange Traded Products
EU	European Union
EURC	Euro Coin
EURT	Tether Euro
FAO	Food Agriculture Organisation
FCA	Financial Conduct Authority
FCPE	<i>Employee savings plan investment funds</i>
FCPI	<i>Fonds Commun de Placement dans l'Innovation</i>
FCPR	<i>Fonds communs de placement à risque</i>
FED	US Federal Reserve
FIP	<i>Fonds d'Investissement de Proximité</i>
FPCI	<i>Fonds Professionnel de Capital investissement</i>
FPS	<i>Fonds Professionnels Spécialisés</i>
FSB	Financial Stability Board
GDP	Gross Domestic Product
GDR	Global Depositary Receipts
HCSF	<i>Haut Conseil de Stabilité Financière</i>
IBC	Initial Business Combination
ICE	Intercontinental Exchange
ICMA	International Capital Market Association
IFRS	International Financial Reporting Standards

IMF	International Monetary Fund
INSEE	<i>Institut national de la statistique et des études</i>
IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offering
IRR	Internal Rate of Return
ISDA	International Swaps and Derivatives Association
ISP	Investment service provider
LBO	Leveraged BuyOut
LCH	London Clearing House
LEI	Legal Entity Identifier
LME	London Metal Exchange
LMT	Liquidity management tools
LVNAV	Low Volatility Net Asset Value
MiCA	Markets in Crypto-Assets Regulation
MIFID	Markets in Financial Instruments Directive
MIFIR	Markets in Financial Instruments Regulation
MMF	Money Market Funds
MoM	Multiple of Money
NAV	Net asset value
NFC	Non financial corporations
NPISH	Non-profit institutions serving households
NYSE	New York Stock Exchange
OECD	Organization for Economic Co-operation and Development
OFCE	<i>Observatoire français des conjonctures économiques</i>
CIS	Collective Investment scheme
OPCI	Real Estate Collective Investment Undertakings
OTC	Over the counter
P&C	Property and Casualty
PACTE	<i>Plan d'Action pour la Croissance et la Transformation de l'Entreprise</i>
PFOF	Payment For Order Flow
PGE	<i>Prêt garanti par l'État</i>
PIPE	Private Investment in Public Equity
PME	Public Market Equivalent
PRA	Prudential Regulation Authority
RRF	Recovery and Resilience Facility
RTO	Reception and transmission of orders
SCPI	Real estate investment companies
SEC	Securities and Exchange Commission
SEF	Swap Execution Facility
SFDR	Sustainable Finance Disclosure Regulation
SGP	Stability and Growth Pact
SI	Systematic Internaliser
SME	Small and medium companies
SPAC	Special Purpose Acquisition Companies
SPC	Socio-Professional Category
SPV	Special Purpose Vehicules
SSM	Single Supervisory Mechanism
STO	Share Trading Obligation
TREM	Transaction Reporting Exchange Mechanism
TVPI	Total Value to Paid In
UCITS	Undertakings for Collective Investment in Transferable Securities
UL	Unit-linked
USDT	Tether
UST	Terra
VBBO	Volume Weighted Best Bid Offer
VNAV	Variable Net Asset Value
WFE	World Federation of Exchanges
WLA	Weekly Liquid Assets

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