CNMV
Comisión Nacional del Mercado de Valores

Non-bank financial intermediation in Spain

Financial year 2021

Non-bank financial intermediation in Spain

Financial year 2021

The report on non-bank financial intermediation (NBFI) in Spain describes the most recent trends of the entities and activities that form part of the process and assesses their most important risks. It forms part of the annual publication CNMV Non-Bank Financial Intermediation Monitor (http://cnmv.es/portal/Publicaciones/PublicacionesGN.aspx?id=56&lang=en).

The Spanish National Securities Market Commission (CNMV) distributes its reports and publications via the Internet at www.cnmv.es.

ISSN (digital edition): 2695-5822

Layout: Cálamo y Cran

Table of contents

List of tables

List of exhibits

List of figures

Non-bank financial intermediation in Spain

1 Executive summary

This publication monitors the entities that form part of non-bank financial intermediation (NBFI) in Spain. A numerical overview and its degree of involvement in certain risks in 2021 are outlined. The main macroprudential tools that can be applied to investment funds are also described, as well as the results of the stress tests that are carried out periodically on these entities, which continue to be, by far, the most important NBFI players in quantitative terms.

– The Spanish financial system once again grew appreciably in 2021. Its assets stood at €5.49 trillion at the end of the year, 6.2% more than in 2020. More than half of the increase came from central bank assets (due to monetary policy operations) and 40% from banks' assets. All the sub-sectors of the system presented advances except insurance, which experienced a decrease of 1.8%.

– The assets of other financial institutions (OFIs), which are the basis from which NBFI is delimited, grew by 2.3% to stand at €875 billion. Their relative weight in the system was close to 16%. Investment funds, captive financial institutions and securitisation vehicles continue to be the most significant entities within this group, representing 43%, 26% and 19% of the total respectively. As in previous years, great disparities were seen in the evolution of the OFI components in 2021: among the advances, it is worth highlighting that of investment funds (non-monetary), with 17%, and among the decreases, those of broker-dealers and securitisations.

– The degree of direct interconnection between banks and OFIs continued to decline in 2021: both banks' claims on OFIs and their obligations to them stood at close to 8% of total banking assets. These percentages have shown a practically uninterrupted downward trend since 2010, when they stood at 15% in the case of banks' claims and 20% in the case of obligations. The decline in direct interconnection between banks and OFIs tends to limit, to a certain extent, the channel for risk contagion.

– The volume of NBFI assets in Spain, according to the narrow measure established by the Financial Stability Board (FSB), stood at €328 billion in 2021, 8.1% more than in 2020 and 6% of the total Spanish financial system. This percentage, which has remained relatively stable since 2014, is lower than that of other neighbouring economies (close to 14%). The most important NBFI institutions here continue to be investment funds (91%) followed at some distance by securitisation vehicles (6.2%). The other NBFI institutions, namely finance companies, broker-dealers and mutual guarantee companies, barely account for 3% of total assets.

– An analysis of the risks associated with NBFI remains non-indicative of the existence of significant vulnerabilities from the point of view of financial stability. In the field of investment funds, as well as the usual risk indicators, analytical extensions have been added to provide more detailed assessment of credit risk (through the credit ratings of the assets in the portfolio), liquidity risk (by analysing the portfolios of the collective investment schemes [CIS] in which the funds invest) and interest rate risk (by estimating the modified duration of the fixed income portfolio). Finally, we evaluated the funds' leverage through the use of derivatives, observing a certain increase in average leverage compared to 2020, but not an intense or widespread use of these derivatives. This last analysis is particularly relevant, given the problems that some European funds have recently experienced as a result of the margin calls that they have had to face at times of high volatility and falling prices in the markets.

– In 2021, the use of fund liquidity management tools in Spain was much lower than that observed during the previous year when the COVID-19 crisis originated. In 2022, in the context of the war between Russia and Ukraine, a total of five institutions activated the partial redemption mechanism as a result of exposure to assets suspended from trading. As usual, communication between the CNMV and the management companies potentially most affected continued to be a priority. In addition, in terms of liquidity management tools, it is worth noting the policy that the CNMV is carrying out to promote the active use of these tools, not only in extraordinary situations. This policy is giving rise to an increase in the number of institutions that have established the possibility of using some of the existing tools. Thus, for example, it is estimated that 85% of all investment funds (in terms of assets) have established in the prospectus the possibility of requiring advance notice of up to 10 business days when redemptions exceed €300,000 and that 39% of them have established, either in the prospectus, or through communication by a public notice on the CNMV's website, the possibility of using a swing pricing mechanism.

– The results of the stress tests that the CNMV performs periodically on Spanish investment funds continue to reveal that this market is resistant to the various redemption shock scenarios proposed for the different categories of funds. The exercise carried out with data to December 2021 shows that, in the most extreme scenario (between 15 and 20 times more severe than the worst week of redemptions of the COVID-19 crisis), the number of funds that could experience liquidity problems is 13. All but one of them belong to the category of high-yield corporate fixed income.

– This publication includes two exhibits that address two topics of special interest:

  • The first reviews the repercussions of the war in Ukraine, as well as other elements of uncertainty in the current context in the Spanish investment fund industry.

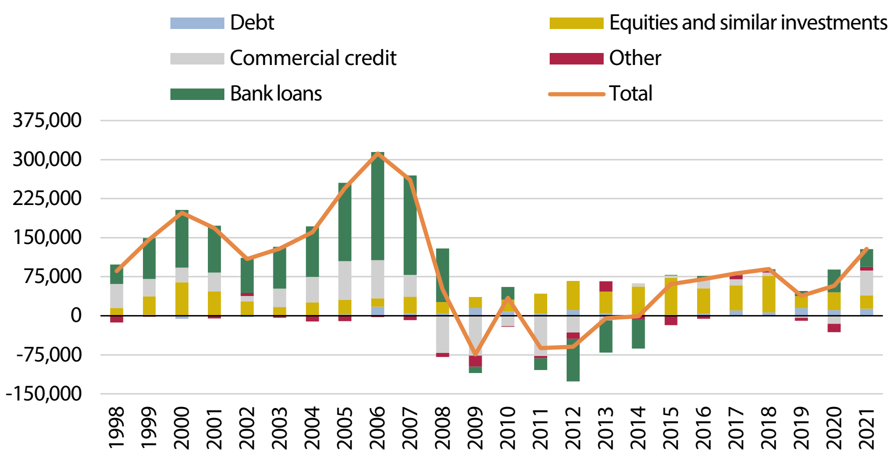
  • The second describes the results of the assessment exercise of the application of the liquidity recommendations of the International Organisation of Securities Commissions (IOSCO) in different jurisdictions and the proposals of the FSB in the same field.

2 Evolution of the main indicators

This section presents the most recent evolution of the sub-sectors forming part of the Spanish financial sector with a view to discerning the development of the various financing channels of the economy. The banking sector stands out among them, due to its quantitative significance; however, in recent years other channels associated with financial markets have taken on a growing role. A certain balance in the sources of financing of an economy is desirable, since it helps to reduce fluctuations in economic cycles and, ultimately, to achieve higher growth rates in the long term.

Figure 1, which shows the evolution of the sources of financing of non-financial companies since 1997, shows precisely the significance of items not associated with bank debt in recent years and their relatively stable nature in periods of both expansion and contraction of the economy. This pattern is clearly seen in the item "Equities and similar investments", in contrast with the more procyclical nature of both bank loans and other items such as trade credit. In 2021 the net flow of financing obtained by non-financial companies stood at €128 billion, a level not seen since 2007. Of this amount, financing through shares and debt (analogous to financing via markets) represented 31% of the total, bank loans 26% and trade credit 37%.

Financing of non-financial companies FIGURE 1

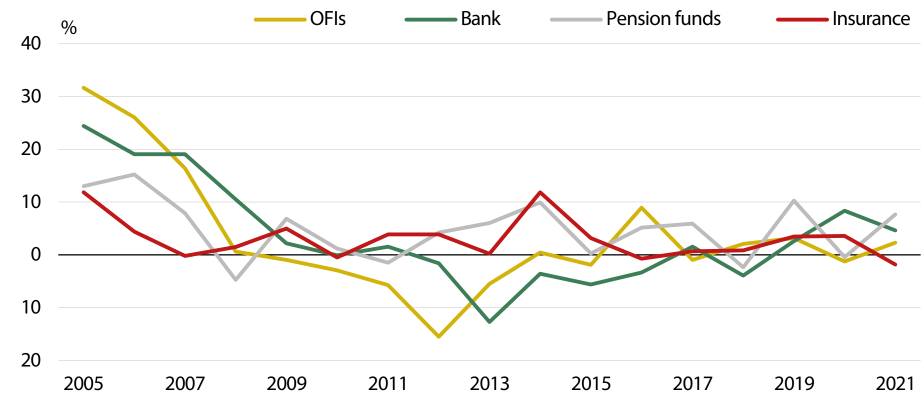


Source: Bank of Spain. Data in millions of euros.

The total size of Spain's financial system at the end of 2021 was €5.49 trillion (4.5 times its GDP). This figure, which is 6.2% higher than that of 2020, represents a new all-time high for the series and reflects intensified growth of the system, which began its last expansionary stage in 2015. More than half of the increase in the size of the financial system between 2020 and 2021 is related to central bank assets (a consequence of monetary policy operations) and 40% to the expansion of the banking sector. This last sector continued to be the most significant in quantitative terms, representing 53% of the total financial system.

As can be seen in Figure 2 and Table 1, all the large sub-sectors that make up the Spanish financial system experienced increases in their volumes of assets in 2021, except for insurance, which saw its assets decrease by 1.8%. The biggest increases corresponded to pension funds, with 7.7%, and the banking sector, with 4.6%. Growth of the remaining sub-sectors was less intense: the assets of OFIs grew by 2.3% and those of financial auxiliaries increased by 1.9%. As a consequence of these variations, the weight in the system as a whole of the assets of the OFIs, which are the basis from which NBFI is delimited, was close to 16%.

Annual growth rate of assets in the financial system FIGURE 2



Source: Bank of Spain.

Structure of the Spanish financial system TABLE 1

Millions of euros

	Central bank	Banks	Insurance	Pension funds	Financial auxiliaries	OFIs	Total
Size in 2021 (millions)	1,199,672	2,898,218	323,162	161,291	35,091	875,654	5,493,088
Size in 2020 (millions)	1,032,421	2,769,440	329,216	149,772	34,451	855,717	5,171,017
% of total (2021)	21.8	52.8	5.9	2.9	0.6	15.9	100
Growth 2021 (%)	16.2	4.6	-1.8	7.7	1.9	2.3	6.2
Cumulative growth 2002-2009	125.8	158.6	54.6	73.2	360.3	231.9	159.2
Cumulative growth 2009-2021	446.6	-12.9	31.7	56.2	-41.1	-17.3	9.5

Source: CNMV and Bank of Spain.

Despite the fact that there is no clear and unequivocal delimitation of the activities that make up NBFI, this report presents the approach followed by the FSB, which starts out from a broad non-bank aggregate and goes on to identify entities according to whether they perform one or more previously defined economic functions.[1] Other

1 These functions are described and quantified for the Spanish context in Table 3 of this report.

institutions such as the European Systemic Risk Board (ESRB) consider the OFI sub-sector as a measure of NBFI.[2]

The volume of assets of this non-bank financial aggregate in Spain stood at €1.4 trillion in 2021, 1.9% more than in 2020. The weight of this group of entities, which was above 30% during the years prior to the global financial crisis, fell to 25% in 2012 and subsequently increased again. In the last three years, a new downward trend has been observed (to 25.4% in 2021), which is explained by the strong expansion of central bank assets in the system[3] (and not by the rest of the banking sector).[4] The relative size of the non-bank financial sector in other jurisdictions is greater. According to FSB data, this proportion is close to 50% of the total financial system, on average.[5]

Structure of other financial institutions in Spain TABLE 2

Millions of euros

	Non-money market investment funds	Money market investment funds	Captive financial institutions	SFVs: securitisation	Broker-dealers	Finance companies	REITs	Other	Total
Size in 2021 (millions)	372,205	4,459	225,213	164,723	4,372	50,750	34,297	19,635	**875,654**
Size in 2020 (millions)	318,145	4,572	233,509	185,000	9,562	48,994	33,334	22,601	**855,717**
% of total (2021)	42.5	0.5	25.7	18.8	0.5	5.8	3.9	2.2	**100.0**
Growth 2021 (%)	17.0	-2.5	-3.6	-11.0	-54.3	3.6	2.9	-13.1	**2.3**
Cumulative growth 2002-2009	33.3	-74.7	845.3	917.4	14.3	49.0	-	-	**231.9**
Cumulative growth 2009-2021	99.0	-67.0	-20.7	-65.9	-66.8	-6.6	407.3	12.3	**-17.3**

Source: CNMV and Bank of Spain.

Within the group of non-banking entities, the OFIs stand out both for their size and for the fact that the narrow measure of NBFI is obtained on the basis of this group. As shown in Table 2, OFI assets were €875 billion in 2021, 2.3% more than in 2020. This amount accounts for close to 63% of the non-bank financial sector. Leading the OFI segment in terms of volumes of assets were investment funds (with over €376 billion), captive financial institutions (€225 billion) and securitisation vehicles (€164 billion). In relative terms they represent 43%, 26% and 19% of total OFI assets respectively. As in other years, evolution over time was uneven among the different institutions that make up OFIs. Among the advances, investment funds (non-money market) stood out above all, with 17%, followed at a great distance by finance companies (3.6%) and REITs (2.9%). The remaining entities saw the volume of their assets fall by percentages ranging in relative terms between 54.3% in the case of broker-dealers (due to the

2 See latest report at https://www.esrb.europa.eu/pub/pdf/reports/nbfi_monitor/esrb.NBFI_Monitor.20220715~a623f2329b.en.pdf?ed03941fc3d33c62acf8f2628b9ccb98

3 These have gone from representing around 4-5% of the system between 2002 and 2010 to 21.8% in 2021.

4 The weight of the banking sector, excluding the central bank, has progressively decreased from 66% in 2002 to 53% in 2021.

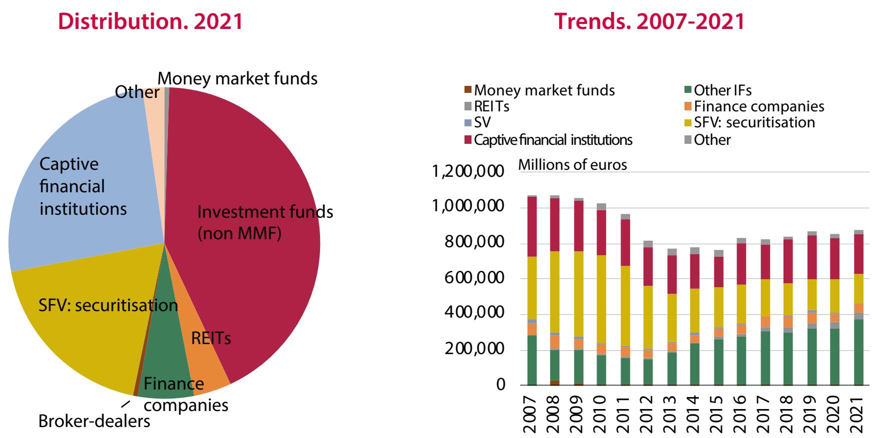
5 See latest report at https://www.fsb.org/wp-content/uploads/P161221.pdf

departure of one large entity)[6] and 2.5% in the case of money market funds. In absolute terms, the decline in securitisation assets is noteworthy (€20.28 billion).

Internationally too, there is a clear preponderance of investment funds and captive financial institutions, with around 50% and 20% respectively of aggregate OFI assets.[7] On the other hand, other entities such as broker-dealers have a greater weight than in Spain (in relation to their size, with around 10% of the total), in contrast to securitisations, which barely account for 4% of this sector.

As can be seen in the right panel of Figure 3, in 2021 two of the most important trends that have been observed in OFIs in recent years continued. On the one hand, we see the continuation of the expansionary trend of the assets of these institutions, which began with more intensity in 2016, although the volume of assets has not yet recovered the maximum values registered during the global financial crisis (more than €1 trillion). On the other hand, the recomposition between the different types of institutions also continued, marked by the increased importance of investment funds, which now represent 43% of the sub-sector (17% in 2010), to the detriment of securitisations (19% of the total compared to 47% in 2010) and, to a lesser extent, captive financial institutions.

Distribution and trends of the OFI sector in Spain FIGURE 3



Source: CNMV and Bank of Spain.

The OFIs that are considered part of NBFI in the strict sense because they perform certain economic functions defined by the FSB (and which are described in the following section) are investment funds (although not all of them),[8] structured finance vehicles (SFVs) for securitisation, broker-dealers and finance companies. In contrast, the OFIs that do not fall within the narrow measure of NBFI are captive financial institutions and money lenders, REITs,[9] central counterparties (CCPs) and venture capital firms. Of the total volume of OFI assets (€875 billion), €356 billion correspond

6 Credit Suisse.

7 In the case of investment funds, it should be noted that in Spain the weight of money market funds and hedge funds is much lower than in other jurisdictions (in average terms), representing only 0.5% and 0.4% of OFIs respectively, while in the international sphere these percentages stand at 6.6% and 4.5%.

8 Equity funds are not part of the narrow measure of NBFI.

9 Real Estate Investment Trusts.

to entities that are not part of NBFI. From the remaining amount it is necessary to deduct more than €191 billion for consolidation in bank balance sheets to reach the narrow measure of NBFI (which in 2021 stood at €328 billion, see Figure 8).

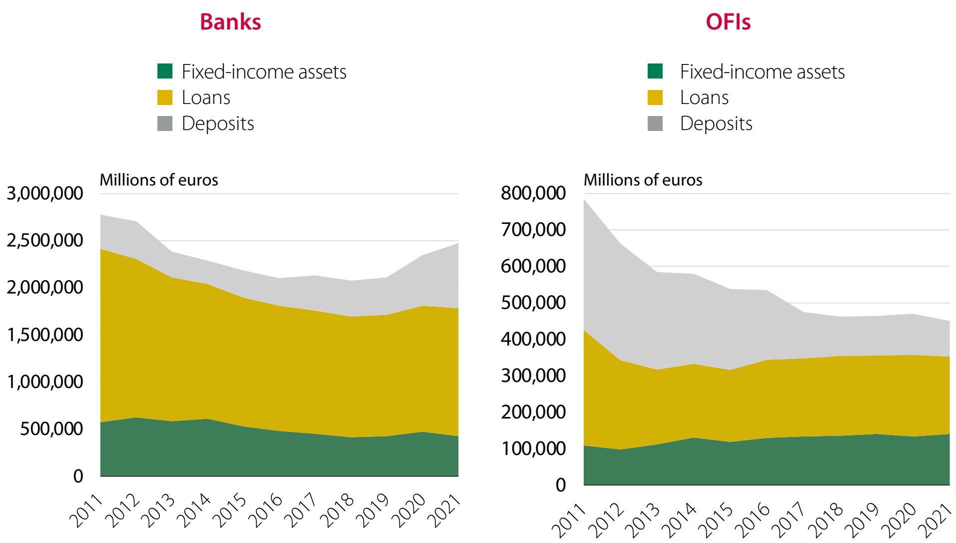
2.1 Credit intermediation and financing of entities included in NBFI

The main aim of this section is to offer an overview of the extent of involvement of non-bank financial intermediaries in credit intermediation and in granting loans within the financial system. At the same time, the use that these entities make of wholesale financing and, especially, of the temporary acquisition of assets, better known as repos, is analysed.

In 2021, credit intermediation of the financial system as a whole increased by 2.2%, reaching €3.6 trillion. This growth originated in the banking sector, the sub-sector with by far the largest volume of credit assets, reaching almost €2.5 trillion last year (up by 5.4% in 1 year). On the other hand, in the case of OFIs, credit assets fell by 4.2% over the course of 2021, to €450 billion at the end of the year, 51.4% of their total financial assets. Within OFIs, the most important entities in terms of credit intermediation are, with similar figures, securitisation vehicles and investment funds, with approximately 36.5% of the total at the end of 2021 in both cases. However, the composition is very different between the two types of vehicles: while in investment funds almost the entirety corresponds to fixed-income assets, in securitisation the credit assets correspond to the loans securitised by these entities.

As can be seen in Figure 4, until 2019 the credit assets of both OFIs and banks followed a clear downward trend, which in the case of banks, but not that of OFIs, was interrupted in 2020. Thus, since 2010, OFI credit assets have decreased, in cumulative terms, by 46.4%, as a result of the sharp contraction in securitisation vehicles since the financial crisis. Given that practically all the financial assets of these vehicles are made up of loans, it is these that have fallen most in recent years. In contrast, OFI fixed income assets have grown by 24.7% since 2010, due to the increasing importance of investment funds.

Trends in credit intermediation FIGURE 4

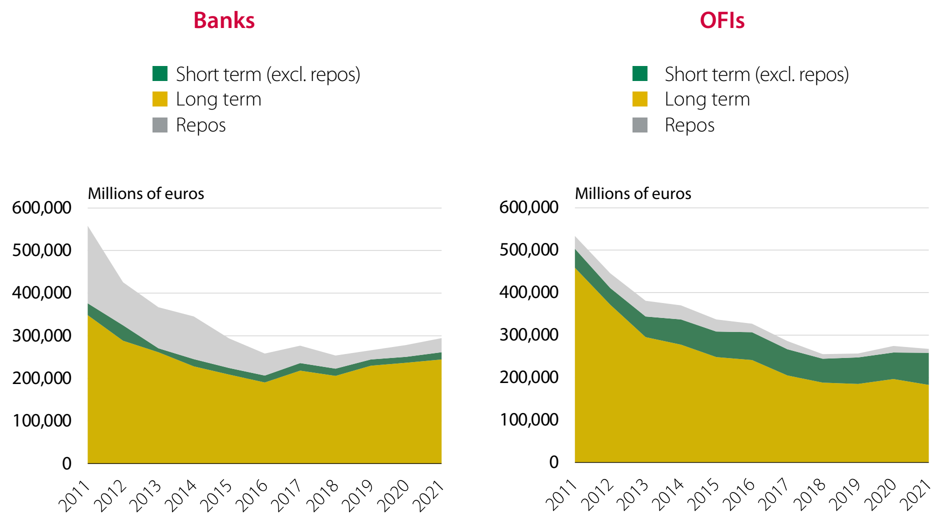


Source: CNMV and Bank of Spain.

In relation to the financing received by entities in the financial system, wholesale financing is one of the main sources of funds. These instruments, which are positive in terms of price formation and liquidity in secondary markets, may also give rise to short-term obligations and consequently to risks associated with maturity transformation and liquidity outside the banking system. Wholesale financing could also increase the interconnectedness between different financial institutions and thus contribute to increasing the procyclicality of the system.

Spanish OFIs have been decreasing their dependence on wholesale financing since 2009 (with a slight increase in 2019 and 2020), reaching more than €258 billion at the end of 2021, 30.6% of the total financial assets of these entities (32.0% in 2020), a percentage that, as might be expected, is higher than that of banks, which is around 10%. Within this type of obligation, long-term financing is the predominant source for OFIs, accounting for 70.9% of total wholesale financing in 2021, although this percentage has progressively decreased in recent years (see right-hand panel of Figure 5). In the case of banking entities, this percentage stood at 85.1% at the end of 2021.

Trends in wholesale financing FIGURE 5

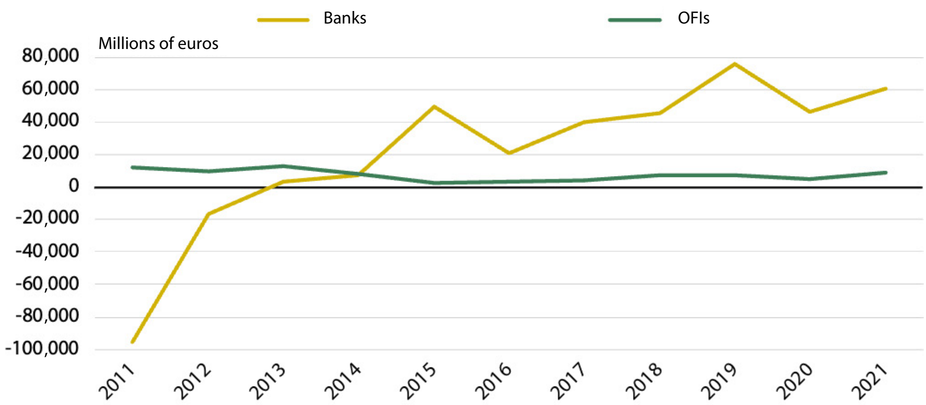


Source: CNMV and Bank of Spain.

Repos deserve a separate analysis in the area of wholesale financing, as they have shorter repayment terms and, therefore, the associated risks may be higher in terms of financial stability. In the case of OFIs, financing through repos has been limited, without ever exceeding 9% of total wholesale financing. It reached a maximum in 2013 with €36.5 billion (see right-hand panel of Figure 5). In 2021, after declining year after year, with the exception of 2020, repo financing was slightly over €9 billion, just 3.5% of wholesale financing. In the case of banks, this type of financing stood at 11.2% in the last year, with just over €33 billion, after having increased by €11 billion since 2019.

The analysis of financing via repos in net terms, in other words the difference between repo transactions where the entity provides liquidity and those where it receives financing, shows that banks have been net providers of liquidity to the economy since 2013 (see Figure 6), with a figure of €60.5 billion in the financial year last ended. OFIs for their part are also net providers of liquidity, although with much lower values, standing at close to €9 billion at the end of 2021 (less than €5 billion in 2020).

Net repo position FIGURE 6



Source: Bank of Spain.

2.2 Interconnectedness between banking institutions and OFIs

From a financial stability point of view, in addition to the size of the different financial sub-sectors, it is important to know the interrelationships between them, especially in periods of stress, since these are channels that favour risk contagion. This report analyses the direct interconnection between the financial sectors relevant to the study, on the basis of the bilateral positions existing between them. In other words the interconnection between banks and OFIs has been calculated based on banks' claims on and obligations towards OFIs, all in relation to the banks' total assets (see Figure 7).[10]

As can be seen in the left-hand panel of Figure 7, at year end 2021 the rights of banks with regard to OFIs ("Bank Exposure to OFIs") accounted for 7.7% of bank assets[11] (around €220 billion), a figure that has fallen sharply since 2010, when it stood at over €467 billion, representing 14.5% of total assets. On the opposite side, the data referring to bank obligations to OFIs ("Bank use of funding from OFIs") show that in 2021 these accounted for 8.0% of bank assets, after a decline of 1.3% in just one year and more than 13 pp since 2008. In absolute terms, this decrease was almost €15 billion, taking the total to €227 billion. If the claims and liabilities of OFIs that are consolidated in the banking groups themselves are excluded,[12] the aforementioned percentages

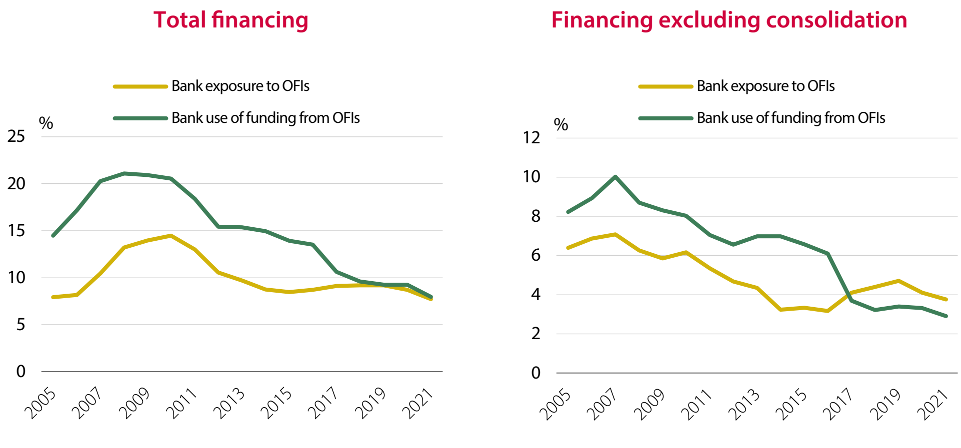
10 There are also indirect connections between financial sectors, which occur when two entities own assets of the same entity or the price of their shares or debt securities has, for whatever reason, a very similar behaviour.

11 This same figure represented 25.2% of OFI assets.

12 In Spain, interconnectedness data for banks and OFIs that are consolidated in banking groups are only available for the SFV sub-sector.

decrease, in the case of claims, to 3.8% of banks' assets (4.1% in 2020), and to 2.9% in that of banks' liabilities to OFIs (3.3% one year earlier).

Interconnectedness between banks and OFIs FIGURE 7



Source: CNMV and Bank of Spain.

The interconnectedness of OFIs with the other sub-sectors of the financial system is much lower than with banks, relationships with other entities belonging to the same group being the most significant, followed by relationships with insurance undertakings. For example claims of entities belonging to the OFI sub-sector on others in the same sub-sector amounted to just over €35 billion at year-end 2021, while claims on insurance undertakings amounted to just over €14 billion and liabilities to €22 billion. From the banks' point of view too, the greatest interconnectedness is with OFIs,[13] followed by relationships with other banking entities, which amounted to just over €122 billion at the end of 2021.

It is also important to analyse, in the field of financial stability, the interconnection that exists between the different financial sub-sectors and the non-financial sectors in order to understand the effects that a period of financial difficulties could have on the real economy. In this context, banks are, as might be expected, those that show the greatest interconnection with non-financial agents in the Spanish economy,[14] the relationship with households being the most important, in both directions: bank liabilities to this sector amounted to over €1 trillion a the end of 2021, while claims, receivables, etc. amounted to €667 billion.[15]

13 This does not take account of relations with the central bank, whose interconnection with commercial banks amounts – in both directions – to about €300 billion.

14 Non-financial agents consist of households, the public administration and non-financial companies.

15 Bank liabilities to public administrations and financial companies amounted to €116 billion and €354 billion respectively; and banks' rights and claims on these same sectors were €290 billion and €526 billion.

3 Non-bank financial intermediation

To identify and evaluate the risks associated with NBFI, the criterion developed by the FSB in 2013 based on five economic functions was used.[16] Table 3 shows a summary of these five functions, the entities in the Spanish financial system that belong to each[17] and the volume of their assets in 2021. From the data in the table, it can be deduced that in 2021 a trend that has been observed for several years was maintained and manifested in the increase in assets belonging to economic function 1 (management of collective investment schemes with features that make them susceptible to runs), which account for more than 57% of the total, and the decrease in assets of economic function 5 (securitisation-based credit intermediation to fund financial institutions), the weight of which decreased to 32%. The assets of the rest of the functions show a much lower relative importance and only those of economic function 2 (granting of loans dependent on short-term funding) stand out, representing almost 10%.

Classification of NBFI according to economic functions TABLE 3

Economic functions	Definition	Member entities	Size in millions of euros, (% of total NBFI), % change 2021
EF1	Management of collective investment schemes with features that make them susceptible to runs	Money market funds, fixed income funds, mixed funds,[1] hedge funds and SICAVs	298,074 (57.4%) 12.3%
EF2	Loan provision that is dependent on short-term funding	Finance companies	50,750 (9.8%) 3.6%
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding	Broker-dealers	4,372 (0.8%) -54.3%
EF4	Entities that facilitate credit creation	Mutual guarantee companies	1,399 (0.3%) 18.8%
EF5	Securitisation-based credit intermediation to fund financial institutions	Structured finance vehicles (SFVs) whose object is the securitisation of assets	164.723 (31,7 %) -11,0 %

Source: CNMV and Bank of Spain.

1 According to the criterion established by the FSB, only mixed funds with total portfolios consisting of less than 80% equities are included in the EF1 category. In Spain, pursuant to current legislation, the exposure of mixed funds to equities cannot exceed 75% of the portfolio, meaning that all are considered as NBFI.

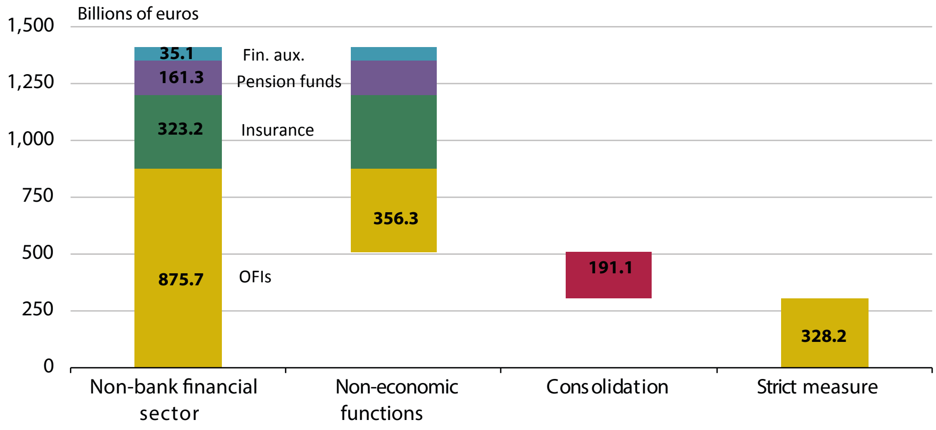
Obtaining the figure for the volume of assets included in NBFI begins with the non-banking financial sector, excluding those entities whose activity cannot be framed in any of the five economic functions described in the foregoing table. Pension funds, insurance

16 Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities.

17 For further details, see the first article in this series: Ispierto, A. (2019). "Non-bank financial intermediation in Spain". *CNMV Bulletin*, Quarter I, pp. 79-122. Available at: https://www.cnmv.es/DocPortal/Publicaciones/Boletin/Boletin_I_2019_WEBen.PDF

entities and financial auxiliaries are excluded, as are OFIs that do not perform any economic function.[18] Also, we add certain entities that are not OFIs but are within the scope of NBFI. These entities, which in our case would correspond to mutual guarantee companies (economic function 4), have very little relevance in Spain. Finally, we exclude entities that, while belonging to one of the economic functions described, are consolidated in banking groups.[19] This process, which is represented in Figure 8, leads to an amount of the narrow measure of NBFI in Spain of €328 billion in 2021, 8.1% more than in 2020.

From the non-bank financial sector to the narrow measure of NBFI. 2021 FIGURE 8



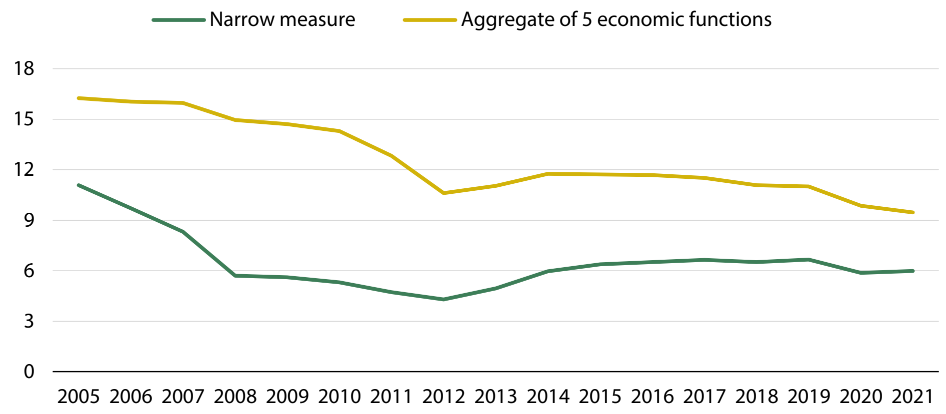
Source: CNMV and Bank of Spain.

NBFI assets have represented a relatively unimportant part of the Spanish financial system in recent years. The weight of the assets of the five economic functions, which had held between 10% and 12% of the financial system since 2012, has declined for the past two years. In 2021 it was 9.5%. The narrow measure of NBFI, for its part, has hovered around 6% of the system since 2014. The size of NBFI in Spain continues to be small in relation to the values observed in other neighbouring countries. The narrow measure in the countries analysed by the FSB is, in aggregate terms, around 14% of the total financial system.

18 As explained in the previous section, OFIs that are not part of NBFI are captive financial institutions and money lenders, equity investment funds, REITs, CCPs and venture capital firms.

19 Bank consolidation occurs basically for one of two reasons: i) the entity in question is controlled by a bank or ii) the assets belonging to the entity are also on the bank's balance sheet (and therefore subject to banking regulations). The latter case would relate to securitisation vehicles, whose assets must remain on the bank's balance sheet if the associated risks and returns have not been substantially transferred to third parties.

Relative weight of NBFI (% of financial system) FIGURE 9



Source: CNMV and Bank of Spain.

Table 4 shows the assets of the entities making up NBFI for each of the economic functions in 2020 and 2021 and their growth since 2002. As has been indicated previously, the most important economic functions in terms of size in Spain are EF1, which contains certain classes of investment funds, and EF5, which contains securitisation vehicles. At year-end 2021, the assets of these two groups of entities stood at €298 billion and €164 billion respectively, representing 57% and 32% of the total. EF1 assets have been growing for several years (12.3% in 2021) with some exceptions associated, for example, with the COVID-19 crisis. In contrast, the trend in EF5 assets (securitisation vehicles) has generally been downward (-11% in 2021), except at times when these assets have been more attractive as a way for financial entities to obtain Eurosystem financing. EF2, which consists of finance companies, is the third most significant function (9.8%). Its assets grew by 3.6% in 2021. As for the remaining economic functions, the only thing worth mentioning is the sharp decline in the assets of EF3 (broker-dealers), associated with the deregistration of a large entity.

Structure of non-bank financial intermediation TABLE 4

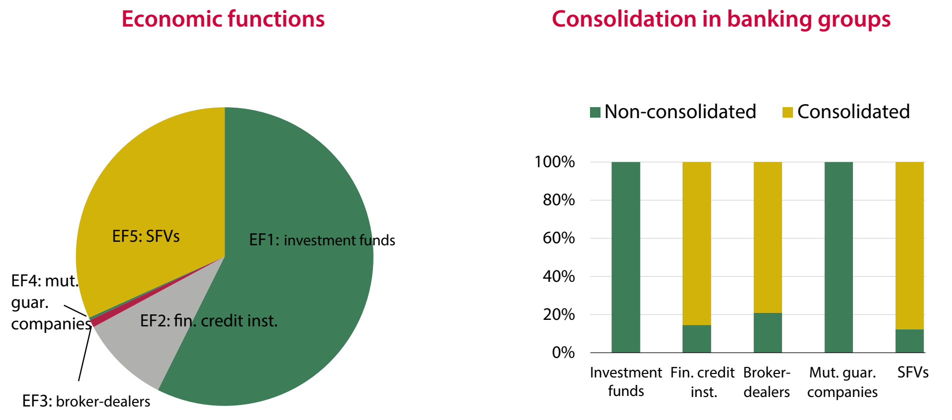
Millions of euros

	EF1	EF2	EF3	EF4	EF5	Aggregate of the five functions	NBFI (narrow)
Size in 2021 (millions)	298,074	50,750	4,372	1,399	164,723	519,318	328,178
Size in 2020 (millions)	265,405	48,944	9,562	1,177	185,000	510,138	303,686
% of total (2021)	57.4	9.8	0.8	0.3	31.7		
Growth 2021 (%)	12.3	3.6	-54.3	18.8	-11.0	1.8	8.1
Cumulative growth 2002-2009	-4.1	49.0	14.3	217.8	917.4	154.8	23.3
Cumulative growth 2009-2021	60.4	-6.6	-66.8	32.7	-65.9	-29.6	16.7

Source: CNMV and Bank of Spain.

The last step in order to determine the narrow measure of NBFI consists in deducting the assets of entities which, while forming part of one of the five economic functions, are consolidated by banks. As can be seen in the right-hand panel of Figure 10, this consolidation mainly affects securitisations, finance companies and broker-dealers, with consolidation percentages that vary between 80% and 90% of their assets. However, it does not affect the assets of investment funds or mutual guarantee entities. As a consequence of these important differences, the relevant weight of EF1 (investment funds) in NBFI after the consolidation process rises to 91% (no assets being deducted) while that of EF5 (securitisation) decreases to 6.2%. The remaining three functions account for only 3% of the narrow measure of NBFI.

Distribution of non-bank financial intermediation. 2021 FIGURE 10



Source: CNMV and Bank of Spain.

3.1 Risk assessment of non-bank financial intermediation

The ultimate objective of the definition and delimitation of entities that make up the narrow measure of NBFI is the identification and monitoring of the potential risks that these may pose to financial stability. In this section, we propose an approach to the assessment of the credit risk, maturity transformation, liquidity risk and leverage in the areas of investment funds, finance companies, broker-dealers and SFVs.[20]

As can be seen in Table 5,[21] which illustrates the intensity of the risks analysed, the greatest degree of involvement of NBFI entities in the various financial risks is in credit and liquidity risk. The intensity of many of these risks is related to the nature of the entities themselves, for which reason there are few changes over time. For example in the case of credit risk,[22] it is natural for the figure to be high, since many NBFI entities invest the majority of their portfolios in debt assets (investment funds for example) or in loans (finance companies and SFVs). Nonetheless it is always interesting, and informative, to observe the time pattern of the indicators.

20 Mutual guarantee entities are not included in the analysis, as they account for less than 0.5% of the sector.

21 See the article by Ispierto (2019), *op. cit.*, for further details on the thresholds defined for each risk and type of institution.

22 This risk has been calculated as the ratio of credit assets to total financial assets. Credit assets are made up of cash, deposits, loans granted and fixed income securities, both domestic and foreign.

Degree of NBFI involvement in financial risks. 2021 TABLE 5

	Investment funds					
	Money market	Fixed income	Mixed	Finance companies	Broker-dealers	SFVs: securitisation
Credit risk	●	●	○	●	●	●
Maturity transformation	○	●	○	○	○	●
Asset liquidity[1]	●	●	●	●	●	●
Leverage[2]	○	○	○	●	●	●
Interconnectedness with the banking system	○	○	○	○	○	●
Relative importance[3, 4] (%)	0,9	16,6	33,6	9,8	0,8	31,7

Source: CNMV. For greater detail on the thresholds for each risk and type of entity, see the article by Ispierto, A. (2019). "Non-bank financial intermediation in Spain". *CNMV Bulletin,* Quarter I, pp. 79-122.

1 In the case of investment funds, the colours assigned to this risk are defined on the liquidity measure that is based exclusively on the type of asset in the portfolio. Starting with this number of the Monitor, this assessment includes the portfolio assets relating to CISs' investments in other CISs.

2 In the case of investment funds, the assessment of the leverage risk is made on the indirect leverage measure, based on the position in derivatives.

3 The weights of each of the entities presented in this table do not add up to 100%, since mutual guarantee entities and some types of funds that also belong to NBFI are not represented.

4 These percentages are calculated according to the total size of the sector, without deducting the entities that are consolidated in banking groups.

The analysis of investment fund risk indicators, which is the most extensive in the report due to the significance of these institutions, does not point to any substantial change between 2020 and 2021. In the field of credit risk, a certain improvement has been observed in the indicators proposed in the category of mixed funds, which, in addition, has been complemented with an estimate of the relative weight of investment grade assets in the portfolios. This proportion is very high, higher than the 86% average in NBFI funds, although the weight of the worst assets within this group (BBB) is notable. Likewise, the analysis of the fixed-income portfolio has been extended to assess the sensitivity of this portfolio to increases in interest rates (modified duration). The estimates point to relatively small average sensitivities (between 2.5 and 3.1 depending on the category of funds) and lower than those of European funds as a whole (close to 4). In the field of liquidity, in this edition of the Monitor, the liquidity conditions of the portfolio of funds' investments in other CISs have been assessed in order to define more precisely the proportion of the total portfolio that can be considered relatively illiquid. The result of this exercise reveals that the liquidity conditions of the funds' portfolio are satisfactory (with average percentages of liquid assets between 44% and 48% of total assets depending on the category of funds). The level of leverage of the funds has increased slightly compared to 2020 figures, but it remains very low.

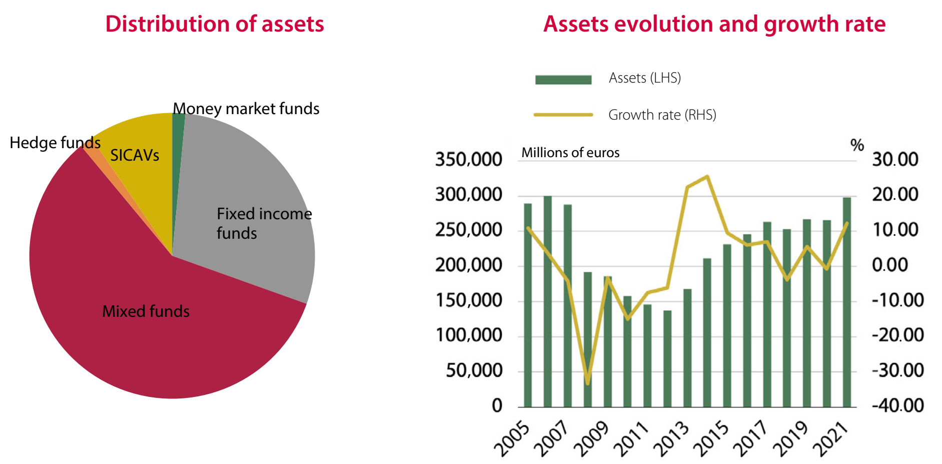
3.1.1 Economic function 1

As seen in Table 5, EF1 is defined as the management of CISs with features that make them susceptible to runs. Taking these considerations into account, of the various types of investment vehicles existing in Spain, we considered that the following belong to this economic function: money market funds, fixed income funds,[23] mixed funds, hedge funds[24] and open-ended collective investment companies (SICAVs).

As described at the beginning of this section, in Spain, investment funds belonging to EF1 accounted for 90.8% of the total narrow measure of NBFI at the end of 2021, continuing the growth trend that began in 2010, when the proportion was around 60%. As can be seen in the right-hand panel of Figure 11, the assets of these funds showed a significant advance in 2021 (12.3%), after a 2020 in which there was stagnation (-0.7%) due to the effects of the COVID-19 crisis. Thus, in 2021 there were notable increases in net subscriptions by investors, which had already begun at the end of 2020, and a revaluation of the aggregate portfolio of these institutions.[25]

The relative importance of the different vehicles included in EF1 shows little change with respect to previous years: as can be seen in the left-hand panel of Figure 11, Spanish mixed funds represented more than half of the assets of this function (58,6%),[26] followed by fixed income funds (29.0%) and SICAVs (9.6%). The weight of money market funds and hedge funds continued to be very low, at 1.5% in both cases.

Distribution of investment funds belonging to NBFI FIGURE 11



Source: CNMV.

In Spain, at year-end 2021, there were a total of 3,577 active investment vehicles belonging to EF1 (196 fewer than in 2020). Of these, 1,208 were investment funds, 2,281 were SICAVs and 88 were hedge funds. The essential characteristics of the institutions belonging to this economic function continue to be similar to those of previous reports, with some nuances. The biggest investment vehicles are investment funds: 64 investment funds were managing assets of more than €1 billion each at the end of 2021 (47 in 2020), a figure that was not exceeded by any SICAV or hedge fund.

23 See footnote 1 to Table 3.

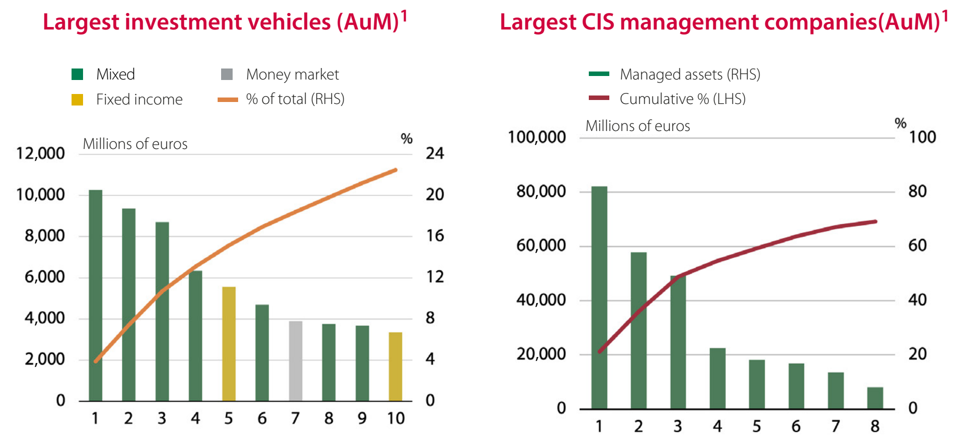
24 These institutions may be subject to runs in their liquidity windows, if they have any. The four types of hedge funds that exist in Spain are included: hedge funds (funds and companies) and funds of hedge funds (funds and companies).

25 However, in the money market and fixed-income funds, the portfolio depreciated slightly during 2021.

26 Mixed funds include different categories of funds, among which, after some changes compared to 2020, global funds (38.8%) and mixed fixed-income funds (29.2%) stand out.

On the other hand, the degree of concentration of these institutions is very high and, moreover, has shown a certain increase in recent years. As can be seen in the left-hand panel of Figure 12, the four largest vehicles accounted for 13.1% of total assets, while the ten largest funds accounted for 22.5% of assets, values very similar to those of 2020. The degree of concentration in the field of CIS managers also continued to be very high, and indeed increased considerably, with the three largest entities managing 48.8% of total assets (43.5% in 2020) and the seven largest managing practically 70%. Six of them belong to banking groups[27] (see right-hand panel of Figure 12).

Concentration in the collective investment sector FIGURE 12



Source: CNMV.

1 AuM: Assets under Management.

27 The smallest management company of the seven belongs to an insurance company.

Evolution of investment funds in the context of the war in Ukraine

EXHIBIT 1

This exhibit reviews the repercussions of the start of the war in Ukraine on the Spanish investment fund industry in a year in which other determinants of agents' investment and financing decisions have also emerged, such as the rise in the inflation and interest rates. For this, the exposure of the funds to the assets affected by the war is described, as well as the evolution of the investment flows in the different types of funds, their performance, their liquidity conditions and their portfolio.

The CNMV's supervisory actions arising from the Russian invasion of Ukraine and the subsequent war, which continues at the time of publication of this report, have revolved around three areas: i) analysis of CISs with positions in assets directly exposed to the countries directly involved in the conflict, ii) the monitoring of investment funds with significant redemptions and iii) the investment flows and price variation of CISs with exposures greater than 5% to assets with lower levels of liquidity. In none of these areas, on which communication with the managers potentially most was permanent, were significant problems observed.

The analysis of the exposure of Spanish CISs to Russia and Ukraine allowed us to conclude that this was very small: at the end of 2021 it was estimated at an amount close to €350 million (barely 0.10% of the assets of the CISs), of which €183 million were fixed income assets (only €6.3 million were Russian public debt assets). During the first weeks of the war, it was observed that this exposure fell to less than half (to a figure close to €116 million), as a result of asset sales and falls in valuations.

Exposure to suspended foreign equities and funds was also assessed. Among Spanish CISs, only 11 entities with exposures greater than 1% were identified, with no significant incidents in relation to the valuation of the assets. A total of five institutions activated the partial redemption mechanism. These institutions' exposure to suspended securities ranged from a minimum of 4.2% to a maximum of 16.3%. As regards foreign CISs marketed in Spain, a total of 21 institutions were identified that reported the suspension of trading in one or more of their sub-funds. The investment volume of these CISs was €88 million (3,052 participants). For the part not affected by suspensions, all institutions continued to process redemptions normally.

In the field of fixed income, the assessment of the liquidity conditions of the funds' portfolio continued to be a priority. In 2022, no liquidity difficulties similar to those registered in March 2020 have been observed, given that the prices at which the fund purchase and sale transactions have been executed have been in line with the prices observed in the market.

Figure E1.1 shows the evolution since the second quarter of 2021 of the assets of investment funds divided into ten categories and breaking down the variation in assets between investment/divestment flows, called "net subscriptions" in the panels of the figure, and portfolio returns. In the first half of the year the volume of investment in the funds was close to €5.9 billion, while the value of the portfolio assets declined by nearly €27.9 billion, due to the general drop in the price of most financial assets in the half-year. Losses in value have been larger in international equity funds and global funds, although, as can be seen in the figure, all categories experienced losses in both the first two quarters of the year. In the first quarter, the aggregate return on investment funds was -3.1% and in the second quarter, -5.4%.

Variation in assets with breakdown of investment flows and returns (by category of fund) FIGURE E1.1

Source: CNMV. FI: fixed income, MFI: mixed fixed income, ME: mixed equities, EE: euro equities, IE: international equities, GFI: guaranteed fixed income, GE: guaranteed equities, GF: global funds, PM: passive management, AR: absolute return.

[1] The data for net subscriptions of ME and GF of II-21, which are not fully reflected in the figure so as not to impair the representation of the other amounts, are very high and largely respond to mergers between funds.

In the case of investment flows, we see much more differentiated behaviour among categories, responding for the most part to the changing context of interest rates and expectations regarding economic activity, all in an environment of high uncertainty. Thus, strong net subscriptions are observed in the fixed income category[1] (more than €8.2 billion between January and June) and in global funds (more than €5.5 billion). Within the fixed income categories, there has been a significant preference for "buy & hold" funds and also for funds with durations of less than one year. On the other hand, there have been substantial divestments in the mixed fixed-income category (over €8.1 billion) and, to a lesser extent, in guaranteed equity funds (€1.7 billion). In the remaining categories, in general, inflows of funds are observed in the half-year, but of much smaller amounts.

As a consequence of these variations in assets, fixed-income assets have gained in relative weight in the total assets of the funds, from 37.5% in December 2021 to 42.4% in June, to the detriment of investments in other CISs (which has fallen from 34.1% to 32.2%) and in the most liquid assets – deposits and treasury – (from 11.3% to 9%).

In conclusion, the repercussions of the war between Russia and Ukraine, as well as other elements of uncertainty in the current economic and financial context, have led to significant falls in the value of CISs' portfolios during the year, but there have been no substantial redemptions in the institutions or liquidity problems in meeting such redemptions as there have been. In addition, the direct exposure of investment funds to Russian or Ukrainian assets is practically irrelevant within the total assets and there have also been very few cases in which partial redemptions have been made or trading of any sub-fund has been suspended in the case of foreign CISs. Finally, it is worth noting the strong investor appetite observed in the fixed income categories in order to take advantage of the notable increase in the yield of these assets.

1 Preliminary data for the third quarter of the year reveal that net subscriptions to fixed income funds remained strong (close to 75% of total subscriptions).

The analysis of the financial risks associated with NBFI investment funds does not present an intensification of any of them in 2021. Although in the context of systemic risk and financial stability the analyses focus on the liquidity risk of the funds (which determines the ability to meet redemptions) and their leverage, this report also provides information on the credit risk of these institutions, as well as the maturity transformation risk. In addition, this issue includes several new analytical features that allow us to look in greater depth at some of these risks. Thus, for example, in the field of liquidity risk, a first approximation has been made to the liquidity of the portfolio assets of the funds' investments in other CISs (considered to have reduced liquidity in previous editions); in the area of credit risk, the credit ratings of the funds' portfolio assets have been evaluated, as well as their evolution in recent quarters and, finally, in the area of maturity transformation risk, the modified duration of the fund's portfolio has been quantified, in order to determine the price sensitivity of the assets in the portfolio to increases in interest rates. All these additional analyses are especially relevant in the current context, marked by uncertainty, the deterioration of economic activity and the increase in interest rates and risk premiums.

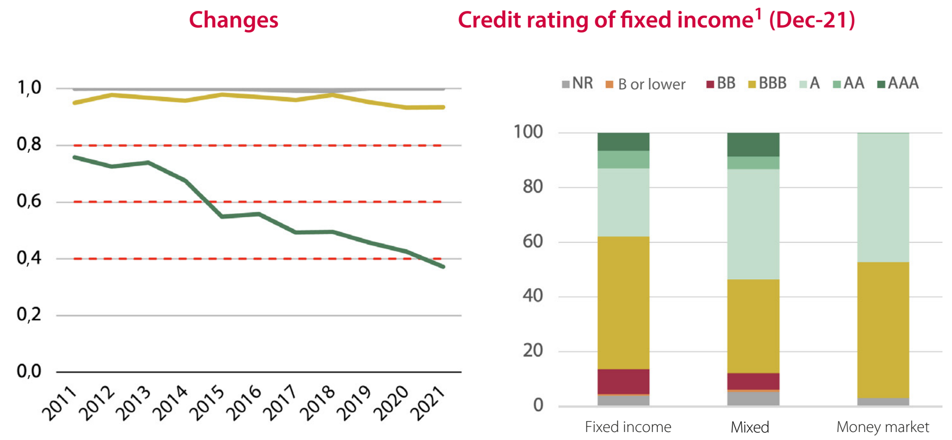
The assessment of credit risk based on the proportion of credit assets in the funds' portfolio reveals similar patterns to those of previous reports. This proportion is practically 100% in money market funds and very high, 93.4%, in fixed-income funds due to the very nature of these institutions (see left-hand panel of Figure 13). More interesting is the evolution of this indicator in the case of mixed funds, which presents a practically uninterrupted downward trend since 2013 (37.2% in 2021, compared to 73.9% in 2013). This trend, which reduces the credit risk of this category of funds, is explained by the increase in the weight of investments in other CISs in the investment portfolio.[28]

Analysis of the credit ratings of the funds' fixed-income portfolio reveals that most of the debt investments are investment grade. In December 2021, this proportion was

28 This trend responds, at least in part, to the increase in the importance of global funds within this category of funds, whose investment in other CISs is around 70% of assets.

86.4% in fixed-income funds and 87.9% in mixed funds. However, within this group of assets, the weight of those with a BBB rating (the worst within investment grade, prior to high yield) is notable. In fixed income funds, BBB debt represented 48.6% of the fixed income portfolio and in mixed funds, 34.4%. On the other hand, the relative weight of high-yield (low credit quality) debt was 13.6% in fixed income funds and 12.1% in mixed funds[29] (see right-hand panel of Figure 13). Time analysis of these ratings from March 2021 to March 2022 does not reveal significant changes in these ratios. Thus, for example, for fixed income funds, the proportion of high yield debt has remained between 12.7% and 14% in all quarters, and in mixed funds, between 12% and 12.7%.

Credit risk in the different types of investment funds FIGURE 13



Source: CNMV.

1 Distribution of the fixed-income portfolio of the three NBFI fund categories (fixed-income, mixed and money market) based on the credit ratings of their portfolio assets. NR: no rating.

In relation to the maturity transformation risk, i.e. the entity's ability to meet its current obligations, in the case of investment funds the ratio of non-current assets to assets managed by the fund has been used, rather than the ratio of current liabilities to current assets, as in other entities. This difference in the method of calculation derives from the fact that in investment funds unitholders can redeem their equity stakes with a high frequency, in most cases daily, and therefore current liabilities are not representative of all the possible obligations of the fund. Additionally and for this same reason, it has been considered important to carry out an analysis of the duration[30] of the assets of the fixed income portfolio of the investment funds belonging to NBFI.

In this way, as can be seen in the left-hand panel of Figure 14, the ratio of long-term assets to total assets shows a high value only in fixed income funds, in which long-term assets as a proportion of the total was slightly higher than 55% in 2021, continuing an upward trend that began in 2016 when this percentage stood at 40%. In the remaining fund types, the value of the indicator is low; indeed in money market funds it is practically non-existent due to the severe constraints on investing in long-term

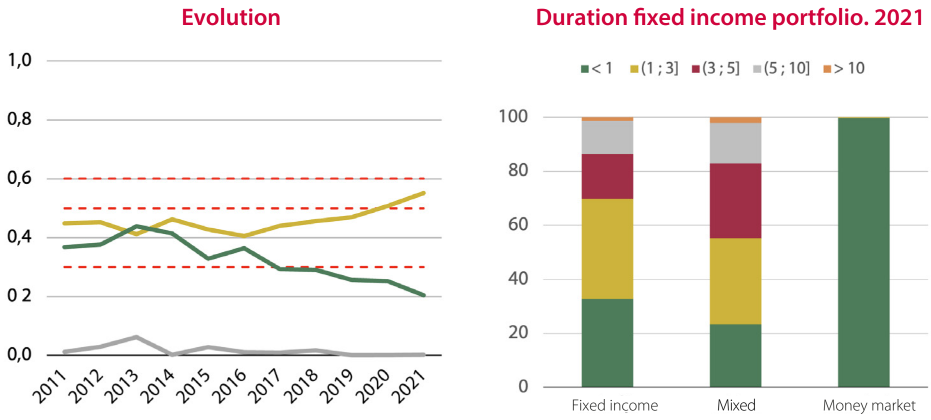
29 These percentages include both debt rated BB or lower and unrated debt.

30 Duration is a measure of the effective term to maturity of an asset, taking into account all cash flows throughout the life of the asset.

assets.[31] In mixed funds, the share of long-term assets was above 30% until 2016, but since then it has shown a downward trend, standing at 20.5% in 2021.

In order to determine whether the variations in this indicator are accompanied by a significant interest rate risk for investment funds, an analysis has been made of the duration of the assets in the fixed-income portfolio of these vehicles, specifically the modified duration.[32] Thus, the average value of the modified duration for fixed-income funds was 2.5 at the end of 2021, while this figure stood at 3.1 in mixed funds.[33] In the case of money market funds, obviously, the value was much lower, standing at 0.29. As can also be seen in the right-hand panel of Figure 14, of the total fixed-income portfolio of mixed funds, around 23% had a modified duration of less than 1, while only 2.1% was over 10 years. In the case of fixed-income funds, these percentages were 32.8% and 1.4%, respectively.

Maturity transformation in the different types of investment funds FIGURE 14



Source: CNMV.

Figure 15 shows a distribution of the number of funds based on the average modified duration of their fixed income portfolio, as well as a box plot that allows us to see different measures of dispersion of the data. From the information in these panels, it can be deduced that most of the funds have an average modified duration of less than 5, specifically 86.1% of fixed-income funds and 91.0% of mixed funds. In fact, only five funds have been identified (four mixed and one fixed income) with an average modified portfolio duration greater than 10. It can also be observed that the dispersion of the values of the modified duration of the fund portfolio is not very high, since for more than half of the funds the modified duration is between 1 and 4.

31 In money market funds, the average duration of the portfolio must be less than or equal to 60 days and the average maturity cannot exceed 120 days.

32 Modified duration measures the percentage change that occurs in the price of a financial asset in the event of a 100 bp increase in interest rates.

33 These values are below those observed in the euro area as a whole. According to the latest NBFI monitor published by the ESRB, the estimates made for a representative sample of fixed-income funds suggest that the loss in value of the portfolio in the event of an increase in interest rates of 100 bp is 4%. See footnote 2.

Average modified duration of the fixed income portfolio of the different types of investment funds FIGURE 15

Source: CNMV.

1 Distribution of the number of funds according to their modified duration.

2 The figure represents, for each type of fund, the minimum, maximum, mean (x), median, and percentiles 0.25 and 0.75 of the duration of the funds. In the case of the minimum and maximum, outliers have been excluded (values that fall below [above] the first [third] quartile whose distance from it is greater than 1.5 times the interquartile range [P75-P25]).

The analysis of liquidity risk is complex, since, as has been pointed out in previous editions of this report, there is no single and unequivocal definition of liquid asset, the generic conception being related to the possibility of buying or selling the asset in a short time without incurring large losses. Therefore, this concept is related to the nature of the asset and also to the situation of the financial markets. In times of market turmoil, liquidity often dwindles rapidly, especially in debt markets. Below are two representations of the liquidity conditions of the fund portfolio that take into account the type of financial asset and the credit rating of the issuer. In order to properly assess the liquidity risk of the funds, not only these representations of liquidity must be taken into account, but also the information on the availability and use of liquidity management tools in Spanish CISs, which are described in Section 3.2. This same section also presents the results of the stress tests on the funds, which show their degree of resistance to theoretical and severe increases in redemptions.

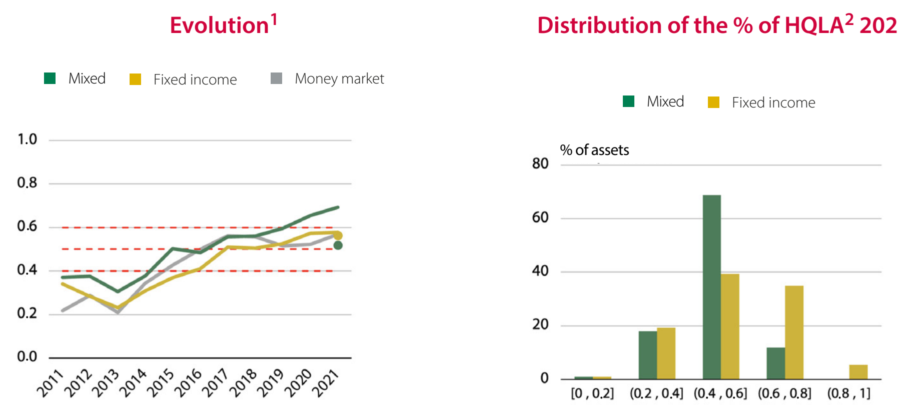
The metrics shown in the panels of Figure 16 reveal that the proportion of liquid assets in the funds' portfolio is satisfactory, although there is a slight worsening compared to the figures for the previous year. It should be noted that these metrics are extremely conservative, as they are based on stringent assumptions, such that the proportion of relatively illiquid assets represented, for example, in the left-hand panel of the Figure can be thought of as a maximum level of relatively illiquid assets. In fact, one of these assumptions, which considers that 100% of the investment of the funds in other CISs[34] is relatively illiquid, has been relaxed in this edition of the monitor, as it has been possible to quantify the proportion of most liquid assets in the portfolio of these other CISs. As a consequence of this extension of the analysis, which has required the evaluation of the portfolio of these CISs, the proportion of relatively illiquid assets, which is estimated at a maximum of 69.3% of the assets of mixed funds and 57.8% of those of fixed-income funds in 2021, drops to 51.8% in the former and 56.3% in the

34 This trend is explained, in large part, by the increase in the investment of funds in other CISs. In the last three years, the investment of the funds in other CISs has grown from 31.2% to 37.5% of their total assets.

latter (see left-hand panel of Figure 16). The increase in recent years in the primary liquidity indicator responds, above all, to the increase in investments in other CISs.[35]

The second metric, known as HQLA (High Quality Liquid Assets) and used in numerous reference studies, incorporates, in addition to information on the type of asset, its credit ratings. The distribution of these assets in 2021 is shown in the right-hand panel of Figure 16. It shows that the proportion of liquid assets is high (over 40% of the portfolio) for 79.7% of the assets of fixed income funds and for 81% of mixed funds. This proportion is high, and higher than that estimated in 2020 (close to 70% for both types of funds). For both categories of funds, most of the assets are in funds with a proportion of liquid assets of between 40% and 60%.

Liquidity risk in the different types of investment funds FIGURE 16



Source: CNMV.

1 Relatively illiquid assets as a percentage of total assets, considering "liquid assets" to be deposits, public debt, guaranteed issues, repos and 50% of the value of the equity portfolio. The points corresponding to 2021 adjust the proportion of relatively illiquid assets of the funds taking into account the liquidity conditions of the investment portfolio in other CISs.

2 High quality liquid assets (HQLAs) are considered to be all cash and deposits, 50% of the value of the equity portfolio and variable percentages of public debt, private fixed income and securitisations depending on their credit rating. The percentage of public debt that would be considered liquid ranges between 0% and 100%, while that of private fixed income is between 0% and 85% and that of securitisations is between 0 and 65%.

In addition, within the supervisory tasks of the CNMV, an analysis of the liquidity level of the portfolio of open-ended CISs is periodically carried out.[36] Based on the methodology defined in these analyses, a study was carried out in December 2021, according to which 96.8% of the fixed income portfolio was highly liquid and 95.3% of the equity portfolio of these vehicles would be realisable within one week,[37] while only 1.8% of fixed income was relatively illiquid and 1.7% of equities was not considered realisable in less than 30

35 It does not respond, on the other hand, to the increase in the relative importance of private fixed-income assets (which under this measure are also considered 100% relatively illiquid), since their weight in the fixed-income portfolio has remained relatively stable at around 57%.

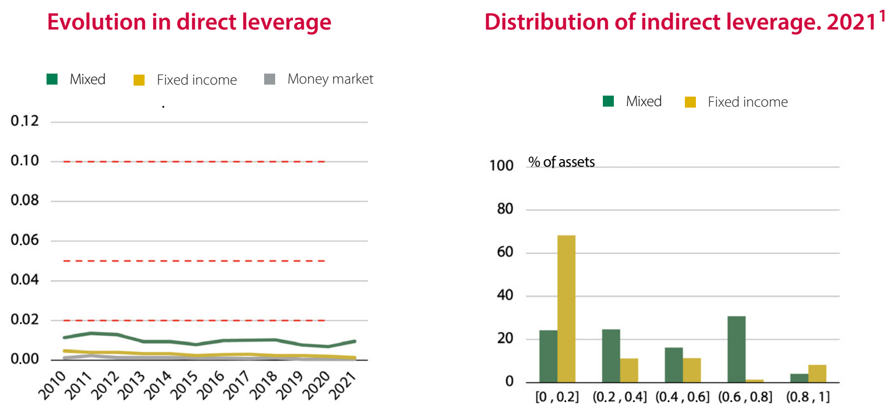
36 Specifically, all investment funds and all SICAVs are analysed.

37 In the case of fixed income, assets for which there are no representative prices quoted by information providers are considered to be relatively illiquid (for example, if there are no CBBT or BGN prices in Bloomberg). In the case of equities, the daily volumes traded on official stock markets are obtained, and we then calculate the number of days needed to unwind each position (taking into account daily trading volumes).

days. In the specific case of the fixed-income portfolio of the mixed funds and fixed-income funds analysed in this monitor, the proportion of assets liquidated in less than a week would be very similar to that of the total CISs, 96.4% and 97.9% respectively. In relation to relatively illiquid assets, that is, those that cannot be settled in less than a month, the proportion would be 1.2% for mixed funds and 2% for fixed-income funds.

Lastly, in relation to the level of leverage of CISs, Spanish legislation establishes that non real-estate CISs (with the exception of hedge funds) can only be temporarily indebted and for a specific reason,[38] and that debt can never exceed 10% of their assets. In Spain, no category exceeded 1% in 2021 and, at least since 2009, they have never exceeded 2%[39] (see left-hand panel of Figure 17).

Leverage in the different types of investment funds FIGURE 17



Source: CNMV.

1 Investment funds, both UCITS and quasi-UCITS, that use the commitment method and belong to NBFI (except for money market funds).

However, these institutions can also be leveraged through the use of derivatives, a practice which is currently growing internationally and for which the indicators recently proposed by IOSCO will be used to monitor the leverage of these institutions.[40] The information available to the CNMV on the use of derivatives by Spanish CISs still does not indicate the existence of significant vulnerabilities to any of the possible risks that the use of derivatives may generate (counterparty, market and contagion). The calculations carried out show that, at the end of 2021, the exposure to market risk, evaluated for the CISs belonging to NBFI that are subject to UCITS regulations in relation to the leverage limits[41] and which perform their calculations through the commitment methodology[42]

38 Royal Decree 1082/2012, of 13 July, approving the implementing regulations of Law 35/2003, of 4 November, on Collective Investment Schemes.

39 To assess the level of leverage of investment funds we calculated the ratio of their liabilities to their assets.

40 IOSCO (2019). Final Report on Recommendations for a Framework Assessing Leverage in Investment Funds, December.

41 Includes both CISs that comply with UCITS regulations in their entirety and those that do not fully comply (CISs availing themselves of one of the exceptions provided in Article 72 of Royal Decree 1082/2012) although they do comply in relation to derivative transactions.

42 The European commitment method, the technical specificities of which are set out in the ESMA Guidelines on Risk measurement and the calculation of global exposure and counterparty risk for UCITS (CESR/10-788), allows exposure to be calculated based on the conversion of all derivatives contracts to

(95.6% of the total in terms of assets),[43] accounted for 31.2% of their assets.[44] This percentage, despite having increased by more than 7 pp in relation to 2020, was still well below the maximum allowed by current legislation (100% of assets). An individual analysis of mixed and fixed income funds[45] shows that exposure to market risk was less than 40% in nearly 80% of fixed income funds and 50% of mixed funds (in terms of assets), while only 8.1% and 4.1% respectively of assets corresponded to funds with relatively high levels of exposure to this risk (between 80% and 100% of assets).

For the remaining CISs included in NBFI (4.4% of total assets), about 1.0% of the assets correspond to CISs that say they do not carry out any type of derivative transactions, 1.9% to CISs that are also subject to UCITS regulations on the leverage limits, where exposure to market risk is calculated in accordance with VaR methodology, and lastly, 1.5% correspond to CISs subject in general terms to UCITS regulations but able to be more flexible in certain aspects of their operations through derivative instruments and able to exceed the 100% limit of exposure to market risk (referred to as quasi-UCITS). In the case of the latter two, the gross exposure level[46] stood at 62.9% and 101.5%, respectively.[47]

Leverage of NBFI funds through the use of derivatives TABLE 6

Type of CIS	% of assets[1]	Gross leverage (%)
CISs subject to UCITS regulations (commitment method)	95.6	31.2
CISs subject to UCITS regulations (VaR method)	1.9	62.9
CISs subject to UCITS with flexibility in derivatives operations (quasi-UCITS)	1.5	101.5
CISs that say they make no use of derivatives	1.0	-
Hedge funds		36.7

Source: CNMV.
1 Percentages calculated without taking hedge funds into account.

Lastly, for hedge funds (included in the category of AIFs and as such having more flexible regulations), empirical evidence also shows a generally moderate level of

the equivalent investment in their underlying assets. The method is based on considering the market value of the underlying asset (or its notional value if this is more conservative) adjusting it for the delta in the case of options and incorporating rules to offset long positions with short positions of the same underlying asset (netting) as well as between different underlying assets (hedging).

43 Hedge funds, which are analysed later, are not included here.

44 The level of gross leverage is calculated from the sum, in absolute value, of the nominal amounts of the derivative contracts, in other words, the amounts of long and short positions are added, both with a positive sign. If the net exposure is calculated (see footnote 40), this percentage falls to 15.2%. However, if in order to simplify the calculation the indirect risk originated by the investment in other CISs is counted within net exposure – because many CISs establish it – as 100% of their investment in other CISs, the net leverage percentage increases to 35%.

45 In aggregate terms, in fixed income funds that use the commitment methodology, the level of leverage was 19.9%, while in mixed funds this figure was 42.4%.

46 The level of gross leverage is calculated from the sum, in absolute value, of the nominal amounts of the derivative contracts, in other words, the amounts of long and short positions are added, both with a positive sign.

47 Of all the CISs that can exceed leverage limits, only one was above the 200% threshold.

leverage (36.7% at a gross, aggregate level), with only a few isolated funds making more intensive use of leverage. In the case of pure hedge funds, six institutions exceeded 100% gross leverage at the end of 2021. For funds of hedge funds, i.e., funds and companies that invest in other hedge funds, it should be borne in mind that leverage is largely taken on indirectly through investment in hedge funds, gross direct leverage being very low – only two institutions (the same ones as in 2020) reported direct leveraging, one of them at 30% and the second at 77%.

Counterparty risk, referring to the risk that financial difficulties experienced by an entity may be transmitted to its counterparties or lenders and which is amplified by a high use of leverage, has not materialised in Spanish investment funds. Exposure to this risk, which in the case of these vehicles originates from derivatives transactions in OTC markets through transactions pending settlement, is at very low levels and a long way from the levels that could be considered potentially systemic. Thus at the end of 2021, the combined debit balance of UCITS and quasi-UCITS in respect of OTC derivatives transactions represented 0.27% of their total assets (0.33% in 2020). From this figure, we should deduct the value of the assets that the CISs receive as collateral to cover possible counterparty non-payment, which represented 0.11% of their assets, meaning that the counterparty risk borne by CISs, net of collateral and at the aggregate level, at the end of 2021 stood at 0.16%. In the case of hedge funds (including funds of hedge funds), the debit balance for OTC derivative transactions represented 0.97% of assets at the end of 2021.

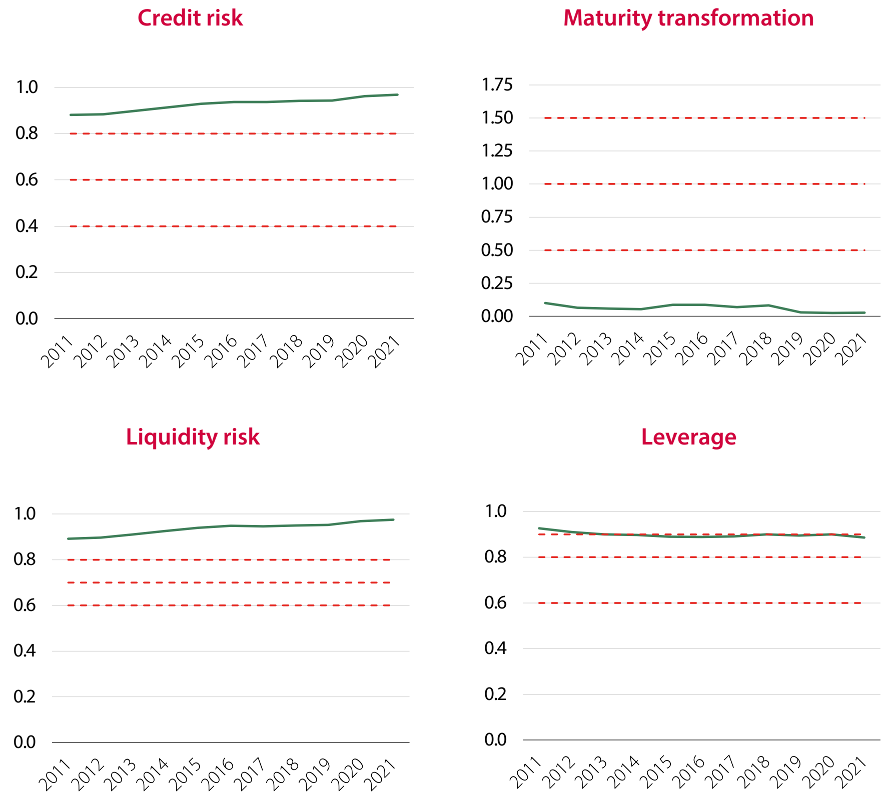
3.1.2 Economic function 2

Economic function 2, defined as a loan provision that is dependent on short-term funding, can comprise a wide variety of entities which, depending on the jurisdiction, may have very different legal frameworks. In Spain, it consists of finance companies, whose financial assets, as commented previously, represent 9.8% of the total of the economic functions, with nearly €51 billion at the end of 2021, after increasing by 3.6% relative to 2020.[48] If the amount consolidated in banking groups is subtracted, the financial assets of these entities fall to €7.4 billion, which is 2.2% of the narrow measure of NBFI, a percentage very similar to that of 2020. The panels in Figure 18 show various risk indicators calculated for these entities. Although some of them are high, in terms of financial stability they would not be particularly relevant, due to the small weight of these entities within NBFI.

As shown in the upper left-hand panel of the figure, the credit risk assessment is high for these entities due to the nature of their activity, since more than 90% of their financial assets consist of loans granted. For their part, the values associated with the level of leverage and liquidity risk are also high (90% and 97%, respectively) as a result of the low levels of own funds and liquid assets held by these entities. On the other hand the indicator for maturity transformation risk has been at levels well below 25%, and furthermore has fallen significantly over the past three years, to 2.6% in 2021 (see upper right-hand panel of Figure 18). This decline was due to the low volume of finance companies' current liabilities, which amounted to just €570 million in total.

48 However, the cumulative decrease since 2008 is 28%.

Risk trends for finance companies FIGURE 18



Source: CNMV.

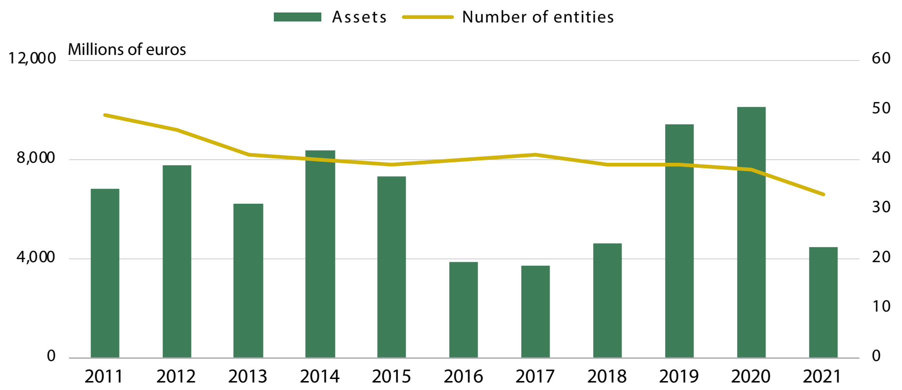
3.1.3 Economic function 3

EF3 is defined as intermediation in market activities that is dependent on short-term funding or on secured financing of client assets. In Spain, broker-dealers belong to this category.

At the end of 2021, there were 33 broker-dealers registered with the CNMV, with total assets of €4.46 billion, more than 50% down on 2020 (see Figure 19). This decrease was due to the cessation of activity of the broker-dealer firm that belonged to Credit Suisse (which was converted into a credit institution). This sector continues to be relatively small compared with other jurisdictions, since in Spain investment services are provided mostly by credit institutions. Consequently, more than 90% of the fees received for these services in 2021 corresponded to credit institutions, whereas broker-dealers received around 6.3%[49] (the remaining 3% corresponded to brokers, branches of foreign investment firms and financial advisory firms).

49 It is worth mentioning that these figures correspond to a classification of entities carried out from a legal point of view, taking into account the legal form of each of them. However, there are some entities that have the legal form of a bank, but whose business model is based on the provision of investment services. Thus, from a broader perspective, it is estimated that 74% of the business relating to the provision of investment services in Spain (including CIS management), assessed through fee and commission income, corresponds to commercial banks or entities belonging to their groups, while the rest corresponds to financial entities specialising in the provision of investment services and without corporate ties to commercial banks.

Assets of broker-dealers and number of entities FIGURE 19



Source: CNMV.

Broker-dealers have a very low relative weight in the five economic functions (0.8% in 2021) meaning that the risk of contagion to the rest of the financial system is very limited. Even so, analysing the risks associated with these companies regardless of their size, it can be seen that the risk indicators calculated for the sector throughout 2021 experienced some variations, especially credit risk and liquidity risk.[50] As can be seen in the different panels in Figure 20, the credit risk indicator increased significantly, returning to the high risk area, where it had been since 2016, with a value of 93.6%. The liquidity indicator, for its part, was also located in the high risk range, with a percentage of liquid assets of 10.6%. The maturity transformation and leverage risks remained, as in previous years, at a low and medium level of risk, respectively.

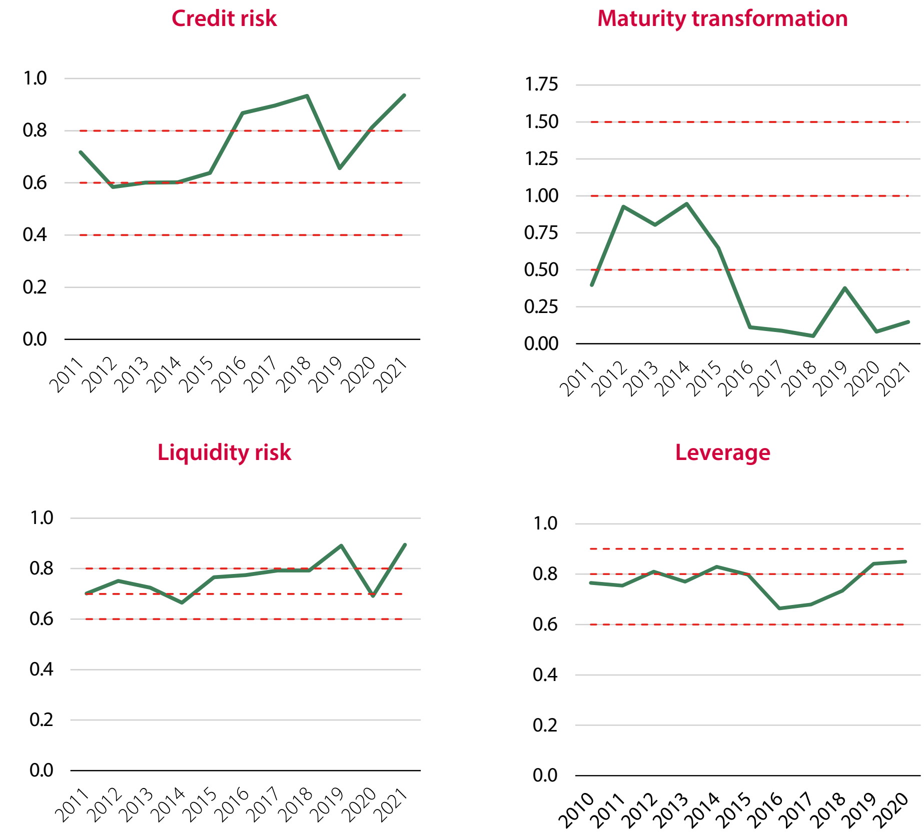
In relation to the level of liquidity of these entities, it is important to mention that, with the entry into force of Regulation (EU) 2019/2033,[51] liquidity requirements have been established for broker-dealers and the definition of liquid assets has been unified at a European level. According to the information sent by the Spanish entities to the CNMV, all of them easily met the minimum requirements established by the regulation.[52]

50 It is worth mentioning that the transfer in 2019 of part of the operations of the broker-dealer firm belonging to Credit Suisse as a result of Brexit and its subsequent de-registration in 2021 have given rise to significant changes in the risk indicators.

51 Regulation (EU) 2019/2033 of the European Parliament and of the Council, of 27 November 2019, on the prudential requirements of investment firms and amending Regulations (EU) No. 1093/2010, (EU) No. 575/2013, (EU) No. 600/2014 and (EU) No. 806/2014.

52 The minimum liquidity requirement is at least 1/3 of the requirement based on general fixed expenses, which, in turn, is established as 25% of the previous year's general fixed expenses.

Risk trends for broker-dealers FIGURE 20



Source: CNMV.
[1] The data have been revised to define more correctly the liquid assets of these entities.

3.1.4 Economic function 4

This category comprises entities that facilitate credit creation. In Spain, this group contains only mutual guarantee companies. These companies are defined as financial entities whose main purpose is to facilitate access to credit for SMEs and to generally improve their financing conditions through the provision of guarantees to banks, public administrations, customers and suppliers. Although crowdfunding platforms are not included as NBFI for now, they are being monitored internationally, since they could potentially be classified as such, and specifically included in EF4, as they are vehicles that facilitate contact between investors and entities that need financing. In Spain, the CNMV is the institution in charge of compiling information on them.[53]

In Spain, mutual guarantee companies account for a very small fraction of the narrow measure of NBFI, since their financial assets represent only 0.3% of the total. Given that the size of this sector is below the 0.5% threshold, it is considered that it does not present any risks to financial stability and therefore no measurement analysis of potential risks has been carried out.

53 The most recent estimated information for these platforms reveals, for the moment, insignificant amounts in relation to the raising of resources, €132 million in 2021.

3.1.5 Economic function 5

EF5 is defined as securitisation-based credit intermediation for the funding of financial entities. This category consists of structured finance vehicles (SFVs), whose purpose is the securitisation of assets. These entities provide resources to banks and other financial entities, whether or not there is a real transfer of assets or risks, meaning that they may be an integral part of credit intermediation chains. For this reason, the risks associated with NBFI need to be borne in mind, especially with regard to maturity transformation. However, as mentioned in previous reports, securitisation issuances in Spain are generally structured, meaning that payments are made with the asset pools that are being redeemed, so in principle this problem is not very significant.[54]

In Spain, securitisation is the second most important sector within NBFI. Thus, the financial assets of the SFVs amounted to almost €165 billion at the end of 2021, which represented 31.7% of the aggregate assets of the five economic functions, compared to the 36.3% that they represented in 2020, as a consequence of the decrease of more than €20 billion that occurred during the year. As can be seen in the right-hand panel of Figure 21, the assets of these vehicles have progressively decreased since 2011, after the impact of the financial crisis, although some stabilisation has been observed since 2019. As with finance companies, a very high percentage of securitisation vehicles are consolidated in banking groups,[55] as a result of which, although their size is significant compared with that of entities belonging to the other economic functions, once the assets included in bank balance sheets are deducted, their relative weight falls to 6.2% (7.6% in 2020).

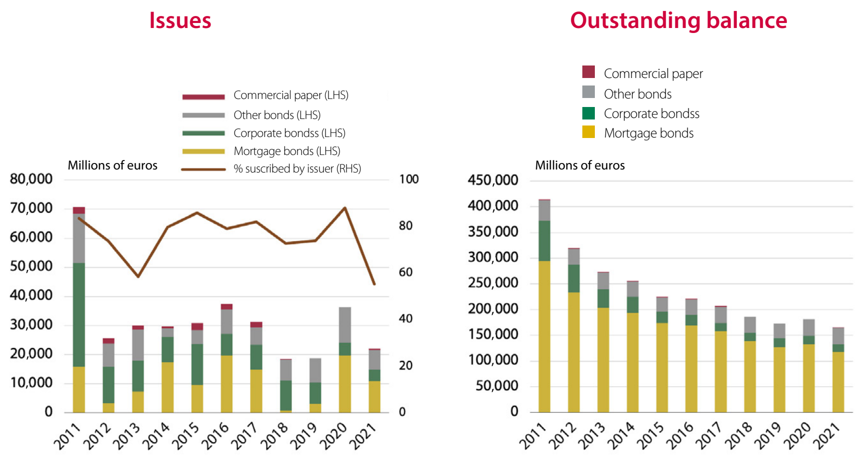
As the left-hand panel of Figure 21 reflects, securitisation bond issues have been small since 2012 compared to the figures for previous years, as the crisis severely affected these institutions, since then they have not exceeded €40 billion in any year. The percentage of the issues underwritten by the issuer or assignor itself was 55.3% in 2021, the lowest figure since 2008, therefore, despite the total value of issues having decreased, the amount that investors acquired in the market was higher than in previous years, which may indicate a certain dynamism in the securitisation market.

---

54 Furthermore, in Spain, in general terms, securitisation has been more a financing tool than a risk transfer tool, unlike in other economies where it emerged as one of the most significant problems of the 2008 financial crisis. For further information see Martín, M.R. (2014). *Análisis de los fondos de titulización españoles: características en el momento de su constitución y comportamiento durante los años de la crisis.* CNMV, Working Document, No. 57. Available (Spanish only) at: https://www.cnmv.es/DocPortal/Publicaciones/MONOGRAFIAS/DT_57.pdf; and Redondo, J. (2021). "How securitisation has evolved since the financial crisis". *CNMV Bulletin,* Quarter IV, pp. 73-107. Available at: https://www.cnmv.es/DocPortal/Publicaciones/Boletin/Boletin_IV_2021_EN.pdf

55 The reason why this happens in Spain is that in most situations the transferor retains control, pursuant to Bank of Spain Circular 4/2017 and IFRS 10: Consolidated Financial Statements, among other reasons because it continues to be exposed to the variable returns of the funds and assets securitised, either through credit enhancements, or through swaps in which they collect the returns of the securitised portfolio and pay the bond coupons. In these cases, according to the existing accounting standards, the vehicle must remain on the balance sheet of the issuing banks and therefore falls within the scope of traditional banking regulations.

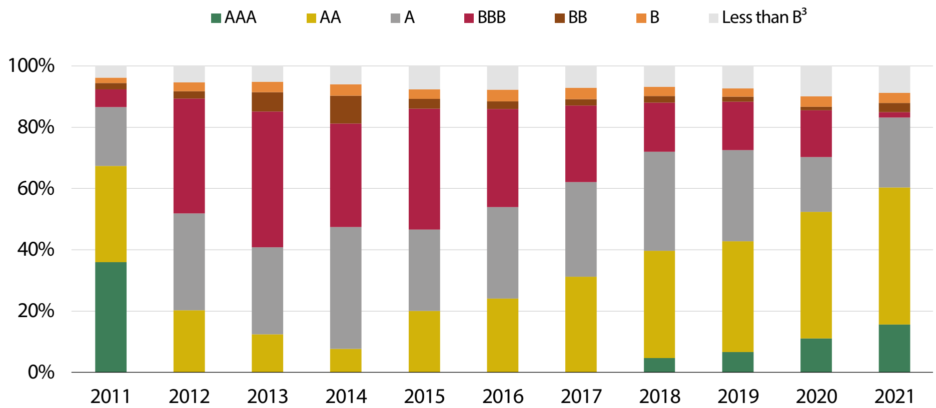
Evolution of securitisation bonds and commercial paper by asset type FIGURE 21



Source: CNMV.

By type of asset, it can be observed that in Spain traditionally most securitisation assets have corresponded to mortgage bonds. Since 2009, although they remain predominant, mortgage bond issues have been approaching those of other types of underlying assets, especially those of business loans. Thus in 2021, the issue of mortgage bonds accounted for 49.6% of the total issued, while bonds backed by consumer loans (included under the heading "Other bonds") were second in importance, with 20.4% of the total. On the other hand, the credit rating of securitisation vehicles has shown a clear and gradual improvement since 2014 (see Figure 22). At the end of 2021, 15.6% of the total outstanding balance of bonds and securitisation notes corresponded to assets rated AAA (until 2017 this percentage was practically zero), while 16.8% were rated BBB or lower (in 2013 they reached almost 60% of the total).

Outstanding balance of securitisation bonds and commercial paper by credit rating[1, 2] FIGURE 22



Source: CNMV.

1 Does not include the Alternative Fixed Income Market (MARF).

2 Ratings grouped according to their Standard & Poor's equivalent.

3 Includes unrated issues.

A specific mention is warranted by simple, transparent and standardised securitisations (STS), regulated by Regulation (EU) 2017/2402,[56] in which a general framework for securitisation is established and a specific one is created for STS. Issuers may use the term STS to denominate their issues providing they meet the requirements established for this purpose,[57] which facilitates their marketing among investors compared with other more complex securitisations, as well as a lighter treatment in terms of capital requirements and requirements for originators to retain assets on their books. In Spain, the issue of STS bonds amounted to almost €6 billion in 2021, 27.1% of the total bonds and promissory notes issued. The outstanding balance of these instruments was 15.8% of the total.

In relation to the risk assessment of these entities, the risk of maturity transformation is clearly the most significant, while the liquidity risk is also appreciable. The calculation of credit and leverage risks is, by definition, of little relevance for SFVs, at least in Spain: while credit risk is practically 100% by definition, all SFV assets consisting of loans or receivables transferred by the originator, something similar happens with leverage, since securitisation funds do not have own funds and therefore the ratio, as constructed, is always equal to one. Liquidity risk stood at 92.4% at the end of 2021, a figure that has not changed substantially in recent years: almost all the assets are made up of the loans granted and, therefore, there are very few liquid assets. Individual analysis of the funds shows that, in terms of assets, around 85% of them had liquid assets below 10%, while fewer than 1% had liquid assets above 40%.

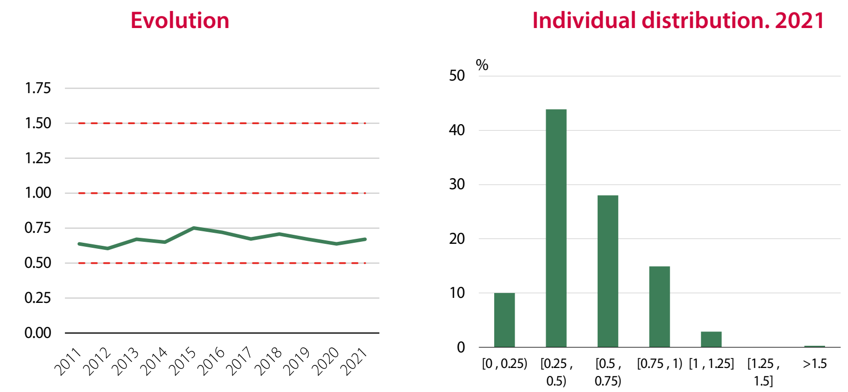
The level of the risk indicator associated with maturity transformation reached 67% in 2021, slightly above the figure for 2020 (see left-hand panel of Figure 23), therefore remaining, as in recent years, in the moderate risk region. There are substantial differences among the different vehicles, with a slight worsening in the values of this indicator in relation to 2020 but a decrease in dispersion. As can be seen in the right-hand panel of Figure 23, 53.9% of funds in terms of assets had a ratio of current liabilities to current assets of under 50% (low risk), compared to 65% of funds in 2020. On the opposite side, there was also a reduction in the assets that were in the hands of vehicles with a risk level above 100% (medium or high), since the percentage went from 4.8% in 2020 to 3.2% in 2021.

It should also be borne in mind that most securitised assets in Spain come from long-term loans or credits – mostly mortgages, with the same applying to the securities issued (liabilities). Thus, at the end of 2021, the short-term assets and liabilities of Spanish securitisation funds represented only 23% and 15% of the balance sheet respectively, percentages that, even so, have increased slightly due to the increase in securitisation of consumer loans.

56 Regulation (EU) 2021/557 of the European Parliament and of the Council, of 31 March 2021, amending Regulation (EU) 2017/2402 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation to help the recovery from the COVID-19 crisis.

57 For a securitisation to be considered an STS, it must meet certain requirements of simplicity (the ownership of the credit exposures must be transferred by means of a real sale to the vehicle that securitises them), transparency (potential investors must have information on the historical behaviour of defaults and losses) and standardisation (compliance with risk retention requirements and prohibition on contracting derivatives except for hedging purposes).

Maturity transformation risk in securitisation funds FIGURE 23



Source: CNMV.

3.2 Use of macroprudential tools

Although there is a wide range of tools that may be considered as macroprudential in the field of NBFI, generally deriving from regulatory requirements,[58] this section is dedicated exclusively to the tools available and used in the field of collective investment and, in particular, to liquidity management tools. Also included in this section is a sub-section with the results of the stress tests that are carried out periodically on investment funds, as they are understood as a preventive tool that helps to identify in advance funds that could show a certain vulnerability in the future. Another preventive tool to take into account is the monitoring and supervision work carried out by the CNMV of the risks assumed by CISs, in particular liquidity risk, based on the data received monthly from these institutions.

Liquidity management tools (LMTs) seek to mitigate the mismatch between the redemption profile that a fund may be faced with and the proportion of liquid assets available to service these redemptions. The nature of these tools is diverse, as is their level of efficiency and effectiveness. Most can be activated by the CIS manager and some by the securities regulators. However, there is no standardised set of tools available in the different European jurisdictions. In this regard, it should be noted that there is a project to reform the UCITS and AIFMD Directives, aiming to standardise the available tools and promote their use within the European Union.[59]

In Spain, the availability of liquidity management tools is high compared to other European jurisdictions. The most important tools available to UCITS are: suspension of redemptions, side pockets, partial redemptions, prior notice of redemptions, redemptions in kind, redemption fees, swing pricing and minimum liquidity ratios. In the field of alternative investment funds (AIFs), the tools known as gates are added to the foregoing. In general terms, they are activated by management companies, although the CNMV may activate some in certain circumstances (for example, the

58 See the report entitled *The participation of the CNMV in macro-prudential policy,* available from: http://www.cnmv.es/DocPortal/Publicaciones/OTROS/CNMV_politica_macroprudencial_en.PDF

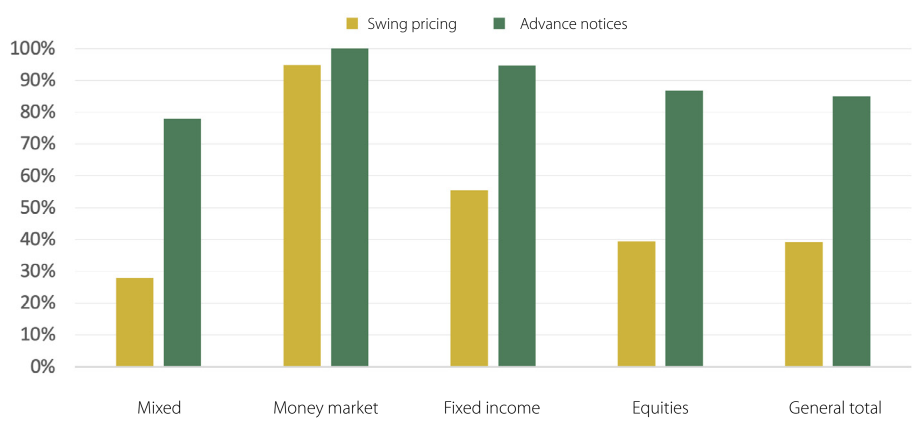
59 Proposal for a Directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0721

suspension of redemptions or the reinforcement of liquid assets). The most recent tool was approved in the context of the COVID-19 crisis,[60] in March 2020, and consists in the possibility of establishing notice periods for reimbursements without their being subject to the requirements of term, minimum amount and prior proof in the management regulations, applicable on a regular basis. These terms can be established by the manager or by the CNMV itself.

In 2021, the use of fund liquidity management tools in Spain was much lower than that observed during the previous year, when the COVID-19 crisis led to a notable increase in redemptions and liquidity tensions occurred in some fixed income market segments.[61] In 2022, in the context of the war in Ukraine, communication between the CNMV and the management companies potentially most affected continued to be a priority. During the first quarter of the year, coinciding with the outbreak of the war and the consequent suspension of the trading of assets linked to both countries, five institutions activated the partial redemption mechanism. These institutions' exposure to suspended securities ranged from a minimum of 4.2% to a maximum of 16.3%. For the part not affected by suspensions, these institutions continued to process redemptions normally.

The data available to the CNMV, at the end of September 2022, reveal that its policy of promoting the active use of liquidity management tools by CISs, not only in extraordinary situations but also in normal market conditions, has led to a high volume of investment funds (85% of the total in terms of assets) establishing in the prospectus the possibility of requiring advance notice of up to 10 business days when redemptions exceed €300,000. In addition, 39% of the funds, in terms of assets, have established, either in the prospectus or through a public notice on the CNMV's website, the possibility of using a swing pricing mechanism. This last mechanism is most frequently resorted to by money market and fixed income funds. Thus, 95% of money market funds and 55% of fixed-income funds are prepared to make use of it (see Figure 24).

Availability of LMTs in investment funds FIGURE 24



Source: CNMV.

60 Royal-Decree Law 11/2020 of 31 March implementing additional urgent social and economic measures to deal with COVID-19.

61 See NBFI Monitor for 2020, available at: https://www.cnmv.es/DocPortal/Publicaciones/Informes/IFNB_2020_ENen.pdf; and *Technical Guide 1/2022 on the Management and Control of Liquidity of Collective Investment Schemes (CISs)*, available at: https://cnmv.es/DocPortal/Legislacion/Guias-Tecnicas/GT_1_2022_Liquidez_IIC_en.pdf

Application of IOSCO and the FSB liquidity recommendations

EXHIBIT 2

In 2017 the FSB published a set of recommendations aimed at mitigating potential risks arising from asset management (Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities). Among others, these recommendations address the risk of liquidity mismatch between the assets in which mutual funds invest and the frequency with which they allow redemptions. In a complementary way, and with the aim of putting part of these recommendations into practice, in 2018 IOSCO published its Recommendations for Liquidity Risk Management for Collective Investment Schemes.

Two separate exercises to assess the degree of compliance with the FSB and IOSCO recommendations have recently been carried out.

The review work of the IOSCO recommendations focused on evaluating the degree of implementation of these in the regulatory frameworks of 14 participating jurisdictions,[1] comprising 92% of global assets under management. An additional 11 jurisdictions[2] participated in the evaluation with less demanding criteria. Finally, 76 management companies (with scope of action in 17 jurisdictions) voluntarily responded to a questionnaire on their general liquidity management policies and, in particular, on those applied in the stress episode experienced in the recent COVID-19 crisis.

Of the 17 IOSCO recommendations, ten were chosen for evaluation: five (R.1, R.2, R.3, R.4 and R.7), referring to the initial design phase of the fund; three (R.10, R.12 and R14), to day-to-day liquidity management; and two (R.16 and R.17), to contingency plans and the availability of liquidity management tools.

Of the 14 participating jurisdictions: seven (China, Germany, Japan, Luxembourg, Spain, the United Kingdom and the United States) were rated fully compliant with all ten recommendations evaluated; two (Ireland and France) were fully compliant with nine of the ten recommendations, and four (Brazil, Canada, India and Switzerland) were fully compliant with at least six of the recommendations and the remainder were complied with broadly or partly. Australia is the lowest ranked jurisdiction; even so, it complies fully with three of the recommendations, broadly with six, and partially with the remaining one.

A high degree of compliance is also observed among the 11 additional jurisdictions. Finally, all of the large managers (over $1 trillion in assets under management) have liquidity management practices in place that meet the recommendations. And more than half of the total have adopted practices the results of which are consistent with the recommendations.

As regards the FSB recommendations for mitigating structural vulnerabilities in the field of asset management, a working group created within the Supervisory and Regulatory Cooperation Committee (SRC) has carried out work to assess the degree of effectiveness of four blocks of recommendations, specifically those aimed at: i) reducing the structural risk of liquidity mismatch in open-ended collective investment schemes (CISs), ii) promoting the use of liquidity risk management tools, iii) reinforcing the periodic submission of data to the regulators that allow correct monitoring of the liquidity risk of CISs and, finally, iv) promoting stress test exercises both at individual CIS level and at the macro level, taking into account the interrelationships of the CISs with the rest of the entities of the financial system.

The work to review the FSB Recommendations is in its final phase and the final report is expected to be published before the end of the year with the conclusions on the degree of effectiveness of the recommendations and possible proposals for improvement.

In short, and as far as Spain is concerned, it fully complies with IOSCO's recommendations and, in principle, seems largely to comply with those of the FSB. In this regard, the CNMV has received monthly data on fund portfolios for years, which allows it to continuously monitor the liquidity risks assumed by investment funds. In addition, and with regard to liquidity management policies and tools, the recently published *Technical Guide 1/2022 on the Management and Control of Liquidity of Collective Investment Schemes (CISs)* specifies and develops the principles established in CNMV Circular 6/2009, of 9 December, on internal control of CIS management companies and investment companies. In particular, it specifies the criteria that must be taken into account for an adequate liquidity management policy, both in the design phase of the CIS and in its day-to-day activity, and, finally, determines the criteria for a correct application of the liquidity management tools, among others of the anti-dilutive ones.

1 Australia, Brazil, Canada, China, France, Germany, India, Ireland, Japan, Luxembourg, Spain, Switzerland, the United Kingdom and the United States.

1 Argentina, Hong Kong, Indonesia, Italy, Korea, Mexico, the Netherlands, Saudi Arabia, Singapore, South Africa and Turkey.

3.2.1 Stress tests

Stress tests are part of the supervisors' tools to contrast the degree of resistance of their supervised entities to a very adverse theoretical scenario. In the case of investment funds, stress tests are carried out to assess the capacity of these institutions to meet an extraordinary increase in redemptions. This capacity depends on the magnitude of the estimated redemption shock and the liquidity conditions of the assets in the fund portfolio. It therefore involves an assessment of the risk known as liquidity mismatch of investment funds, the most important from the point of view of financial stability for these institutions, where there is a possibility that the redemption profile is not sufficiently aligned with the liquidity of the portfolio of these funds. This section summarises the most significant results of an exercise of this type on Spanish real estate funds carried out every six months applying a methodology initiated by ESMA (STRESI framework [ESMA, 2019])[62] and later expanded by the CNMV (see the work of Ojea, 2020).[63]

62 ESMA (2019). *Stress Simulation for Investment funds.* ESMA Economic Report.

63 Ojea, J. (2020). "Quantifying uncertainty in adverse liquidity scenarios for investment funds". *CNMV Bulletin,* Quarter II, pp. 23-44. Available at: https://www.cnmv.es/DocPortal/Publicaciones/Boletin/Boletin_II_2020_ENen.PDF

Specifically, the CNMV designed a stress test for the sector comprising money market investment funds, UCITS and quasi-UCITS.[64] The database used for the test was extracted from the confidential statements submitted by Spanish investment fund managers to the CNMV in its supervisory role. The granularity of the information contained in this database with respect to the type of unitholder, the composition of the fund portfolio, its category and volume of assets allows the funds to be classified into detailed and representative categories. In this case, the categories of investment funds are: i) wholesale public debt funds, ii) retail public debt funds, iii) investment grade corporate fixed income funds, iv) high yield corporate fixed income funds, v) mixed fixed income funds, vi) wholesale equity funds, vii) retail equity funds and viii) other investment funds (global and absolute return). The funds are then filtered, as detailed in Ojea (2020), so that those which could distort the simulation of the scenarios are eliminated from the sample.[65]

Using the methodology developed by the CNMV, the stress test was carried out on non-real estate investment funds with data from December 2008 to December 2021. This exercise provides several results, of which two are particularly relevant: i) the quantification of the proportion of liquid assets in the portfolio of investment funds and ii) the identification of funds that could experience difficulties in catering to redemptions in various adverse scenarios.

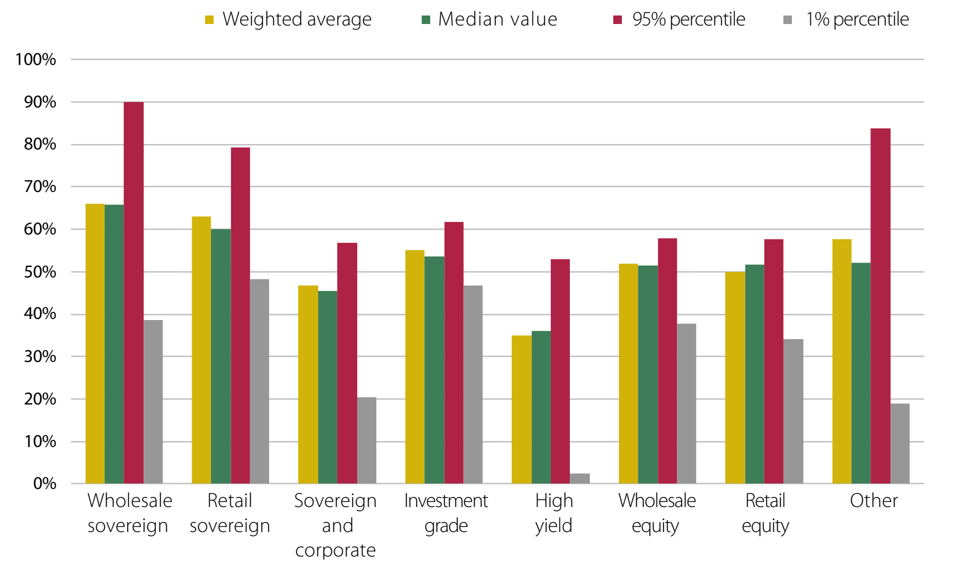
Figure 25 presents the first of the results, that is, the quantification of liquid assets, which is carried out using the HQLA approach.[66] Under this approach, we delimit the assets available to the funds to face a negative shock that could occur in the next six months. The weighted average of liquid assets is between 35% and 66% of the funds' assets depending on the category. The high-yield corporate bond and sovereign and corporate bond categories have the lowest liquidity ratios, while the sovereign bond, investment grade corporate bond and "Other" categories have higher liquid asset ratios. It is also important to note that in the high-yield corporate bond category there is a certain percentage of funds that have available liquidity that is well below the average.

64 Money market funds are those regulated by Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds. UCITS are funds regulated by Directive 2009/65/EC of the European Parliament and of the Council, of 13 July 2009, on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities. In Spain, UCITS and quasi-UCITS are regulated by Law 35/2003, of 4 November, on Collective Investment Schemes and its implementing regulations, transposing Directive 2009/65/EC into Spanish law. It is important to note that according to European regulations, most of the quasi-UCITS funds are considered to be alternative investment funds (AIFs), which ESMA includes in the "Other" category. These alternative funds are regulated at European level by Directive 2011/61/EU of the European Parliament and of the Council, of 8 June 2011, on alternative investment fund managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No. 1060/2009 and (EU) No. 1095/2010.

65 For instance, funds with portfolios containing unidentifiable assets that represent more than 40% of their total assets are eliminated (such as funds that mostly invest in other funds). Guaranteed funds are also eliminated from the sample because they penalise redemptions outside the pre-established liquidity windows.

66 The HQLA approach measures the liquidity of the fund portfolio using an index that attributes to each asset class a degree of liquidity (a weight that can take values from 0 to 100) depending on its characteristics: $HQLA_i = \sum_{k=1}^{n} (w_{i,k} * S_{i,k}) * 100$. Where $w_{i,k}$ is the weight (degree of liquidity) of asset k of fund i and $S_{i,k}$ represents the proportion of that asset in the fund's portfolio. In other words, the HQLA index is a weighted average of the liquidity of the assets making up the fund portfolio. The weights attributed, $w_{i,k}$, correspond to those applied under Basel III.

Proportion of HQLA of investment funds by category FIGURE 25



Source: CNMV.

The second of the results requires the simulation of different scenarios of redemption shocks and their effects on the categories of funds and the identification of those funds that, with the liquid assets estimated, would not be able to face the volume of redemptions in these theoretical scenarios. Table 7 presents the results of this analysis, which considers five theoretical scenarios of varying severity. One of them is the scenario proposed by ESMA in its 2019 exercise and the rest are scenarios proposed by the CNMV. The most severe,[67] $COES(\alpha = \beta = \sqrt{(0.4\%)})$, is up to 19 times more severe than in the worst week of COVID-19.

As can be seen in Table 7, which represents the percentage of funds (and assets) within each category that could experience difficulties in servicing redemptions in different scenarios, the CIS market is, in general, resistant to the scenarios posed. The number of funds that could experience problems ranges from two in the least severe scenario to thirteen in the most severe. There is only one category in which funds could experience problems in all scenarios considered: high-yield corporate fixed income. For this category, two funds that could experience difficulties in one of the least extreme scenarios and 12 in the worst scenario are identified. These funds represent between 4.3% and 25.5% of the funds in this category and account for between 2.2% and 5.7% of their assets. In the category of "Other funds", the redemption coverage ratio is insufficient for one fund in the most severe scenario (1.1% of assets in this category). The rest of the categories do not present funds with difficulties.

67 *CoES* is formally defined as: $CoES_{i|j}(\alpha,\beta) = \int_0^u F_i^{-1}(v)dv$, where $u = F_i^{-1}(CoVaR_{i|j}(\alpha,\beta))$ and F_i^{-1} is the inverse distribution function of variable *i*. In this context, *CoVaR* takes a value that fulfils the expression: *Pr(Net flow* $\%_i$ *<* $CoVaR_{i|j}$*) (α,β) | Net flow* $\%_j$ *<* $VaR_j(\alpha)$*) = β*, where $VaR_j(\alpha)$ is the percentile *α* of net flows *j* that determines the severity of the conditional redemptions, while *β* is the percentile that determines the severity of redemptions conditional on the previous scenario. For example, for *CoES* $(\alpha = \beta = \sqrt{5\%})$, to calculate the redemption shock applied to the funds in each of the categories, the largest 22.36% ($\sqrt{5\%}$) of redemptions in each category have been taken into account selected at times when the largest 22.36% of redemptions occurred in the whole fund sector.

Results of the stress tests (aggregated flows) TABLE 7

%

Scenarios	Wholesale sovereign	Retail sovereign	Sovereign and corporate	Investment grade corporate	High yield corporate	Wholesale equity	Retail equity	Other
	Number of funds with RCR[1] < 1 in each style/Total funds in each style							
ES ($\alpha = 3\%$)[2]	0.0	0.0	0.0	0.0	6.4	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{5\%}$)	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{3\%}$)	0.0	0.0	0.0	0.0	6.4	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{2\%}$)	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{0.4\%}$)[3]	0.0	0.0	0.0	0.0	25.5	0.0	0.0	1.0
	Assets of funds with RCR[1] < 1 in each style/Total funds in each style (in %)							
Scenarios	**Wholesale sovereign**	**Retail sovereign**	**Sovereign and corporate**	**Investment grade corporate**	**High yield corporate**	**Wholesale equity**	**Retail equity**	**Other**
ES ($\alpha = 3\%$)[2]	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{5\%}$)	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{3\%}$)	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{2\%}$)	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
CoES ($\alpha = \beta = \sqrt{0.4\%}$)[3]	0.0	0.0	0.0	0.0	5.7	0.0	0.0	1.1

Source: CNMV.

1 RCR: Redemption coverage ratio, defined as the ratio of each fund's liquid assets to the possible redemption outflows in the case of a shock. Therefore, funds with an RCR < 1 are identified as those that could directly experience liquidity problems.

2 This is the baseline scenario used in the stress test carried out by ESMA (2019). ES = Expected Shortfall, a risk measure for expected redemptions considering only the largest redemptions that may arise. In this case, the largest 3% of redemptions are considered.

3 The number of funds that could have liquidity problems are 13: 12 correspond to the category of "high-yield corporate" and one to that of "Others".