A MAP OF THE SPANISH FINANCIAL SYSTEM: A TOOL FOR ANALYSING INTERCONNECTEDNESS AND STRESS TRANSMISSION CHANNELS

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A MAP OF THE SPANISH FINANCIAL SYSTEM: A TOOL FOR INTERCONNECTEDNESS AND STRESS TRANSMISSION CHANNELS ANALYSIS

Abstract

Following the methodology in Andersen and Sánchez Serrano (2024), this article presents a map of the Spanish financial system as at June 2024. The study shows banks' pivotal role in the Spanish economy, channelling savings from households into loans to the real economy. The non-bank financial sector, encompassing investment funds, money market funds, other financial institutions, pension funds and insurance corporations, appears to play a lesser role in Spain than in the euro area as a whole. One finding of the study refers to the role of the rest of the world in the Spanish economy, be it as investor in financial markets (it is the main investor in corporate and government bond markets and in listed shares) or as a channel for the investment of savings, mainly through investment fund shares. Looking at data for the International Investment Position, investment fund shares predominantly explain Spanish residents' exposures to funds domiciled in Ireland and Luxembourg. Developing these maps is useful to understand interconnectedness and potential transmission channels of stress, whether originating inside the country or elsewhere.

Keywords: interconnections, sectoral accounts, banking, financial stability.

1 Introduction

In advanced economies, the financial system has grown in importance and complexity in recent decades, with a greater role played by non-bank financial institutions, an increase in cross-border transactions and a growing number of interconnections between institutions. The financial system's traditional role of channelling savings from the real economy – households and non-financial corporations (NFCs) – into lending opportunities has been complemented by a wide range of new business models (such as passive investment funds) and new financial products (such as securitisation). Moreover, the development of information technologies has increased the speed and frequency of communications, also contributing to today's interconnected financial system.

Following the methodology in Andersen and Sánchez Serrano (2024), a map of the Spanish financial system is built using primarily data from the European Central Bank (ECB) (Quarterly Sectoral Accounts, QSA). The map shows the cross-sectoral interconnections and exposures, albeit at a high level of aggregation. Balance sheet structures and interconnections are key to identifying contagion channels of financial stress. Although it is beyond the scope of this article, the map can also be used to analyse trends in bilateral positions over time and could even be useful to answer more restricted "research questions".[1]

1 For example, the extent to which financial flows from the rest of the world contributed to the large increase in bank credit in the years leading up to the global financial crisis.

Using national accounts, including flow of funds data and QSA, to understand interconnectedness is not new. A first reference is Castrén and Kavonius (2009), who use flow of funds data to create a sector-level network of the financial system's bilateral balance sheet exposures. Pozsar, Adrian, Ashcroft and Boesky (2010) provide a detailed overview of the US shadow banking system and its interaction with banks and broker dealers during the global financial crisis. In this seminal work, they explain how developments, exposures and imbalances in that system triggered the global financial crisis. Moving to the UK, Burrows, Cummings and Low (2015) use national accounts, complemented by other national data sources, to produce a map of the UK financial system. They conclude with a set of recommendations to enrich the flow of funds data and compile new statistics on debt exposures. More recently, Acharya, Cetorelli and Tuckman (2024) use expanded data from the US financial accounts to investigate the links between banks and non-banks, focusing on the transformation of risks between the two sectors. Mouakil, Heipertz, Stojanovic and Guinouard (2024) discuss interconnections in the French financial system using the methodology in Andersen and Sánchez Serrano (2024), while Saldias (2025) looks at the interconnections in the Portuguese financial system using the whom-to-whom accounts for Portugal. This article is thus close to Mouakil, Heipertz, Stojanovic and Guinouard (2024) and Saldias (2025).

This article is organised as follows. The next section discusses the methodology used to build the map, highlighting where it departs from the methodology in Andersen and Sánchez Serrano (2024). The subsequent two sections present the balance sheet of Spanish financial institutions and the main interlinkages with other institutional sectors (particularly with the real economy). A description is then provided of the main issuers and investors in the corporate and government bond markets and listed shares market. Next, the aggregate of the rest of the world is analysed more closely to identify Spain's main counterpart countries. The last section concludes.

2 Methodological considerations

This study applies the methodology developed by Andersen and Sánchez Serrano (2024) to obtain the necessary data points to build the map of the Spanish financial system. The approach provides a solid starting point for this analysis, as it is based on datasets (mainly the QSA) provided by the ECB, with sound methodologies and data quality. All data points are on a non-consolidated basis, so intragroup exposures across sectors and between Spanish residents and the rest of the world are included in the map. There are, however, some differences which are explained in the following paragraphs.

First, no data are used from EMIR or the Securities Financing Transactions (SFT) database on derivatives and repos, respectively. There are two main reasons for this, one conceptual and the other practical. On the conceptual side, the methodologies in EMIR and SFT are rather different to those in the QSA, thus limiting the comparability of the data with those in this analysis. Besides, these activities have a strong cross-country component and getting the aggregates for Spanish

institutions is not straightforward, particularly for large banking groups operating in several euro area countries (one question, for instance, is whether or not the map should include derivatives reported by a subsidiary of a Spanish bank in another EU country). On these grounds, it has been decided to exclude them from the map of the Spanish financial system.

Second, given the ECB's monetary policy function for the euro area as a whole,[2] the central bank's full balance sheet is not included in the map of the Spanish financial system.[3] It would be technically possible, albeit not straightforward, to create a "central bank sector" for the Spanish financial system (probably comprising the Banco de España's balance sheet and the proportional share of the ECB's balance sheet). However, the central bank's balance sheet is not the focus of this article. Indeed, the central bank is only considered when looking at the main investors in government and corporate bond markets, where it has been playing a pivotal role since 2015. In this case, its government and corporate bond holdings are indirectly computed as the difference between the total holdings of monetary financial institutions, as reported to the ECB whom-to-whom accounts, and the holdings of banks and money market funds (MMFs).

Related to this, the computations of the main items on the banks' balance sheet have been slightly changed. Exposures between banks and the central bank in the form of deposits could not be adequately captured in whom-to-whom data, creating issues when computing the banking sector's balance sheet. Therefore, instead of using whom-to-whom data and then discounting the amounts attributed to the central bank and MMFs, data on Spanish deposit-taking financial corporations (link) have been used to compute the total amount of deposits in the balance sheet of the Spanish banking sector.[4] The underlying methodologies of these two datasets are broadly aligned, so this should not have substantially impacted the analysis.

Third, there is an important consideration to be made about the rest of the world sector. In the case of the Spanish economy, this sector comprises countries both within and outside the euro area. As a result, some of the computations used in Andersen and Sánchez Serrano (2024) had to be changed as they covered only exposures outside the euro area. This mainly affected the insurance corporation and pension fund sectors.

In relation to the previous point, data for the International Investment Position (IIP) of Spain (compiled by Eurostat) have been used to deepen the analysis of the rest of the world sector. The IIP offers a breakdown of assets and liabilities with the rest of the world by country that is not available in the QSA (which only contain an aggregate for the rest of the world). In general, the provisions of the European System of Accounts 2010 (ESA 2010), which serves as the

2 The euro area comprises 20 EU Member States: Austria, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain.

3 In a strict sense, then, the map is incomplete as it does not offer the financial flows and the balance sheet of the central bank.

4 Deposit-taking corporations (defined as financial institutions primarily engaged in financial intermediation and whose activities consist of receiving deposits and/or close substitutes and granting loans and/or investing in securities on their own account) are, with minor exceptions (such as e-money institutions), banks.

basis for the preparation of the QSA, and the 6th Edition of the Balance of Payments and IIP Manual (BPM6) should ensure comparability and consistency between the rest of the world sector in national accounts and in balance of payments statistics. While discrepancies are still possible, an analysis by Eurostat and the ECB shows that they tend to be minor (Eurostat, 2024).[5]

3 Balance sheet of the Spanish financial system's main sectors

The analysis starts with an overview of the balance sheet for the Spanish financial system's main sectors in 2024 Q2. The balance sheets of the general government sector, households and NFCs, which constitute the real economy, are not covered.

Banks had a total balance sheet of just over €3 trillion in 2024 Q2, with deposits and loans as their main liabilities and assets, respectively (Table 1). Deposits, including interbank deposits, accounted for more than 70% of the balance sheet, while bonds (10%) and listed shares (6%) played a more limited role. On the asset side of the balance sheet, loans account for almost half of the assets, followed by interbank deposits (20%). Corporate and government bonds together represent more than 15% of their assets, with investment fund shares and MMF shares playing a marginal role (less than 1%).

Other financial institutions are the second largest financial sector in Spain, with a total balance sheet of €635 billion in 2024 Q2. As Table 2 shows, unlisted shares are the main item on both sides of the balance sheet, related to their ties with NFCs through captive financial institutions and as holding entities. Other financial institutions also include securitisation vehicles, meaning they have strong linkages with banks, evident in the amount of deposits and corporate bonds on the balance sheet.

Turning to investment funds (Table 3), more than 60% of investments are in corporate bonds (€253 billion), with lower investments in listed shares (€65 billion), government bonds (€40 billion) and real estate (€1 billion). The balance sheet structure differs from that for the euro area, particularly in the sizeable position in corporate bonds.

Insurance corporations and pension funds have a similar balance sheet structure, with substantial technical provisions as the largest liability and government and corporate bonds as the main assets (Table 4 and Table 5). Pension funds have around 30% of their assets in the form of investment fund shares (mainly equity investment funds). However, investment fund shares make up a low proportion of Spanish insurance corporations' balance sheet, in contrast to the situation for the euro area as a whole, as documented in Andersen and Sánchez Serrano (2024). The main assets of Spanish insurance corporations are corporate and government bonds, each representing more than 30% of the total balance sheet.

5 For further details, see Sánchez Serrano (2025).

Table 1
Aggregated balance sheet of Spanish banks, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Cash	6,782		0.22	
Corporate bonds	262,548	319,507	8.70	10.59
Government bonds	223,641		7.41	
Listed shares	54,321	179,334	1.80	5.94
Unlisted shares	222,438		7.37	
MMF shares	13,096		0.43	
Investment fund shares	2,288		0.08	
Loans	1,400,856		46.43	
Deposits	646,681	2,172,209	21.43	71.99
Derivatives	112,340	106,921	3.72	3.54
Other	72,228	239,248	2.39	7.93
Total assets	3,017,219	3,017,219	100.00	100.00

SOURCES: ECB (QSA and balance sheet items) and author's calculations.

Table 2
Aggregated balance sheet of other Spanish financial institutions, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Corporate bonds	2,943	138,806	0.46	21.87
Government bonds	4,621		0.73	
Listed shares	29,613	41,370	4.66	6.52
Unlisted shares	333,882	303,262	52.59	47.77
Investment fund shares	10,368		1.63	
Loans	68,660	51,768	10.82	8.15
Deposits	166,613		26.25	
Other	18,129	99,623	2.86	15.69
Total assets	634,829	634,829	100.00	100.00

SOURCES: ECB (QSA) and author's calculations.

Last but not least, the MMF sector is relatively small in the Spanish financial system, with a total balance sheet of around €18 billion (Table 6). Its main assets are corporate bonds (70% of assets), typically of short maturities, followed by loans (24% of assets).

In overall terms, the Spanish financial system is dominated by banks, which have a substantially larger balance sheet than other institutions. Compared with the euro area financial system, banks represent a larger share of the Spanish financial system, while other financial

Table 3
Aggregated balance sheet of Spanish investment funds, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Corporate bonds	252,791		61.40	
Government bonds	39,536		9.60	
Listed shares	64,874		15.76	
Real estate	1,487		0.36	
Investment fund shares	12,994	408,106	3.16	99.13
Loans		1,247		0.30
Deposits	33,842		8.22	
Other	6,157	2,328	1.50	0.57
Total assets	411,681	411,681	100.00	100.00

SOURCES: ECB (QSA and investment fund statistics) and author's calculations.

Table 4
Aggregated balance sheet of Spanish insurance corporations, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Corporate bonds	109,312	976	31.74	0.28
Cash and deposits	12,954		3.76	
Government bonds	106,767		31.00	
Listed shares	9,443	380	2.74	0.11
Derivatives	5,511	14,807	1.60	4.30
Investment fund shares	36,627		10.64	
Loans		3,882		1.13
MMF shares	1,271		0.37	
Unlisted shares	12,987	48,668	3.77	14.13
Technical provisions		230,027		66.79
Other	49,527	45,659	14.38	13.26
Total assets	344,399	344,399	100.00	100.00

SOURCES: ECB (QSA and insurance corporation fund statistics) and author's calculations.

institutions, investment funds, insurance corporations and MMFs comprise a smaller share (Chart 1). In Spain, the non-bank financial sector accounts for 34% of the total financial system, whereas in the euro area it accounts for 58%. Much of this difference compared with the euro area aggregate owes to the smaller size of other financial institutions and of investment funds in Spain. While the lesser role of insurance corporations and pension funds may be linked to structural issues, investment funds, MMFs and other financial institutions tend to be concentrated in certain euro area countries, with residents in other jurisdictions readily accessing them.

Table 5
Aggregated balance sheet of Spanish pension funds, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Corporate bonds	34,505		20.63	
Cash	1,269		0.76	
Government bonds	27,424		16.39	
Listed shares	23,207		13.87	
Derivatives	183	113	0.11	0.07
Investment fund shares	48,071		28.74	
Net worth		726		0.43
MMF shares	957		0.57	
Deposits	7,735		4.62	
Technical provisions		165,854		99.15
Other	23,927	585	14.30	0.35
Total assets	167,278	167,278	100.00	100.00

SOURCES: ECB (QSA and pension funds statistics) and author's calculations.

Table 6
Aggregated balance sheet of Spanish money market funds, 2024 Q2

€m and %

	€m		% of total assets	
	Assets	Liabilities	Assets	Liabilities
Corporate bonds	12,800		69.32	
Cash	146		0.79	
Government bonds	1,125		6.09	
Loans	4,395		23.80	
MMF shares		17,105		92.63
Other		1,361		7.37
Total assets	18,466	18,466	100.00	100.00

SOURCES: ECB (QSA and money market fund statistics) and author's calculations.

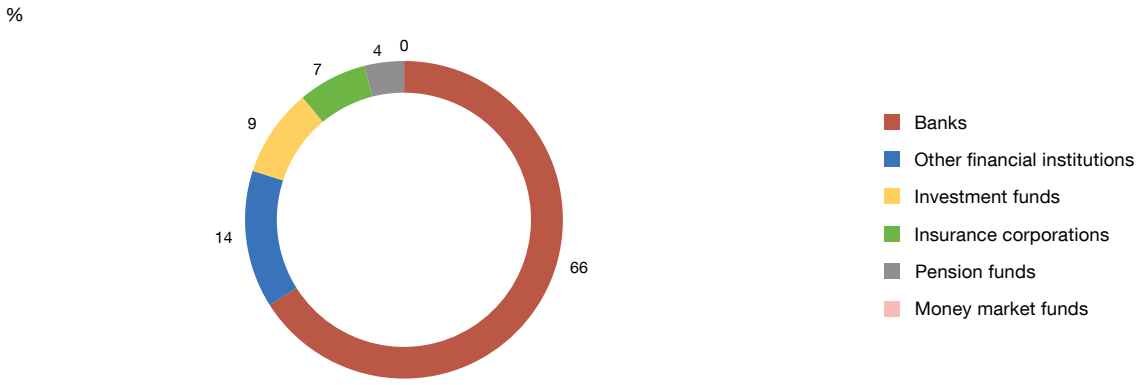
4 The Spanish financial system and the real economy

To examine how the financial sector interacts with the real economy, one must look first at the interconnections between the different sectors in the Spanish economy in 2024 Q2.

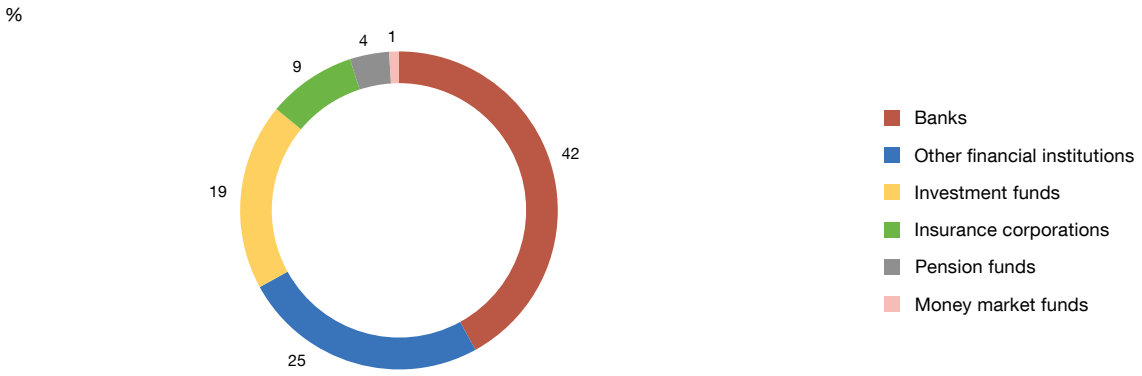
A map of the Spanish economy is shown in Figure 1. To avoid cluttering the figure, only flows between two sectors above €25 billion are represented (with the sole exception of banks' holdings of MMF shares). The listed shares, corporate bond and government bond markets are shown separately in green boxes, as they typically do not entail bilateral contacts between sectors, instead being organised markets where sellers and buyers meet. Further details

Chart 1
Sectoral composition of the financial system in Spain and in the euro area

1.a Spain, 2024 Q2



1.b Euro area, 2023 Q2



SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics), Andersen and Sánchez Serrano (2024) and author's calculations.

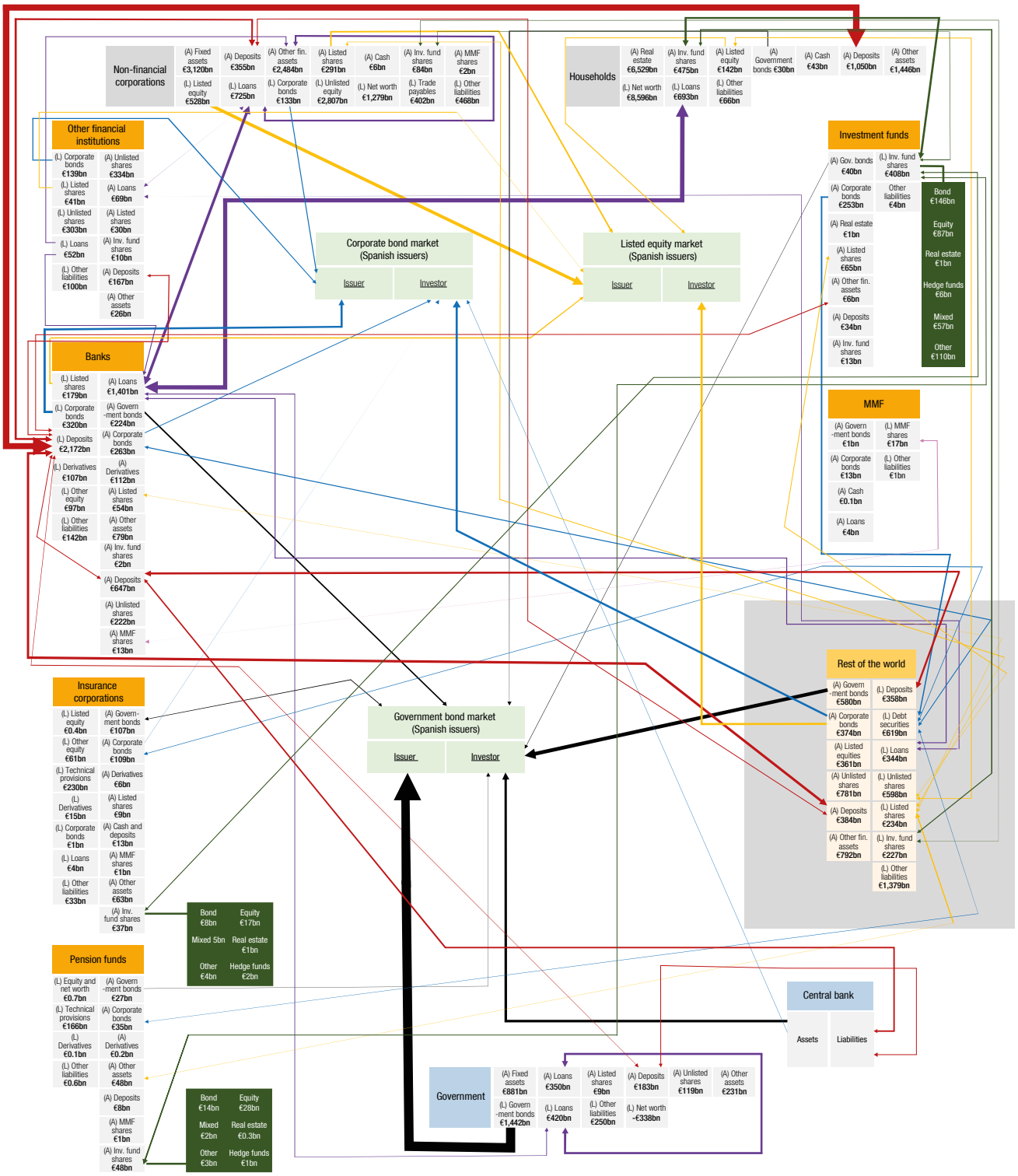
about investors and issuers in these markets are provided later in the article. Finally, a generic sector for the central bank is included to reflect Spanish sectors' exposures to it (in the form of central bank reserves for banks and as deposits for the general government sector) as well as its holdings of Spanish corporate and government debt.

As can be seen, the Spanish system is dominated by a handful of interconnection channels between banks, households and NFCs through loans and deposits. Banks are obviously at the core of the system through bank deposits, which link them to the other sectors in the economy. The provision of credit to households and NFCs is basically undertaken by banks, with credit provided by other financial institutions amounting to just €35 billion (compared with €1,134 billion provided by banks). Aside from equity, bank loans are the main funding source for NFCs, tripling the amount of corporate bonds issued. Loans within the NFC sector are also large, at circa €250 billion.

While interconnections with the rest of the world are (individually) not sizeable, they cover a wide range of financial assets and liabilities. For instance, the rest of the world is the main

Figure 1

A map of the Spanish financial system



SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and author's calculations.
NOTES: Only flows above €25bn are shown. The width of the arrows is proportional to the amount of the flow.

Table 7
Twenty largest financial assets in the Spanish economy by holding or issuing sector

€bn

Financial instrument	Holding / Issuing sector	Amount, 2024 Q2
Unlisted shares	Issued by non-financial corporations	2,807
Deposits	Issued by banks	2,172
Debt securities	Issued by government	1,442
Loans	Granted by banks	1,414
Debt securities	Issued by the rest of the world and held by Spanish residents	619
Unlisted shares	Issued by the rest of the world and held by Spanish residents	598
Listed shares	Issued by non-financial corporations	528
Loans	Granted by the government (incl. intra-government loans)	420
Investment fund shares	Issued by investment funds	408
Trade payables	Issued by non-financial corporations	402
Deposits	Issued by the rest of the world	358
Loans	Granted by the rest of the world	344
Debt securities	Issued by banks	320
Unlisted shares	Issued by other financial institutions	303
Loans	Granted by non-financial corporations	249
Listed shares	Issued by the rest of the world and held by Spanish residents	234
Technical provisions	Issued by insurance corporations	230
Investment fund shares	Issued by the rest of the world and held by Spanish residents	227
Central bank reserves	Issued by the central bank (bank deposits at the central bank)	192
Listed shares	Issued by banks	179

SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and author's calculations.
NOTES: we exclude non-financial items, such as net worth or real estate assets, and residual categories, such as other assets and other liabilities.

investor in government bond, corporate bond and listed shares markets. At the same time, insurance corporations, pension funds, MMFs and other financial institutions tend to have limited interconnections with other sectors. Investment funds have large exposures with the rest of the world, signalling their role as a vehicle for Spanish residents' exposure to the rest of the world.

Banks' central position in the financial system is also evident when looking at the twenty largest financial assets by issuing sector (Table 7).

In the euro area, investment fund shares are the largest item in the financial system (Andersen and Sánchez Serrano, 2024), while in the case of Spain they stand in ninth position, behind bank loans and deposits. This hints at a certain dominance of the banking sector in Spain, contrasting with the more prominent role played by non-bank financial institutions in the euro area. Furthermore, Table 1 features no items from MMFs, while technical provisions of insurance corporations appear towards the bottom of the table. Technical provisions of pension funds would stand in twenty-first position. Unlisted shares issued by other financial institutions also appear towards the end of the table.

Second, the importance of the rest of the world is evidenced by Spanish residents' holdings of the sector's debt securities (fifth position), unlisted shares (sixth position), deposits (eleventh position), loans (twelfth position), listed shares (sixteenth position) and investment fund shares (eighteenth position). Some of these exposures may be towards non-bank financial institutions, e.g. holdings of investment fund shares and unlisted shares, which may be issued by other financial institutions in other EU Member States and owned by large Spanish NFCs.

Third, a comparison with the main euro area items, as detailed in Andersen and Sánchez Serrano (2024), primarily shows the lower weight of non-bank financial institutions in the Spanish economy, evident, for instance, through the position in investment fund shares or technical provisions of insurance corporations. It also reveals a greater role for listed shares issued by NFCs (approximately 75% of the value of government bonds in the euro area and around 35% in Spain) and central bank reserves.[6]

The connections between banks, households and NFCs are presented in Figure 2 (which is based on Mouakil, Heipertz, Stojanovic and Guinouard (2024), albeit only showing exposures above €15 billion between sectors in the real economy – households, NFCs and the general government sector – and banks, plus the central bank, in the form of deposits, loans, debt securities and listed shares).[7]

Starting with households, these provide more funds to banks (€1,085 billion) than they receive in the form of loans (€684 billion). For NFCs the opposite is true: loans (€450 billion) and debt securities (€30 billion) exceed deposits (€335 billion). Similarly, bank loans to the general government sector (€91 billion) and government bonds held by banks (€224 billion) more than offset government deposits with banks (€82 billion).

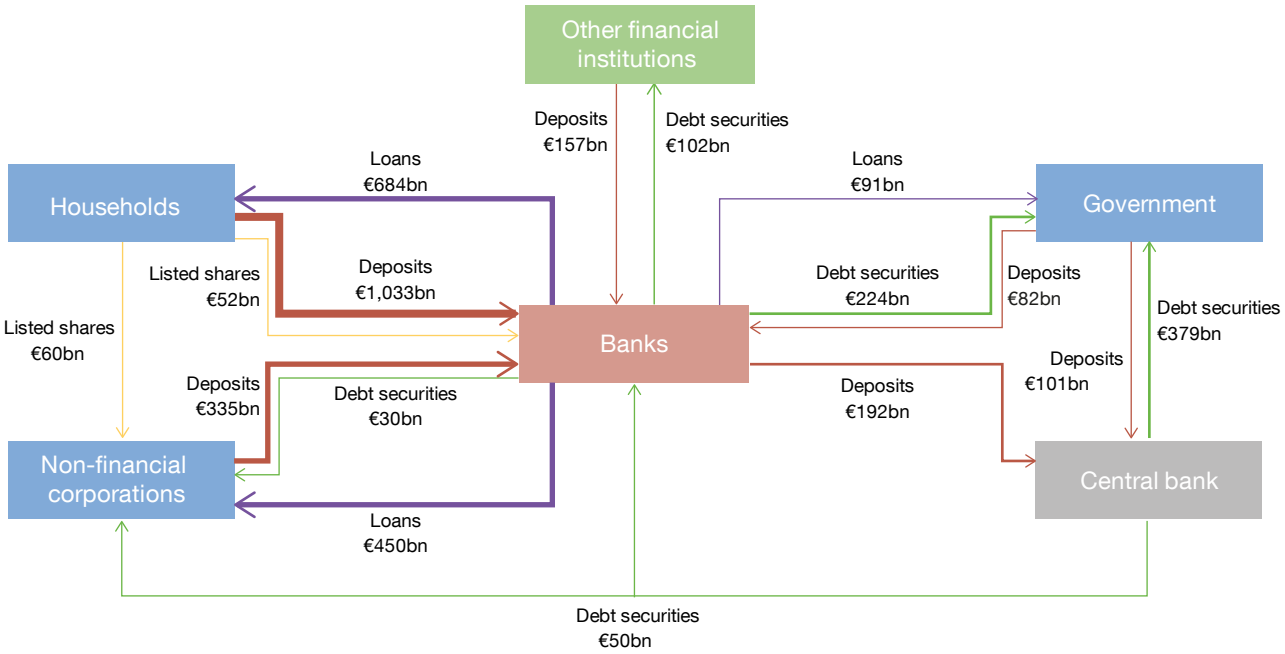
Banks can thus be seen as acting as intermediaries, whereby net savings by households (€401 billion) are channelled to NFCs (€145 billion) and to the government sector (€231 billion). Other financial institutions also have more deposits at banks (€157 billion) than debt securities (€102 billion), although in this case their exposures are mainly linked to securitisation vehicles. The central bank also contributes to funding the general government sector, NFCs and banks through its asset purchase programmes.

Furthermore, households also have large holdings of unlisted shares (€805 billion) and of investment fund shares (€475 billion). Investment funds offer Spanish residents exposure to financial assets in the rest of the world (Figure 3). This exposure can be direct, through the

6 In a similar vein, a comparison of Table 7 with the French economy, as in Mouakil, Heipertz, Stojanovic and Guinouard (2024), provides interesting insights. While the top financial instruments are broadly the same (unlisted shares issued by NFCs, bank deposits, bank loans and government debt), there are certain items that appear in the French financial system and which are not in the Spanish one, such as bank derivatives (assets and liabilities). Other items seem to have higher importance in France than in Spain, such as listed shares issued by NFCs or technical provisions of insurance corporations, and vice versa, such as debt securities issued by the rest of the world or trade payables of NFCs. Despite these differences, there are more similarities between Spain and France than between Spain and the euro area.

7 Unfortunately, the whom-to-whom decomposition of unlisted shares, which is also a relevant exposure channel for the real economy, is not available.

Figure 2
Financing flows in the real economy in 2024 Q2 (€bn)



SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and own calculations.

holdings of foreign investment funds (€227 billion), or through investment in the foreign assets of Spanish investment funds (€293 billion). Spanish residents' position in foreign investment funds represents around 55% of the investments in Spanish funds. Holdings of financial assets issued by Spanish residents and held by investment funds domiciled in Spain are relatively small, with the main item being government bonds (€40 billion).

As shown in Figure 3, €504 billion is channelled from Spanish economic sectors to the rest of the world (the green boxes in the figure) through investment funds. Similarly, although not shown in the calculations, the rest of the world also invests heavily in the Spanish economy. This is considered in further detail in the next section.

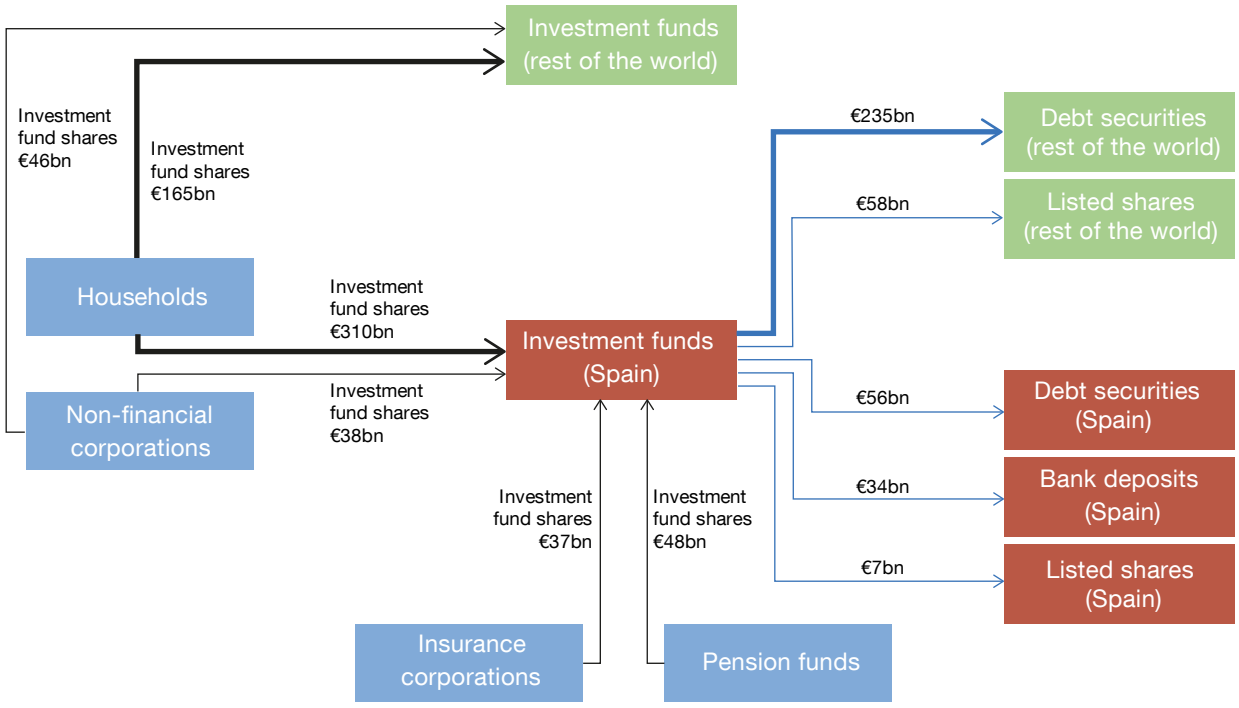
5 Issuers of and investors in corporate bonds, government bonds and listed shares

Let's now take a look at the main issuers and investors in three key financial markets: government bonds, listed shares and corporate bonds (Table 8).

As seen in the first two columns of Table 8 and the x-axis in Chart 2, the rest of the world was the main investor in government bond markets in 2024 Q2 (€580 billion), followed by the central bank (€379 billion), banks (€224 billion) and insurance corporations (€107 billion). In relative

Figure 3

Financing flows through investment funds in 2024 Q2 (€bn)



SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and author's calculations.

Table 8

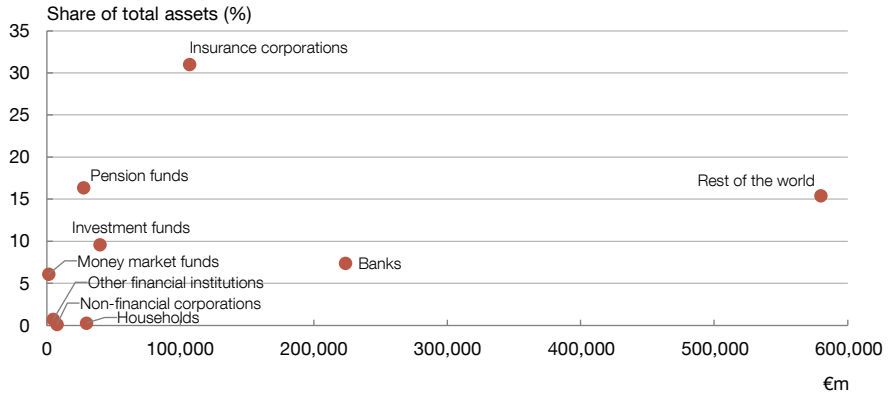
Main issuers and investors in main Spanish financial markets

€m

	Government bonds		Corporate bonds		Listed shares	
	Issuer	Investor	Issuer	Investor	Issuer	Investor
Government	1,441,769					
Investment funds		39,536		17,199		6,959
Insurance corporations		106,767	976	19,817	380	2,502
Other financial institutions		4,621	138,806	1,810	41,370	14,933
Banks		223,641	319,507	118,430	179,334	11,912
Rest of the world		579,890		373,612		361,243
Pension funds		27,424		1,760		2,158
Money market funds		1,125		608		8,780
Households		29,581				119,675
Central bank		378,784		50,072		
Non-financial corporations		7,410	133,038		528,196	222,043
Not allocated		42,990		9,019	925	
Total	1,441,769	1,441,769	592,327	592,327	750,205	750,205

SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and author's calculations.

Chart 2
Main investors in government bond markets



SOURCES: ECB (QSA, balance sheet items, investment fund statistics, insurance corporation statistics, pension fund statistics and money market fund statistics) and author's calculations.

terms, as a share of the total balance sheet of each sector, government bonds represented more than 30% of the assets of insurance corporations and more than 15% of the total assets of pension funds and of all Spanish financial assets held by the rest of the world (y-axis in Chart 2). Holdings of government bonds by the real economy (i.e. households and NFCs) are marginal in both absolute and relative terms.

The Spanish government bond market has changed substantially since the global financial crisis. First, during the period of quantitative easing (from 2015 until circa 2022) the central bank was the main investor in Spanish government bonds. Before that, there were concerns in the euro area about the sovereign-bank nexus, because banks had large holdings of domestic government bonds (see, among others, Altavilla, Pagano and Simonelli, 2017, and Dell'Ariccia et al., 2018). For example, in 2012 Q1 banks were the main investors in government bonds (€244 billion), followed by the rest of the world (€215 billion). These two sectors alone represented 60% of the total investments in government bonds.

Turning to corporate bond markets, the main issuing sectors are banks (€320 billion in June 2024), other financial institutions (€139 billion) and NFCs (€133 billion). In terms of market size, corporate bond markets are around one-third of the government bond market. The modest issuance of corporate bonds by NFCs is also notable, signalling the limited development of this market to fund the real economy (on the other hand, large multinationals may issue corporate bonds abroad, which are not shown in Table 8). On the investor side, the main investor is the rest of the world (€374 billion in June 2024, representing more than 60% of the total market), followed by banks (€118 billion) and the central bank (€50 billion). Other sectors hold less than €20 billion on their balance sheets. Only banks are active on both sides of the market, while NFCs and other financial institutions are mainly active on the issuing side. Lastly, although not directly observable in Table 8, investment funds and pension funds invest more in bonds issued abroad than in those issued in Spain, while banks and insurance corporations focus on bonds issued in Spain (including government bonds).

The third market in Table 8 is that of listed shares. NFCs are the largest issuers (€528 billion in June 2024), followed by banks (€179 billion) and other financial institutions (€41 billion). On the investor side, the rest of the world is the largest investor (€361 billion), followed by NFCs (€222 billion) and households (€120 billion). Interestingly, banks, investment funds, insurance corporations and pension funds tend to have higher holdings of listed shares issued abroad than of those issued in Spain.

In the analysis of these three markets, the rest of the world plays an important role as investor. At the same time, some sectors (particularly investment funds) tend to have higher holdings of such instruments issued by the rest of the world than of those issued by Spanish residents. Looking at the latter, insurance corporations are large investors only in government bonds, while banks are key investors in government and corporate bond markets. As seen above, these three markets can be an important channel of interconnection between banks and the real economy (i.e. NFCs and general government).

6 A closer look at the rest of the world

It is by now clear that the rest of the world has multiple interconnections with the Spanish financial system. It is the main investor in Spanish listed shares and in government and corporate bond markets, providing funding to the Spanish economy. At the same time, Spanish residents hold more than €3 trillion in financial assets outside Spain.

The rest of the world encompasses a broad spectrum of countries (other EU Member States, other advanced economies and emerging economies in Latin America, for example), with which Spain has wide-ranging links. To get further insights into the interactions of Spanish residents with the rest of the world, the analysis draws on IIP data for Spain, as compiled by Eurostat. While the data offer a broad country breakdown, they do so for the aggregate of the total economy, without allowing for sectoral breakdowns. Therefore the sectoral perspective is lost in this analysis, while the country perspective is gained. Moreover, the structure of the IIP data is slightly different to that of the QSA data used so far. Financial assets and liabilities are classified into three categories: (i) foreign direct investment (FDI), whereby a resident in one country obtains a lasting interest (implying a long-term relationship and significant influence) in an enterprise resident in another country; (ii) portfolio investment, which involves transactions with securities that are negotiable in organised markets; and (iii) other investment, which comprises mainly loans and deposits. A foreign subsidiary of an NFC is an example of FDI, while the purchase of shares in a secondary market in a third country is an example of portfolio investment.

At this stage, it is worth noting that the current data reported to Eurostat do not offer a complete country breakdown of financial assets and liabilities with the rest of the world. The data reported to Eurostat cover 38 countries and so, by definition, cannot reach 100% coverage of the rest of the world aggregate in the QSA. In some cases, such breakdown is simply not available, like for portfolio liabilities (which would require tracking non-residents' ownership of

Table 9
Comparison of the rest of the world aggregate, 2024 Q2

€bn

	Assets	Liabilities
Quarterly Sectoral Accounts	3,272	3,759
International Investment Position	2,852	3,672
Difference	420	87
Difference (% of QSA)	12.85	2.32

SOURCE: ECB (QSA), Eurostat (IIP) and author's calculations.

financial instruments issued by Spanish residents). At the other end of the spectrum, the current country breakdown covers more than 90% of the total exposure with the rest of the world for portfolio assets and FDI liabilities. For the other components, the country breakdown coverage ranges between 75% and 90% of the total exposure, except for deposits (both assets and liabilities) and other investments.

Table 9 shows the data reported for the rest of the world aggregate in June 2024 in the QSA and in the IIP. In overall terms, the divergences are not large, particularly for liabilities (which only include FDI and other investments).

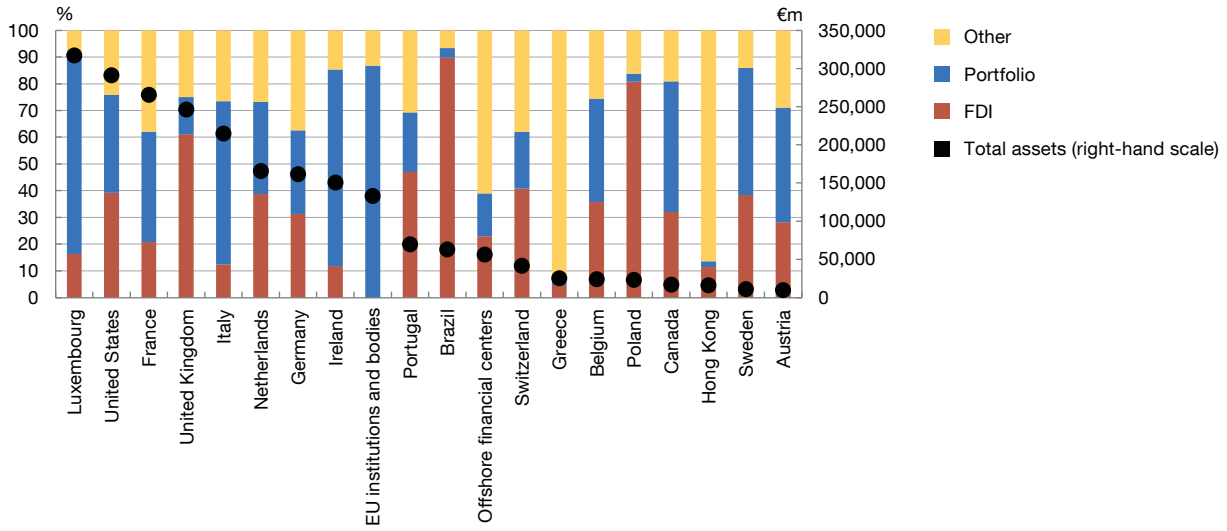
Turning to the financial assets of Spanish residents with the rest of the world, Chart 3 shows the top 20 countries at the end of June 2024 and the breakdown by portfolios. The main destinations for investments from Spain are Luxembourg, the United States, France, the United Kingdom and Italy, each of them receiving more than €200 billion. Many investment funds and captive financial institutions are based in Luxembourg, which explains why the country appears in first position in Chart 3. Among the 20 countries listed are 12 EU Member States (plus EU institutions and bodies) and just one emerging economy (Brazil).[8] In terms of portfolios, FDI dominates in only four countries: Brazil, Poland, the United Kingdom and, to a lesser extent, Portugal. Other investments, mainly comprising bank loans and deposits, are the primary type of investment by Spanish residents in offshore financial centres, Greece and Hong Kong. These exposures, particularly those through portfolio and other investments, could act as vehicles for the transmission of financial stress from these countries to Spain.

Regarding liabilities, as already noted, the Eurostat dataset lacks a country breakdown for portfolio investments, showing only FDI and other investment. Chart 4 ranks the top 20 countries and includes similar names to Chart 3; the Netherlands, France, the United Kingdom, Germany and Luxembourg represent the top 5, with more than half of liabilities held through FDI. These are the countries that invest most in Spain. While the top 20 is again dominated by other EU countries, two emerging economies, Brazil and China (plus Hong Kong), and Japan appear towards the end. Other investment tends to stand below 50% for most countries, with EU institutions and bodies, Hong Kong and Austria being the only exceptions.

8 Additionally, it can be assumed that exposures to Hong Kong ultimately go to China.

Chart 3

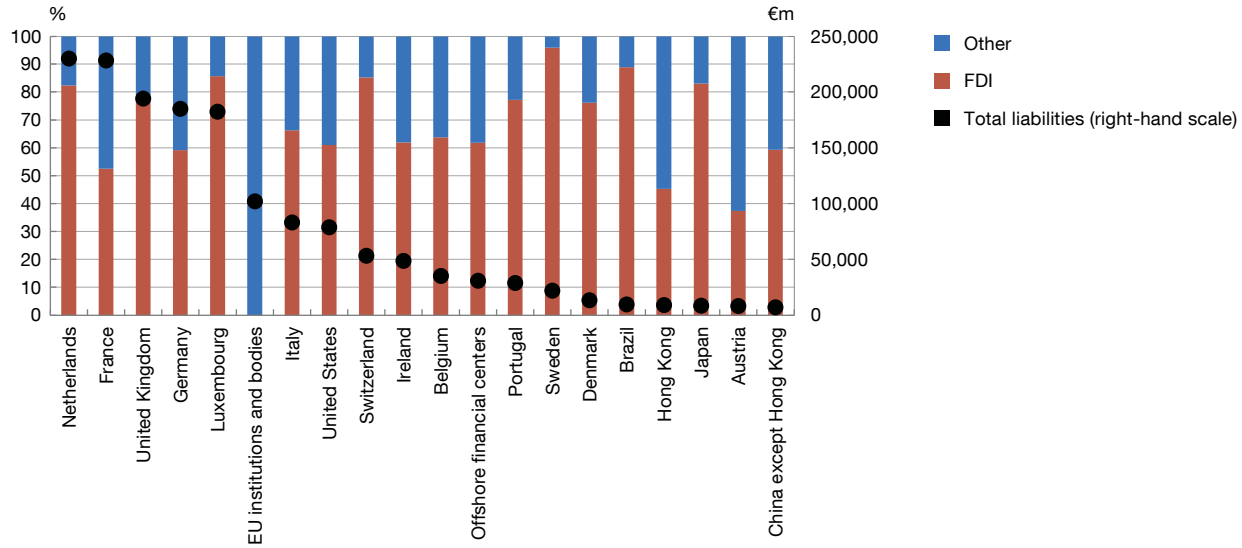
Top 20 countries: Financial assets held by Spanish residents



SOURCES: Eurostat (IIP) and author's calculations.

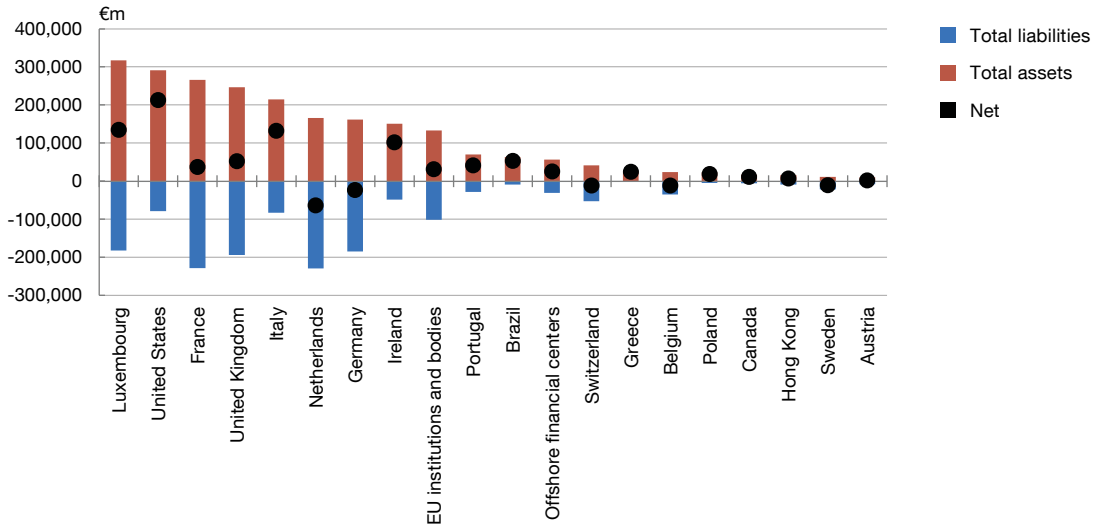
Chart 4

Top 20 countries: Financial liabilities held by Spanish residents



SOURCES: Eurostat (IIP) and author's calculations.

Chart 5
Top 20 countries: net financial assets held by Spanish residents



SOURCES: Eurostat (IIP) and author's calculations.
NOTE: the countries shown are the top twenty to which Spanish residents are most exposed, as in Chart 3.

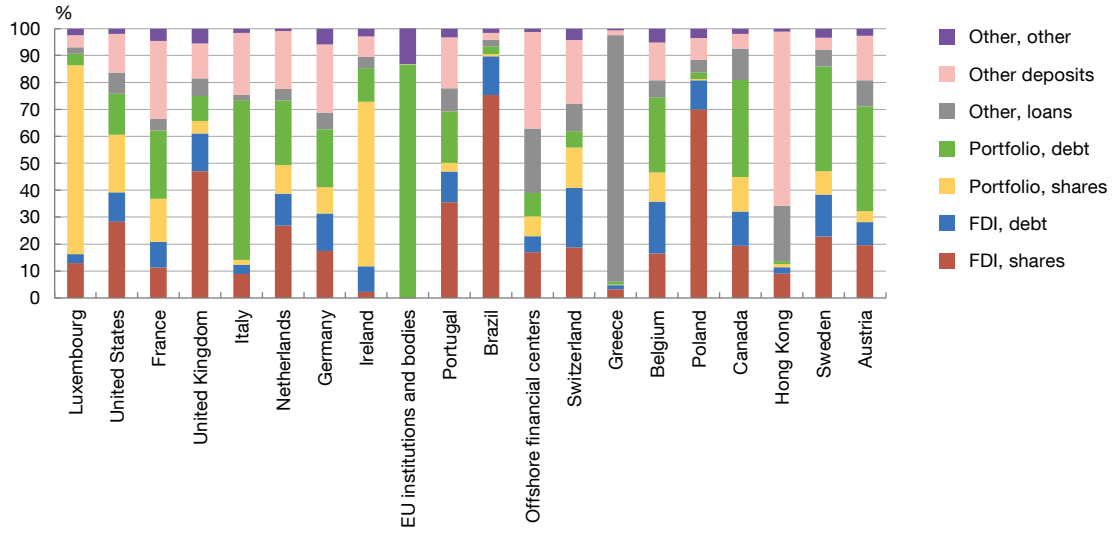
In net terms (assets minus liabilities), the United States, Luxembourg and Italy have the highest net assets (Chart 5). Countries with negative net assets (i.e. larger financial liabilities than assets) are the Netherlands, Germany, Switzerland, Belgium and Sweden, all of which provide net funding to Spanish residents.

Delving deeper into the types of assets vis-à-vis the main countries (Chart 6), Luxembourg and Ireland show large holdings of portfolio shares (related to investment funds), at €222 billion and €92 billion, respectively. Shares issued in Luxembourg are among the largest financial items in the Spanish financial system according to Table 7 above. FDI in the United Kingdom through shares is also significant, at €116 billion. Portfolio debt is also relatively sizeable in Italy, at €127 billion. Loans tend to be rather small, with the main exception of Greece. Deposits are large with Hong Kong, offshore financial centres,[9] Germany and France, pointing to potential financial stress contagion channels in the banking system.

We end this section with an analysis of developments in the main items since the data were first reported in 2013 Q1. Covering a period of 10 years, the data are deflated to remove the influence of prices and then an index is built, with the first observation indexed to 100. Chart 7

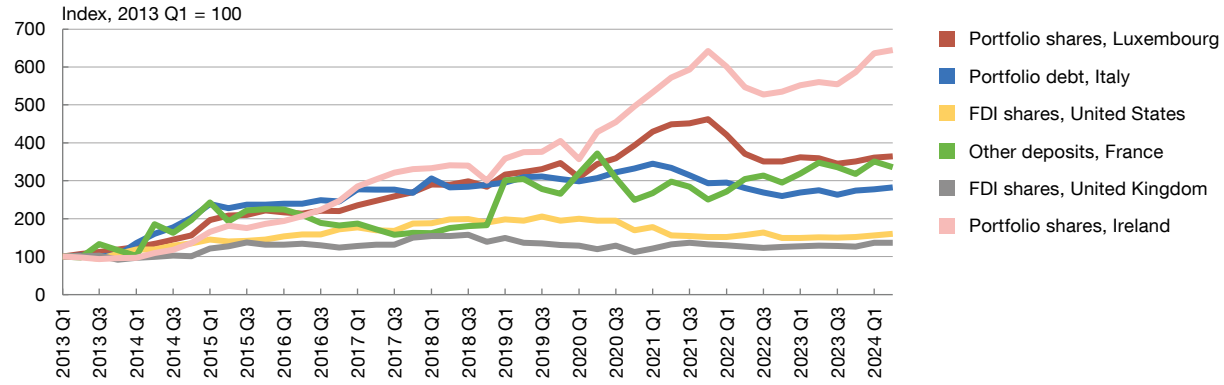
9 Offshore financial centres are countries or jurisdictions that provide financial services to non-residents on a scale that is incommensurate with the size and the financing of their domestic economies. According to Appendix 7 of the 2016 Balance of Payments Vademecum, offshore financial centres are Andorra, Antigua and Barbuda, Anguilla, Aruba, Barbados, Bahrain, Bermuda, Bahamas, Belize, Cook Islands, Curaçao, Cayman Islands, Dominica, Grenada, Guernsey, Gibraltar, Hong Kong, Isle of Man, Jersey, St Kitts and Nevis, Lebanon, Saint Lucia, Liechtenstein, Liberia, Marshall Islands, Montserrat, Mauritius, Nauru, Niue, Panama, Philippines, Seychelles, Singapore, Sint Maarten, Turks and Caicos Islands, Saint Vincent and the Grenadines, Virgin Islands (British), Virgin Islands (U.S.), Vanuatu and Samoa (link).

Chart 6
Breakdown of financial assets with top 20 countries



SOURCES: Eurostat (IIP) and author's calculations.

Chart 7
Developments in the main financial assets of the Spanish economy with the rest of the world



SOURCES: Eurostat (IIP) and author's calculations.

shows a sharp increase for portfolio investment shares based in Ireland, related to the growth of the investment fund sector in the euro area. Portfolio investment shares with Luxembourg have also seen a remarkable 3.5-fold increase. Deposits with France have followed a similar path, with large peaks around the outbreak of the COVID-19 pandemic. Conversely, FDI shares in the United Kingdom and the United States have not changed substantially over the period. Lastly, the increase in Italian portfolio debt mainly took place between 2013 and 2015, maintaining a slight upward trend until 2021 and decreasing thereafter.

The analysis above points to the potential to use IIP data to better understand Spain's exposure to other countries through financial instrument holdings. Although there are gaps in the country breakdown and differences with the data reported in QSA, such information can be relevant for macroprudential analyses as it may signal potential channels of contagion from the rest of the world.

7 Conclusions

Following the methodology in Andersen and Sánchez Serrano (2024), QSA data have been used to draw a map of the Spanish financial system, showing cross-sectoral linkages through financial instruments.

As at June 2024, banks still play a pivotal role in the Spanish economy, channelling savings from households into loans to the real economy. The non-bank financial sector (including investment funds, MMFs, other financial institutions, pension funds and insurance corporations) appears less important in Spain than in the euro area aggregate. However, it is also worth noting that cross-border flows between Spanish residents and foreign non-bank financial institutions exceed those with foreign banks.

The analysis also finds that the rest of the world plays a significant role in the Spanish economy, be it as investor in financial markets (indeed, it is the main investor in corporate and government bond markets and in listed shares) or as a channel for the investment of savings, mainly through investment fund shares. Looking at the IIP data, such investment fund shares predominantly account for Spanish residents' exposures to Luxembourg and Ireland. Exposures to and from the rest of the world could act as a transmission channel of financial stress to the Spanish financial system and economy.

Undertaking this type of analysis is useful for understanding potential contagion channels for stress, whether originating inside the country or coming from elsewhere through exposures with the rest of the world. Desktop exercises could even be conducted to simulate the impact of certain shocks on the national economy. The methodology used here relies on datasets of the highest quality and should enable comparisons across countries. These are important endeavours that would have a large positive impact on the current monitoring of financial stability in the EU (see also Rehn, Cecchetti, de Guindos and Hernández de Cos, 2024).

Finally, there is one dimension of the map that has not been exploited in this article. In addition to examining the exposures across sectors at a certain point in time (2024 Q2), we might also have looked at developments in these exposures over time. In theory, one could examine changes in the map during, for example, the build-up to the global financial crisis or over the course of the sovereign debt crisis. This constitutes a relevant avenue of analysis for macroprudential policy purposes, as it may offer insights into how exposures in the financial system evolve over time, during both normal and stressed times. This is an avenue of research that merits attention in the future.

REFERENCES

Acharya, Viral, Nicolla Cetorelli and Bruce Tuckman. (2024). "Where do banks end and NBFIs begin?". NBER Working Paper Series No 32316. https://www.nber.org/system/files/working_papers/w32316/w32316.pdf

Altavilla, Carlo, Marco Pagano, and Saverio Simonelli. (2017). "Bank exposures and sovereign stress transmission". *Review of Finance,* 21, 6, pp. 2103–2139. https://doi.org/10.1093/rof/rfx038

Andersen, Isabel, and Antonio Sánchez Serrano. (2024). "A map of the euro area financial system". ESRB Occasional Paper Series, No 26. https://doi.org/10.2849/608785

Burrows, Oliver, Fergus Cummings and Katie Low. (2015). "Mapping the UK financial system". Bank of England *Quarterly Bulletin* 2015 Q2. https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2015/mapping-the-uk-financial-system.pdf

Castrén, Olli, and Ilja Kristian Kavonius. (2009). "Balance sheet interlinkages and macro-financial risk analysis in the euro area. ECB Working Paper Series, No 1124. https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1124.pdf

Dell'Ariccia, Giovanni, Caio Ferreira, Nigel Jenkinson, Luc Laeven, Alberto Martin, Camelia Minoiu and Alexander Popov. (2018). "Managing the sovereign-bank nexus". ECB Working Paper Series, No 2177. https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2177.en.pdf

Eurostat. (2024). Consistency between national accounts and balance of payments statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Consistency_between_national_accounts_and_balance_of_payments_statistics#Inconsistencies_in_the_financial_account

Mouakil, Tarik, Jonas Heipertz, Edith Stojanovic, and François Guinouard. (2024). "Une vue d'ensemble du système financier français : évolution dans le temps, cartographie comptable et interconnexions avec le reste du monde". Banque de France Rapport sur la stabilité financière, Décembre. https://www.banque-france.fr/system/files/2025-01/Chap2_RSF_Decembre_2024.pdf

Pozsar, Zoltan, Tobias Adrian, Adam Ashcroft, and Hayley Boesky. (2010). "Shadow banking". Federal Reserve Bank of New York Staff Report, No 458. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr458.pdf

Rehn, Olli, Stephen Cecchetti, Luis de Guindos and Pablo Hernández de Cos. (2024). Building on a decade of success. Report by the High-Level Group on the ESRB Review, European Systemic Risk Board, December. https://www.esrb.europa.eu/pub/pdf/reports/esrb.buildingonadecadeofsuccess202412~f42335eb3a.en.pdf

Saldias, Martín (2025). "Sectoral interconnectedness in Portugal and the role of NBFI". Banco de Portugal Occasional Paper Series, forthcoming.

Sánchez Serrano, Antonio. (2025). "Three extensions of the map of the euro area financial system". ESRB Occasional Paper, forthcoming.

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