Staff memo

Mapping Swedish cross-border links to the investment fund sector

Samantha Myers

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Contents

Summary

Author: Samantha Myers, working at the Financial Stability Department of the Riksbank.[1]

The Swedish investment fund sector has almost quadrupled in size since 2012. This industry does not operate in isolation, but rather forms a small piece of a highly interconnected global market. These interconnections provide significant benefits to the economy in the form of risk diversification, but also have the potential to operate as channels for systemic risk.

This paper maps for Sweden the subset of cross border interlinkages that are created by cross-border debt and equity securities investment connected to investment funds. The links are defined with respect to the domicile of the underlying fund, rather than the managers or the investor base. While largely descriptive, it also includes a discussion of the size of the channels and the ways in which risks may be transferred through these channels.

Four types of investment links have been identified.

- The smallest is foreign investors' investment in Swedish-domiciled funds, which represents a tiny fraction of total investment in these funds, and is unlikely to be significant from a systemic risk perspective.

- Second is the investment of Swedish-domiciled funds in assets issued abroad, which is significantly larger. These investments appear to be somewhat biased toward Europe and the US relative to overall market size, with notable exposures to the banking sector, healthcare, and US tech, as well as significant investment in funds of funds. While most funds are either focussed on Sweden or on markets abroad, there is a significant subset of funds invested both in Sweden and abroad that may have some potential to transmit risks from abroad to Swedish markets.

- The third set of cross border investment links relates to Swedish investors' investments in funds domiciled abroad, amounting to over one quarter of total investment in the fund sector. Around one third of assets (primarily owned by social security, pension funds and insurance corporations) are to 'private capital' funds, generally domiciled outside the EU. The remainder are primarily invested in public markets, of which the majority are located in Luxembourg. Despite being domiciled abroad a substantial proportion are primarily owned by Swedish investors, and have similar investment profiles to Swedish domiciled funds. Many also have Swedish fund managers, including Swedish banks.

- Finally, estimates suggest that foreign investment funds are likely to be the largest foreign holders of Swedish securities. Of the share of these securities that can be identified the majority are held by funds domiciled in the US and Europe. The

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largest industry to which funds are exposed is the banking sector, and this is also the only sector where the securities are predominately in the form of debt rather than equity. Many of the foreign funds with Swedish short-term bank debt exposures are money market funds.

The work is relatively narrow in scope, partly due to data gaps. Future work could consider the interactions between fund level vulnerabilities and these linkages, as well as linkages arising from other sources such as use of derivatives.

1 Introduction

Investment funds are the second-largest non-bank sector in Sweden, with a total of SEK 6.5 trillion of financial assets as at 2023Q1 (second only to pension funds with total financial assets of SEK 7 trillion). The sector has experienced rapid growth both in Sweden and abroad over the past decade, with total assets of the Swedish sector now over 3.8 times their value in 2012. Investment funds are used to pool capital from investors (including households, pension funds, insurance corporations, social security, and other economic actors) to purchase securities and real property for the purposes of generating a return. As compared to direct investments, funds are sometimes used to reduce transaction and monitoring costs, as well as to obtain access to markets.

The Swedish investment fund industry does not operate in isolation. The global investment fund sector is highly interconnected, due to cross border investment, capital raising and counterparty exposures. For the most part, these links are likely to be positive, as they allow for and encourage diversification of asset portfolios and funding sources.[2] When managed well, they therefore have the potential to improve resilience of both the investment funds sector and markets more broadly to domestic shocks.

However, in the event of an international shock, cross border links can interact with fund vulnerabilities such as leverage and liquidity mismatch to propagate the shock to other parts of the global financial system. In the worst case, they can facilitate the transfer of risk between markets, particularly if they fall into gaps in regulatory oversight. The potential risks have recently come under more scrutiny, due to instances of market dislocation. For example, in 2022, there was dislocation in UK Gilt (government bond) markets, as the result of actions taken by foreign-domiciled liability-driven investment funds that were themselves primarily held by UK pension funds.[3]

The Riksbank has a role in identifying risks of severe disruptions or significant efficiency losses, as well as generally assessing whether the financial system is stable and efficient. Globally, investment funds as a sector have several potential sources of vulnerability that can result in systemic risk, primarily due to use of leverage (both on-balance sheet loans and off-balance sheet derivative exposures) and liquidity mismatch (the ability of investors to withdraw their capital more quickly than funds can raise the cash to meet the demands).

The degree to which these vulnerabilities are of concern varies, and not all funds exhibit all risks. However, cross border links have the potential to channel these vulnerabilities from one part of the global financial system to another. Cross border interconnectedness can also make it difficult to identify potential areas of vulnerability, as reliable and frequent data can be difficult to obtain.

The goal of this paper is to map for Sweden the subset of cross border interlinkages that are created by cross border on balance-sheet investments in the fund sector. It

[2] For a discussion of funding diversification see Black and Munro, 2010.

[3] Andersson (2023).

will also include a discussion of the size of the channels and the ways in which risks can potentially be transferred through these channels. These links are defined with respect to the domicile of the underlying fund, rather than the managers or the investor base.

The paper is limited in its scope. The primary focus is on investment funds' portfolios of listed debt and equity securities (hereafter referred to as securities) as this data has the greatest availability. These types of securities include, for example, bonds, commercial paper and listed shares. However, this constitutes only a subset of the interconnections that exist. The analysis does not cover interconnections related to borrowings, managerial structures, or use of derivatives. Further, investment in unlisted equities, loans, and direct purchase of real assets (including real estate) is difficult to trace, although where available the information is included here. However, it should be noted that listed debt and equities securities investment is by far the dominant asset class of Swedish-domiciled investment funds, representing around 97 per cent of the assets under management of the industry.[4] It is also an area where market dislocation can occur quickly, sometimes in a matter of days as was seen in Swedish corporate bond markets and EU money markets in 2020.[5][6]

Four types of investment links have been identified, although there is inevitably some overlap in the results.

- Swedish-domiciled funds may have investment links abroad, due to foreign investment in their units;
- Swedish-domiciled funds may invest in foreign assets;
- Swedish investors can also, in many cases, invest in funds domiciled abroad;
- Finally, funds globally can invest in Swedish asset markets to varying degrees.

The paper will be structured as follows. Section 2 will provide a discussion of the structure of the global (and particularly EU) and Swedish investment funds industry, with a focus on the governing regulation and the way funds can generate systemic risk. Section 3 will outline the cross border links to the Swedish investment funds sector. Section 4 will look at Swedish investor's investments in funds domiciled abroad. Section 5 will look at the investments from funds domiciled abroad in Swedish securities markets.

[4] Based on Statistics Sweden data. Quoted shares, interest bearing securities and domestic and foreign mutual fund ownership comprise 97 per cent of the total assets of the industry at market value.

[5] Wollert (2020).

[6] Bouveret, Martin, and McCabe (2022).

2 Swedish investment funds in a global context

The global open-ended regulated funds industry had over USD 68 trillion in net assets at the end of 2023Q1.[7] This is around 2.5 times the net assets of the sector at the end of 2008Q1, indicating that the significant growth in this sector has been widespread.

Open-ended funds are funds that allow for redemptions and subscriptions through the life of the fund, while closed-ended funds generally do not. Regulated funds are subject to supervision by an authority, which is also not the case for all funds (see the fact box for more details). Given that closed-ended funds and unregulated funds are not covered in the available data, the sector is even larger than the aggregate figures imply.[8]

Within the global aggregates, fund size and industry structure appears to vary across jurisdictions (see Figure 1). For example, US funds are individually significantly larger on average (by net assets) than European Economic Area (EEA) funds. This can be inferred from the data, since although the EEA is the largest jurisdiction of domicile by number of open-ended funds (almost 54,000 funds) its fund industry has only around half the value of the net assets of the US fund sector.

Outside Europe, the global open-ended regulated funds industry does not appear to be concentrated in cross-border financial centres.[9] In contrast, the EEA investment fund industry is heavily consolidated in a small number of Member States (see Figure 2), including two financial hubs (Luxembourg and Ireland). In addition to Luxembourg and Ireland, the primary domiciles for investment funds are Germany and France.

Within Europe, Sweden represents the sixth largest domicile for funds in Europe by total net assets. This makes the sector relatively large compared to other EU countries, taking into account GDP and population. The size partly reflects significant investment from the household sector, as Sweden has the largest household sector investment in domestic domiciled investment funds in Europe relative to GDP (based on data from Eurostat). However, despite being the sixth largest, the Swedish investment funds sector is nonetheless significantly smaller in size than sectors in the largest domiciles. For comparison, total net assets of Swedish funds are less than 10 per cent of the total net assets of funds domiciled in Luxembourg.

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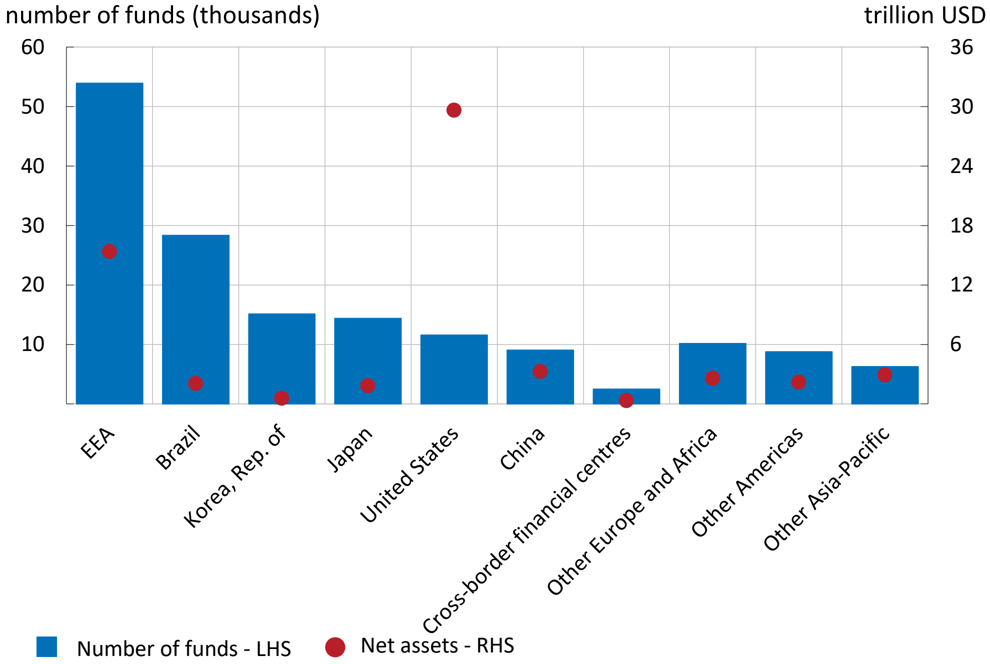
[7] According to the International Investment Funds Association. Includes funds-of funds. Total excluding funds of funds is USD 63 trillion.

[8] Due to the varying degrees of regulation and data availability, it is not possible to get a complete global picture of the funds industry. In particular, unregulated funds marketed to professional investors (including, for example, many private equity funds) are difficult to trace.

[9] Cross-border financial centres defined here should be distinguished from offshore financial centres used in the remainder of the paper, although there is significant overlap. Cross-border financial centres refers generally to jurisdictions where financial activities are concentrated and primarily service investors that are not from their domestic markets, and these are identified using the BIS methodology (see Pogliani, von Peter and Wooldridge (2022) for a classification). Offshore financial centres also refer to jurisdictions where the primary market is not domestically oriented, but also that are not located in the European Union and where tax treatment of financial services is generally favourable (the Cayman Islands being the largest of these jurisdictions for example).

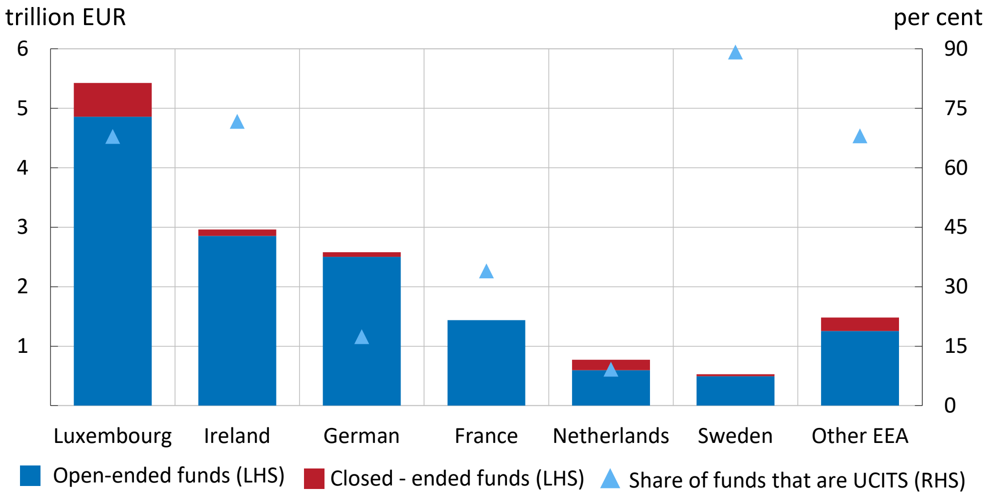
Figure 1. Number and net assets of global open ended funds



Note. International investment funds association data is for 2022Q3. Morningstar data has been used to calculate the approximate number of funds for Australia, and net assets and number of funds for cross border financial centres. Morningstar data is at February 2023. Open-end funds include mutual funds, funds-of-funds, and institutional funds. Exchange-traded funds are included for some countries but not all. BIS classification has been used to identify cross border financial centres, although EEA members have been excluded.

Sources: International investment funds association, Morningstar, author calculations, Pogliani, von Peter and Wooldridge (2022)

Figure 2. Net assets and type of European funds



Note. Values for Euro area countries are based on ECB Statistics Data Warehouse data. Values for Sweden are estimated from a combination of Statistics Sweden and International investment funds association data.

Source: ECB Statistics Data Warehouse, International investment funds association, Statistics Sweden, author calculations

Certain types of funds in the EEA are able to be 'passported', allowing them to be sold across multiple jurisdictions (see the Fact Box below). These passporting arrangements are likely to increase the degree of cross border linkages between funds within the EU relative to those outside, as they increase the ease with which a given fund can be marketed across EU borders. The level of integration in the EU funds industry is also increasing over time. The Capital Markets Union initiative seeks to remove structural and legal barriers to increased cross-border capital flows, including to investment fund activities. For example, recent work in this area has sought to further facilitate cross-border marketing for investment funds.[10]

Funds marketed in Sweden (Swedish domiciled or foreign) fall into one of two categories defined under EU Directives (see the Fact Box below): undertakings for collective investments in transferable securities (UCITS) or alternative investment funds (AIFs).[11] The substantial majority of Swedish-domiciled funds by value are covered by UCITS regulation (in the US these are often referred to as 'mutual funds'). UCITS are subject to relatively strict rules regarding, for example, use of leverage and the frequency with which investors can transact. The remainder of the funds in Sweden are AIFs which in Europe generally have less rigid rules. However, in Sweden a proportion of AIFs are categorised as 'special funds', which are subject to many rules that are similar to UCITS, although allow additional investment in securities that UCITS will not.[12]

While UCITS are regulated in their country of domicile, AIFs are indirectly regulated via their fund managers. This makes the impact of domicile more difficult to assess, as a subset of funds may not be regulated in the country in which they are domiciled.[13] For the purposes of this paper (as well as simplicity of calculation and matching with financial accounts) domicile is taken to be country of domicile of the fund, rather than the manager. This reflects the fact that the primary concern of this paper is related to cross border investment patterns and the associated financial stability transmission risks, rather than the structural vulnerabilities that may be inherent in funds (and which may be influenced by the manager).

[10] See, for example, Regulation (EU) 2019/1156.

[11] Note this applies to investment funds only. Pension funds are subject to separate regulation. In Sweden, state-owned pension (AP) funds are generally categorised and regulated as social security vehicles, not as pension funds or investment funds (although in some cases they may themselves own units in investment funds). The exception is the seventh AP fund, which is defined under legislation as a UCITS and is included as an investment fund unless otherwise noted.

[12] See Chapter 5, section 11, of the Alternative Investment Fund Managers Act (2013:561) for the rules applying to special funds.

[13] Investment funds may choose domiciles based on a number of factors, including other regulatory requirements related to the fund structure and tax optimisation.

FACT BOX – EU Investment fund regulation

Funds are regulated differently in different jurisdictions. In general, funds can be either open- or closed-ended, either marketed to retail or professional investors, and either regulated (i.e. subject to supervisory oversight) or unregulated. The exact regulatory structure varies significantly across countries, as do the reporting requirements. In general, global regulatory frameworks to date have been focussed on protecting investors, rather than on minimising systemic risk.

In the EEA, two Directives cover (separate) groups of funds, although additional regulations (both EEA and domestic) can also apply depending on the fund type. The first is the UCITS directive, under which UCITS are subject to relatively strict requirements on, for example, redemption terms and asset liquidity. The second applies to alternative investment funds (AIFs). UCITS are regulated at the fund level, and UCITS managers at the manager level. AIFs, on the other hand, are regulated indirectly via their fund managers. In some jurisdictions, unregulated funds can also exist.[14]

UCITS must be open-ended, and are marketable to retail investors. AIFs can be either open-ended or closed-ended (subject to specific country regulations) and can only be marketed to professional investors unless they are authorised in a given jurisdiction to be marketed to retail investors. Swedish 'special funds' are AIFs that can be marketed to retail investors, but are subject to many additional regulatory requirements that are more similar to those which apply to UCITS.

UCITS can be 'passported' across EU Member States, meaning that once established in a Member State, a UCITS may (subject to notification) market units in other Member States. The UCITS is supervised in the home Member State of the fund, even if all investors and/or the fund manager are domiciled/supervised in a second Member State.

AIFs that are domiciled in the EEA (and managed by an EEA-domiciled manager) and marketed to professional investors can also be 'passported' to professional investors across Europe. AIFs marketed to retail investors (including special funds) do not automatically have access to the same rights, although many national regimes do allow for some degree of within-EEA passporting.[15] Sweden allows marketing of EEA-based retail funds that are the equivalent of special funds directly, but requires authorisation in Sweden for other types of retail funds.

Funds that are managed by non-EEA AIF managers or are domiciled outside the EEA, are not subject to the passporting regime.[16] These funds can only be marketed under the national private placement regime subject to individual Member State legislation). Nine countries (including Sweden) have non-EEA AIFs marketed within their State.[17]

[14] For example in Ireland and Luxembourg certain types of limited partnerships are unregulated.

[15] Danieli, Lorenzo; De Renzis, Tania and Salituro, Valeria (2019), "Retail AIFs – heterogeneity across the EU", *Report on trends, risks and vulnerabilities*, No. 1, ESMA.

[16] Non-EU domiciled "UCITS" (or mutual funds) are not regulated in the EU as UCITS, but as non-EU AIFs, and therefore also do not have access to passporting.

[17] ESMA (2022)

2.1 The investment fund industry and systemic risk

Investment funds globally have vulnerabilities arising from their use of financial (on balance sheet) and synthetic (off balance sheet) leverage. Both types of leverage make the fund vulnerable to unexpected demands for extra liquidity. For example, financial leverage can sometimes be 'called' by the lender if terms (such as collateral values) are breached, or can be subject to rollover risk. Synthetic leverage is usually in the form of derivative positions, which can lead to margin calls. UCITS (which are more common in Sweden) have more limited potential for vulnerabilities arising from their use of leverage than AIFs, due to regulatory restrictions on their leverage levels.

In addition, open-ended investment funds often have some degree of liquidity mismatch, especially when markets are stressed. Liquidity mismatch occurs when investors can redeem their units faster than investment funds can raise the capital (i.e. sell their assets) to pay them. This is because investment funds often maintain constant, very liquid redemption terms, but invest in assets that are not always equally liquid.[18] Liquidity mismatch can therefore also lead to runs: since investors know that the remaining portfolio after large-scale withdrawals is likely to be less liquid and lower valued, they have an incentive to try to exit first if they believe others will do so.

These vulnerabilities can lead to a situation where investment funds need to sell assets very quickly into illiquid markets to meet their liquidity demands. This can deplete market liquidity further and depress prices below fundamentals. This in turn can impact other funds and the decisions of their investors, resulting in spirals of decreasing market liquidity.

Market dislocation in turn has impacts for other parts of the financial system and real economy. Banks raise capital on markets, and lend against collateral at market values. Non-financial corporations rely on markets for raising capital. Pension funds and insurance corporations hold large portfolios of securities and are relied upon by both households and non-financial corporations for financial services.[19]

So how do cross border interconnections potentially impact this dynamic? There are several ways.

- Foreign investors in Swedish funds have the potential to withdraw due to problems at home, potentially increasing the liquidity demands on the fund.
- Foreign funds that invest in Swedish assets have unverifiable degrees of vulnerability and regulatory oversight, so it is difficult to estimate how they may be impacted by a shock and which assets they may need to sell.
- Foreign funds in which Swedish investors invest have the same potential, and may further channel any losses back to their Swedish investors (who in turn may

[18] In Europe, UCITS are required to offer redemptions at least twice a month, while AIFs often have more flexibility in setting redemption terms. In Sweden, regulation has historically been interpreted as requiring UCITS to offer redemptions at least once per week, while special funds are only required to offer redemptions a minimum of once per year (see Finansinspektionen 2021). Redemptions may be offered more frequently depending on the fund.

[19] These risks have drawn increasing attention over recent years from international authorities. See, for example, ECB (2022), ESRB (2023), FSB (2022), and IMF (2023).

have to rapidly sell other assets to rebalance their portfolios, meet liquidity demands, etc).
- Swedish funds' investments abroad are vulnerable to shocks in those markets, and losses there can result in redemptions by flighty investors or the need to rapidly sell Swedish assets to meet other liquidity needs.

In addition, there can be second and third round feedback effects, which have the potential to rapidly escalate the problems above beyond a single market or group of funds. Shocks can therefore propagate quickly, sometimes over a matter of days. It is therefore useful to understand ahead of time to the degree possible where there may be existing vulnerabilities or interconnections that can transfer risk.

The degree to which these interconnections have the ability to transfer systemic risk depends on the size of the channel and the types of exposure. The remainder of this paper analyses these variables for the Swedish case.

3 Cross border links to Swedish domiciled funds

Swedish funds have cross border links, both in terms of their investors and in terms of their asset holdings. These links serve important benefit in terms of diversification and risk sharing. Funds can act as a channel to bring foreign equity investment into the Swedish economy. In addition, by providing access to foreign markets, they can help Swedish economic participants to diversify their risk exposures.

Nevertheless, it is important to monitor these channels closely, as they also might have the capacity to generate systemic risk, as discussed in Section 2. Investors tend to exhibit home bias,[20] and may therefore be more likely to pull back in the event of a shock, either in Sweden or at home. If this has the potential to generate large outflows, it can act as a destabilising force to the investment fund industry.

On the asset side, large exposures to specific economies and specific sectors can act as a channel to 'import' shocks from those markets into the Swedish economy. In the event of a shock (for example due to credit requirements, margin calls, or investor withdrawals), funds may have difficulty selling foreign assets into temporarily dislocated markets to meet their liquidity needs. This dynamic can be exacerbated as investors tend to withdraw in the event of real or expected losses.[21]

Either of these two channels can therefore create potential flow-on effects to Swedish investors, or to Swedish markets if funds must sell Swedish assets to meet their liquidity needs.

3.1 Foreign unit holders of Swedish-domiciled funds

The Swedish investment funds industry is domestically oriented at present, with only 6 per cent of units in Swedish investment funds (by value) currently being held by investors outside Sweden (Figure 3). This is despite a steady rate of growth since 1998 in most fund types.[22]

Reflecting their relatively small proportion, the total size of these exposures was around SEK 400 billion in 2023Q2 (Figure 3). Equity funds represent the largest share of this figure, totalling SEK 256 billion. However, as equity funds are also the largest subset of Swedish funds in total, the foreign ownership share for this group is very close to the aggregate value.

In addition to the low total exposures, there is little to suggest that foreign unit holders have to date been substantially more 'flighty' than domestic holders. If foreign investors were more flighty, one should see volatility in both the proportion and value of funds held by foreign unit holders. That is, foreign investors should dis-invest faster

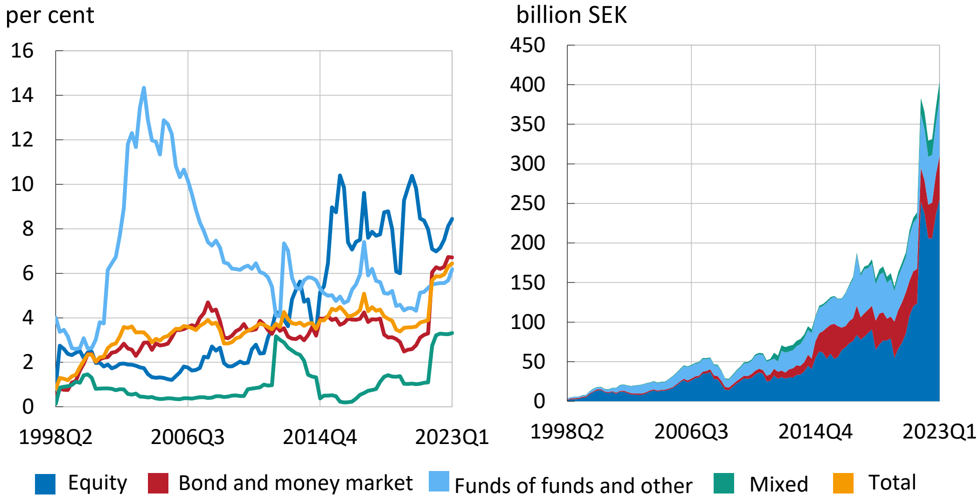
[20] French, and Porterba (1991) and others.

[21] Ippolito (1992) and others.

[22] With the exception of funds-of-funds, which have followed the opposite path, starting as predominately foreign-owned and becoming increasingly Swedish-owned over time.

than domestic investors when times are bad (decrease in both value and proportion) and invest faster than domestic investors when times are good (increase in both value and proportion). Although the proportion of bond fund holders who are foreign has been somewhat erratic since 2010, with the exception of a noticeable fall at the end of 2020 the total value of investments from abroad has increased at a fairly steady rate. On the other hand, the value of foreign equity investments has been a little more volatile, but the proportion has increased in a fairly steady manner.

Figure 3. Units of Swedish-domiciled funds held by foreign investors by fund type (per cent of total units and value in SEK)



Note. Last observation 2023Q1.

Source: Statistics Sweden

That said, the absence of a large global crisis over the previous decade means that foreign investor's resilience has not been recently tested against such large-scale shocks. During the global financial crisis foreign holders' share of the total decreased by over one quarter. However, this was from such a low base (both in terms of percentage and total capital) that it is difficult to extrapolate from to the current market.

Going forward, there are some signs that the growth in foreign investor's share may be accelerating, particularly after 2021. While to date risks from this channel appear to be quite small, this may change if growth continues.

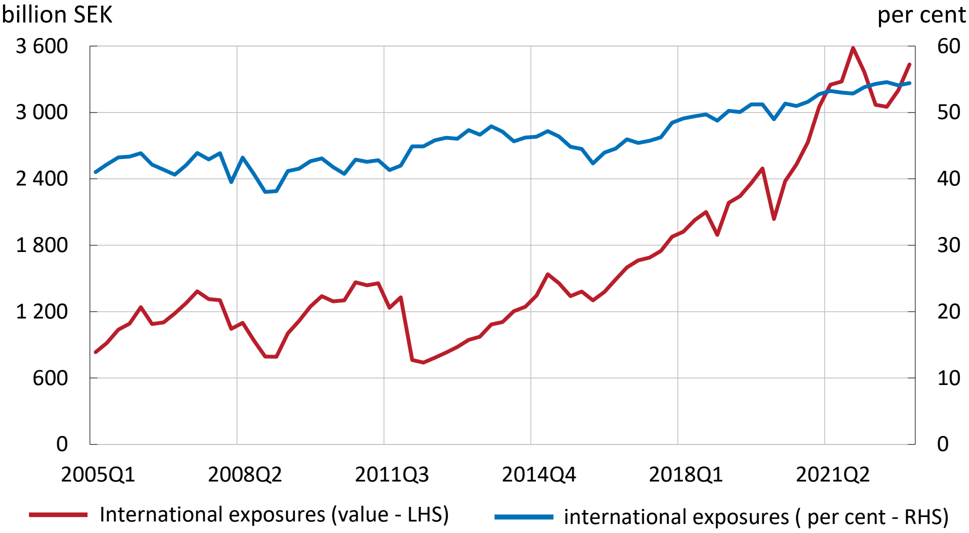
3.2 Foreign asset investments of Swedish-domiciled funds

Swedish investors use investment funds both as domestic savings vehicles and as a way to diversify their portfolios. Diversification is generally positive, as it makes the industry more resilient to domestic shocks. However, investments abroad do expose funds and their ultimate investors to potential shocks from other jurisdictions. Any impacts are likely to be more pronounced if the funds themselves are collectively highly exposed to a specific sector or geographical location, rather than being broadly diversified.

In terms of aggregate portfolios, the industry demonstrates considerable home bias. 43 per cent of total securities held by Swedish domiciled funds are issued by Swedish resident entities. This is a significantly larger share than the Swedish share of global securities markets. It is not possible to determine from the data how much this is driven by demand from investors for local securities, relative to how much is driven by the options that fund managers are willing to offer. It should be noted that home bias in and of itself does not necessarily increase or decrease overall systemic resilience.[23]

Home bias has been slowly shrinking since the global financial crisis, and foreign securities now represent more than half the aggregate Swedish domiciled funds portfolio (Figure 4). This trend is perhaps unsurprising given the rapid growth in the investment fund sector over this period, combined with the limited size of the Swedish market. Reflecting the rapid growth in the industry as a whole, in value terms the growth in foreign asset exposures has been very rapid. Foreign assets now totalling almost SEK 3.5 trillion, compared with less than 1 trillion in 2008.[24]

Figure 4. Foreign securities held by Swedish-domiciled investment funds (per cent of total units and value in SEK)



Note. Last observation 2023Q1 Remainder includes Swedish securities as well as property, cash and derivatives.

Source: Statistics Sweden

In order to determine if this increase in aggregate foreign investment has been concentrated in particular sectors or countries, it is necessary to look more closely at the securities in the funds' portfolios. Through a combination of the Riksbank's securities holdings data and Morningstar data it is possible to identify the region and industry

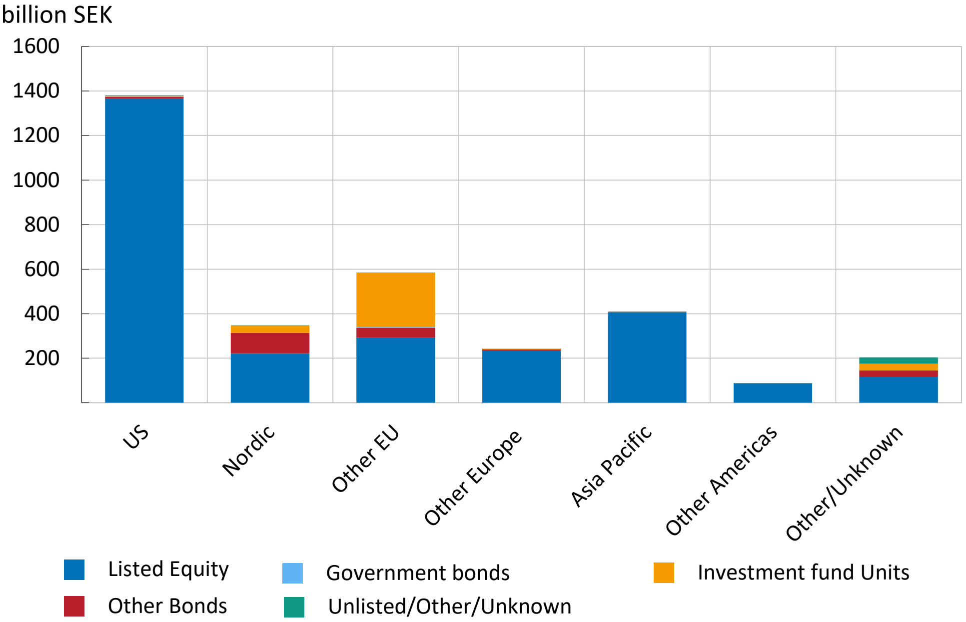
[23] The potential for concentration risk may be offset by inflation and currency management, as well as reduced information asymmetry.

[24] Growth in foreign exposures is not always due to active investment decisions: in some cases it can also result from fluctuations in exchange rates and market valuations of existing portfolios.

sector of most issuers of investment funds' securities. Together, this allows us to identify where the exposures are the most concentrated for the majority of the funds in the sector.

As at December 2022, securities holdings data indicates a substantial focus on equity investment, particularly in the US and Europe (Figure 5). Of the SEK 3.3 trillion issued by entities abroad and held by Swedish funds at that time, nearly half were listed shares of companies domiciled in the United States, which is substantially higher than the US proportion of the world's global equity market capitalisation (39 per cent).[25]

Figure 5. Swedish-domiciled investment funds' foreign securities by location of issuer and type of security



Note: As at 2022Q4. Short positions excluded. Small cells added to other/unknown to protect confidentiality.

Source: Riksbank's Securities holdings data.

A degree of 'close to home' bias is also evident, as Swedish funds' European listed equity exposures (excluding their Swedish exposures) were around 27 per cent of the total, compared with a global market cap share of 24 per cent for Europe, the Middle East and Africa as a whole. This bias is particularly skewed toward EU investments, as non-EU European listed equity exposures are almost exactly in line with their proportion of global market cap (around 8.5 per cent). By contrast, Asia-Pacific was underrepresented, with the share of exposures totalling less than half of the market cap share.

'Close to home' bias is more notable for bonds than for equity, with the majority of bonds held being issued by Nordic firms and banks, followed by other EU firms and banks and then by supranational institutions (generally development banks). There is

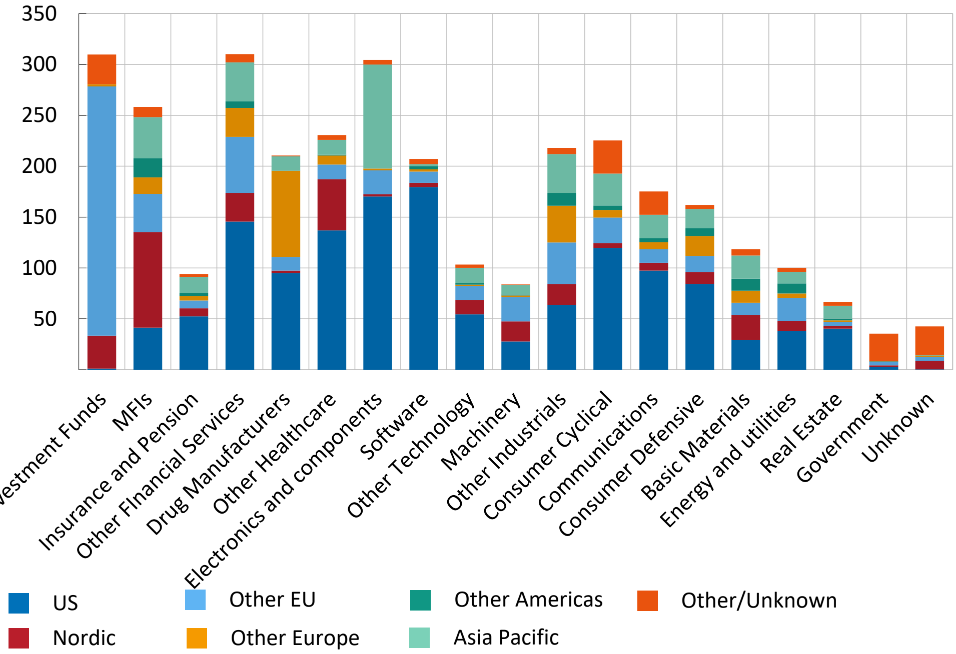
[25] Figures derived from SIFMA (2021). Note that not all firms that are listed in a jurisdiction necessarily operate in that jurisdiction, but nevertheless form part of the total equity market size.

very little exposure to foreign 'safe' assets, such as US Treasuries. Interestingly, however, there also is considerable cross-ownership of investment funds. The largest single industry-region exposure is to non-Swedish EU investment funds, which in turn invest onward (see section 4 for more details of these investments).

At a region-sector level, there is no overwhelmingly dominant exposure (Figure 6), which is generally positive in terms of overall vulnerability. However, there is a notable exposure to monetary financial institutions (MFIs – generally banks) within the EU, and within the Nordic region in particular. EU MFIs also represent the largest industry-region share of bond holdings, accounting for over one third of the total.

Figure 6. Swedish-domiciled investment funds' foreign securities by location and industry of issuer

billion SEK



Note. Consumer electronics includes computers, and electronic components includes semiconductors. Short positions excluded. Unknown data is either uncategorised in Morningstar or in funds not covered by Morningstar data. Small cells added to other/unknown to protect confidentiality. MFIs includes covered bonds.

Source: Securities holdings data, Morningstar, author calculations.

Exposures to foreign real estate companies, on the other hand, represent only a small fraction of the total. Further, none of the Swedish-domiciled funds identifiable in Morningstar are documented as having any direct holdings of real estate. Some additional real estate exposures may be included indirectly, in the portfolio holdings of the funds whose units are owned by the funds in our sample. There may also be direct or indirect real estate exposures in the funds whose holdings are not available in the data.

In addition to MFIs, investment funds are also heavily exposed to other financial services and insurance and pension firms, highlighting the degree of interconnectedness within the global financial sector. Other specific subsectors from which shocks may be more likely to propagate include the healthcare sector (both in the US and in Europe) and US tech firms who are relatively heavily weighted in investment funds' exposures.

Propagation to Swedish markets is more likely if a fund holds *both* Swedish and foreign assets. If the fund holds only foreign assets, it cannot be put in a position where it needs to fire sell Swedish assets. While the majority of funds by value are predominately either Swedish-focussed or foreign-focussed, around SEK 1.6 trillion of assets are held in funds that have between 20 per cent and 90 per cent foreign assets (excluding cash, property and derivatives) (Table 1). Should other vulnerabilities such as leverage or liquidity mismatch be present in these funds, they may be more likely to encounter a situation where they are required to sell Swedish assets in the event of a shock to the foreign asset markets in which they are invested.

Table 1. Market value of Swedish-domiciled investment funds' assets by foreign share

Foreign share of securities investments	Value of fund's total securities (billion SEK)
0 per cent	273.7
>0 to 10 per cent	874.2
>10 to 20 per cent	713.3
>20 to 30 per cent	286.5
>30 to 40 per cent	164.4
>40 to 50 per cent	248.2
>50 to 60 per cent	300.3
>60 to 70 per cent	127.9
>70 to 80 per cent	353.8
>80 to 90 per cent	221.7
>90 to 100 per cent	1449.6

Note: Proportions calculated based on reported domicile of securities. As at 2022Q4. Sjunde AP-fonden is not included

Source: Author's calculations, securities holdings data

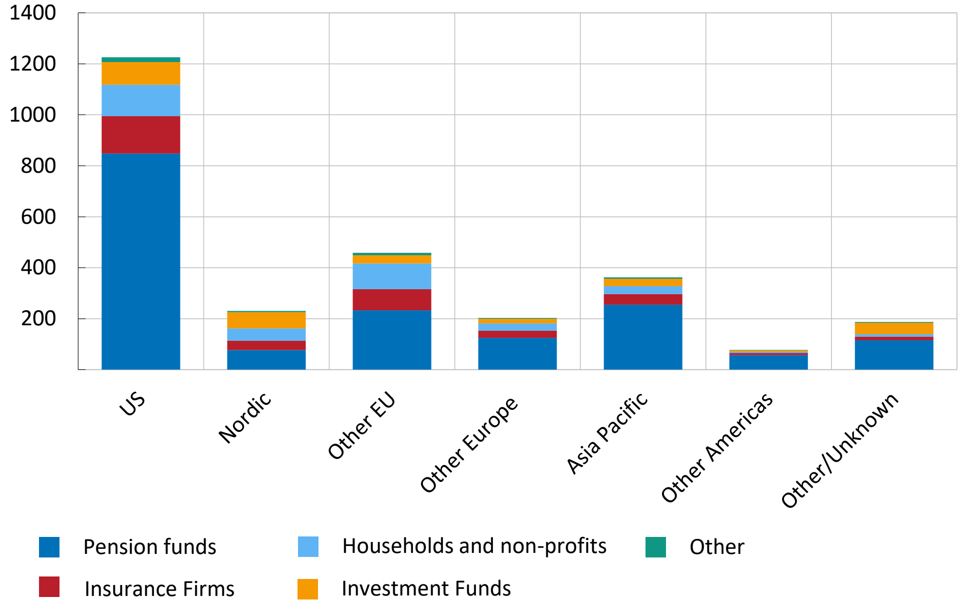
For the funds that are more specialised, the key channel for propagating shocks from foreign economies into the Swedish economy is via their investors. It is possible to 'look through' the fund structure to link the underlying portfolios back to the ultimate investor. This process allows us to form an estimate of the total indirect exposures to foreign securities by Swedish fund investors (Figure 7 and Figure 8).[26] It is possible to link around 84 per cent of the underlying portfolio securities back to Swedish investors.[27]

[26] While it is not possible to adjust for cash, real estate and other assets of the fund, on aggregate securities represent over 97 per cent of total net asset values for the sector, so the estimates are relatively close.

[27] The remaining 16 per cent likely reflects a combination of (a) funds' use of leverage, (b) foreign investors in funds (not observable in securities holdings' data, and (c) incomplete coverage of household and non-financial corporations' investments in Swedish funds by securities holdings data.

Figure 7. Value of total Swedish-domiciled funds' foreign securities by location and investor

billion SEK



Note: Short positions excluded. Other category of investors includes government, social security, MFIs, other financial institutions and non-financial corporations.

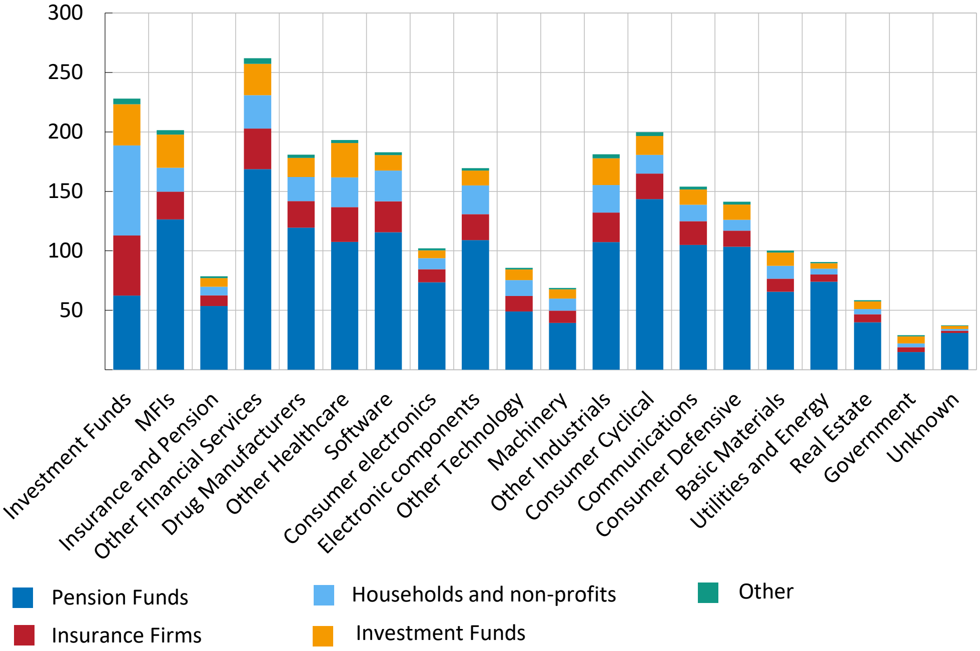
Source: Securities holdings data, Morningstar, author calculations.

The largest investors are pension funds, and these appear to be more geographically diversified than the remaining investor types. Pension funds are heavily exposed to both MFIs and other financial services.

Households, on the other hand, display a fairly significant bias toward EU exposures, although this may partly reflect the more limited subset of funds available to this group as retail investors. This may be partially offset by the fact that households are the most notable users of 'funds of funds' – that is, investment funds who are domiciled in one location (Sweden or elsewhere) and invest in other funds which in turn invest in other locations and/or assets (see section 4). This further highlights the complex interconnections that exist within the investment fund industry.

Figure 8. Value of total Swedish-domiciled funds' foreign securities by industry and Swedish investor

billion SEK



Note: Consumer electronics includes computers, and electronic components includes semiconductors. Data does not equal the values in Figure 6, coverage is around 84 per cent (see footnote 25). Short positions excluded. Unknown data is either uncategorised in Morningstar or in funds not covered by Morningstar data. Other includes government, social security, MFIs, other financial institutions and non-financial corporations. MFIs includes covered bonds.

Source: Securities holdings data, Morningstar, author calculations.

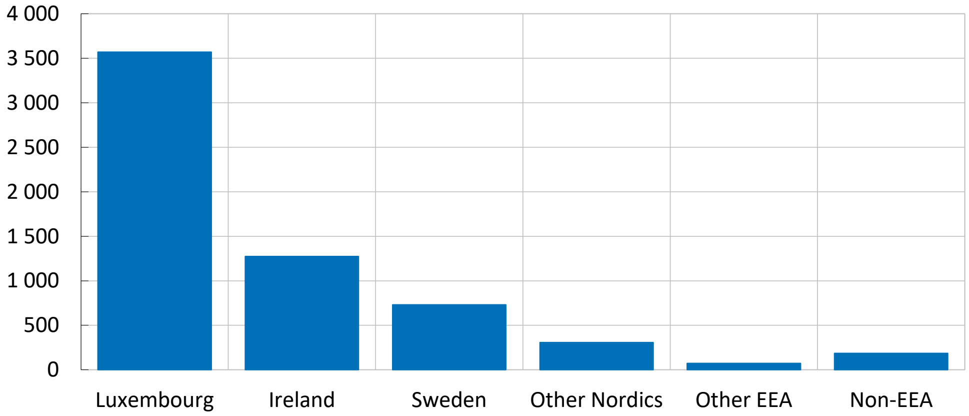
4 Swedish investors' exposures to foreign domiciled investment funds

Swedish investors have a wide range of options for investing in funds. These include investments in funds domiciled throughout the EU, as well as other funds that have been approved for sale in Sweden. While this allows Swedish investors access to a broader range of products than would otherwise be the case, these funds have the potential to impact Swedish financial stability but are not always subject to oversight by Swedish authorities.

Based on Morningstar data, over 6100 open-ended and exchange-traded funds are available for sale in Sweden (this does not include open-ended AIFs marketed only to professional investors). Foreign account for 88-89 per cent (by number and by assets under management) of the open-ended and exchange-traded investment funds available to Swedish investors (Figure 9). It should be noted that the domicile of the fund and the domicile of the fund manager need not be the same (see Section 2).

Figure 9. Domicile of mutual funds available for sale in Sweden

number of funds



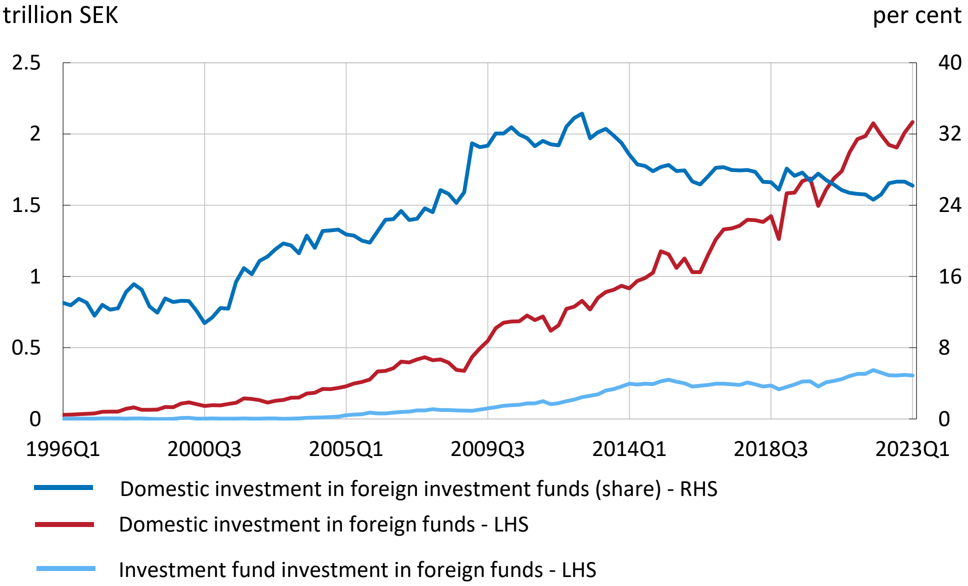
Note. Includes all open-ended and exchange traded funds listed in Morningstar with at least one share class available for sale in Sweden. As of February 2023.

Source: Morningstar, author calculations

Of course, not all investors in the funds indicated above are Swedish, and many of them may have no Swedish investors at all. Many funds, both domiciled in Sweden and outside, are available for sale across multiple jurisdictions. Common sales regions include cross-Nordic and European-wide distribution.

However, in contrast with the small share of foreign investors in Swedish funds, Swedish investments in foreign funds are significant – over one quarter of total fund exposures (see Figure 10). In some cases this may be due to the way that related funds are structured. Swedish investment funds themselves also invest in funds domiciled abroad, although the proportion is relatively small (around 14 per cent).

Figure 10. Swedish investments in foreign funds (value and per cent of total Swedish investment in funds)



Note. Last observation 2023Q1.

Source: Statistics Sweden

As with the foreign investment of Swedish domiciled funds, one potential source of systemic risk relates to the degree to which the collective portfolios are exposed to vulnerable geographical or market sectors, especially if these exposures are unbalanced. This can be further complicated by varying degrees of inherent fund vulnerability (which in turn can be affected by regulatory frameworks, depending on jurisdiction and fund type (see chapter 2)).

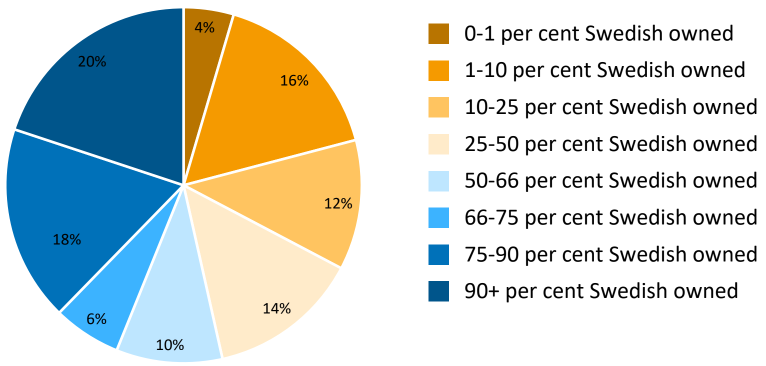
The exposures of Swedish investors to foreign funds can be divided into several categories. Nearly two thirds (65 per cent) were funds investing primarily in public markets and for which detailed holdings data is available (these are discussed in section 4.1). Of the remainder, nearly one third (32 per cent) of total fund exposures as at December 2022 were to funds which invested primarily in private markets (e.g. private equity). These are discussed in more detail in section 4.2. No holdings data are available for the remaining 3 per cent of funds, although it includes a mix of bond, equity, mixed and exchange traded funds, as well as reinsurance funds, unit linked insurance funds, and crypto asset funds.

4.1 Swedish exposures to foreign funds focussed on public markets

As noted in the previous section, around two thirds of the foreign domiciled funds in which Swedish investors invest are focussed on public markets, and for these detailed portfolio data is available. Using the available data, it is possible to identify where these funds are located, what proportion are held by Swedish investors, and the structure of the underlying investment portfolios.

Based on this approach, it appears that despite being domiciled abroad, a large proportion of funds are focussed on Swedish investors. In fact, more than half of the funds for which Morningstar data is available that serve Swedish investors are majority-owned by Swedish investors (see the blue segment Figure 11). Many of these funds are also managed by Swedish domiciled fund managers, including Swedish banks. While some customers may consider these funds to be 'Swedish', to the degree that these funds are UCITS they are domiciled and supervised outside of Sweden, and subject to the regulation of the jurisdiction in which they are domiciled.

Figure 11. Percentage of total investment in foreign domiciled (non-private) funds by Swedish ownership share of the fund



Note. Blue segments are estimated to be more than half Swedish-owned. Based on 4667 identified investment funds.

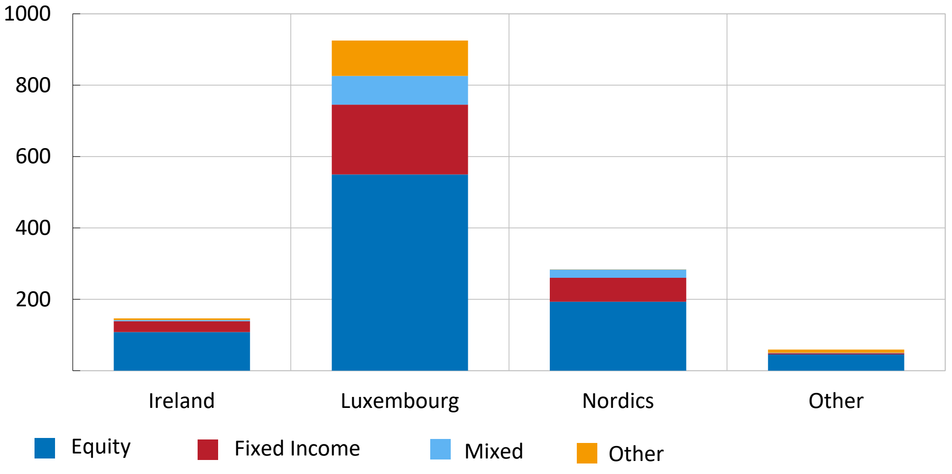
Source: Morningstar, securities holdings data, author calculations.

The majority of exposures are to funds located in Luxembourg, and to a lesser extent other Nordic countries and Ireland (see Figure 12). Less than SEK 50 billion of investor exposures are to funds domiciled outside of the EU. Consistent with domestic trends, the majority of exposures are to equity funds. Most of the EU-domiciled funds to which Swedes are exposed (both by number and total assets) are UCITS funds, which means that they are limited in their use of leverage.

More generally, it is not clear whether foreign domiciled funds are likely to have more or fewer inherent vulnerabilities than those domiciled in Sweden (and therefore be more or less likely to contribute to systemic risk. In Europe, regulation for EU AIFs is primarily targeted at the fund manager level, so the domicile of an AIF in which Swedes invest may have limited impact on its structure and degree of oversight, especially for funds that are operated by Swedish fund managers. On the other hand, foreign-domiciled UCITS are regulated in their country of domicile, and are not subject to the same regular data collection requirements as Swedish domiciled UCITS.

Figure 12. Value of foreign domiciled investment funds with Swedish investors by type and domicile of fund

billion SEK



Note: Values are estimates. Securities holdings data is as at 2022Q4. Morningstar holdings data is most recently available as at April 2023. Short positions excluded.

Source: Morningstar, securities holdings data, author calculations

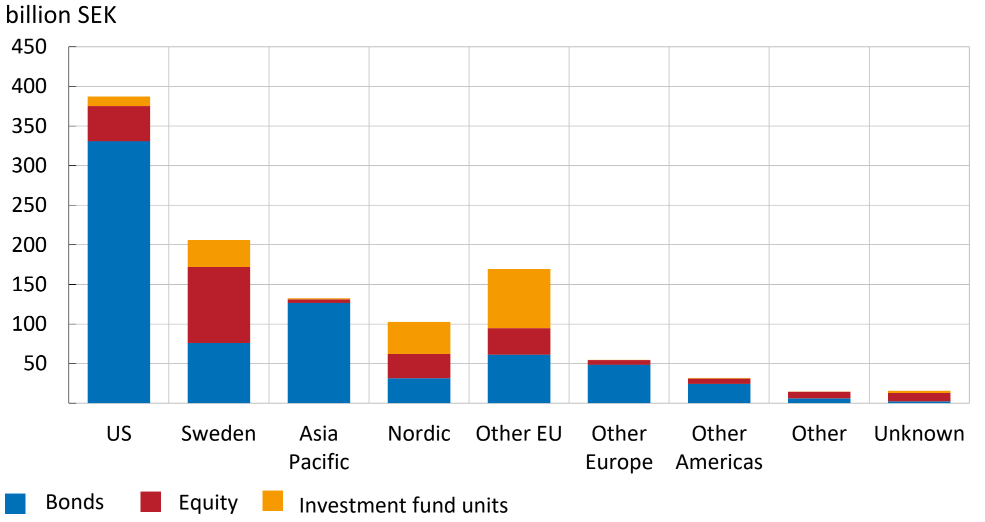
By examining the holdings data for these funds, it is clear that the dominant source of this equity is in the US (Figure 13). While there is a larger Asia-Pacific component to the investment, there is also still a large bias toward Sweden and the Nordic countries, especially as regards bond investment. The volume of Swedish assets further emphasises the degree to which these funds resemble Swedish domiciled funds, and highlights that offshore funds do not appear to be predominately aimed at furthering asset diversification.

In terms of the industries in which these funds invest, there is also considerable overlap with those of the Swedish funds (see Figure 14). However, interestingly there is very little difference in this case between the ultimate portfolios of different investor types, suggesting that investors are overall invested in relatively similar types of foreign funds.

Measured securities in the real estate sector are relatively small. Further, total direct exposures to real estate for this subsector are also very small, with the Swedish share totalling only SEK 43.1 million across all the funds in this sample. However, a substantial quantity of real estate exposure is included in the 'investment fund' industry category, as this category includes holdings of units in real estate investment trusts.[28]

[28] This reflects the categorisation of real estate investment fund units as investment fund units in the data sources. However debt securities issued by real estate investment trusts are categorised as real estate exposures.

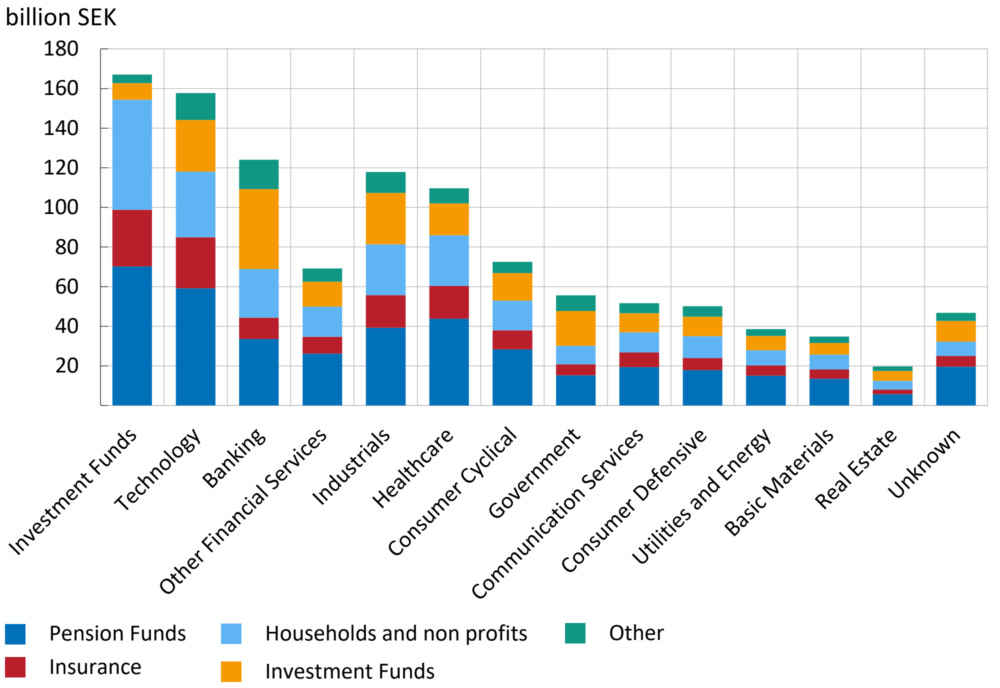
Figure 13. Assets of foreign domiciled investment funds held by Swedish investors by location and type (Swedish share only)



Note: Values are estimates. Securities holdings data is as at 2022Q4. Morningstar holdings data is most recently available as at April 2023. Short positions excluded. Offshore financial centre exposures are very small and are therefore included in 'Other'.

Source: Morningstar, securities holdings data, author calculations

Figure 14. Assets of foreign domiciled investment funds held by Swedish investors by ultimate investor and industry of asset holdings (Swedish share only)



Note Values are estimates. Securities holdings data is as at 2022Q4. Morningstar holdings data is most recent available as at April 2023. Short positions excluded. Other includes government, social security, MFIs, other financial institutions and non-financial corporations. Banking includes covered bonds.

Source: Morningstar, securities holdings data, author calculations

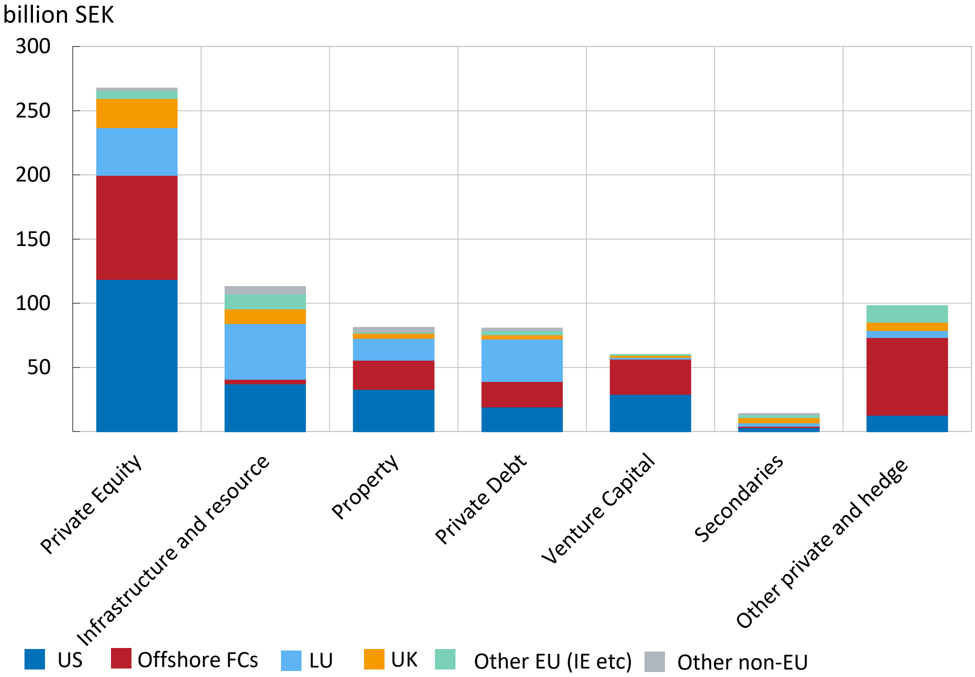
4.2 Swedish exposures to foreign private capital funds

A significant proportion – 32 per cent – of foreign fund exposures fall into the broad category of 'private capital'. These are funds that are generally closed to retail investors, and invest in debt, equities and real assets which are not listed on public exchanges.[29] The majority of these funds also have non-Swedish fund managers.

As these funds are generally invested in private markets, most of their investments are not listed securities. Rather they are in the form of loans (in the case of private debt), unlisted equity (in the case of private equity and venture capital) or real assets (in the case of infrastructure, real estate and resource funds). These markets are quite opaque, and data is not currently available to provide a more detailed breakdown of the specific assets in which these funds invest.

These funds tend to be domiciled outside the EU (Figure 15). Funds are concentrated in the US (35 per cent by value) and in offshore financial centres (30 per cent in jurisdictions such as the Cayman Islands), with a notable fraction (8 per cent) also domiciled in the UK. Within Europe, Luxembourg is by far the largest domicile (20 per cent by value), followed by Ireland (less than 2 per cent).

Figure 15. Swedish investments in foreign domiciled private funds by fund type and location



Note. Secondaries refers to private debt and equity purchased on the secondary market.

Source: Pitchbook, Securities holdings data, author calculations

[29] The exception is hedge funds, which constitute around 4 per cent of the total, and which collectively utilise a mix of private and public market investment strategies.

Swedish investment in these funds comes primarily from institutional investors, especially those with longer investment horizons. Across all jurisdictions noted above, investment is predominately held by private pension funds, and also by social security funds (AP funds). Insurance corporations represent a smaller proportion of total investment, but these also invest in funds across all noted domiciles. Only 6 per cent of identifiable Swedish investment in these funds comes from other types of investors (households, non-financial corporations, banks and so forth).[30]

The asset exposures of these funds often do not always align with their domicile. The largest exposures of these funds are to private equity markets (Figure 15), which include for example private investments in growing companies and company buyouts. While it is not possible to see their exact investments, fund descriptions suggest that these are most often located in the US and Europe. Private debt, infrastructure, venture capital and real estate funds are also significant sources of exposure.

As these types of funds are focussed on institutional investors, tend to be closed, and do not have links to securities markets, the main channel of risk on the investment side is via the investors themselves, for example via potential losses or liquidity demands. Depending on the structure and jurisdiction in which these funds are located, they may not always be subject to rigorous regulatory frameworks and oversight.

[30] Exact breakdown of investor holdings cannot be provided for data confidentiality reasons.

5 Swedish assets held by foreign domiciled investment funds

It is considerably more difficult to trace the cross-border ownership of Swedish assets than to trace Swedish investment abroad. Real property holdings (for example property held by foreign commercial real estate funds) and unlisted debt and equity are not possible to trace, as relevant data are not available. However, even the data on the counterparties to listed debt and equity instruments can be difficult to obtain.

This is further complicated by the fact that the potential universe of funds that can hold Swedish assets is much larger than the set of funds that can be purchased by Swedish investors. While the marketing regulation discussed in Section 2 limits the sale of investment fund units cross-border to some degree, in general Swedish assets can be purchased and held by investment funds globally.

Nonetheless, the links arising from foreign investment in Sweden are particularly important for assessing financial stability risks. Not only are foreign investment funds potentially 'home biased' in some cases, as discussed in Section 3, there may be individual vulnerabilities in these entities that cannot be easily observed. It is therefore difficult to assess their potential to withdraw – or to 'fire sale' their assets – in the event of a shock.

Foreign investment in Swedish securities has potential diversification benefits for capital recipients and the domestic economy as a whole.[31] However, it also creates the potential for knock on effects in the event of large-scale withdrawal or fire sales by these funds. Corporates, banks and government entities who rely on foreign investment funds to purchase their securities may have higher rollover risk, or encounter difficulties raising new funding. Indirectly, Swedish investors (including investment funds) may also be affected if domestic securities markets become dislocated. This is particularly important for institutions (banks, insurance corporations etc.) who themselves may rely on being able to sell these assets to generate liquidity during periods of shock.

Foreign links are potentially very large, increasing the likelihood of contagion effects. Based on Swedish financial accounts data, over 50 per cent of Swedish debt securities, and around 20 per cent of Swedish equities (including investment fund units), are estimated to be held by foreign residents (Table 2). These values have not changed significantly since the global financial crisis. Debt securities rose somewhat up to 2015, but have returned to their former levels in more recent years, partly reflecting a decrease in their holdings of Swedish government bonds.[32]

[31] From the individual entity's perspective, foreign investment can expand the size of the market for their securities, as well as reducing reliance on domestic investors, which are more likely to be subject to correlated shocks that affect their willingness or ability to purchase securities. From the overall perspective of the economy, foreign equity investment can reduce the degree to which losses on these securities creates domestic-level feedback effects.

[32] Note that over the relevant period the Central Bank's share of Swedish government bonds has increased, due to Riksbank asset purchases.

Table 2. Share of aggregate Swedish debt and equity securities held by foreign investors

Type of securities	Debt securities (per cent)	Equity securities (per cent)
Total	52.7	18.7
Government	7.8	N/A
MFI	59.5	28.0
Corporate	61.7	18.4
Other	23.5	0.0

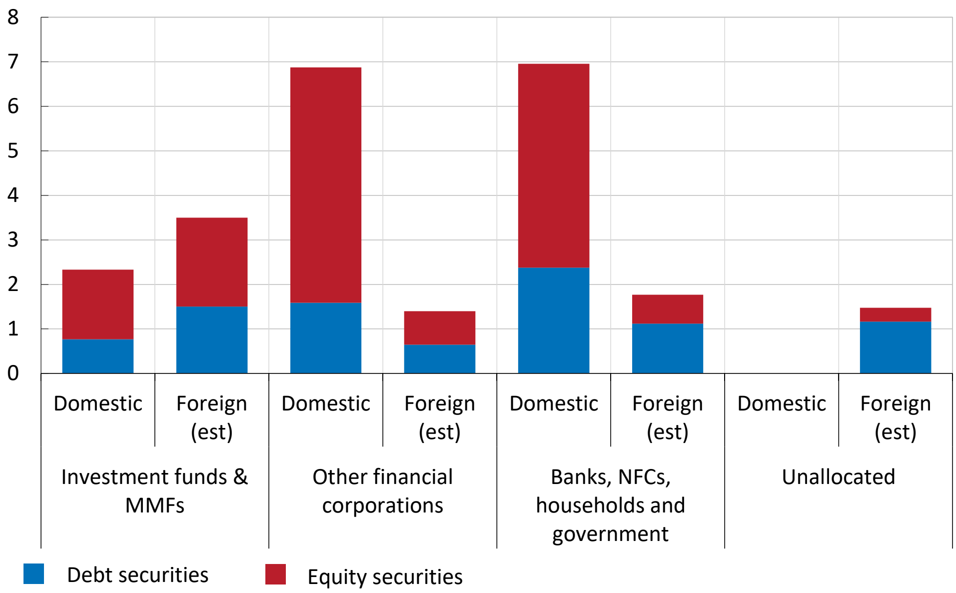
Note Equity securities includes listed equity and units in investment funds (including money market funds).

Source: Statistics Sweden

Swedish securities holdings data does not cover this universe. However, it is possible to get a high-level estimate of aggregates by combining IMF CPIS survey data with financial accounts and other sources (see Figure 16).

Figure 16. Estimated holdings of Swedish debt and equity portfolio securities by counterparty

trillion SEK



Note. Equity securities includes listed equity and units in investment funds (including money market funds). Other financial corporations includes insurance corporations and pension funds. Banks includes Central Bank holdings. Estimates are based on CPIS data combined with national financial accounts to establish weightings between other financial intermediaries and investment funds. Allocations are weighted according to national reported holdings of rest of world debt and equity portfolio securities where available. Where data is unavailable for a country, estimates have been derived from funds reporting to Morningstar.

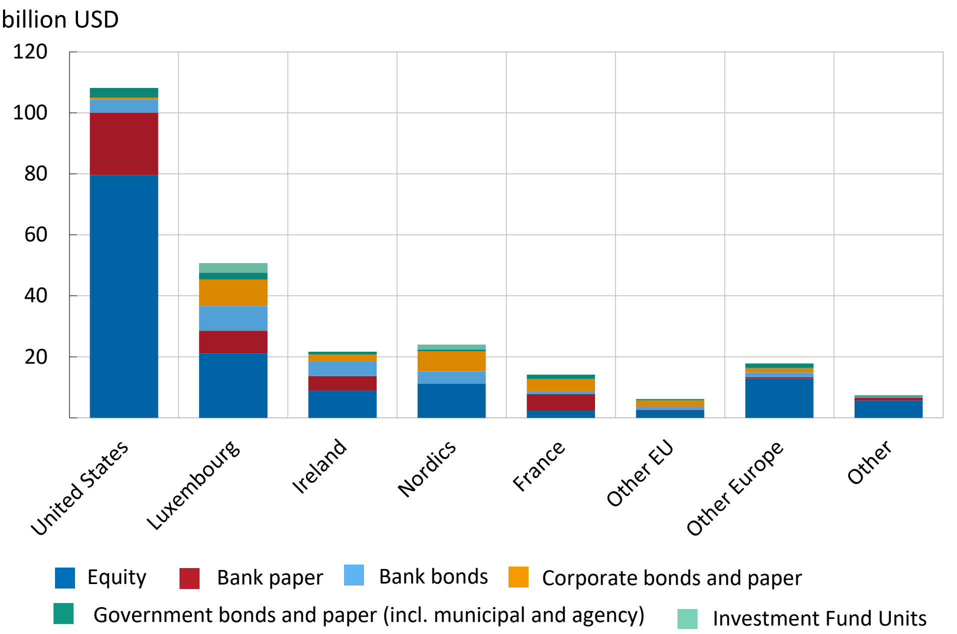
Source: Author calculations, IMF Coordinated Portfolio Investment Survey June 2022, Statistics Sweden, national financial accounts, Eurostat, Morningstar.

Based on these calculations, foreign investment funds appear to be the largest foreign holders of both Swedish debt and equity securities. In fact, holdings of Swedish assets by foreign investment funds are estimated to be significantly larger than those held by domestic investment funds. As at June 2022 over one third of foreign-held debt securities and over half of foreign held securities are estimated to be held by investment funds (including money market funds) domiciled abroad. Debt securities held by foreign funds appear to be larger in proportion than equity securities: a reverse pattern from that seen for Swedish funds investing abroad.

By examining the holdings of funds reporting to Morningstar, it is possible to identify at a micro level USD 250 billion (approximately SEK 2.6 trillion) of Swedish assets held by foreign investment funds as at April 2023. [33] Around 8 per cent of this total can be traced back to Swedish investors via their holdings of foreign investment fund units, as discussed in section 4. It should be emphasised, however, that the microdata can be used to identify only around two thirds of the aggregate estimates for the sector.[34]

Swedish securities have been identified in the holdings of open- and closed-ended funds, money market funds, insurance product funds, collective investment trusts and a small number of hedge funds. This is equal to approximately 23 per cent of the stock of foreign-held Swedish debt securities and 40 per cent of the stock of foreign-held Swedish listed equities as at March 2023 (Figure 17).

Figure 17. Foreign domiciled investment funds' holdings of Swedish assets by type and domicile of fund



Note. Latest portfolio summaries available as at April 2023. Short positions excluded. Cells with fewer than three observations have been removed due to confidentiality.

Source: Morningstar, author calculations

[33] While this does not affect the aggregates, it is worth noting that country of securities issuance does not perfectly align with the country of operations of a given company. Some Swedish companies raise funds through subsidiaries domiciled abroad (such as in the Netherlands), which are not always captured as 'Swedish' in the data. In contrast, some securities are issued by Swedish fund-raising subsidiaries of foreign companies (this includes, for example, some Polish companies).

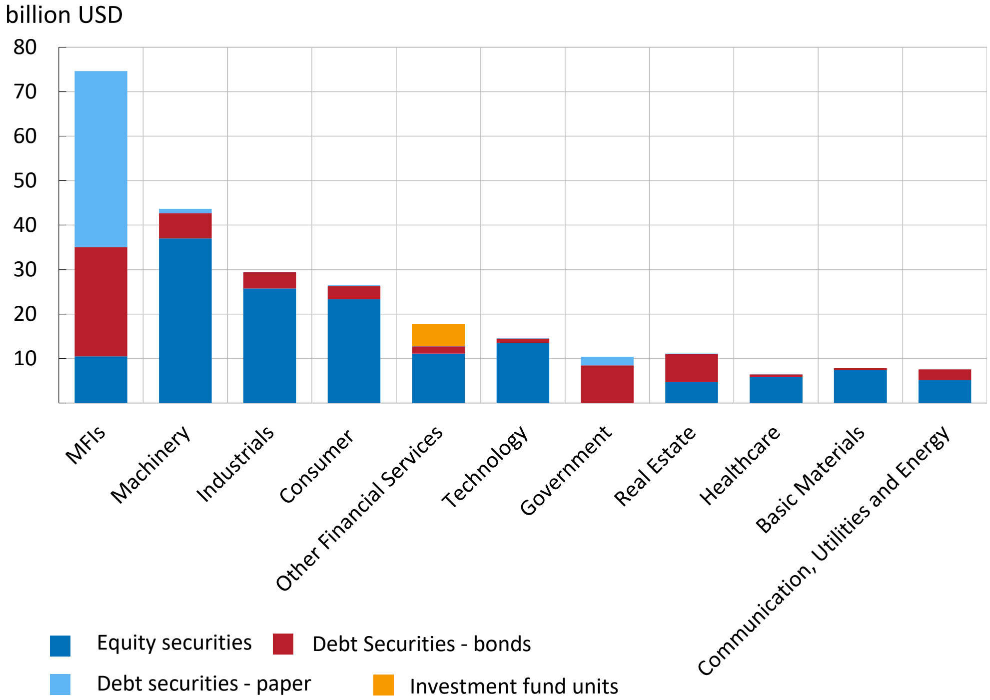
[34] Some funds do not report holdings, others are not in the universe covered by the data sources.

The majority of the identifiable securities are held by funds domiciled in the United States, followed by locations in the EU. Within the EU, Luxembourg, Ireland, other Nordic countries and France represent the largest four domiciles for funds holding Swedish assets.

In terms of industry exposures, the largest by value is the banking sector (Figure 18). Both in terms of the absolute size of the exposures and the type of exposures suggest potential vulnerability of this market to shocks in the global investment fund sector. As debt – and particularly short-term debt such as commercial paper – are the most subject to rollover risk, these represent the areas with the clearest potential vulnerability. Real estate, machinery, and Government sectors also have relatively substantial debt exposures to the investment fund sector.

As far as corporate bond exposures go, the identifiable amounts are relatively modest – only 16 per cent of total outstanding corporate bonds, or 26 per cent of the foreign-held total. For financial firms foreign investment funds identifiably holding 13 per cent of total debt securities, but 38 per cent of total short-term MFI debt securities.

Figure 18. Foreign domiciled investment funds' holdings of Swedish securities by type of security and industry of security issuer



Note. Government includes central government, municipalities, and government agencies. Government owned banks are classed as MFIs. Sectors are based on Morningstar allocations where available. Short positions excluded. An additional USD 46 million of debt securities cannot have their industry identified, these have been excluded from the chart to aid readability. MFIs includes covered bonds.

Source: Morningstar, author calculations

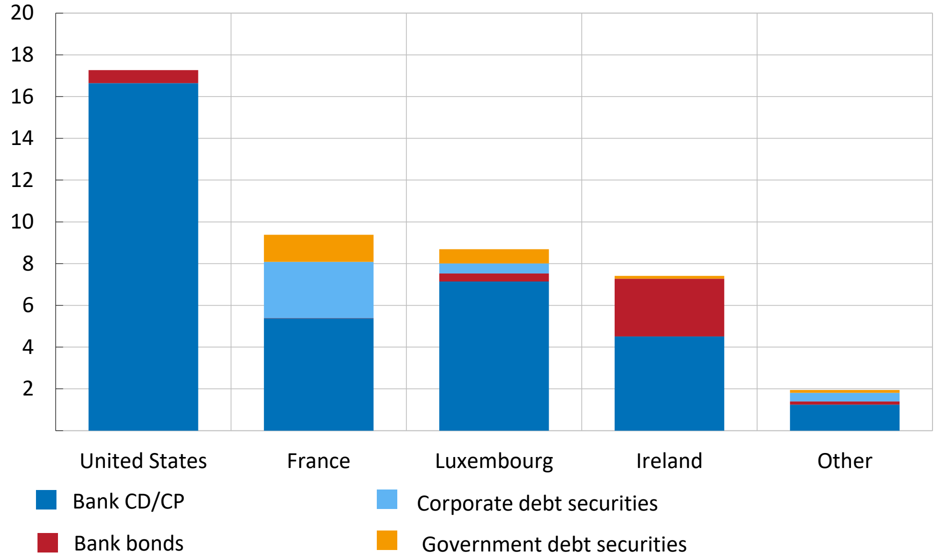
5.1 Swedish assets held by foreign money market funds

The relatively large proportion of short-term Swedish MFI debt securities identified in foreign funds above is likely due to the relatively significant reliance of the Swedish financial system on foreign money market funds (there are no money market funds currently registered in Sweden).[35] Where relevant money market funds are included in aggregated figures discussed in the rest of this paper, but given their specific risk profiles the links are outlined in more detail in this section.

Based on Morningstar holdings data, the US is the largest single money market fund domicile for Swedish bank assets, holding 43 per cent of identified Swedish foreign-held short-term bank paper (Figure 19). However, EU funds collectively hold more Swedish assets in total, across all jurisdictions, and are larger holders of debt issued by Swedish governments and corporates.

Figure 19. Money market funds' holdings of Swedish assets by type and industry of issuer

billion USD



Note. Government includes central government, municipalities, and government agencies. Government owned banks are classed as MFIs. Sectors are based on Morningstar allocations where available. Short positions excluded. Equity holdings not included due to small cell size. Bank bonds includes covered bonds where applicable.

Source: Morningstar, author calculations

In fact, Sweden represents one of the larger EU issuers of EU money market fund assets (Figure 20), disproportional relative to its GDP. While France dominates issuance across Europe, as at June 2022 Sweden was the fifth largest (and the fourth largest offshore issuer), issuing over USD 35 billion to EU money market funds. Swedish resident entities issued more securities to money market funds in Luxembourg than Luxembourgian resident entities, and more securities to Irish money market funds than

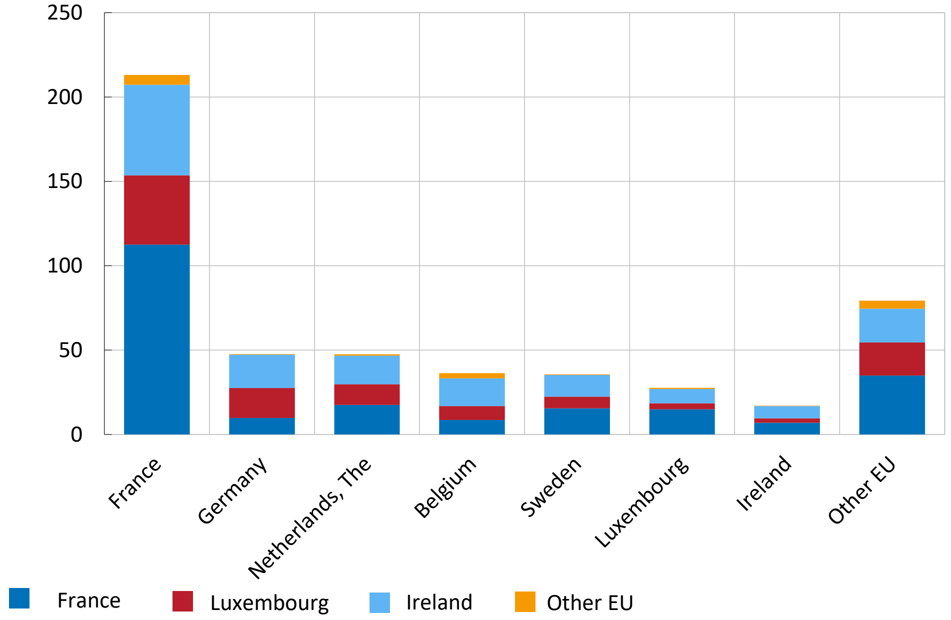
[35] There are a number of bond funds in Sweden that invest in similar assets to money market funds, including short-term paper, but fall outside the scope of money market fund regulation.

Irish resident entities. It should be noted that these funds are also generally *not* managed by Swedish banks, or even by Swedish asset companies.

Given that money market funds regulation in Europe requires a weighted average maturity of 6 months across portfolio assets (which helps improve money market fund liquidity), this represents a clear potential for rollover risk for the asset issuers, especially for the banking sector who are the largest issuers of these debt securities. Further, as money market funds have been shown to operate in relatively illiquid markets (for example for commercial paper and certificates of deposit) with potential to rapidly generate financial stability risks,[36] these exposures potentially warrant continued monitoring, as the availability of credit to the issuers can potentially be affected.

Figure 20. EU Money market funds' holdings of EU assets by country of issuer and domicile of fund

billion USD



Note. Includes securities only except for the Netherlands' holdings of Dutch assets (where the breakdown is unavailable). Data is estimated using multiple sources, some variance may therefore occur in the results.

Source: IMF Coordinate Portfolio Investment Survey, ECB Statistical Data Warehouse, Luxembourg Central Bank, Hungarian National Bank, author calculations.

[36] See ESRB Recommendation no. ESRB/2021/9.

6 Conclusion

The investment links identified in this paper are generally likely to have positive impacts on the Swedish economy, both in terms of investors' portfolio diversification and the diversification of funding sources for those raising funds. However, such links need to be monitored from a financial stability perspective.

Investment links arising from investors abroad investing in Swedish-domiciled funds are small, and do not appear likely to represent a destabilising force at this stage. On the assets side Swedish-domiciled funds' investments abroad are large and appear to be concentrated in Europe and the US. Ongoing monitoring may be beneficial, but there are no immediate areas of serious concern from a financial stability perspective.

As regards investment in funds abroad, it is clear that there are a substantial proportion of funds by volume that 'look Swedish' in terms of their investor base, but are domiciled outside Sweden. It is not clear to what degree these may have more or fewer inherent vulnerabilities than those domiciled in Sweden, and this may be a useful subject for further work. In any case, such funds are deeply connected to the Swedish financial system, and may therefore have the potential to impact financial stability in Sweden.

Finally, examination of foreign (both Swedish-owned and foreign-owned) investment funds' investment in Swedish securities suggests that these links are substantial. This is particularly the case for the banking sector, and investment funds hold a material proportion of its debt. This reflects in part the fact that the Swedish banking sector issues a large number of securities that are purchased by European and US money market funds. These types of funds have previously demonstrated instability under stress, suggesting a potential area of future risk.

An interesting theme which emerges across all channels is the degree to which investment funds invest in other investment funds. This represents a material subset of the first order linkages, making the overall picture somewhat more difficult to clarify.

As noted in the introduction, this paper did not consider cross border links arising from borrowings or use of derivatives. Future work could look at these in more detail, to determine the degree to which these may be conduits for risk propagation. The structure of the Swedish investment funds industry (in particular the prevalence of UCITS and special funds) means that aggregate financial leverage in the investment fund sector are very low (liabilities total less than 0.5 per cent of assets). Nonetheless, there is potential for direct or indirect international connections related to the use of financial or synthetic (derivatives) leverage. Given the events that have occurred in the international pooled investments sector over the past few years (for example the impact of the failure of Archegos in the US in 2022 and the dislocation in gilt markets in 2023) have all been tied to use of derivatives (e.g. interest rate swaps and credit default swaps), this area in particular may also present a useful avenue for further work.[37]

Further, ongoing work on closing data gaps, especially within Europe, could help improve these types of analysis over time.[38] For example, foreign investment funds' holdings of Swedish real estate are not available, and this represents a potentially significant data gap for authorities.

[37] ESRB (2023).

[38] See ESRB Recommendation no. ESRB/2019/3.

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Key data sources

Statistics Sweden’s financial accounts

Statistics Sweden publish quarterly and annual financial accounts. These outline the balances of financial assets and liabilities by type, sector, and counterparty. Data is available from 1996.

Securities Holdings Data

The Riksbanks’ Securities Holdings Statistics (VINN) are produced by Statistics Sweden on behalf of the Riksbank. The statistics are based on a combination of directly reported holdings, prudential data reported to the financial supervisory authority and custodian data. The data are used as input in other statistics such as the Balance of Payments but there is currently no stand-alone regular publication.

Morningstar

Morningstar provides details of managed investments, including a significant subset of the universe of relevant investment funds discussed in this paper. Data includes details regarding the operational structure of the fund, fund size and performance, and investment portfolios.

CPIS

The IMF undertakes a coordinated portfolio investment survey (CPIS) twice-yearly. The survey collects aggregate data on the holdings of foreign portfolio debt and equity securities broken down by sector of holder and cross border issuer.

Eurostat

Eurostat is the statistics authority of the European Union. It provides a wide range of data collected by individual statistical authorities in each Member State, include financial account data.

European Central Bank Statistics Data Warehouse

The European Central Bank publishes a significant amount of data via its statistics data warehouse. This includes quarterly data on investment funds’ balance sheets.

Worldwide Regulated Open-Ended Investment Fund Assets and Flows

The International Investment Funds Association publishes data on regulated open-ended investment funds on a quarterly basis, including the value of net assets and the number of funds.

SVERIGES RIKSBANK
Tel +46 8 - 787 00 00
registratorn@riksbank.se
www.riksbank.se

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