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Property funds and the Irish commercial real estate market

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Abstract

Irish property funds' investment in Irish commercial real estate (CRE) has grown in recent years. This growing form of financial intermediation has brought many benefits, including diversification of the financing of CRE away from domestic to international investors and a reduced reliance on debt financing by Irish retail banks. This investment supports domestic economic activity. However, like all forms of financial intermediation, property funds can also contribute to the build-up of risks that need to be monitored. The main contribution of this *Note* is to review and assess the financial stability risks associated with Irish domiciled investment funds investing in Irish property assets. The analysis is based on the results of a bespoke survey of these property funds carried out by the Central Bank in 2020. In the *Note*, we show that there is a cohort of property funds that have reported significant levels of leverage. In addition, while the lower frequency of dealing periods limits liquidity mismatches across the sector to some extent, there is a cohort of funds where some of these mismatches remain apparent, given the very illiquid nature of property assets. These characteristics increase the risk that – in response to adverse shocks – some property funds may need to sell property assets over a relatively short period of time, amplifying price pressures in the CRE market. Property funds have a number of options to mitigate this risk, including liquidity management tools. The analysis in this *Note* supports the need to explore the costs and benefits of possible macroprudential policy interventions in this area, to strengthen the property fund sector's overall resilience to potential future shocks.

1 Introduction

Market-based finance has grown rapidly in the past decade, both in Ireland and internationally. In Ireland, this has been driven by growth in the size of the investment fund sector. In general, these investment funds have limited direct connections to the Irish economy. However, a notable exception to this are investment funds that invest in Irish CRE, that is, Irish real estate investment funds (also known in this *Note* as 'property funds').[2]

Property funds' investment in the Irish property market has continued to grow in recent years (Coates et. al, 2019). Often established and funded by overseas investors, property funds provide a valuable alternative channel of financing for investment in the Irish CRE market. They reduce the reliance of funding on domestic channels, diversifying the investor base. This is in contrast to the prevailing situation prior to the Irish property crash in 2008, when domestic investors funded the

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[2] CRE refers to all income-generating commercial and residential property and land assets held by property funds for investment purposes.

bulk of activity in the sector. These domestic investors were leveraged through debt financing provided by Irish banks. Consequently, property funds' investment in the domestic property market may reduce domestic macro-financial concentration risk, while also providing positive knock-on effects for the domestic economy through growth, employment and investment.

However, like all forms of financial intermediation, property funds can also contribute to the build-up of financial vulnerabilities, which then need to be monitored and – if necessary – addressed. The main contribution of this *Note* is to review and assess the financial stability risks associated with property funds. It utilises new data collected by the Central Bank through a bespoke survey of Irish property funds (known as the *Deep Dive Survey*) in 2020. This survey was announced by Governor Makhlouf in Dec. 2019.[3] The analysis has fed into the Central Bank's supervisory engagement. In the context of the heightened uncertainty associated with the COVID-19 pandemic, the Central Bank – as part of its supervisory interventions – is actively monitoring and engaging with investment funds to enhance their preparedness to respond to shocks. Furthermore, the analysis will form part of the development of a comprehensive macroprudential framework for market based finance.

The analysis presented in this *Note* refers to Irish domiciled alternative investment funds (AIFs) authorised under domestic funds legislation and investing in Irish property assets. Other domestic institutional investors in the Irish CRE market, such as publically listed real estate investment trusts (REITs), pension funds and unit-linked property funds (offered by insurance companies), are not included in the analysis. Foreign domiciled property funds investing in Irish property assets are also not within the scope of this *Note*.

The remainder of the paper is structured as follows. Section 2 discusses the potential sources of vulnerability stemming from property funds in further detail. Section 3 is a summary of the survey and overview of the property fund sector. Section 4 is an assessment of liquidity mismatches, leverage and interconnectedness of property funds. Finally, section 5 concludes.

2 Potential sources of vulnerability stemming from property funds

In this section of the *Note*, we consider the potential financial stability risks that can emanate from property funds. Our assessment is based on the ability of actors in the financial system to absorb, rather than amplify, shocks. Thus, here, we are not focusing on risks to investors or the potential impact of increased investment by property funds on residential rents for example, but on risks connected to the resilience of this growing form of finance of the real economy and, in particular, of the CRE market.

Dysfunctional property market prices or activity can have many real economy knock-on effects: collateral, wealth, investment, employment (FSR 2020:1, p. 28) as well as direct bank losses. These effects can transmit directly, through the impact of changes in property asset prices, or indirectly, through the impact of property values on the wealth or activities of investors or counterparties to the property fund, for example non-financial corporations, banks, insurance companies, pension funds or households.

Property funds have become a key participant in the domestic CRE market in recent years. Irish property holdings by Irish property funds are valued at €23.3bn. Recent engagement with industry suggests that the 'invested' CRE sector is approximately €53bn.[4] Therefore, property funds'

[3] The *Deep Dive Survey on Property Funds*, was announced by Governor Makhlouf on 4 December 2019, see his speech on "*The Macrofinancial Outlook for Ireland: risks, resilience and policy*". The survey was conducted in the early part of 2020, asking property fund managers for data as at Dec 2019.

[4] The value of the "invested" or "professionally managed" Irish CRE stock market is estimated using a combination of information from Cushman & Wakefield and Morgan Stanley Capital International. "Invested" Irish CRE is the share of the overall Irish CRE market that is not owner-occupied, and is thus owned by professional real estate investors for investment purposes. This estimate only considers direct holdings of physical real estate portfolios, it excludes portfolios of mortgages.

holdings of Irish property assets represent over 40 per cent of Irish 'invested' CRE. Given their growing importance, the resilience of this form of financing matters more today for the functioning of the overall CRE market than it did a decade ago. In particular, if – in the presence of financial vulnerabilities – property funds needed to sell property assets in the face of adverse shocks, their collective behaviour would have the potential to amplify shocks in the CRE market. Throughout the *Note*, we explore two potential sources of financial vulnerability: liquidity mismatches and leverage. Each is explained in more depth below.

The first potential source of financial vulnerability stems from the possibility of liquidity mismatches. Open-ended property funds raise finance through subscriptions of units in the fund by equity investors. Should a fund experience large redemption requests from equity investors, it may not be able to meet these requests out of liquid assets. This can lead to a number of options for the fund manager, one of which is to sell their property assets over a short period of time to meet the redemptions or in anticipation of future redemptions. This rapid or forced selling can lead to dislocated prices, which can have knock-on real economy effects. This dynamic can also occur in open-ended funds with limited liquidity who are approaching a dealing day. However, due to the low frequency of dealing days, the risk of these dynamics occurring are lower.

A key question is what would trigger investment fund investors to look for redemption of their investments on a large scale? Capponi et al. (2020) explain that widespread redemptions can be triggered by *first mover advantage* dynamics, leading to a run on the fund. This refers to the possibility that investors who redeem first will not bear the full liquidation cost of selling the assets. This will be borne by remaining investors instead. As they put it, '*Alert investors anticipate the impact on a fund's net asset value (NAV) of other investors' redemptions and exit first at favourable prices*' (Capponi et al., 2020, p. 1). As funds are collective investment vehicles with diversified asset holdings, there is a possible advantage from exiting first. This is particularly true if the fund holds a small amount of cash or liquid assets and a large amount of illiquid assets.

Two examples can be used to illustrate the risks stemming from liquidity mismatches. The first is the impact of Brexit on UK property funds. Unlike Irish property funds, which tend to be open ended with limited liquidity or closed-ended, and which most commonly have annual dealing days, many UK funds offer daily dealing. Both in 2016, when the Brexit referendum result was announced and then again in 2019, there were large withdrawals from UK daily-dealing property funds due to fears of the impact of Brexit on property values. The large redemption requests led a number of funds to suspend redemptions. This had the '*domino effect*' of causing other funds to experience large redemptions as investors attempted to withdraw their funding before the fund suspended (Mooney et al., 2019). Recently, the UK's Financial Conduct Authority has announced that they are considering enhancing liquidity rules for open-ended funds that are invested in illiquid assets (such as property), for example to increase notification periods to up to 180 days (FCA, 2020).

A second example is that of the German open-ended public property fund sector, which experienced two runs, one in 2005-2006 and another that started after Lehman collapsed in 2008 and ran until 2012. A central trigger of these runs appears to have been the gap between the appraisal-based valuation of the property held by the funds and the realised market-valuation (Weistroffer and Sebastian, 2015). It appears that some investors became aware of the disparity and called in their investments. This caused some of these open-ended property funds to suspend and eventually to close. In the years that followed, these funds were forced to sell their assets into a '*crisis-ridden market*' (Sebastian, 2018). The domestic policy response to the German experience was a change in the regulation to increase the resilience of open-ended public property funds. For example, investors must initially hold their investments for 2 years and have a notification period of 1 year should they wish to redeem (Maurer et al., 2012).

A second potential source of financial vulnerability that could increase the risk of selling CRE assets by property funds stems from leverage. Property funds can borrow to finance their investments through loans from banks, shareholders or other third parties (Coates et al., 2019). Leverage can have an amplifying effect on returns to equity, increasing returns in upward moving markets and

decreasing returns in downward markets. The significant negative effect of leverage during the few downward market periods for property assets has led a number of papers (Case, 2015, Baum et al., 2011, and others) to conclude that overall leverage has a negative impact on property fund returns. This point is also illustrated by Thurner et al. (2012) when they show that leverage in investment funds can lead to more extreme losses or gains in the fund and can also increase the persistence of large losses or gains over time.

Higher levels of leverage also increase the risk that, in a downturn, funds may breach loan covenants. These are specific conditions included in lending agreements, often linked to thresholds around the financial performance of the borrower. As investment funds were not big holders of property assets at the time of the previous financial crisis, we do not have much empirical evidence of how lenders to investment funds may react to covenant breaches during a crisis. Unless property funds can successfully take actions in response to potential covenant breaches (renegotiate with lenders or raise more equity etc.), they may be forced to sell property assets, causing further price falls. Thus, leverage can amplify an existing downward trend in a market.

3 Summary of the survey and overview of the property fund sector

As mentioned in section 1, the Central Bank conducted a bespoke survey of property funds to assess potential financial vulnerabilities in the sector. The survey – and the broader analysis in this *Note* – covered Irish domiciled investment funds authorised under AIFMD and investing in Irish property assets. The survey results were complemented by additional information, including – but not limited to – statistical returns, funds' prospectuses and financial reports of property funds.

The survey requested additional information on a range of dimensions that help inform an assessment of potential financial vulnerabilities in property funds, including:

- **Characteristics of asset holdings and investment strategy**: This included information around the type of CRE assets (e.g. office, retail or residential); the location of those assets; the (perceived) liquidity of these assets; and the expected remaining life of the fund.
- **Characteristics of liabilities**: This included information around the liability structure of fund; the location and sector of investors in the fund; the amount of borrowing and provider of debt to the fund; and the types of covenants in place for different types of borrowing.
- **Approach to risk management**: This included information around the liquidity management tools available to the fund; the approach to stress testing for different types of shocks; and different information that fund managers use in assessing and managing risks.

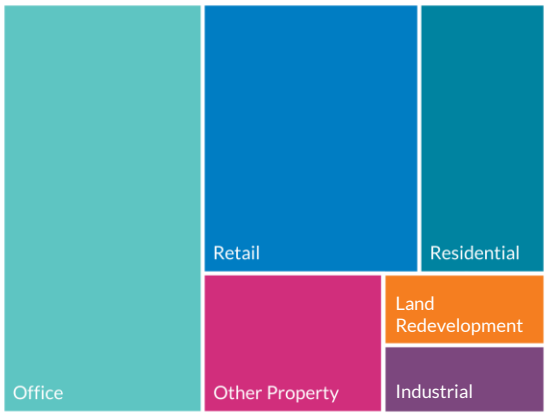
The results of the analysis of liquidity mismatches, leverage and interconnectedness are outlined in the next section. A high-level overview of the structure of the sector is outlined in Figures 1 and 2: the size of each box indicates the relative size of each sector. Some key points are below:

- The *Deep Dive Survey* identifies 171 property funds with €23.3bn in Irish property at Q4 2019. As mentioned above, recent engagement with industry suggests that the 'invested' CRE sector is valued at approximately €53bn. Therefore, Irish property funds are estimated to hold over 40 per cent of Irish 'invested' CRE.
- Holdings of property assets are distributed quite widely in terms of sector. The split of property assets is Office 37 per cent, Retail 26 per cent, Residential 15 per cent and 'Other' 23 per cent. There is greater concentration in terms of geography, with 87 per cent of property assets located in Dublin.
- A key characteristic of the property fund sector in Ireland is the prevalence of single-investor property funds. These account for €15.3bn (or 65 per cent) of property assets. The

majority of the single investors are real estate firms, private equity firms or other financial intermediaries.

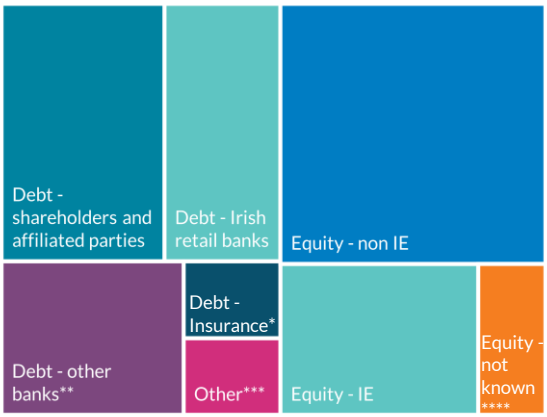
- There is considerable concentration amongst fund managers, with the top five fund managers managing 75 per cent of property funds.

Figure 1: Assets: Distribution of property asset holdings by sector



Source: *Deep Dive Survey*, Prospectus Information and authors' calculations.
Notes: Box size is based on data on property asset holdings. Data includes 171 property funds with total property assets of €23.6bn. Data includes approximately €0.3bn (1%) of property assets not located in Ireland. Funds hold additional non-property assets, including liquid assets, not included in this chart.

Figure 2: Liabilities: Debt by lender type and equity by investor location for property funds



Source: *Deep Dive Survey*, MMIF Data, Financial Statements and authors' calculations.
Notes: Box size is based on data on debt and equity held by property funds. This data is provided on a best efforts basis. Equity source is calculated based on the registered location of investors. *Insurance refers to life assurance and insurance corporations. **Other banks includes lending by Irish non-retail banks and foreign banks. It also includes loans that cannot be validated, as financial statements for these property funds are not yet available. ***Other refers to a combination of approximately 50% other loans and 50% other liabilities. ****In some cases information on equity held by investor location does not equal total equity. In these cases, the balance has been classified as 'not known'. See tables 5 and 6 for more details.

4 Assessment of liquidity mismatches, leverage and interconnectedness

Since 2011, the FSB has implemented a systematic process to assess the financial stability risks posed by the non-bank sector. Ireland has been part of this process since 2015 (see FSB, 2015). In this *Note*, we will use the same approach as the FSB to assess the resilience of funds subject to run risk, that is, liquidity mismatch, leverage and interconnectedness.[5]

4.1 Liquidity mismatches

Liquidity mismatches are primarily assessed by comparing a fund's liquidity timeframe to the expected time to sell property assets. The liquidity timeframe of a property fund is the sum of the standard notice period (the number of days prior to the dealing day before which any redemptions must be requested) and the settlement period (the maximum time available to a fund to settle redemption requests). So the liquidity timeframe represents the maximum length of time between the point at which an investor can request a redemption and the point at which the fund must pay out that redemption. The expected time to sell a property to meet redemption requests will depend on the liquidity of the underlying market, which likely varies depending on the prevailing macro-financial environment. Liquidity timeframes that are shorter than the expected time to sell property assets would be indicative of liquidity mismatches in funds.

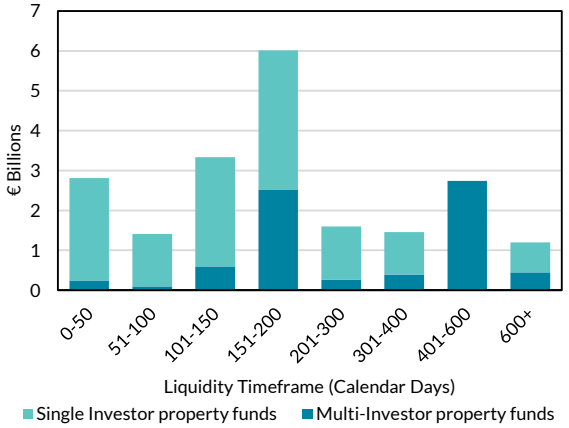
[5] The FSB also look at maturity transformation, but because of the specific nature of property assets, this would not be that valuable.

The liquidity timeframes of property funds vary from 7 days to over 1200 days (more than 3 years). However, according to fund managers' own assessment as part of the *Deep Dive Survey* results, it would typically take on average 6-7 months (or 180-210 days) to sell a property in normal times. This is also backed up by analysis of CRE transaction times, which suggested that it takes between 6-7 months to sell CRE during normal times in Ireland (see FSR 2020:I, p. 60). From our analysis, it is clear that some funds have liquidity timeframes below these values. In fact, 58 per cent or €13.6bn in property assets are held in property funds that have liquidity timeframes less than 200 days (approx. 6 ½ months) (see Figure 3). These liquidity mismatches could become more pronounced in times of stress. Property funds report that it would take on average 14 months (approx. 420 days) to sell a property in stressed times. However, only 17 per cent of property assets are held by property funds with a liquidity timeframe of 400 days or more.

If redemptions are small, property funds may be able to meet the requests out of liquid assets. As highlighted in the FSR (2019: II, chart 103), property funds hold about 5 per cent of total assets in liquid assets, so they should be able to cover redemption requests of this size. However, if redemption requests are significantly above this, they may have difficulty meeting these requests within their liquidity timeframe. This, in itself, could be a motivation for *first mover advantage* (in multi investor funds or possibly in single investor funds with multiple investors underlying the single investor). As at the time of publication of this *Note*, increased redemption flows have not been experienced by property funds in response to COVID 19, and therefore *first mover dynamics* have not, at this stage, been apparent in Irish property funds as a result of the recent shock.

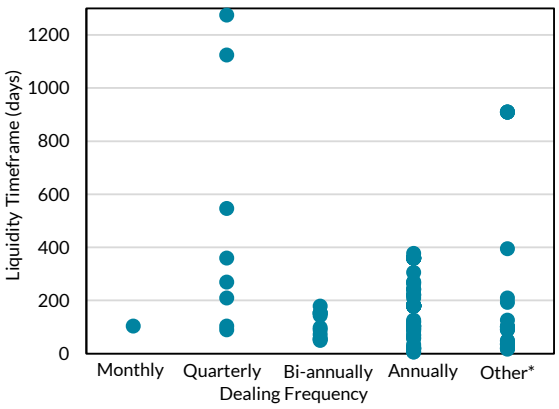
Another indicator that can be helpful in gauging the extent of liquidity mismatches relates to the dealing frequency of the fund. Property funds in Ireland are either closed-ended funds or open-ended with limited liquidity.[6] This means that investors' ability to redeem is significantly limited compared with most investment funds (they are generally daily dealing). However, this does not mean that large redemption requests could not occur at those dealing frequencies. At this point, it would be the liquidity timeframe that determines liquidity mismatches. Figure 4 shows that, despite the relatively low frequency of dealing, the majority of property funds have liquidity timeframes of less than 200 days. Moreover, nearly all funds have a liquidity timeframe less than 400 days (i.e. below the time that funds have reported as being required to sell property in stressed times).

Figure 3: Distribution of property funds' holdings of property assets by liquidity timeframe



Source: *Deep Dive Survey*, Prospectus Information and authors' calculations.
Notes: Data includes 133 property funds with €20.6bn in property assets. Information on liquidity timeframes was unavailable for 38 property funds with €3bn in property assets. Chart includes €3.1bn of closed-ended funds for which withdrawals are available at directors' discretion. These have been allocated to liquidity buckets based on the liquidity timeframe once a dealing day is called.

Figure 4: Property funds' dealing frequency versus liquidity timeframes



Source: *Deep Dive Survey*, Prospectus Information and authors' calculations.
Notes: Data includes 133 property funds with €20.6bn in property assets. *Other refers to property funds that do not have dealing days (i.e. closed-ended) or for which the dealing date is not clear (i.e. where dealing dates are at the discretion of the fund manager).

[6] For closed-ended funds, investors can cash in their investment when the fund closes, for open-ended funds with limited liquidity dealing dates occur at a limited frequency i.e. monthly, quarterly etc. The most common frequency of dealing dates for property funds is annual.

Table 1 outlines the liquidity timeframes of the funds and how these compare to the liquidity buckets reported by funds in the survey. Liquidity buckets indicate how quickly fund managers themselves expect to be able to sell property assets, in normal times, without materially affecting the price of the asset. The red cells are those where the expected time required to sell the assets is greater than the liquidity timeframe. Certainly there are cohorts of funds that may have liquidity mismatch issues that would require management should a large redemption be requested. For instance, property funds with liquidity timeframes of between 0 and 180 days report they could only liquidate €0.4bn of €8.7bn in property assets within that timeframe. The red area in Table 1 represents the total value of assets for which funds report liquidity timeframes less than the time they report it will take to sell their assets.

Table 1: Comparison of *Deep Dive Survey* Property Liquidity Buckets & Prospectus' Liquidity Timeframes

		Liquidity Timeframe (Prospectus)				
		0-90 Days	91-180 Days	181-365 Days	>365 Days	NA
	No. funds	32	30	62	9	38
Property Liquidity Buckets *(normal market conditions)* (Deep Dive Survey)	<90 Days	-	0.4	0.2	-	0.0
	91-180 Days	0.9	1.9	0.3	2.8	0.3
	181-365 Days	1.2	2.2	5.1	1.5	2.1
	>365 Days	1.6	0.5	1.8	-	0.6
	Total (€bns)	***3.6***	***5.1***	***7.4***	***4.3***	***3.1***
Mismatch % Property Assets		100%	54%	24%	0%	NA

Source: *Deep Dive Survey*, Prospectus Information and authors' calculations.
Notes: Data includes 133 property funds with €20.6bn in property assets. Green indicates that the number of days funds reported as being required to liquidate property assets in the *Deep Dive Survey* is less than the liquidity timeframe reported in funds' prospectuses. Orange indicates they are equal, while red indicates the number of days required to liquidate property assets is longer than the liquidity timeframe reported in funds' prospectuses. Chart includes €3.1bn of closed-ended funds for which withdrawals are available at directors' discretion. These have been allocated to liquidity buckets based on the liquidity timeframe once a dealing day is called.

Liquidity mismatches may be less of a concern if property funds only have a single investor. Property funds with a single shareholder would generally not be susceptible to first mover advantage dynamics, unless these single shareholders themselves in turn had many independent sub-investors. In total, of the €8.2bn of assets in the red area in Table 1, €6.7bn is owned by single investor funds. The remaining approx. €1.4bn is owned by multi investor funds where run risk may be a concern. Also it is worth noting that approximately one fifth of single-investor property funds are financial institutions that act on behalf of other multiple investors (i.e. investment funds, pension funds and insurance companies). Requests from investors in these financial institutions could force them to close their property funds and/or sell their property assets, so there may be some indirect *first mover advantage* risk here also.

There are several actions that fund managers can take to mitigate risks stemming from liquidity mismatches. The directors of a fund may have flexibility with the length of the liquidity timeframes in practice. Funds also have access to a wide range of liquidity management tools.[7] These include the power to suspend redemptions, which is available to all property funds that allow for subscriptions and redemptions of fund shares (i.e. are not closed-ended). This would mean investors would not be able to redeem their shares during the time of the suspension and the fund would not be forced at this time to sell the assets. More broadly, applying liquidity management tools can relieve the pressure to sell assets should a fund or funds be subject to large redemption requests. They are a key part of the toolkit available to funds to manage liquidity risks, especially in times of stress. With this in mind, the ESRB, ESMA and the Central Bank have all stated publically the

[7] These include: **Redemption gates** - where redemption requests exceed a certain threshold, a fund can decide to carry forward any redemption requests in excess of that threshold to the next dealing day; **Redemptions in kind:** a fund may decide to satisfy redemption requests by transferring securities, instead of cash, to the redeeming unit-holder; **Side pockets:** a fund may place illiquid investments in a separate 'side pocket' and issue shares in the side pocket to unit-holders in the investment fund on a pro rata basis; **Anti-dilution levy**: a fund can charge a levy on an investor buying or selling units when the fund is in a net subscription or redemption position; **Redemption fee:** a fund has the ability to charge a redemption fee in circumstances where it is experiencing large outflows; **Temporary suspension**: a fund can invoke a temporary suspension of dealing in the fund, and; **Temporary borrowing**: a fund can avail of temporary borrowing or credit lines from another institution.

importance of the availability and timely use of liquidity management tools as part of their risk management strategies.

4.2 Leverage

The second significant metric we use to assess financial stability risk is leverage. For property funds, we measure leverage as a loan-to-value (LTV %) metric based on the value of loans divided by property assets. Falling valuations or rents collected could have an impact on leveraged property funds' loan agreements. Covenants or loan agreements are commonly put in place for bank loans. These include LTV thresholds and interest rate cover requirements. Should funds be unable to make interest payments due to a lack of rental payments or should they break the LTV thresholds in the face of property price falls, they may seek to sell property assets due to these agreements. Alternatively, their third party lenders (i.e. banks) may claim the assets and sell them. If this sale activity is at a significant level, it could trigger or amplify downward pressures in the CRE market.

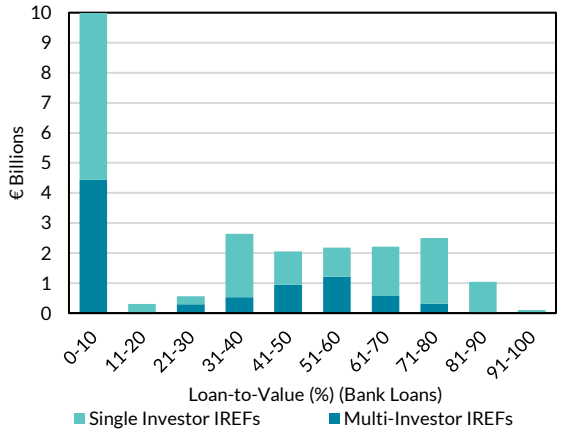
A particular feature of the Irish property fund sector that complicates financial stability assessment is that there is significant borrowing from shareholders or affiliated parties to the funds. This type of debt funding may be largely due to tax reasons. The recent Finance Act (2019) has looked to address this activity.[8] This type of borrowing is unlikely to present the same type of risks as borrowing from other financial institutions – the majority of which is bank lending. In the *Deep Dive Survey*, 85 property funds with €15bn in property assets also reported €6.2bn in bank loans. As a result, we present the leverage metrics in terms of bank loans rather than total loans, as we attach more weight to these as an indicator of potential financial vulnerabilities.

Figure 5 below presents the distribution of leverage across the property fund sector. It is clear the measures of average leverage across the sector can mask significant differentiation across individual funds. Indeed, there is a pocket of funds across the sector with higher levels of leverage. Figure 5 also illustrates differences between single investor and multi investor property funds. The majority of multi investor property funds have lower LTV values, although there are both multi and single investor property funds with higher levels of LTV. As a comparison, REITs are required to maintain leverage below 50 per cent. Around 67 per cent of single investor property funds and 41 per cent of multi investor property funds have leverage above 50 per cent. We also note that Irish property funds hold higher leverage on average than their European counterparts (Figure 6). In part, this is because of the significant presence of shareholder loans. But, even after shareholder loans have been removed, average leverage appears to be at the higher end of the European spectrum.

A further consideration is that the equity investors in a property fund might also be highly leveraged in their own right. Should the investors experience calls for further cash due to their own leveraged positions, this could amplify the financial stability risk outlined here. The extent of the leverage positions of investors in Irish property funds is not included in responses to the *Deep Dive Survey*.

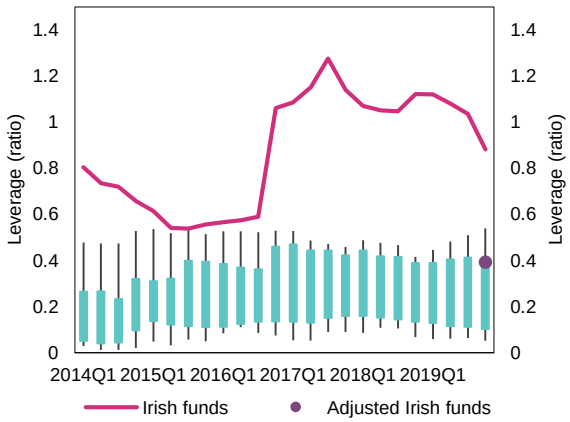
[8] Finance Act (2019) 739LA.

Figure 5: Distribution of property funds' bank loan leverage (LTV %)



Source: *Deep Dive Survey*, Prospectus Information and authors' calculations.
Notes: **Loan-to-Value (LTV %)** calculated as Bank Loans/Property Assets.

Figure 6: Distribution of leverage in real estate funds across European countries



Source: Central Bank of Ireland, *Deep Dive Survey*, European Central Bank and authors' calculations.
Notes: Leverage ratio here is calculated as total assets under management divided by total net asset value minus 1. This can be biased where non-equity liabilities are used by funds for purposes other than leverage. Aside from shareholder loans, this bias is expected to be small for Irish real estate funds. Box plots show the 90th, 75th, 25th and 10th percentiles of leverage of real estate funds across other European countries. Adjusted value assumes shareholder and related party loans would be equivalent to equity. Data for 2014Q1-2019Q4.

As described in the FSR (2020: I, p.28) the Irish CRE market has already experienced a decline in valuations and rents since the onset of the COVID 19 pandemic. Scenario analysis at the Central Bank has considered a reduction in the demand for and supply of new units entering the market. For example, one scenario considers a cumulative baseline fall in CRE prices of almost 16 per cent over the period 2020 to 2022 (FSR 2020: II, Box B).[9] In table 2, we explore the number of property funds that might breach funds' reported loan covenant thresholds for a number of different CRE price decline scenarios. For example, a cumulative 16 per cent decline in CRE prices would imply that 24 funds or 14 per cent of total property funds' property assets could be subject to a loan covenant breach. The funds may be able to renegotiate the terms of the loan with the loan provider or be able to engage in other recovery strategies such as raising more equity. However, it is also possible that the funds may be required to transfer, or may choose to sell, the CRE assets. These 24 property funds hold €3.4bn in CRE assets. For context, average transaction values from 2014-2019 were approximately €4bn, so sales would be substantial relative to annual market volumes with potential downward-amplifying effects on property prices, particularly if the market was already in difficulty.

[9] Additionally, small reductions in residential property prices are also expected in the next twelve months (FSR 2020:1, page 29).

Table 2: Simulated impact on property funds leverage if property prices decline

	Scenario Property Price Decline					
	Cumulative scenario 2020		Cumulative scenario 2020-21		Cumulative scenario 2020-22	
Scenario	Baseline	Adverse	Baseline	Adverse	Baseline	Adverse
	-4.9%	-5.9%	-13.6%	-20.9%	-15.8%	-24.0%
No. property funds breaching LTV covenant	7	8	22	34	24	43
Property Assets (€mn)	737	861	3,070	5,796	3,361	6,646
% Total property funds Property Assets	3%	4%	13%	25%	14%	28%
Average size (€mn)	105	108	140	170	140	155

Source: *Deep Dive Survey* and authors' calculations.
Note that simulations are based on the leverage of property funds (i.e. LTV on bank loans) as reported in response to the Deep Dive Survey at end-2019, using scenarios outlined in the FSR (2020:II, Box B). Thus, the impact of longer cumulative forecasts may change subject to the evolution of property funds' leverage over time.

When asked how they would respond to shocks, fund managers reported in the *Deep Dive Survey* that a number of options may be available to them to manage risks related to their leverage. These included seeking:

- Additional equity from unit holders,
- The drawdown of equity from a parent fund (where relevant),
- The conversion of shareholder loans to equity,
- Engagement with lender/s to resolve any breach including revisiting terms of loans,
- The full or partial disposal of property assets in the portfolio,
- The voluntary and orderly wind-up of the fund, or
- The write-off of debt.

4.3 Interaction between liquidity mismatches and leverage

Funds exhibiting both high leverage and mismatched liquidity positions would be particularly vulnerable to shocks. For example, highly leveraged funds that also exhibit liquidity mismatches may be more susceptible to increased redemption risks by investors in periods of stress.

Table 3 and 4 present the interaction of both these resilience metrics for property funds. We split the funds into four cohorts using two thresholds. The first is to split the funds into those with LTV above and below 50%. This is the current threshold for Irish REITs; see Coates et al. (2019) for more details. The second is to split these funds further into those above and below a liquidity timeframe of 180 days. This value is taken as it represents the average expected time to sell property assets in normal times reported in response to the *Deep Dive Survey* (see section 3.1 above).

Table 3 presents the four cohorts when looking at bank loan leverage. Table 4 presents the four cohorts in terms of all loans. The bottom right cohort of funds are relatively highly leveraged funds with lower liquidity timeframes. We would consider these funds to be the ones most likely to have resilience issues. Some of these funds are relatively small in size. We suggest that one fund by itself is unlikely to have a material impact on the market, more so that a cohort as a whole might do so. Also, many of these funds are single investor funds. As discussed in previous sections, this reduces the likelihood of a run on the fund (the fund is more likely to close) but it does not per se affect the increased vulnerability of being highly leveraged. A single investor fund might still look to sell the underlying assets. Table 4 also includes shareholder loans and other third party loans. A shareholder that is a creditor is less likely than a bank to call for the sale of property assets if the fund itself does not wish to do this, they are more likely to be aligned in their thinking with the fund, particularly for single investor funds.

Table 3: Liquidity Timeframe vs. LTV for Bank Loans as a % of property assets

	LTV ≤ 50 %	LTV > 50%
Liquidity Timeframe > 180 days	43.8%	13.7%
Liquidity Timeframe ≤ 180 days	22.7%	**19.8%**

Source: *Deep Dive Survey* and authors' calculations.
Notes: Data includes 133 property funds with €20.6bn in property assets.
Loan-to-Value (LTV %) calculated as Bank Loans/Property Assets.
Liquidity timeframe = standard notice period + settlement period

Table 4: Liquidity Timeframe vs. LTV for Total Loans received by property funds

	LTV ≤ 50 %	LTV > 50%
Liquidity Timeframe > 180 days	31.8%	25.7%
Liquidity Timeframe ≤ 180 days	11.7%	**30.8%**

Source: *Deep Dive Survey* and authors' calculations.
Notes: Data includes 133 property funds with €20.6bn in property assets.
Loan-to-Value (LTV %) calculated as Total Loans/Property Assets.
Liquidity timeframe = standard notice period + settlement period

4.4 Interconnectedness with other parts of the domestic financial system

Understanding the sources of finance can help to evaluate the risk of large redemptions or forced sales as well as the impact (directly and or through the interconnectedness of property funds) to domestic and international counterparties. As previously noted, approximately 50 per cent of property funds' funding comes from equity and 50 per cent from debt.

Starting with debt financing, Table 5 below outlines the breakdown of debt financing as reported in funds' responses to the *Deep Dive Survey*. Around €6.2bn or 53 per cent of financing from property funds comes from banks, of which €3.2bn comes from Irish retail banks. Thus, there is a direct connection between the property fund sector and the domestic banking sector, although – overall – Irish retail banks have much smaller exposures to CRE lending than in the run-up to the Global Financial Crisis (GFC). Shareholders and other affiliates also represent a significant percentage of funding. As mentioned above, this type of funding may be mainly there due to tax reasons. The recent Finance Act (2019) has looked to address this activity.[10] The remainder of debt financing comes from other financial corporations, such as insurance companies.

Table 5: Debt Liabilities of property funds, By Lender (€ billions)

	Irish retail bank	Other banks (Irish non-retail & foreign)*	Shareholder & Affiliated Parties	Life Assurance & Insurance Corps	Other Third Parties	Total
Amount (€bn.)	3.2	3.0	4.5	0.8	0.4	**11.8**
% Total Loans	27%	26%	38%	7%	3%	**100%**

Source: *Deep Dive Survey*, MMIF Data, Financial Statements and authors' calculations.
Note: This data is provided on a best efforts basis. *Other banks includes €1.1bn in loans that cannot be validated, as financial statements for these property funds are not yet available. The sample here of €11.8bn refers to the value of debt, and does not include equity or other liabilities.

On the equity side, the characteristics of the beneficial owners of property funds are summarised in Table 6. As noted previously, the majority of property fund equity investors are overseas (approximately 73 per cent), especially from Germany, the US and the rest of Europe. Still, the largest cohort of investors by both country and sector are in fact Irish pension funds. The next largest are German OFIs (Other Financial Intermediaries). These OFIs act as intermediaries on behalf of affiliated companies. Further preliminary analysis indicates that OFIs in Europe are ultimately part of asset management and insurance arms of larger financial groups. Those in the UK and US ultimately relate to private equity and real estate firms. While much smaller, the beneficial owners of OFIs in the Caribbean and Asia are less clear, and these OFIs tend to be holding companies and limited partnerships.

As mentioned above, the growing importance of foreign investors is associated with broader risk-sharing and increased liquidity in the market. But it can also give rise to vulnerabilities, including an increased sensitivity of the Irish CRE market to global shocks and closer alignment with developments in international CRE markets.

[10] Finance Act (2019) 739LA.

Table 6: Beneficial Investors in Property Funds by Location, Sector and Size (€ millions)

Country	Sector (Amount - €mn)							Total (€mn)	% Total
	DTC	HHS	IC	NFC	IF	PF	OFI		
Ireland	-	361	184	518	271	1,131	333	2,797	27%
Germany	-	-	549	-	256	6	1,086	1,898	18%
United States	-	0	-	542	13	-	505	1,060	10%
Luxembourg	0	-	-	2	608	-	198	809	8%
United Kingdom	0	70	-	560	58	32	75	795	8%
Other Europe	1	22	667	474	240	82	874	2,359	23%
Caribbean	-	2	-	66	141	-	141	349	3%
East Asia	-	37	-	4	81	6	175	303	3%
Total (€mn)	1	491	1,249	2,165	1,668	1,408	3,386	***10,369***	
% Total	0%	5%	12%	21%	16%	14%	33%		***100%***

Source: *Deep Dive Survey* and authors' calculations.
Notes: Red indicates investment >= €1,000mn; amber >=500mn & <€1000mn; green >=€100mn and <€500mn. Information based on the top 10 investors for property funds as reported in response to the *Deep Dive Survey*. The sample here or €10,4bn represents 89 per cent of a total of €11.7bn of equity. This plus the €11.8bn of debt financing referred to in table 5 gives the total value of financing. In addition, property funds also reported approximately €0.4bn of 'other liabilities'.

In summary, we can see links to the domestic economy through Irish retail bank loans (€3.2bn) and through Irish equity investors, especially pension funds (€2.8bn). Other links are seen to international banks and German OFIs for example. This interconnectedness implies that activities of these entities could have implications for other sectors of the domestic or international economies. As noted above many of the investors in property funds are OFIs, some of which relate to financial institutions and other real economy stakeholders such as non-financial companies.

5 Conclusion

The growth of Irish property funds since the GFC has brought with it many benefits, including the diversification of financing channels for CRE away from domestic investors towards international investors and a reduced reliance on debt financing intermediated by Irish retail banks. This increases risk sharing and reduces domestic interconnectedness. However, an implication of this structural trend is that it increases the sensitivity of the Irish CRE market to global shocks.

More broadly, given the growth of Irish property funds in recent years, the resilience of this form of financial intermediation matters more today for the overall functioning of the CRE market than it did a decade ago. The analysis in this *Note* illustrates that there is a cohort of property funds that have material levels of leverage and, to a lesser extent, liquidity mismatch. These characteristics increase the vulnerability of parts of the property fund sector and the associated risk that – in response to adverse shocks – some property funds may need to sell property assets over a relatively short period of time, amplifying price pressures in the CRE market.

A number of risk management strategies are available to fund managers to manage these risks, including the use of liquidity management tools. In the context of the heightened uncertainty associated with the COVID 19 pandemic, the Central Bank – as part of its supervisory interventions – has been actively monitoring and engaging with investment funds to enhance their preparedness to respond to shocks. While the pandemic has adversely affected parts of the CRE market – especially the retail segment – so far, there has been little evidence of widespread asset sales by property funds in light of the shock.

As property funds have become increasingly important for the financing of the domestic CRE market, their collective behaviour in times of stress can have a material effect on the functioning of this market. A limited set of macroprudential powers are currently available under certain

European regulations for investment funds.[11] The analysis in this *Note* supports the need to explore possible macroprudential policy interventions in this area, such as leverage limits or options to limit liquidity mismatches, to strengthen the property fund sector's overall resilience to potential future shocks. The Central Bank has outlined the development of a comprehensive macroprudential framework for the market based finance sector as one of its priorities.

[11] For example article 25 AIFMD (2011)

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