Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

QB3 – July 2021

Signed Article

New Insights from Irish Pension Fund Statistics

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New Insights from Irish Pension Fund Statistics

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Abstract

This article provides a detailed overview of the new statistical dataset on occupational pension funds collected by the Central Bank of Ireland. It highlights the growing importance of the sector with new insights on the structure of assets, liabilities, and changes in pension fund membership. In contrast to the Euro area, a small number of large pension funds account for most direct investment, with the significant number of remaining small funds relying heavily on unit linked insurance products and investment funds to diversify their holdings. Membership of defined benefit schemes is declining while it is increasing for defined contribution schemes, resulting in a shift in risk from the corporate sector to households. The sector has grown by 6.2 per cent since 2019, with total assets amounting to €127.5 billion at end-March 2021, equivalent to 60 per cent of GNI*.[2] However, the €8.6 billion deficit between Irish occupational pension funds' assets and liabilities warrants further analysis.

[1] Statistics Division. The authors would like to thank Jenny Osborne-Kinch, Maria Woods, Rory McElligott, Martin O'Brien, Mark Cassidy and Caroline Mehigan for their comments. The views expressed here are those of the authors and do not necessarily reflect those of the Central Bank of Ireland or the European System of Central Banks.

[2] Modified Gross National Income for end-2019.

1. Introduction

Pension funds perform a duet of roles, helping individuals save for old age and contributing towards the allocation of long-term capital across different economic sectors. They represent an important household financial decision, and are only comparable to mortgages in terms of financial commitment and long-term time-horizon. Globally, pension systems currently face challenges with older demographics, the low interest rate environment and sectoral reforms. In Ireland, the population is ageing and projections estimate life expectancy growth of over 5 years to almost 87 for males and over 90 for females by 2070 (Finance, 2021). This will result in an increased dependency on pensions to meet the retirement income needs of individuals for extended periods. Such demographic changes are a motivation for pension reform, including proposed increases in statutory retirement ages and the introduction of auto-enrolment to improve levels of pension savings and coverage.

Due to comparable issues across Euro area countries, and the limited information available to analyse pension funds, it became clear there was a need for higher quality, more granular and comparable data on the sector. To facilitate this, the European Central Bank (ECB) published a Regulation in the first quarter of 2018 on mandatory harmonised statistical reporting requirements of pension fund data by Eurosystem member states (See Box A). [3]

Box A: Statistical Reporting Requirements for Pension Funds

Under the Regulation, reporting requirements are mandatory for all pension funds defined under the European System of Accounts resident in Ireland.[4] In the Irish context, a pension fund is an autonomous occupational pension scheme established under trust. Government pay as you go schemes are not included in the data. The new dataset features standardised concepts that comply with international statistical standards and covers assets and liabilities of pension funds broken down between defined benefit and defined contribution schemes. The new statistics provide a detailed set of consistent data, to improve the understanding of sectoral interconnectedness and risks associated with pensions from the view of financial stability. [5] The Regulation facilitated an approach to data collection that would cater for Ireland's unique sector structure, and reduce the reporting burden on the smallest pension funds by setting reporting requirements based on pension fund asset size. The first cohort, composed of the largest funds, report detailed data on a quarterly and annual basis, and the second, capturing smaller pension funds, reporting reduced data on an annual basis. [6] Aggregated figures are incorporated for the residual population who do not report, with a grossing methodology implemented to reach full sectoral coverage. As at Q1 2021, the collection reflected a reporting

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R0231&qid=1620225386606
[4] https://ec.europa.eu/eurostat/web/esa-2010
[5] These data are not used for prudential purposes. The regulatory body for pension funds in Ireland is the Pensions Authority.
[6] Detailed population covers, at minimum, 75 per cent of assets in sector, rising to 80 per cent in 2022. Reduced population covers, at minimum, 95 per cent of assets in the sector.

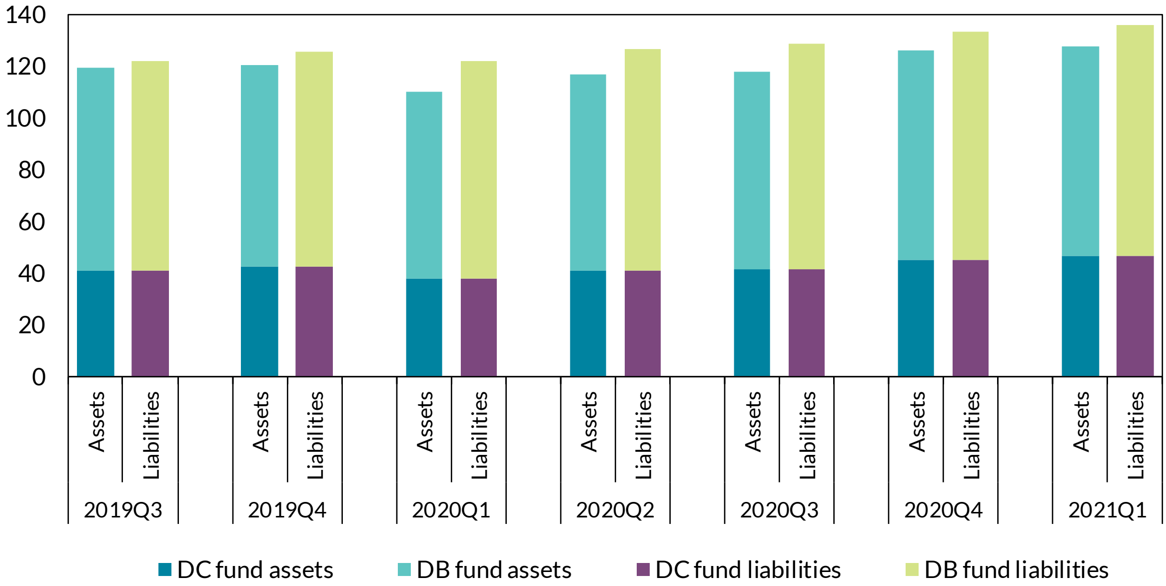
population of 395 pension funds covering 930,000 members for detailed data and 12,000 funds covering 300,000 members for reduced data.

In October 2020, the new statistical series on pension funds was released by the Central Bank of Ireland.[7] The Central Bank of Ireland have also published a Behind the Data on initial insights from the dataset.[8] This article reports key findings from the data and highlights issues that warrant further analysis.

- In Q1 2021, Euro area pension funds' assets amounted to €3.1 trillion, more than doubling in size since 2010.
- The latest figures show the total asset value of the Irish pension fund sector was €127.5 billion, equivalent to 60 per cent of Irish GNI*, at end-March 2021. Despite the initial impact of COVID-19, this marks growth of €7.4 billion since the data was first collected for September 2019.
- Pension fund assets are predominantly held in the insurance corporation and investment fund sectors.
- The pension fund sector is heavily concentrated, with the top 10 pension funds covering 414,981 members and accounting for approximately 30 per cent of assets.
- The assets were €46.6 billion and €80.9 billion for defined contribution (DC) schemes and defined benefit (DB) schemes, respectively (Figure 1).
- The structural change away from DB to DC pension funds over the past decade means a transition of risk to the household sector, with individual's retirement income more susceptible to asset price movements.
- Despite this recent asset growth, the overall net worth of the sector has remained in deficit over the course of the collection, with the total value of liabilities exceeding that of assets for defined benefit pension funds.
- At the height of the pandemic in Q1 2020, the deficit was at a peak of €12.2 billion but has since reduced to a shortfall of €8.6 billion in Q1 2021. This has the potential to influence financial stability as a result of suboptimal pension benefits impacting household retirement income and the funding burden on corporations to address deficits.

[7] https://www.centralbank.ie/statistics/data-and-analysis/pension-fund-statistics
[8] https://www.centralbank.ie/statistics/statistical-publications/behind-the-data/occupational-pension-funds-in-ireland-what-do-we-know

Figure 1: Total assets and liabilities, by pension fund type (€bn)



Source: Central Bank of Ireland Data

The remainder of this article is structured as follows: section 2 provides an explanation of the three-pillar pension system in Ireland. Section 3 provides an overview of membership information. The asset holdings of Irish pension funds are dissected in section 4, and liabilities data in section 5. Section 6 concludes.

2. The Irish Pension System

The Irish pension system can be categorised into three pillars. Pillar 1 is the state pension, whose primary aim is to provide a basic level of income to all members of society. Pillar 2 consists of occupational pensions. This is made up of pension funds and public service pay-as-you-go schemes. Pillar 3 is made up of personal pension products. The combination of income from these three pillars represents the primary means through which households finance themselves in retirement. The size, and role, of pension pillars varies across Euro area countries (Curos et al., 2020).

Figure 2: Pension System Pillars

Pillar 1 State pension	Pillar 2 Occupational pensions	Pillar 3 Personal pensions
• Pay-as-you-go • Contributory/non-contributory • Everyone covered • Poverty prevention	• Employer sponsored • Funded or pay-as-you-go basis • Defined benefit, defined contribution or hybrid	• Personal Retirement Savings Accounts • Retirement Annuity Contracts • Approved Retirement Funds • Personal Retirement Bonds

Pillar 1: State Pensions

In Ireland, the Pillar 1 public pension is a basic scheme paying a flat rate to all who meet contribution conditions. There is also a means-tested non-contributory pension to provide a safety net for the low-income elderly who do not have sufficient pay related social insurance contributions to qualify. The qualifying age for both state pensions is currently 66 and a Pensions Commission has been established to consider the change to the State pension age, among other issues.[9] The primary aim of both of these pensions is poverty prevention by providing a basic level of income in retirement to all members of society. The liabilities of the State for the contributory scheme was valued at €359.2 billion at end-2018.[10]

Pillar 2: Occupational Pensions

Pillar 2 captures occupational pensions, which operate on a funded basis for private sector schemes and either a funded or a pay-as-you-go basis for the public sector. For public sector workers, there are two main groups of pension schemes: those paid directly by the Exchequer or local government and commercial semi-state bodies who have their own specific pension funds. The schemes in the first cohort are pay as you go, while the second cohort are funded schemes (OECD, 2014). In 2018, the public sector pay-as-you-go schemes accounted for a State pension liability of €149.6 billion.

Data collected by the Central Bank of Ireland covers all funded occupational schemes in the private and public sector. These funds are incorporated under trust. A trust is a legal arrangement under which trustees hold the assets of the pension scheme in a trust fund for the benefit of the members of the scheme to provide income in retirement.

Occupational pension funds can be divided into two primary categories depending on the type of benefits they provide. These are DC and DB. DB pension funds provide pension at retirement determined by length of service and earnings. The investment and longevity risks are borne by the scheme and funded primarily by the employer contributions. In DC pensions, the level of pension provided will be the future value of assets purchased by contributions paid by employees and employer. The value of the benefits from the scheme depends on the amount of contributions paid and the investment return achieved minus fees. The investment and longevity risks are borne by the member. DC pension funds include single member schemes (typically set up for company owners/directors) and schemes hosted by life assurance companies. The latter provide investment through a unit linked policy, where the scheme assets are unit-linked policies issued by the company. Single member schemes are often self-administered and invest directly in assets, offering members more flexibility and control over investment decisions.

Pillar 2 consists of 74,866 DC and 597 DB active pension funds (Pensions Authority, 2020), representing over 90 per cent of total euro area pension funds by number. Unlike many other parts of the Irish financial service sector with large international services businesses, the Irish pension fund sector is predominantly comprised of Irish employee pensions. The large number of small funds is unique to Ireland. They are primarily made up of small self-administered single member DC schemes. However, the prevalence of such schemes may be impacted by the recent implementation of IORP II

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[9] https://www.pensionsauthority.ie/en/lifecycle/state_pensions/state_pension_age/
[10] https://www.cso.ie/en/releasesandpublications/ep/p-eipl/estimatesofirishpensionliabilities2018/

(see Box B). While DC pension funds account for the greater share of members, sector assets are concentrated in the larger DB pension funds. This reflects the changing landscape of the pension fund sector with many DB funds now closed to new members with a fall of 50 per cent in the number of active schemes since end-2009 (Pensions Authority, 2009). The switch has been motivated by employers facing higher costs and underfunding challenges, compounded by a low interest rate environment. This structural change away from DB to DC pension funds means a growing number of pension holders are now bearing the investment and longevity risk that the final asset values of their fund will fall below the expected levels of retirement income. This income is increasingly exposed to market fluctuations, as any fall in return will directly reduce the value of their pensions and retirement annuity prices. While DC pension funds might be more advantageous from a sponsor perspective, it may result in suboptimal pension investment decisions. As highlighted by Lusardi & Mitchell (2011), even in countries with very developed financial markets, many households have limited understanding of risk diversification. Households may opt for either a high risk or conservative approach, and not generate sufficient expected returns to ensure adequate retirement income. This may impact long-term consumption patterns for households as they operate with lower levels of income (Serrano & Peltonen, 2020).

Box B: Implications of IORP II

The Institutions for Occupational Retirement Provision (IORP) II Directive was signed into Irish Law on 22 April 2021 via a series of regulations.[11] These supervisory regulations introduce new requirements on occupational pension schemes and their trustees across areas of governance, risk management and investment. Its purpose is to set common standards across Europe by ensuring the soundness of occupational pensions and better protecting pension scheme members through enhanced transparency and procedures.

One key change is that single member arrangements, who were previously exempt from investment restrictions must now comply with requirements relating to borrowing and activity in regulated markets. This applies to new one-member arrangements immediately, while there will be an open-ended derogation from the investment rules and borrowing restrictions for activities entered into by pre-existing schemes before the new regulations. A five year transitory period for pre-existing single member schemes applies for the other new requirements around risk management and governance.

Given increased restrictions will reduce investment flexibility and increase governance and risk management costs on single member schemes, these entities may become less prevalent in the Irish market. As these schemes account for the majority of entities in the sector, a consolidation into larger defined contribution schemes, master trusts or alternative Pillar 3 pension products may occur.

[11] https://www.pensionsauthority.ie/en/trustees_registered_administrators/iorp_ii_directive/

Pillar 3: Personal Pension Products

Pillar 3 covers personal pension products. Primary products in the Irish market include Personal Retirement Savings Accounts (PRSAs), Retirement Annuity Contracts (RACs), Approved Retirement Funds (ARFs) and Personal Retirement Bonds (PRBs). A PRSA is a personal pension savings plan acting as an investment account to save for retirement. Every employer who does not offer an employer pension scheme to all its employees must offer the opportunity to contribute to a standard PRSA contract. The Pensions Authority provide quarterly data on this product.[12] The total assets of PRSAs in Q1 2021 amounted to €8.7 billion, covering 317,000 contracts.

A RAC is a type of insurance contract that provides a tax-free lump sum and benefits at retirement. RACs can be used by the self-employed to accumulate a retirement fund and by employees in non-pensionable employment to build personal and employer contributions. A PRB is a type of personal pension contract. At retirement, consumers can take a tax-free lump sum and use the remaining funds to fund an annuity or an ARF. An ARF is a post-retirement investment fund for the proceeds of a DC scheme, PRB, PRSA or RAC. The individual can decide how to invest the funds, which accumulates tax-free. A minimum percentage withdrawal is required in any given year.

3. Pension Fund Membership

While providing monetary values on pension fund assets and liabilities, the dataset also includes novel information on the total membership numbers for Irish occupational pension funds. These are collected on an annual basis and are broken down across active, deferred and retired members.[13] At end-2020, the total membership of Irish pension funds stood at 1.37 million, registering a small increase on the 2019 figure.[14] This increase was driven by a rise in the number of deferred and retired members of 3,228 (0.47 per cent) and 773 (0.77 per cent), respectively. However, these were slightly offset by the fall in number of active members of 100 (0.02 per cent) throughout 2020.

Figure 3 provides a breakdown of DB and DC pension funds for each member category as of year-end 2020. The total number of members under DB and DC pension funds are split at 46 per cent (625,000) and 54 per cent (745,000), respectively. This split is replicated in many pension markets around the world with the momentum behind DC pension funds showing little signs of abating. There is a large disparity between DB and DC pension funds across member categories. The number of active members in DC pension funds is far higher than DB, reflecting the aforementioned structural changes. This may also explain the high number of deferred members in DB pension funds. As people move jobs, they are more likely to move to an organisation offering a DC pension fund. As a result, their old DB pension fund will appear as deferred and their new DC pension as active. Once you retire from a DC pension fund you are no longer considered a member, resulting in a minimal number

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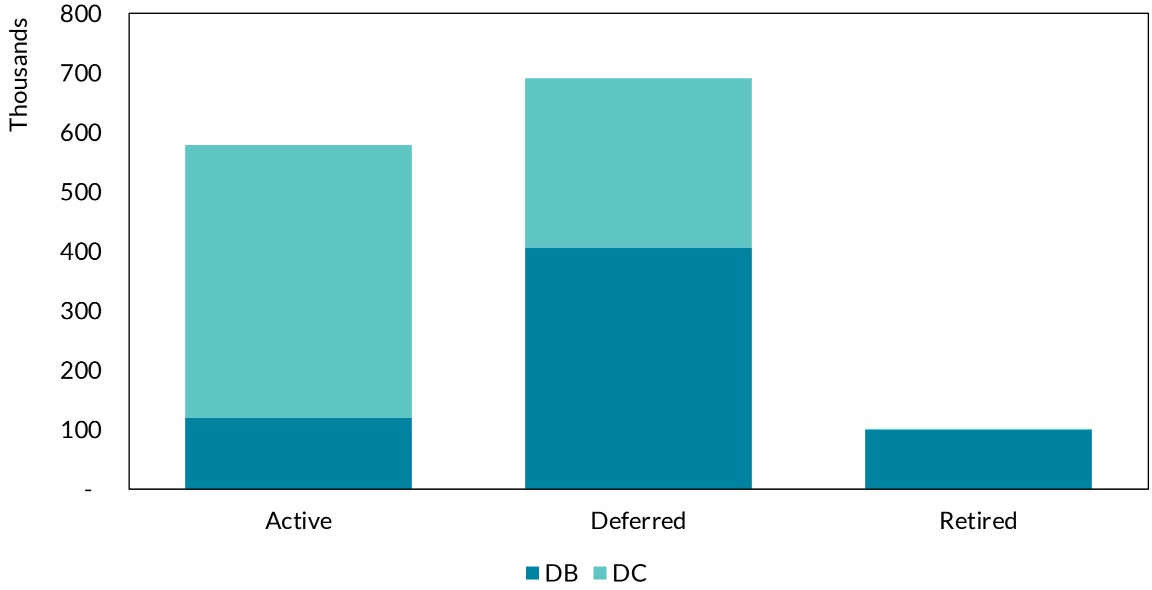
[12] https://www.pensionsauthority.ie/en/i_want_to_start_a_pension_prsa/prsas/

[13] An active member is a pension scheme member who is making contributions and is accumulating assets or has accrued assets in the past and is not yet retired. A deferred member is a pension scheme member who no longer contributes to or accrues benefits from the scheme but has not yet begun to receive retirement benefits from that scheme. A retired member is a pension scheme member who no longer contributes to or accrues benefits from the scheme and has begun to receive retirement benefits from that scheme.

[14] While individuals are usually only active in one pension fund, they may also hold deferred membership of other pension funds linked with previous employment. Therefore, each membership does not necessarily represent a distinct individual.

of retired members for DC pension funds.[15] This data is an important tool to monitor the transition away from DB to DC pension funds and changes in the active workers to retirees ratio.

Figure 3: Membership breakdown by Pension Fund Type - 2020



Source: Central Bank of Ireland Data

To gain insights into the economic sectors represented by this collection, a Nomenclature of Economic Activities (NACE) code is assigned to each detailed pension fund based on the primary activities of the underlying sponsor.[16] At end Q1 2021, the economic sectors most represented, in terms of asset size of pension fund can be seen in Figure 4.[17] Those in Financial and Insurance activities accounted for the greatest proportion with €33.1 billion in total assets across 74 PFs. The sectors with the largest average asset holdings per PF at end-Q1 2021 were Electricity, Gas, Steam and Air Conditioning supply (€781 million) and Transportation and Storage (€523 million). The majority of pension funds represented private employer firms (361), holding €79.5 billion in total assets. Semi-state sponsored pension funds were, on average, over double the size (€570 million) of PFs that were sponsored by private sector firms. Sponsors with Irish ultimate parents represented by 45 per cent of pension funds, holding 61 per cent of assets.

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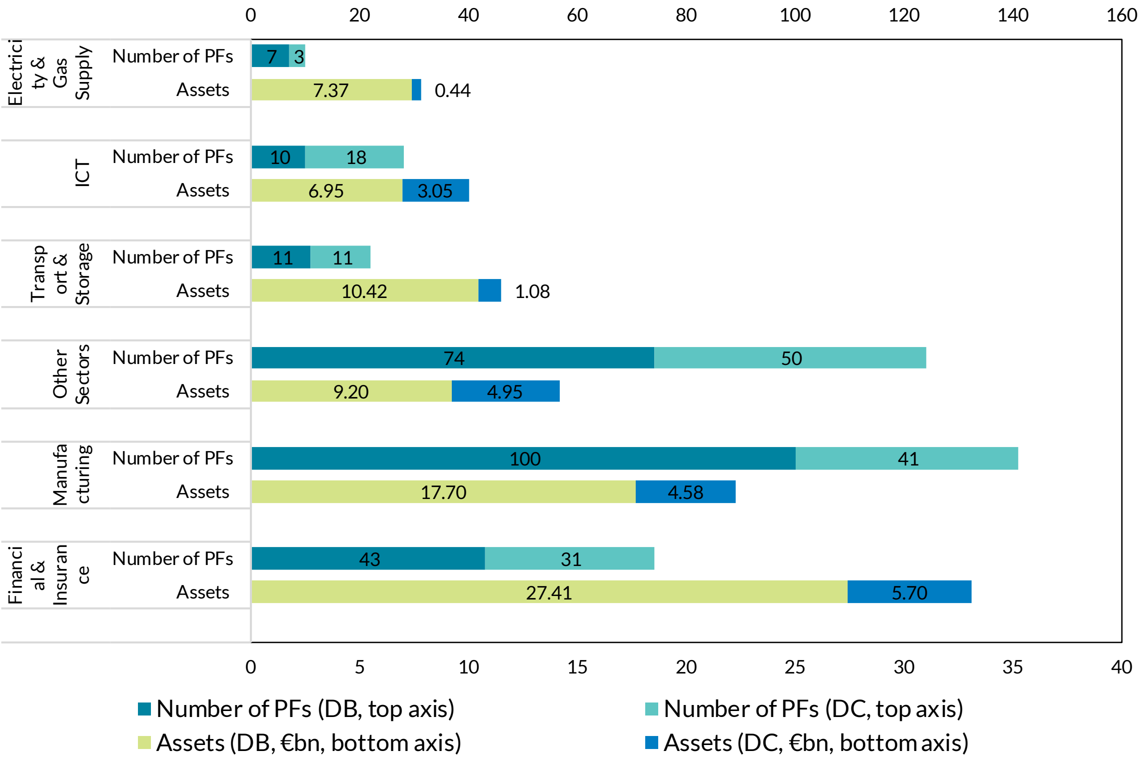
[15] The retired member will be captured under Pillar 3 once their DC retirement benefits have been transferred to a personal pension product.

[16] NACE Codes are a pan-European classification system that groups entities according to their business activities. A sponsor is any undertaking or other body which acts as an employer or in a self-employed capacity and which offers a pension scheme or pays contributions.

[17] These figures relate to the detailed reporting population who are the largest pension funds and submit data on a quarterly basis. At Q1 2021, they accounted for 395 PFs holding €98.8 billion in total assets.

Figure 4: Underlying Economic Sectors of Pension Fund Sponsors



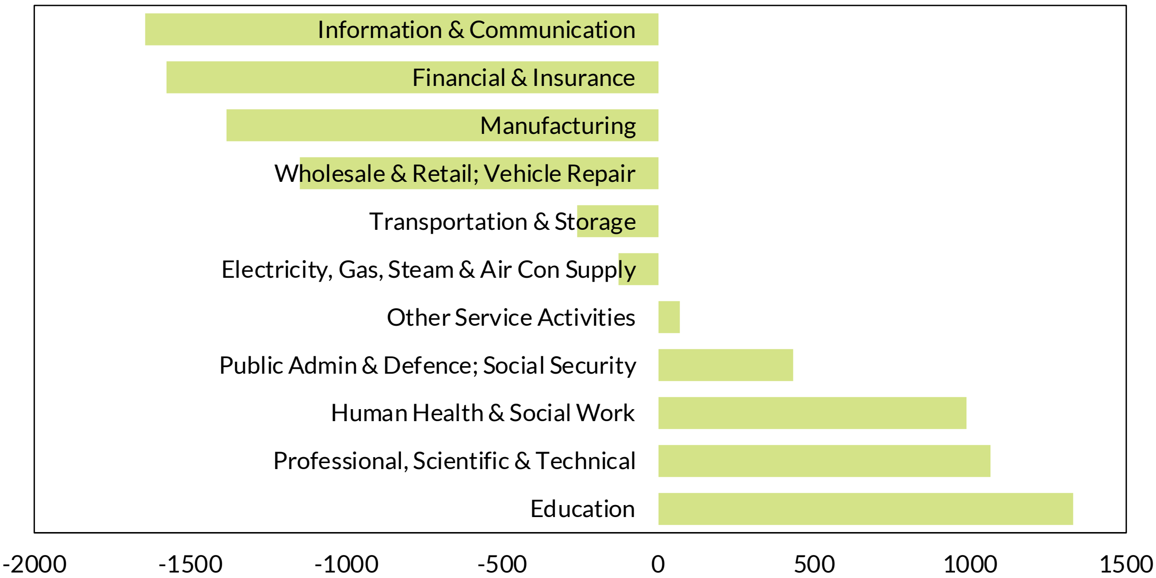
Source: Central Bank of Ireland Data
Notes: Data relates to only detailed reporting population. Other Sectors includes Agriculture, Construction, Wholesale & Retail Trade, Accommodation and Food services, Public Administration, Education, Health, Arts, and other service activities.

COVID-19 and Changes in Pension Membership

Previous work by Byrne, Coates, Keenan & McIndoe-Calder (2020) highlighted the initial impact of COVID-19 on job losses up to April 2020. Based on unemployment claims, they found significant concentration of displacement in the accommodation, food services, retail trade and construction sectors. While employment in these sectors may not all include membership of an occupational pension fund, we can compare their findings with the changes in active pension fund membership by economic sector.

Figure 4 identifies the changes in active members from 2019 to 2020. While some sectors impacted by COVID-19 experienced falls, wider market conditions can also be seen to influence other sectors. The information & communication, financial & insurance and manufacturing sectors showed the largest decreases in active members while the education, professional and health & social work sectors showed the strongest increases. The reduction in active members for the information and communication sector reflects redundancies in, and acquisitions of, specific technology companies. While the drop in the financial & insurance sector can be linked to job cuts at commercial banks. In terms of growth, the increase in active members for the education sector can primarily be associated with additional voluntary contribution schemes for teachers. Building on the work of Heffernan, Saupe & Woods (2020) and Lydon & McIndoe-Calder (2021), who highlighted the increases in households deposits during the pandemic, membership in these voluntary schemes by those in secure employment may represent an example of transfers from record high deposits to retirement savings. As the level of occupational pension coverage varies significantly by sector, membership in certain professions will be more impacted than others during periods of economic fluctuation.[18] This new dataset will provide opportunities for further work in this area.

Figure 5: Annual Change in Active Members by NACE sector 2019-2020



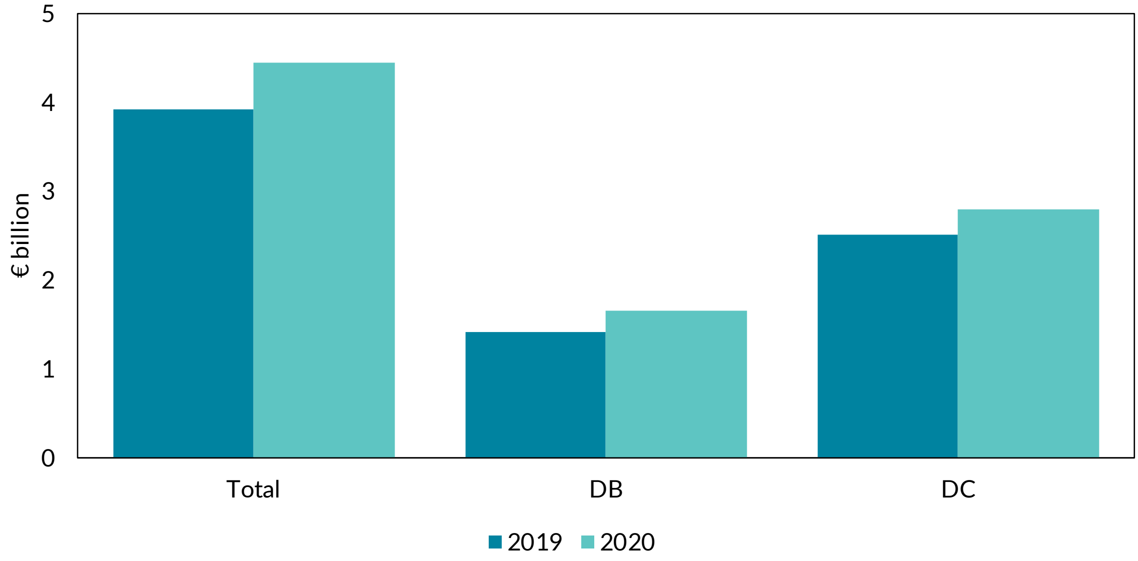
Source: Central Bank of Ireland Data
Notes: Data related to only detailed reporting population and sectors with >1000 active members.

Despite the decline in the number of active members, pension contributions grew by 13 per cent to reach a level of €4.4 billion in 2020. This figure includes contributions by members and sponsors, with both registering increases for 2020. The split in total contributions between DB and DC pension funds was 37 per cent and 63 per cent respectively. At a per active member level, contributions grew by 13 per cent, from an average of €7,774 to €8,819 between 2019 and 2020.

The new dataset outlines the changing structure across types of pension fund, with high levels of DC active membership and DB deferred membership highlighting the transition from DB to DC. By breaking down changes in membership by NACE sector, it identifies a fall in active membership linked to negative economic conditions. In spite of this decrease, contributions to pension funds grew over the same period. Again, additional contributions may represent an example of transfers from increased levels of household deposits to retirement savings.

[18] The Central Statistics Office provide occupational pension coverage by NACE sector. https://www.cso.ie/en/releasesandpublications/ep/p-pens/pensioncoverage2020/overallpensioncoverage/

Figure 6: Contributions by Year and Fund Type



Source: Central Bank of Ireland Data

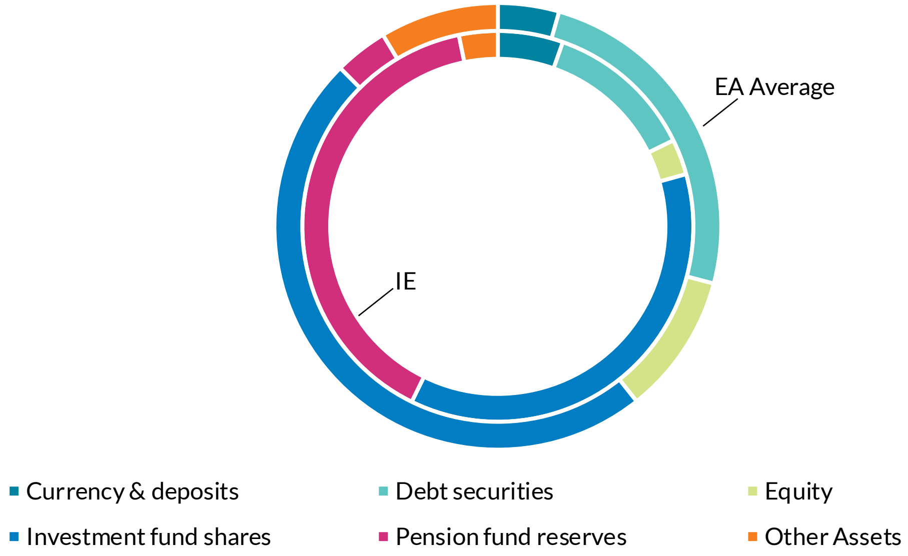
4. Pension Fund Asset Allocation

The new dataset facilitates insights into the investment assets of pension funds. The predominant investment assets are unit-linked insurance products (ULIPs) (€50.4 billion) and investment fund shares (€46.6 billion).[19] Direct investments in debt securities stood at €15.7 billion. The remaining assets are composed of currency & deposits, equity, financial derivatives and non-financial assets such as property. This concentration in asset holdings highlights exposure to the insurance corporation and investment fund sectors.

The composition of Irish pension funds' assets differs compared to the broader Euro area aggregates. The prominence of unit linked insurance products (40 per cent compared to 4 per cent) as an investment vehicle in the Irish market is the primary difference. Use of this product is minimal elsewhere in the Euro area. Pension funds across the Euro area also hold a higher proportion of assets in investment fund shares (48 per cent to 37 per cent), debt securities (25 per cent to 12 per cent) and equities (10 per cent to 3 per cent). Differences in the two latter products reflects a greater preference for direct investment holdings.

[19] Under ESA 2010 statistical classifications, ULIPs are captured under the term *Pension fund reserves*. In Ireland, *Pension fund reserves* are primarily composed of ULIPs.

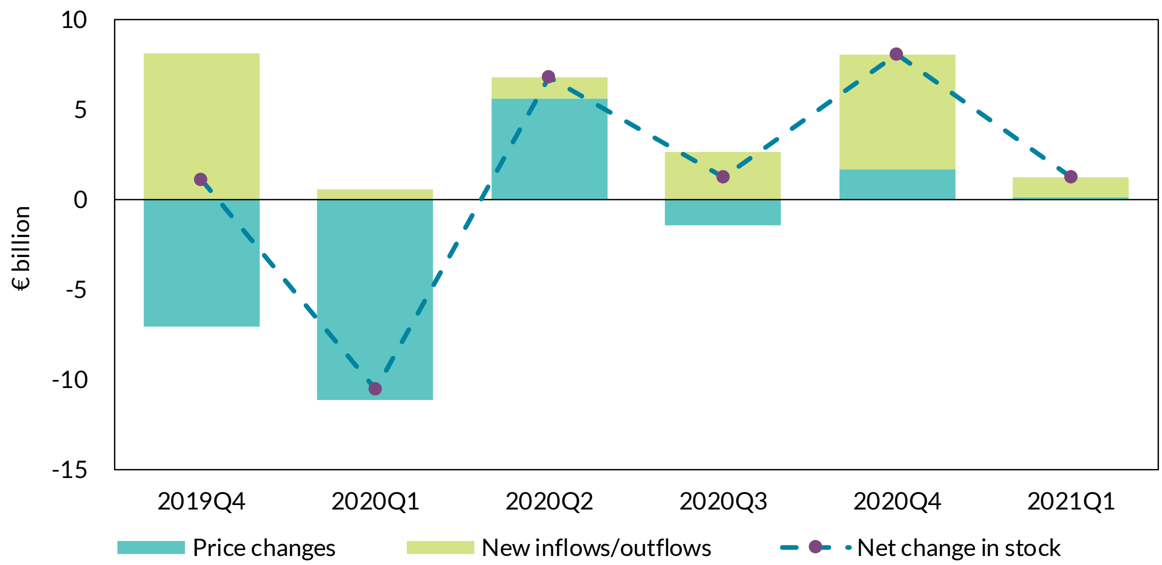
Figure 7: Total assets instrument breakdown Ireland vs. Euro area - Q1 2021



Source: Central Bank of Ireland Data & European Central Bank Statistical Data Warehouse Data
Notes: Other assets includes loans, non-financial assets, remaining assets and financial derivatives

The initial impact of the COVID-19 pandemic can be seen within the series through asset fluctuations, which fell by 9.7 per cent (€12.1 billion) over Q1 2020. Through the new data, we can now see that this was driven predominantly by reductions in asset prices of €11 billion, offset slightly by new inflows. Asset prices continued in their recovery over the remainder of 2020 in line with broader financial market trends, to stand at €127.5 billion by end-Q1 2021. This marks the second quarter in which asset values exceeded pre-pandemic levels (Figure 8). This aligns with findings by the OECD (2021), who showed that despite the market turmoil due to COVID-19, pension fund assets grew by nearly 9 per cent in OECD countries across 2020.

Figure 8: Changes in assets of Irish PFs (€bn)



Source: Central Bank of Ireland Data

Characteristics

Just as Irish pension funds vary in terms of age, size, and type, so do their investments strategies. Pension funds must balance the need for a return on their investment with the need to manage risk over the long run. Investment decisions are guided by a range of factors from membership demographics to general economic conditions.

The size and type of pension fund are key factors when identifying investment strategies. Some pension funds opt to make day-to-day investment decisions, buying and selling assets directly to meet the pension fund's liabilities. Such pension funds tend to have a large number of distinct assets on the balance sheet, with one pension fund having over 3,000 distinct assets. However, these are not in the majority. Of the 400 largest pension funds in Ireland, just 70 funds hold 30 or more distinct assets, with most pension funds choosing to invest indirectly through investment funds or ULIPs issued by insurance corporations . These instruments pool investors' capital so that it can be invested collectively in a range of financial instruments such as stocks and bonds. Ireland's unique pension landscape, with a large number of small pension funds, means that many pension funds may not have the scale to make direct investment in a diverse range of assets cost effective. The purchase of units in investment funds and ULIPs is a convenient way for trustees to diversify their investments while maintaining liquidity and sharing the costs of professional investment management with other investors.[20]

While a pension fund's size is an important factor in determining its investment strategy, so too is its type. DB and DC pension funds have structural differences in terms of both the type of financial assets held and the number of distinct, direct investments. While DB pension funds can be seen to directly invest in hundreds of diverse assets including equities (€3.1 billion) and debt securities (€15.7 billion), DC pension funds tend to predominantly hold a limited number of investments in IFs (€5 billion) and ULIPs (€14.4 billion). This investment approach chosen helps to explain why investment funds and ULIPs account for three quarters of the sector's balance sheet. These instrument types, along with the third largest holding – debt securities - are discussed at an aggregated level in detail below. The remaining assets, which account for just 11 per cent of the balance sheet of Irish pension funds are briefly summarised at the end of this section.

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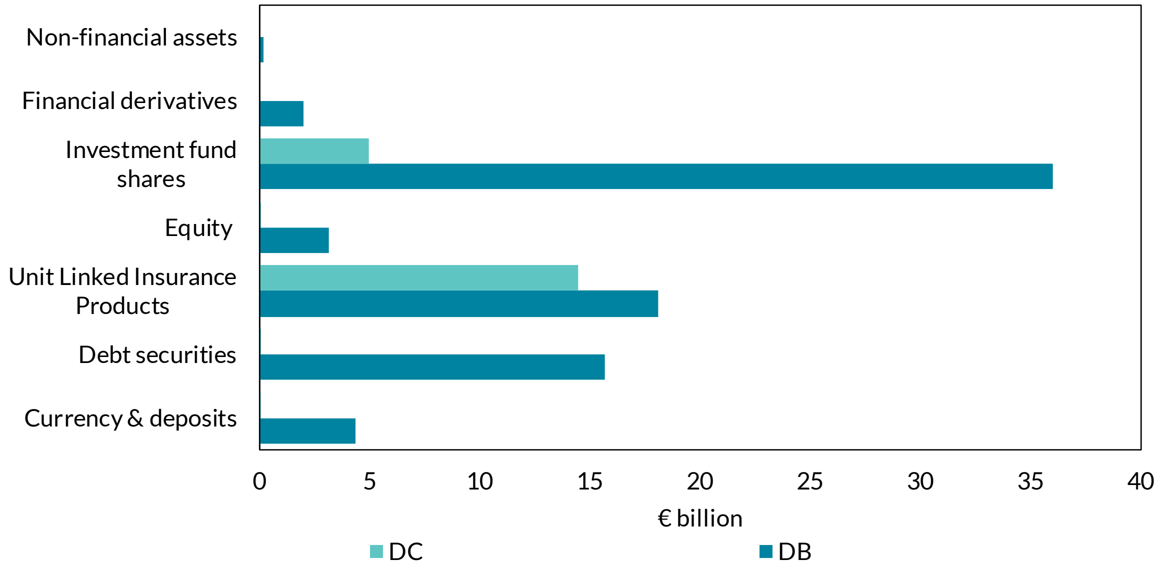
[20] https://www.esma.europa.eu/sites/default/files/library/2015/11/10_1321.pdf

Figure 9: Asset Allocation breakdown by DC/DB pension funds – Q1 2021



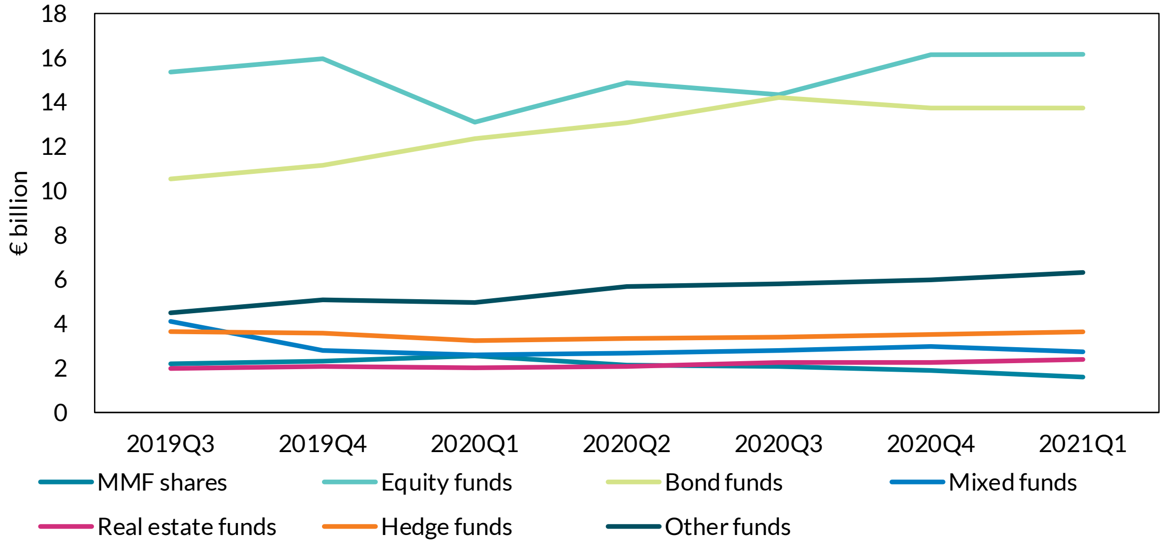
Source: Central Bank of Ireland Data
Notes: Data relates to detailed reporting population.

Investment Funds & Unit-Linked Insurance Products

Investment Funds

The Central Bank collects information on the type of investment funds used by pension funds. The investment fund type relate to the underlying investments of the funds as outlined in their respective prospectuses. The vast majority of investment funds held by Irish pension funds were issued in Ireland. Two thirds of the investment fund holdings of Irish pension funds are in equity and bond funds. Use of real estate or hedge funds is very limited. This concentration of investment fund holdings reflects the Euro area aggregates, where equity and bond funds are also the predominant types (Curos et al., 2020).

Figure 10: Investment Fund Movements by Type – Q1 2021



Source: Central Bank of Ireland Data

Holdings in equity funds amounted to €16.2 billion in Q1 2021 and, despite falling sharply in Q1 2020, now sit above pre-pandemic levels. The total value of bond funds held by Irish pension funds in Q1 2021 amounted to €13.8 billion. The risks and rewards of bond funds can vary greatly depending on the quality of underlying securities. However, where the underlying securities are highly rated, such as certain government bonds, the increase in holdings could be attributed to pension funds searching out safer investments due to the uncertainty associated with Brexit and subsequently COVID-19.

Investment funds also offer investors a way to invest in underlying assets that are not easily divisible, such as real estate. Recent work by the Central Bank of Ireland (Daly, Moloney & Myers, 2021), explored investors in Irish real estate funds by sector and found pension funds to be considerable players. Our data confirm this, showing holdings of real-estate funds to have increased over the past five quarters, to stand at €2.4 billion in Q1 2021. The dataset will provide future opportunities for research in this area.

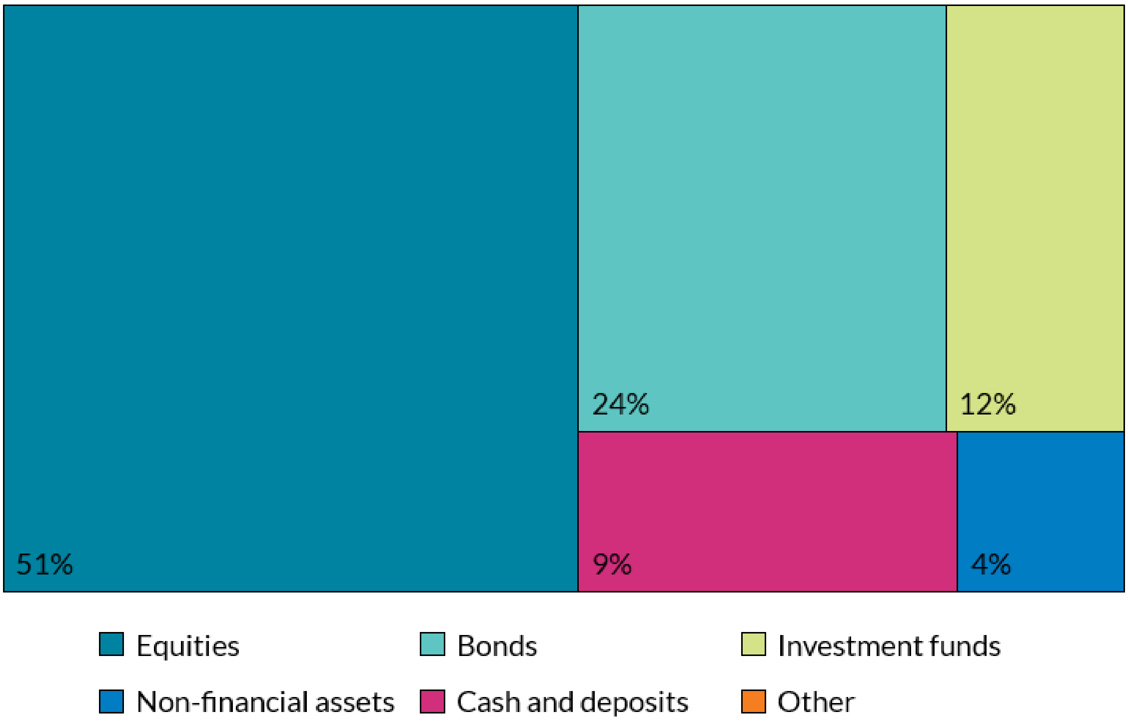
Unit linked insurance products

At a glance, unit-linked insurance products are similar to investment funds in terms of what they offer investors, but there are some important differences. A unit-linked insurance product offered by insurance corporations can be bundled together with life insurance cover under a single integrated plan. Investors, such as pension funds, purchase units in these funds in a very similar way as they would in a standard investment fund. Insurance corporations invest in a range of assets in a similar manner to investment funds. The unit price will increase or decrease depending on the performance of the underlying assets with the policyholder (the pension fund) bearing the investment risk and returns. These assets are either held directly by the insurance corporation, in what is known as an internal unit-linked insurance fund, or are held by a separate legal entity that is wholly owned by the insurance corporation, known as an external unit-linked insurance fund.

Unit-linked insurance plans are the main products offered by life ICs in Ireland, representing 78 per cent of the assets on the life ICs balance sheet. This is in contrast with many other EU member states, with life ICs unit-linked assets comprising of less than 20 per cent of gross technical provisions in countries such as France, Germany, and Spain (Kelly & Osborne-Kinch, 2018).

Irish pension funds held €50.4 billion of unit-linked insurance products in Q1 2021, making them the largest single instrument type on the aggregated balance sheet of the sector.

Figure 11: Underlying Assets of Unit Linked Insurance Products



Source: Authors' calculations.

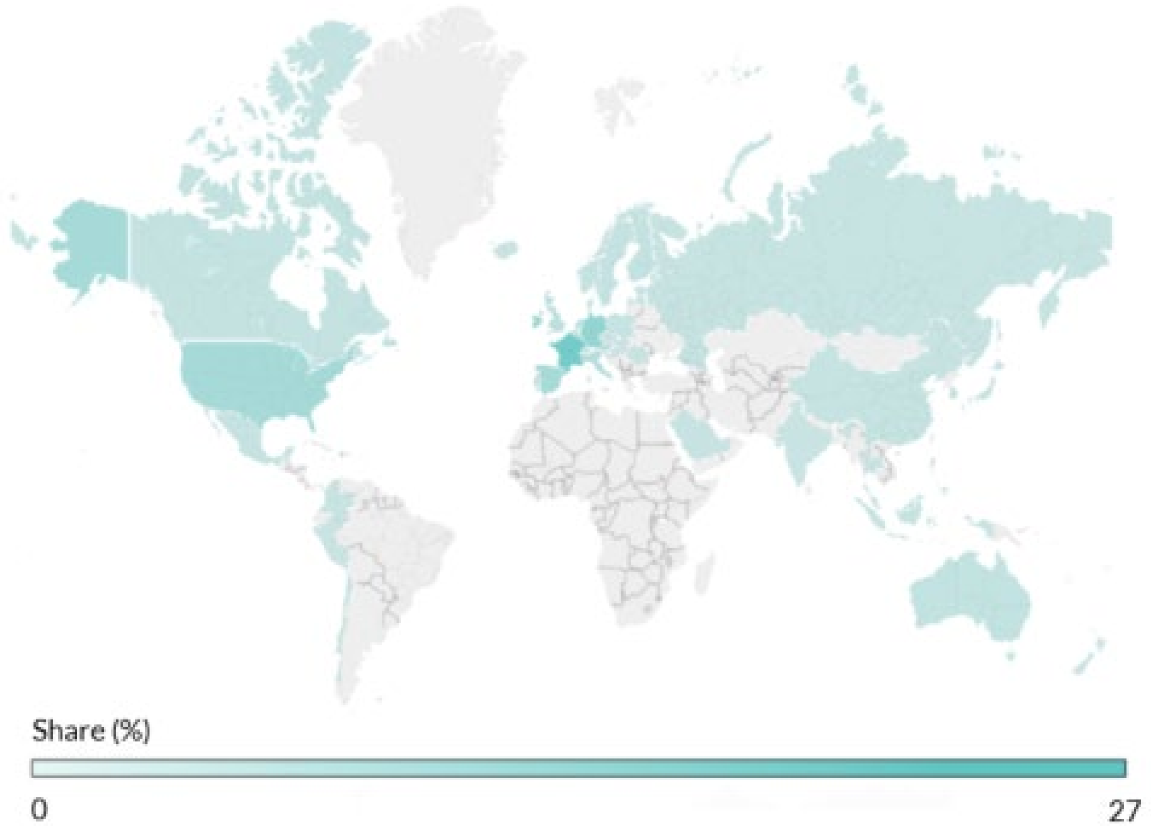
The underlying assets of unit-linked insurance funds display similar patterns to both investment funds. Equities or bonds accounted for 75 per cent of the total assets of a sample of unit-linked insurance funds held by Irish pension funds (Figure 11).[21] The geographical split, based on the same sample, shows that assets issued in Ireland account for 15 per cent of the total, with the US accounting for the largest share of any country (28 per cent).

Debt Securities

By value, close to 78 per cent of debt securities held by Irish pension funds are in the form of government bonds. Corporate bonds account for a further 18 per cent, with the remaining four per cent consisting of structured notes and collateralised securities. These debt securities were issued by institutions across the world but the majority (almost 75 per cent) of those held by Irish pension funds were issued by France (27 per cent), Germany (16 per cent), Ireland (13 per cent), the US (9 per cent), and Spain (9 per cent) (Figure 12).

[21] The Central Bank of Ireland does not collect granular data on the underlying assets of unit-linked insurance funds. The breakdown is based on a survey of a sample of unit-linked insurance fund providers, representing 80 percent of the total value of unit-linked insurance funds held by Irish pension funds.

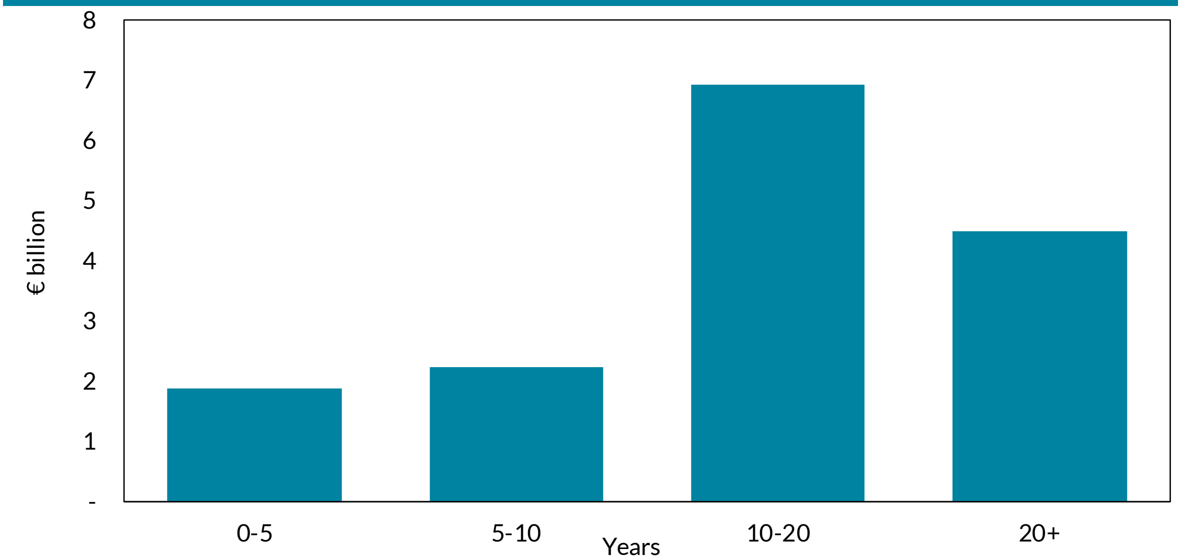
Figure 12: Issuer Country Debt Securities – Q1 2021



Source: Central Bank of Ireland Data

The majority of debt securities held by Irish pension funds are long-term bonds. Almost three quarters of the total debt securities holdings have a residual maturity of more than 10 years (Figure 13). While these bonds may not all be held to maturity, this aligns with the long-term liability profile of pension funds.

Figure 13: Maturity Profile Debt Securities – Q1 2021



Source: Central Bank of Ireland Data

Debt securities serve two main purposes for a pension fund: (i) high rated bonds issued by the governments of countries with strong economies provide relatively safe assets, and (ii) lower rated bonds produce income for the pension fund through higher returns but this comes with greater risk. Over 90 per cent of all bonds held by Irish pension funds are of investment grade (Baa3/BBB- or above) with AAA (25 per cent) and Aa3/AA- to Aa1/AA+ (31 per cent) the predominant holdings. [22]

Other Assets - Currency & deposits, equities, derivatives and non-financial

The remaining 11 per cent of the assets of the Irish pension fund sector consists of currency and deposits, equities, derivatives and non-financial assets. Pension funds in Ireland do not hold loans as assets as they are not authorised to do so, unlike in some other European jurisdictions.

Currency and deposits may be held for investment purposes such as foreign exchange trading. Irish pension funds hold currency and deposits denominated in 27 different currencies. Pension funds also hold currency and deposits to meet outgoings, such as pension benefits, fees and expenses.

Direct holdings of equities represent a small share (3 per cent) of the balance sheets of Irish pension funds, with most pension funds choosing to invest in equities via equity-focused investment funds. Despite this, the €3.8 billion of equity holdings is invested in c. 2,300 distinct entities across a diverse range of countries with the United States accounting for almost half of holdings (47.7 per cent).

Irish pension funds are not permitted to hold financial derivatives for investment purposes but they are used by a small number of pension funds to hedge risks including foreign exchange risk. Non-financial assets, such as property (directly held by pension funds) represent less than 1 per cent of the total assets of the sector - a relatively small share when compared with the holdings of real-estate funds.

The asset allocation of Irish pension funds varies significantly by size, and type of benefit, with larger DB funds accounting for the majority of direct investment in debt securities and equity. We find concentrated links with investment funds and unit linked insurance products to provide diversification within both fund types.

5. Pension Fund Liabilities

Pension funds are established to provide an income to individuals upon retirement. For this reason, the primary liability of any pension fund is typically to households in the form of pension entitlements.[23] While pension entitlements dominate the liabilities side of both DC and DB pension funds, other liabilities may exist. Where a pension fund holds derivatives for hedging purposes and the net position is negative at a point in time, it represents a liability for the pension fund. Also included in other liabilities are credit or unpaid bills. The way in which pension entitlements are treated by DC and DB pension funds is the primary distinguishing feature between pension fund types. As the benefits paid are dependent on the performance of the assets acquired by the pension

[22] Bond ratings are reviewed regularly and can be upgraded or downgraded depending on perceived credit risk.
[23] All liability figures are reported on an annual basis with quarterly figures estimated by the Central Bank of Ireland as per the ECB Regulation. The figures are submitted on an accounting basis, using either the International Financial Reporting Standards ("IFRS") or local generally accepted accounting principles ("Local GAAP").

fund, the liability of a DC scheme is therefore equal to the current market value of the fund's assets. DC pension entitlements stood at €45.3 billion at end Q1 2021.

In contrast, for a defined benefit pension fund the level of pension benefits promised to participating employees is determined by a formula agreed in advance. For example, a final salary DB pension fund might provide a pension of 1/60th of final earnings for each year an employee was an active member of the pension fund.[24] As a result, the liability of a defined benefit pension fund is equal to the present value of the promised benefits. At end Q1 2021, DB pension entitlements stood at €85.2 billion. The fact that DB pension entitlements are equal to the present value of the promised benefits means that their estimation depends on beliefs about the future. Actuarial assumptions such as the discount rate, life expectancy, the rate of increase in salary, the rate of increase in pension entitlements, and the rate of inflation are used to calculate these benefits.[25] As such, the assumptions are impacted by economic conditions and the interest rate environment so can vary from year to year, leading to swings in liabilities.

Figure 14: Changes in total net worth of Irish Defined Benefit Pension Funds

Source: Authors' Calculation based on annual Central Bank of Ireland data.

The liabilities of pension funds can vary substantially over time. Typically, any change in stock can be the result of (i) a change in value or price, or (ii) inflows/outflows, and these effects may work in opposite directions. In the case of a pension fund's liabilities, the dynamics will depend on whether the fund is DC or DB. For a DC pension fund, changes in price/value of benefits is directly related to a change in the price or value of the associated assets. Any other change in the stock of liabilities is the result of an inflow or outflow, such as contributions received or benefits paid. The price/value effect in the context of DB pension funds is more complicated and includes a change to the discount rate or

[24] https://www.pensionsauthority.ie/en/lifecycle/private_pensions/final_salary_defined_benefit_schemes/
[25] https://www.iaasa.ie/getmedia/9a9ba527-e83a-429c-9a60-db0463cd4404/Survey-of-issuers-defined-benefit-pensions-assumptions-final.pdf?ext=.pdf

underlying assumptions. Inflows/outflows in the DB context include contributions and the accrual of obligations since the previous period.

As the pension entitlements of a DC pension fund are equal to the value of the assets, and these values are directly linked, it cannot be over or under funded – the net worth is always zero.[26] In the case of a DB pension fund, there is no direct link between the value of the assets held by the pension fund, which is determined by the market, and the value of its liabilities, which is determined by a range of factors including promised benefits, discount factor, inflation, etc. This means that the net worth of a DB pension fund can be positive or negative and can vary substantially over time, due to changes on either side of the balance sheet.

At end Q1 2021, 55 per cent of Irish DB pension funds had negative net worth – liabilities greater than assets. The deficit peaked at €12.2 billion in Q1 2020 but has since reduced to a shortfall of €8.6 billion in Q1 2021. Ireland is one of eight Euro area countries in which DB pension funds compose the majority of pension entitlements, making it more open to larger funding fluctuations, with six countries having no defined benefit pension elements (Curos et. al., 2020). Since Q3 2019, there has been considerable fluctuations in the level of net worth across a number of countries. Over this period, four countries have experienced negative net worth –Netherlands, Ireland, Cyprus and Slovenia and at end Q1 2021, only the Netherlands had returned to a funding surplus. Given it has the largest pension fund sector in the Eurosystem, movements in its net worth drive the Euro area aggregates.[27]

A potential risk associated with such a deficit is that DB scheme benefits are not guaranteed. If the scheme's assets are not sufficient to pay the benefits, and the employer is not in a position to meet the shortfall, promised benefits may have to be reduced. Sponsors can be called upon to reduce the funding gap between the promised benefits and scheme assets. However, this can weaken their financial position and possibly compromise business viability (Financial Stability Board, 2017). These factors, paired with our preliminary findings, highlight a need for further research on the potential impact of funding deficits on both households and sponsors.

6. Conclusion

This article provides an overview of the pension fund statistical collection undertaken by the Central Bank of Ireland. The growing importance of the sector is clear due to the impact it may have on the macro economy and financial stability as a result of suboptimal pension benefits impacting household consumption and the increased funding burden on corporations to address deficits.

At Q1 2021, the total assets of Irish pension funds were €127.5 billion, the equivalent of 60 per cent of GNI*. Pension fund assets are concentrated in the insurance corporation and investment fund sectors, with unit-linked insurance products and equity & bond investment fund shares the predominant holdings. Direct holding of equity and debt security instruments is only completed by a subset of larger pension funds.

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[26] A pension fund's net worth is the difference between total assets and total liabilities. A positive (negative) net worth means that assets are greater than (less than) liabilities and that the pension fund is over- (under-) funded.

[27] https://www.centralbank.ie/statistics/statistical-publications/behind-the-data/occupational-pension-funds-in-ireland-what-do-we-know

The membership structure of pension funds is changing as the transition from DB to DC continues, with the majority of active members now in DC funds. Over the course of 2020, there was a small fall in active members of pension funds. Despite this, levels of contributions rose at an aggregated level.

In line with the purpose of pension funds, pension entitlements to households represent the largest instrument on the liabilities side of the balance sheet. The liabilities of DB pension funds currently outweigh the value of the assets, with a current deficit of €8.6 billion spread across over 295 schemes.

The introduction of this new pension fund statistical collection provides important data on pension fund activities in their role as the primary provider of household retirement income and as an allocator of long-term capital across economic sectors. It assists in the understanding of the composition, concentration and exposures of pension fund assets and liabilities, and how these change over time. Information on membership allows us to track the impact of evolving economic conditions and sector structure on pension fund participation.

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