

ISSN: 1576-0162

PENSION FUNDS AND FINANCIALISATION IN THE EUROPEAN UNION
FONDOS DE PENSIONES Y FINANCIARIZACIÓN EN LA UNIÓN EUROPEA

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Recibido: febrero de 2016; aceptado: octubre de 2016

ABSTRACT

The expansion and innovation of financial markets, commonly known as financialisation, is closely linked to the growth of pension funds. While the conventional narrative is based on the notion of financial development as a positive change, this paper argues that pension funds may induce demand-led pressures on the financial system, generating potential for systemic risk and instability. The rise of pension funds is therefore important for the process of financialisation, as these institutions' demand for assets continuously sparks growth and innovation in financial markets. In the current context pension funds are attempting to reduce risk by rebalancing their allocations away from equities towards "alternatives", such as hedge funds and private equity. Coupled with the current regulatory trends towards risk-based funding regulation, we argue that pension funds are unlikely to be a stabilising force in financial markets today.

Keywords: Pension Funds; Risk; Financial Innovation; Alternative Assets; Financialisation.

RESUMEN

La expansión e innovación de los mercados financieros, a la que habitualmente denominamos financiarización, está firmemente ligada al crecimiento de los fondos de pensiones. Mientras que la narrativa ortodoxa tiende a considerar el desarrollo financiero como un cambio positivo, este artículo defiende que los fondos de pensiones podrían provocar presiones en el sistema financiero desde el lado de la demanda generando, potencialmente, riesgos sistémicos e inestabilidades. El desarrollo de los fondos de pensiones es importante para el proceso de financiarización dado que la demanda de activos por parte de estas instituciones provoca el crecimiento y la innovación continua en los mercados financieros. En el contexto actual, los fondos de pensiones intentan reducir su exposición al riesgo reorientando sus carteras hacia activos ‘alternativos’, tales como los fondos de cobertura y la inversión de capital. Si a esto unimos la tendencia actual a regular la financiación basada en riesgo, defendemos que los fondos de pensiones difícilmente serán una fuerza estabilizadora en los mercados financieros actuales.

Palabras clave: Fondos de pensiones; Riesgo; Innovación Financiera; Activos alternativos; Financiarización.

JEL classification: G23, G28, H55.



1. INTRODUCTION

Pension funds underwent accelerated growth in the decades prior to the Financial Crisis and Great Recession in many parts of the world, turning them into significant players in financial markets. Showing asset size as proportion of GDP since 2001, table one shows that in fact, the Financial Crisis did little to stall this development. This growth was encouraged and facilitated by governments, who were themselves influenced by a concerted effort to promote pension funds by domestic and international policy stakeholders. It was widely argued that funded pensions could ease the strain placed on a state by an ageing demographic, whilst at the same time induce wider economic benefits through driving financial market development and innovation. Higher savings, invested in more efficient instruments, was expected to increase investment and so enhance growth (Davis, 1995; European Commission, 2000; World Bank, 1994).

There are reasons to be sceptical about these expectations. The predictions are based on theoretical conjectures drawn primarily from New Keynesian and Modern Financial Theory, when not based on more pre-Keynesian views on the market for loanable funds (Cesaratto, 2005). As the literature on “financialisation” shows, growth of financial markets and financial innovations may not necessarily promote growth and stability, but can actually contribute to stagnation and instability (Fumagalli and Lucarelli, 2011; Sawyer, 2013; Vercelli, 2013). Pension funds are indeed agreed to be causally linked to the process of financial growth and innovation, through generating a demand for financial assets that suit their needs (Whalen, 2001; Lysandrou, 2011). Such demand may however be de-stabilising for the system as a whole, if financial innovations generate systemic risk; it is now for example widely accepted that the rise and fall of asset-backed securities were an important causal factor behind the Financial Crisis.

We document how this process may be playing out in the current context, post the Financial Crisis. The crisis has left a mark on the minds of both fund managers and fund regulators, who are seeking to avoid, in turn, individual losses and systemic risks. Prior to the Financial Crisis, however, pension funds were sorely affected by the dotcom bubble, and it is our conjecture that current behaviour of both managers and regulators can be traced back to this financial event. In terms of the asset allocation decisions of the funds themselves, what we are seeing is a move towards the asset class referred to as

“alternative’, which is held to be distinct to the more commonplace classes of equity, bonds and property. We highlight how this move links pensions with the shadow banking sector, whose growth seems to be correlated to the growth of institutional investors.

Regulatory and accounting standards, for their part, should in theory reduce aggregate risk exposure and improve transparency within the sector. However, we argue that after both the dotcom bubble and the Financial Crisis, changes have been made that are likely in fact to introduce further weaknesses into the system. Taken together, the changes in internal and external behaviour are highly unlikely to strengthen the sector, and may sow the seed of further financial instability at a more systemic level.

The paper is organised as follows: in section 2, we discuss the growth of funded pension schemes, with reference to our theoretical perspective. We take the EU as our example, where significant pressure to introduce private funded pensions as a pillar in the overarching pension system took form in earnest in 1999. In section 3 we document the changing asset allocation of pension funds in countries with well-established pension fund industries – Canada, Netherlands, UK and US – highlighting in particular the rise of the “alternative’ asset class. In section 4 we underline the importance of the evolution of regulation, and highlight some critical aspects of recent trends towards risk-based funding regulation. Section 5 concludes.

2. THE PROMOTION OF FUNDED PENSIONS AND “FINANCIALISATION”

2.1. THE PROMOTION OF PENSION FUNDS

At the turn of the century the European Commission began a concerted effort to encourage member states to set up or enhance the role of private funded pension schemes as one step towards managing the predicted rising costs of state-managed Pay As You Go (PAYG) pension schemes (EC, 1999; EC, 2000; EC, 2001). Although the European Union has no direct control over this area of policy, which lies within the Open Method of Coordination framework (OMC), this move has seemingly had a large impact. As shown in table 1, there has been a remarkable growth in pension funds’ assets across most member states since 2001, even if, in absolute terms, substantial differences remain across countries (e.g. the UK, Netherlands and, to a smaller extent Finland, Ireland and Denmark, given the longer history of their funded pensions sector, present much higher figures than the rest of the countries).

TABLE 1. PENSION FUND ASSETS, % GDP

	2001	2007	2010	2011	2014
Austria	2.9	4.7	5.2	4.8	5.8
Belgium	5.4	4.3	3.6	4.1	5.6
Czech Republic	2.1	4.4	5.9	6.2	8.0
Denmark	26.5	31.6	48.3	48.4	48.6
Estonia	0.0	4.4	7.3	6.9	11.3
Finland	47.9	68.1	79.1	42.4	51.0
France	..	0.1	0.2	0.2	0.5
Germany	3.5	4.6	5.4	5.5	6.7
Greece	..	0.0	0.0	0.0	0.6
Hungary	3.9	10.9	14.7	3.8	4.1
Iceland	81.7	124.8	117.7	123.2	146.8
Ireland	42.2	44.0	45.8	42.3	58.1
Italy	2.2	3.1	4.4	4.7	6.7
Luxembourg	..	1.0	2.0	2.0	3.2
Netherlands	96.4	126.0	120.4	126.9	159.3
Norway	5.4	6.8	7.5	7.2	8.8
Poland	2.4	11.9	15.5	14.7	8.8
Portugal	10.9	12.7	11.0	7.5	10.1
Slovak Republic	0.0	3.6	7.3	8.3	10.6
Slovenia	..	1.8	3.0	3.2	4.2
Spain	5.6	8.0	7.8	7.8	9.5
Sweden	7.6	8.1	9.0	8.8	9.3
Switzerland	93.8	105.7	102.5	101.1	120.3
United Kingdom	68.0	76.4	82.7	89.3	96.0

Source: OECD funded pension indicators.

The European Commission was itself influenced by the World Bank. In a renowned report, the World Bank (1994) pushed for the adoption of “multi-pillar” pension systems, where PAYG would remain as an anti-poverty and redistributive basic tier, but should be combined with both a mandatory and a voluntary funded pension sector to provide for the bulk of retirement income. Adopting such a system, it was argued, would alleviate the pressure on public systems, deemed to be unsustainable in light of population ageing. This policy was theoretically supported by the idea that “financial deepening’ is necessary in order for economies to develop and mature, and that institutional investors can play an important role in that deepening: “A mandatory saving plan that increases long-term saving beyond the voluntary point and requires it to flow through financial institutions stimulates a demand for (and eventually supply of) long-term financial instruments - a boon to development” (World Bank, 1994: 13). Innovative new financial instruments allow for more efficient risk sharing and lower investment costs for firms (Ibid: 177; Davis, 1995: 162) which mean more investment, higher productivity and growth (Davis, 1995: 38).

2.2. PENSION FUNDS AND FINANCIAL DEEPENING

The World Bank view was officially embedded within EU pension policy in 2003, when an EU parliament and council directive laid out the framework of pension regulation and policy direction, which essentially promoted the “multi-pillar” system at the European level¹ (EU 2003), on the grounds that it can both achieve a greater sustainability of the pension system, and promote the development of an integrated financial market².

The arguments of the pension reform advocates were based on theoretical conjectures in line with Levine’s concept of “financial development” (Levine, 1997). Deep and well-functioning capital markets ease the financial costs facing firms and therefore inspire investment. Policies that encourage such developments, such as pension reforms promoting funded pensions, are therefore beneficial to economic development in the long-run.

In light of the financial crisis, there are reasons to be sceptical about the positive contributions of a growing and evolving financial sector in the economy. Proponents of the concept of “financialisation” have long been critical of the theory of “financial development” and its related policy implications. The literature points out a number of ways through which finance can negatively

¹ Directive 2003/41/EC of the European Parliament and of the Council of 3 June 2003 on the activities and supervision of institutions for occupational retirement provision.

² As regards to this latter point, a specific concern of European pension policy in this respect is the removal cross-border restrictions within the EU, with respect to both financial market investment and the provision of financial services. Funded pensions in this sense promote not only financial development per se, but also contribute to the increasing integration of financial markets across the continent.

affect economic and social development³. Even in terms of the simple relationship between the size of the financial sector and economic growth, recent evidence suggests that the relationship is weak or even negative (Sawyer, 2013; 2014; Berkes *et al.*, 2012).

Causally, this is unsurprising. At the most basic level, the theoretical conjectures behind the prediction of higher growth coming from large financial sectors depend on the idea that increasing the level and composition of savings will increase investment. This would seem to depend on a loanable fund view of interest rate determination (Cesaratto, 2005) in addition to uncritical views of corporate finance, whereby investment is thought to be determined almost entirely by the cost of external finance. Opposing theories of corporate behaviour can be found, for example, in Kalecki and Chick, who hold that investments are primarily financed through internal funds, and motivated by positive profit returns (Kalecki, 1968; Chick, 1993). If firms are unwilling to invest for whatever reason, an increase in the flow of pension fund contributions into the capital markets can lead to destabilising asset price inflation. Indeed Toporowski (2002) argues that the massive expansion of capital markets since the 1980s is essentially determined by the inflation of stock prices as a result of the expansion of funded pension schemes.

2.3. FINANCIAL INNOVATION

Beyond financial deepening, the World Bank also made a more specific – and more controversial – argument in terms of the benefits it saw as arising from the promotion of pension funds, namely that a stronger pension fund industry would be a catalyst for financial innovation. The World Bank rested this argument on empirical evidence relating to experiences in the US, as is most clearly seen in the following quote:

“In the United States, pension funds and life insurance companies became the main forces behind financial innovation after..... 1974 New instruments have been tailored to the needs of pension funds (such as zero-coupon bonds, collateralized mortgage obligations, mortgage-backed securities, indexed futures and options, and guaranteed income contracts)” (World Bank, 1996).

Modern financial theory predicts that such innovations add stability to the financial markets, but not everyone agrees. Vercelli (2013) argues that financialisation itself can be characterised as a long-run phenomenon centred around financial innovation. Such financial innovations can to an extent facilitate economic activities, and therefore foster economic development, but also sow the seeds of potential financial instability. If uncontrolled, financialisation is thus likely to undermine the real economy and eventually lead to a

³ See Stockhammer (2012) for an overview of the main themes.

financial crisis. The rise of securitisation and the shadow banking system are indeed considered by many as a defining characteristic of financialisation and the global financial crisis (Fumagalli and Lucarelli, 2011; Seccareccia, 2012; Botta *et al.*, 2015).

Pension funds (and institutional investors more widely) have been causally linked with financial innovation by suggestions that innovation is a demand-driven phenomenon. According to this argument, the large size of pension funds means that they are able to generate substantial demand-side pressure, whilst their nature (given that they are effectively taking up a function of the state and cannot be allowed to fail) means that they are governed by a fundamental contradiction, whereby they seek continual reduction of risk at the same time as an increase in financial returns. Continuous financial innovation is therefore needed to fulfil the demand for new assets with an attractive risk/return profile for institutional investors. Whalen (2012, p. 258) argues that it was Minsky's view that the "rise of institutional investors encouraged further financial system evolution by providing a ready pool of buyers for securitized loans, the commercial paper of finance companies". By so doing however, pension funds contribute to financial instability, since financial innovations may contribute to spread systemic risk rather than reducing it, as testified by the boom-bust cycle of asset-backed securities.

In sum, the promotion of funded pension schemes is indeed closely related to the growth of financial markets and financial innovations. As discussed, the "financialisation" literature makes it clear that there can be no presumptions that these will necessarily be positive for the EU economic development and financial stability. The promotion of funded pension schemes has resulted in the emergence of large and systemically important financial institutions, which may, with their constant demand for high returns and low risk, contribute to the instability of the financial markets. The change in pension funds asset allocation behaviour and the related issue of the evolving regulation over the past 15 years, which will be discussed in the following sections, confirms that pension funds have had and continue to have an ambiguous role as "stabilisers" of the financial sector.

3. THE QUEST FOR RISK-REDUCTION

3.1. ASSET ALLOCATION AND LIABILITY-DRIVEN INVESTMENT

Occupational schemes - in countries where they have traditionally played a dominant role as investors and retirement income providers (e.g. US, Canada, UK, Netherlands⁴) – had relied up until 2001 on a relatively simple and stable model: employers sponsored a final salary or other defined benefit scheme

⁴ Excluding Japan, for which data was missing, these are the four countries with the biggest pension fund sectors according to OECD pension fund statistics.



and contributions were mostly invested in equities. Equities were seemingly favoured for their capacity for large capital gain and their capacity to keep pace with general levels of inflation. Such beliefs were validated by the meteoric rise of equity prices following a suspension of scepticism regarding the economic potential of all things internet, and the asset price inflation arising from the growing inflow of the pension funds themselves.

Roughly 15 years ago, the collapse of the dot-com bubble shook heavily the world's equity markets. Asset price collapses resulted in substantial losses for pension funds, resulting in severe funding deficits. These demanded attention as many funds were statutorily obliged to hit a minimum level of funding.

Pension funds and their sponsors have therefore been acting so as to correct the problems described above as well as prevent them from happening in the future. As one example, pension plan sponsors, facing the need to cover for funding shortfalls, started to perceive the costs of maintaining their defined benefits plans too high.

Consequently – as is well known from the media – there has been a shift towards defined contribution arrangements, where members of the scheme bear all the investment risk, as their pension income is entirely dependent on the returns obtained in the financial markets. Many private sector schemes in the UK now only allow existing members to accrue additional benefits: only 14% of the schemes were still open to new members in 2014 (BoE, 2014). While slow-moving and with diverse trends across the world, defined contributions funds have therefore been growing in importance. According to the Global Pensions Assets Study by Towers Watson (2015), the share of defined contribution funds to total pension assets, in the seven countries with the biggest pension fund sectors⁵, increased from 38.9% in 2004 to 46.7% in 2014.

The asset allocation and investment strategy of pension funds has also changed substantially over the last 15 years. Up until the early 2000's, the majority of pension funds held a portfolio consisting in listed equities, as these were supposed to deliver the high return needed to face their long-term pension commitments. The consensus view has however been changing. It is now considered that a very high exposure to equities makes asset returns very volatile, and furthermore does not properly track the corresponding changes in liabilities. New asset allocations strategies have therefore sought to correct both these issues.

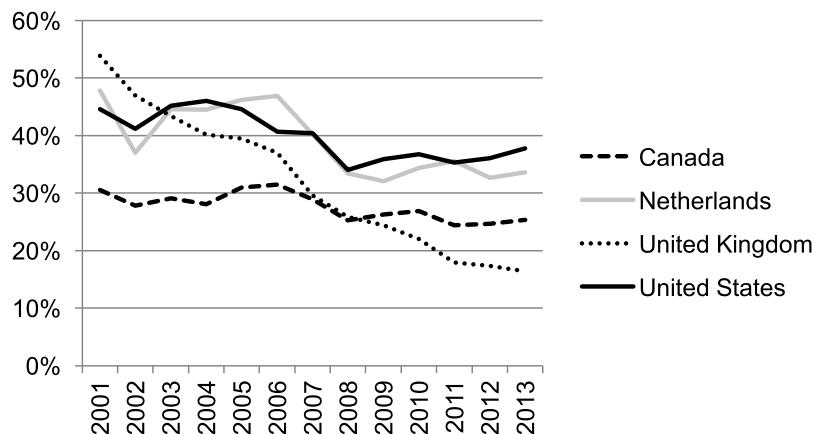
The overall principle of these techniques is to make a pension fund's investment strategy be driven by the structure and exposure of its liabilities – hence why this is often the liability-driven investment (LDI) strategy. Pension funds' portfolios can be split into two components. The first, the growth or return-seeking portfolio, seeks to deliver high returns, to grow the overall

⁵ These are the four considered throughout this paper plus Switzerland, Japan and Australia.

pot of the pension funds in order to have enough assets to cover for the liabilities in the long run. The second one, the liability-matching or protection portfolio, seeks to minimise the volatility, by investing in assets that closely match the evolution of the pensions' liabilities. This is commonly achieved by matching the duration of asset and liabilities, to ensure cash outflows are roughly balanced by cash inflows. LDI strategies urge for a much greater emphasis on the latter as well as the use of derivatives to hedge against inflation and/or longevity risk, which represent uncertainties about the future patterns of cash outflows. These asset-liability management techniques have been increasingly adopted by pension funds across the world: 2014 saw a 29% increase, to £657bn, according to a KPMG report quoted in the Financial Times (Faurischou and Newlands, 2015).

Can we see the impact of LDI strategies in the data? It is certainly the case that there has been a notable drop in the proportion of equity that pension funds are holding, as shown in Figure 1. The trend is clearly common across countries, but has been particularly dramatic in the UK, where direct allocations to equities dropped from over 60% to about 18% between 2001 and 2013.

FIGURE 1. EQUITY SHARE OF PENSION FUNDS



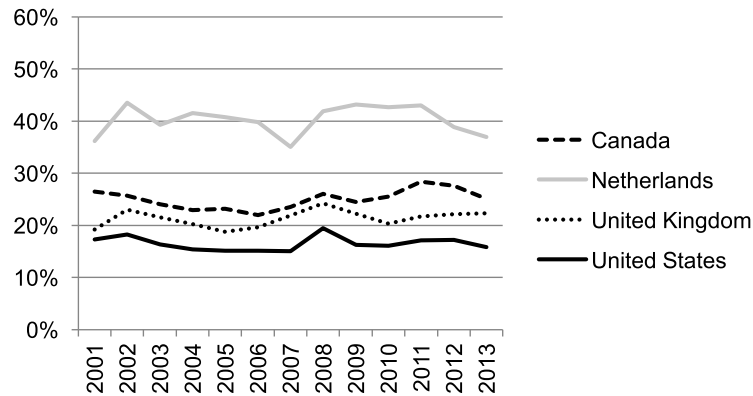
Source: Authors' calculation based on OECD Pension Statistics.

Note: Includes equity mutual funds figure for the Netherlands since 2009.

It would seem reasonable to infer that this change in the data is due to the adoption of LDI strategies. Equities are quite clearly not fit for “matching” purposes, given the uncertainty of their inflows and imperfect sensitivity to interest rates on the one hand, and their vulnerability to asset price changes.

A further point of interest however is what pension funds are choosing to hold in the place of equity, and looking at this data, it would seem that there are further concerns conditioning the asset allocation of funds. While equity allocation declined, bond allocations have remained roughly constant over time over the same period (Figure 2), despite the increased emphasis on matching assets that came with the adoption of LDI strategies.

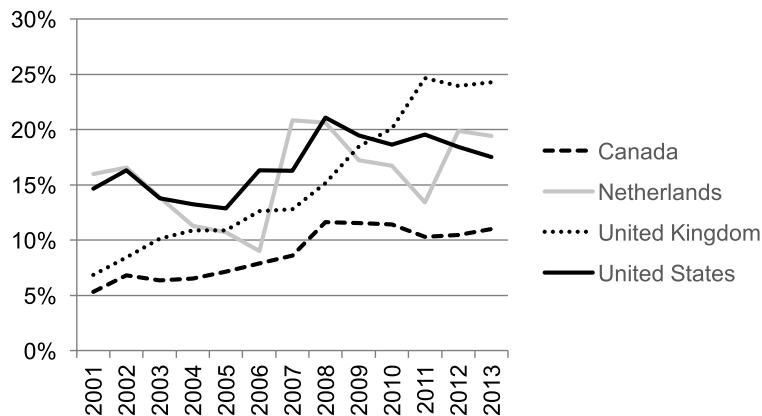
FIGURE 2. FIXED-INCOME SHARE OF PENSION FUNDS TOTAL ASSETS



Source: Authors' calculation based on OECD Pension Statistics.
 Note: Include bonds mutual funds figures for the Netherlands since 2009.

The absence of an increase in bond allocations can be explained in several ways. LDI strategies are great if your fund is in reasonable health (in relation to funding levels) to begin with. However, many funds are facing large deficits, and do not wish therefore to move out of what they see as “growth’ assets. Furthermore, yields on government bonds are at an all-time low across all advanced countries, as quantitative easing continues to stoke prices. With bonds looking expensive, the shift out of equities – or “de-risking’, as the industry commonly calls it – has taken the additional character of movement within the return-seeking part of the portfolio, a *search for yield*, as can be seen in Figure 3.

FIGURE 3. “OTHER” SHARE OF PENSION FUNDS TOTAL ASSETS



Source: Authors' calculation based on OECD Pension Statistics
 Note: Other assets are calculated as total assets minus equities bonds, mutual fund holdings and insurance contracts.

The increase in allocations to “other’ assets looks therefore a defining trend of the past decade, mirroring the decline in equity allocations. These “other’ assets, which account for a substantial proportion (close to 30% in the UK) of pension fund assets refer to a very large extent to the rise of “alternatives’

(to be explained below), as the OECD (2015) –the institution compiling these data– reports.

3.2. ALTERNATIVES

Alternative assets essentially include all types of assets that are not traditional securities (e.g. equities and bonds), or traditional funds such as mutual funds and unit investment trusts. Notable elements within the category are: hedge funds, private equity funds, commodities, infrastructure and in some cases real estate. These can be accessed directly, (e.g. by investing in infrastructure projects), or through funds (e.g. hedge funds can be accessed through funds-of-funds). Significantly, alternatives are considered growth assets, but with differing characteristics to equity. Historical analysis suggests that the price of such assets are not correlated with equity price movements. They are understood as offering the opportunity to opt for the same level of growth whilst reducing the risk parameters of a portfolio.

Our data shows that the importance of alternatives has certainly grown, especially considering the very low starting allocations in the early 2000's. Unfortunately, detailed publicly available data on alternatives is sparse. The alternative class covers a group of assets with distinct characteristics and we cannot do much more than speculate over where specifically the money is going. One point to make is that the money is not primarily going into infrastructure as normally understood. This is significant because the possibility of pensions funding public infrastructure is one further argument that has been used to promote pensions across Europe and elsewhere, as a means of easing pressure on state capital expenditure (Della Croce and Gatti, 2014). Private pensions in this scenario help to reduce the size of the state in terms of both the revenue and capital budget. This argument (that pension funds are ideally placed to take on the role of financing infrastructure) is longstanding, and was made by Clark in 2000. But, as Della Croce and Gatti argue: "Despite the theoretically ideal match between a large source of capital and an asset class in need of investment, the uptake of institutional investors has been slow. In addition to the lack of a transparent and stable regulatory framework this has been *inter alia* due to negative experiences with earlier investments, discontent with the vehicles used to access infrastructure assets, and a lack of government facilitation." (Della Croce and Gatti, 2014: 124)

Rather than infrastructure, pension fund managers seem to be opting for private equity and hedge funds. In the UK for example, allocations to these categories were negligible prior to 2008, but have increased to 3% and 6.1% respectively (The Purple Book, 2015), while global allocations to infrastructure remain below 1% (Della Croce and Gatti, 2014: 10). This raises the issue of shadow banking; these funds can lend directly to companies but are not subject to banking regulations. As banks are forced to reduce their lending and tend to their balance sheets, the shadow banking sector is showing strong

growth. The IMF *Financial Stability Report* of both 2013 and 2014 has raised the link between “shadow banking” and pension funds. In 2013 the IMF raised the issue that the solvency of pension funds and insurance companies was being seriously tested by the ongoing low returns on assets, and that this strain may be encouraging the rise in allocations to riskier asset classes. The 2014 report reiterates this concern, finding that for advanced economies the “search for yield, which began around the mid-2000s, accelerated flows into hedge funds and private equity funds and stimulated the rapid growth of structured finance and investment funds.” (IMF, 2014: 81)

3.3. “DE-RISKING” VS RISK SHIFTING

Shifts to defined contribution pensions and these allocation shifts share one common causal element: the willingness to reduce risk. Indeed, a key word across the pension fund industry in recent years has been “de-risking”. But have risks been reduced? And for whom? The move by sponsors to defined contribution plans, for example, aside from creating individual retirement income insecurity, may in fact not reduce risks systemically. Indeed, risks have just been shifted to individuals, who may not always be capable at managing them in a better way than institutions do. Additionally, it will strengthen the link between households’ expenditure and financial markets, thus potentially generating stronger “accelerator” effects of asset price dynamics on the business cycle.

In terms of asset allocation, we have described how pension funds have adopted liability-driven investment strategies, investing in assets that more closely match their liabilities and/or hedge these with derivatives as well as diversifying their return-seeking assets. These trends have on the face of it improved the management of pension funds and reduced some risks; excessive allocation to equities, particularly in US and UK funds, had negative results for funds and for the capital markets more generally. The recent changes have worked to more closely align the investment strategy to the ultimate goal of a pension funds – paying pensions.

However, they may increase different types of risks. Increasing demand for bonds may exceed their supply, especially as governments are under the pressure to reduce their borrowing. This could make the quest for “de-risking” even more daunting, and contribute to keep long-term interest rates at very low levels, which can generate financial vulnerabilities.

Furthermore, as we have documented, bond allocation has not sizeably risen. Instead we see the increasing use of derivatives and allocation towards “alternatives” may pose risks for financial stability. The increasing allocation to funds rather than direct investment may increase the complexity of the financial system, as well as decreasing the transparency of pension funds actual asset holdings. And to the extent that a large part of these “alternatives” flows into the “shadow banking” sector, it creates further concerns in terms of systemic risk.

We have seen this all before of course – pensions demand growth and safety, and even if this is not possible, instruments will come forth which promise to combine these characteristics: financial innovation.

4. REGULATION CHANGES

The pension fund sector has seen developments in terms of regulatory and accounting standards. Aside from the negative impact on their balance sheets, the dot-com crisis revealed the inadequacy of the existing regulatory structure. The aggregate risk exposure of these institutions was excessive and not sufficiently clearly displayed and accounted for. Regulatory developments sought to correct these weaknesses, by acting both on the accounting of the sponsoring institution, and the supervision of the pension fund itself⁶.

On the accounting side, most countries have gradually enforced fair or market valuation accounting for both assets and liabilities. Pension funds' assets have to reflect their financial markets price, and their liabilities' discount rate needs to be in line with current bond market yields. Moreover, sponsors are now required to show in their balance sheet their unfunded liabilities – i.e. the part of their liabilities that exceeds their assets.

On the regulatory side, pension funds in most countries are now required to keep their funding level – the ratio of assets to liabilities – above a certain threshold, with recovery plans of variable length to be made in case of underfunding. Liability discount rates used for regulatory purposes vary, but have also generally been changed to reflect more accurately current prevalent market rates.

Overall these changes contributed to inflate the value of pensions' liabilities, therefore amplifying the already low pension funding levels across a number of different countries. This increased the costs of maintaining defined benefits pension funds (BIS, 2007), therefore reinforcing the shift towards defined contribution schemes, and the plans for long-term de-risking of their portfolio.

Beside these common developments, countries took different routes to ensure the ultimate solvency of their defined benefit systems. In fact, while tightening the links between asset and liabilities in the long-run, the funding and accounting regulations did not impose a perfect match in the short-run. For example in the UK, while accounting standards require the use of AA corporate bond yields as discount rates in line with IAS 19 regulations (or the FRS 17 for non-listed companies), actuarial funding ratios are calculated every three years, with the discount rates chosen by also taking into account expected returns on the plans' assets. In case of underfunding a recovery plan should be submitted, stating how the plan will reach minimum funding requirement⁸,

⁶ See Pugh and Yermo (2008) for an overview on current funding and accounting rules for pension funds.

⁷ Liabilities of defined benefits pension funds reflect the present value of the estimated future benefits payments. Amongst the various assumptions (longevity, inflation) a key decision is the choice of the discount rate used in the present value calculation.

⁸ <http://www.thepensionsregulator.gov.uk/docs/recovery-plans-2007-short-version.pdf>

but limitations apply only when such plans are longer than 10 years. In other words, new regulations increased the awareness and costs of pension schemes' liabilities, but there is still considerable flexibility about how to face them.

In these circumstances, to ensure the solvency of the system, UK regulators created the Pension Protection Fund in 2005. This institution effectively works as a "life insurance" for defined benefit pensions: in case of bankruptcy of the sponsor, it will intervene and take on the liabilities of those funds, and pay the accrued benefits to the members. To avoid moral hazard problems, the fund also has a risk-adjusted premium policy, according to which severely underfunded schemes have to pay higher contributions to the fund⁹.

An alternative way in which countries have tackled the issue of the pension funds' sector solvency is by acting to ensure higher funding level on a more permanent basis. This is typical of northern European countries, where regulation seeks to enforce continuous compliance by funds with the minimum funding requirements by having very short recovery periods. In the Netherlands for example, the regulation requires pension funds to have a 5% buffer margin of assets over liabilities overall, and recovery periods to be 3 years long. In Norway, underfunding requires immediate action.

Finally, in a small number of countries pension funds also have risk-based capital requirements. The case of the Netherlands is particularly interesting as it is the first case where such regulation is implemented specifically for the pension funds sector¹⁰. In 2007 the Financial Assessment Framework (Financieel Toetsingskader, FTK) was introduced. This regulation states that, beside the mentioned 105% funding ratio, pension funds should remain fully funded with a 97.5% confidence, and set capital buffers correspondingly. Under such a system different assets imply different capital buffers requirements, depending on their impact on the riskiness of the funds' portfolio. Assets that are less risky and less correlated with the other assets in the portfolio bear a lower capital requirement. This regulation has much in common with the similar requirements that are now imposed on banks and insurance companies respectively through the Basel III and Solvency II regulations.

In recent years proposals have been made for adopting risk-based funding regulations at the European level. The European Insurance and Occupational Pensions Authority (EIOPA), which supervises pensions regulation in the EU,

⁹ The US system is relatively similar, although recovery plans are shorter (7 years) and AA corporate bonds yields as discount rates for funding as well as accounting purposes. A very similar institution to the Pension Protection Fund, the Pension Benefit Guaranty Corporation, also exists.

¹⁰ Risk-based capital requirements have long existed in Sweden and Denmark, but in these countries this was an extension of life-insurance regulations to the pension fund sector (Pugh and Yermo, 2008) "genre": "OECD Working Papers on Insurance and Private Pensions", "source": "OECD", "event-place": "Paris", "abstract": "This paper provides a description of the risk-sharing features of pension plan design in selected OECD and non-OECD countries and how they correspond with the funding rules applied to pension funds. In addition to leading to a better understanding of differences in funding rules across countries with developed pension fund systems, the study considers the trend towards risk-based regulation. While the document does not enter the debate over the application of risk-based quantitative funding requirements to pension funds (as under Basel II or Solvency II).

conducted consultation on the implementation of a revision of the existing Institutions for Occupational Retirement Provision (IORP) II regulation, in order to provide common regulation across member countries. Such a proposal initially contained risk-based capital requirements for pension funds, but these were later dropped from the proposal following the strong opposition coming from the pension industry. While the IORP II is currently going through the legislative process in the European Parliament, consultations about solvency requirements restarted, with EIOPA launching the Holistic Balance Sheet (HBS) as a new framework seeking to implement pension capital requirement across the EU. The consultations, which include a European-wide quantitative impact study – effectively a stress test of the impact of such policy proposals – are still on-going and are expected to be concluded by the end of 2015.

Risk-based funding regulation could contribute to significantly reinforce the above-mentioned trends. Firstly, under such a regulation, risky assets are likely to decline within portfolios. Boon *et al.* (2014) find that, following the introduction of risk-based capital requirements in the Netherlands, allocation to risky assets decline by as much as 5%. Therefore, it is likely that de-risking will be going on even more aggressively. This could pose further threats for financial stability at the macroeconomic level. The demand-supply imbalances in some financial markets will increase significantly, with the reallocation out of equity towards bonds, and more in general those assets with high to those with lower capital requirements. This may also have adverse consequences to the extent that it deprives certain sectors of long-term less liquid finance, that may be on the other hand very beneficial for the economic development of EU countries e.g. infrastructure¹¹.

Secondly, it can create incentives for pro-cyclicality of investment. This point, widely discussed for the case of banks (e.g. Adrian and Shin, 2010) and insurance (e.g. Eling and Pankoke, 2013), may also apply to pension funds, as discussed by Amzallag *et al.* (2014) and Severinson and Yermo (2010; 2012). As asset prices increase the market value of the funds' assets increase, thus making the capital requirements become less binding and allowing the funds to take on more risks. Conversely, in a downturn as asset prices fall the capital buffers erode and funds may be forced to sell risky assets to comply with the regulation.

Finally, these regulations may in fact significantly increase the cost of maintaining occupational pension funds for employers, given the large underfunding that such regulations would create. As a result, this is likely to put a definitive acceleration to the demise of occupational defined benefits schemes. This would therefore increase the uncertainty about adequate income provision for the elderly, and is particularly worrying at a time where developed countries are ageing fast and their governments are reducing the basic public social security pensions in many countries. Moreover, it will shift ever more risk on top of households, which, as argued in the previous section, are likely to be even less able to cope with it than occupational schemes.

¹¹ <http://www.pensionseurope.eu/system/files/PensionsEuropesolvencyonIORPs-17-02-2015.pdf>

5. CONCLUSIONS

Despite a shared desire across agencies to decrease the level of risk in pension fund management, it is highly debatable whether this is indeed being achieved or if instead, behaviours are leading to risks appearing in different guises. The two main concerns highlighted in this paper are the fact that pensions are still searching for the holy grail of risk-free growth, and moving into the “alternative” asset class, which may increase systemic risk. Related to this, and to the concern raised that pensions are fuelling the “shadow banking” sector, we are seeing some debate and action on introducing solvency rules into the pensions sector. We have argued that the danger of such moves would be the introduction of certain levels of pro-cyclical behaviour.

More fundamentally, the promotion of funded pension schemes as key element of EU pension policy needs careful consideration. Pension funds do not seem to directly promote long-term investment in the real economy of European countries, but rather act as a catalyst of their financialisation, by providing the demand side for financial innovations. Beside rethinking financial regulation, it is therefore necessary to reassess whether the best way to provide for Europe’s ageing population is by channelling their savings into an ever more complex and interconnected financial system.

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