

# Risk in pension plans

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## Chapter 6

# Valorisation

This dissertation contributes to the understanding of the design of collective pension funds and their investment choices. Therefore, the results of this dissertation are of direct economic relevance to pension funds, pension regulators, policy makers and individuals as the ultimate stakeholders.<sup>1</sup>

Pension funds are currently facing unintended consequences of low interest rates. Market interest rates are important for them, as they go into the assumptions that they make for their liabilities and asset allocations. Low interest rates increase the market value of liabilities of the pension funds, which decreases their funding ratio, the ratio between the market value of their asset and liabilities. Pension funds can respond to this special macroeconomic situation by changing their asset allocation to change the return on the assets. Chapter 4 of the thesis contributes to the understanding of what pension funds have done since the start of the low interest rate environment and what they should they have done according to the strategic asset allocation models.

Governments typically play a significant role in a country's pension system. They are fully responsible for the first pillar pensions, but also have a large role in providing a legal & tax framework and supervision. Therefore, they are concerned by the well-being of the pension funds.<sup>2</sup> Organizations like OECD that frequently advice governments have also been interested in the effects of low interest rates on pension funds. For example Antolin, Schich, and Yermo (2011) discuss how protracted low interest rates could affect both the assets and the liabilities of the pension funds. They hypothesize that pension funds affected by lower interest rates will seek higher yields via riskier investments. Moreover, interest rate hedging activities by pension funds

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<sup>1</sup>The pension system of a country can be thought of comprising three pillars: a government provided basic old age pension, occupational pension schemes, and private savings. This thesis focuses on the second pillar pensions i.e. the occupational pension schemes.

<sup>2</sup>In the Netherlands, junior social affairs minister Jetta Klijnsma has expressed concerns about the effect on low interest rates on pension funds due to European Central Banks decision to cut interest rates further and benefits cuts are expected due to decline in funding ratios.

can put further downward pressure on bond yields. Chapter 4 adds to this discussion by showing that pension funds have chosen to reduce their investment risk since the start of low interest rate environment. More generally, we provide the insights on the direction of response using models in the strategic asset allocation literature that incorporate macroeconomic variables in addition to the short-term interest rate. The results provide empirical evidence on how institutional investors like pension funds actually incorporate macroeconomic news in their portfolio as compared to traditional models.

The pension fund industry is characterized by its focus on long-term decision-making approach for investments. This long-term focus is largely driven by their liability structure. Thanks to long investment horizons, they should be able to easily withstand short-term uncertain market conditions. However, there is a concern from the regulators as well as pension fund managers themselves that pension funds tend to invest for short-term performance and in line with the asset prices. For example a paper by International Monetary Fund (IMF) researchers, Papaioannou, Park, Pihlman, and Van der Hoorn (2013), discusses the procyclical investment behavior of institutional investors including pension funds. They state that the market volatility driven by procyclicality can have detrimental effect on the real economy. Chapter 3 contributes to the discussion in this area, where the analysis is focused on portfolio rebalancing to analyze pension funds' response to realized returns and hence evaluates their procyclicality. An institutionalized rebalancing strategy by pension funds can be one of the ways to minimize procyclicality and promote investment for the long term. In this way, pension funds can bring stability to markets and earn risk premiums not available to short-term investors.

The estimates of rebalancing that we find for pension funds in the analysis of chapter 3 are higher than the estimates of individual investors found in the literature. However, the rebalancing varies over time and pension funds follow asymmetric rebalancing. They rebalance more when stock market is performing poorly but less when it is performing well. Moreover, actively managed equity and externally managed assets can be identified as a major source of rebalancing coefficient observed in the baseline results. These results can assist pension funds in creating and following an institutionalized rebalancing framework. This can help pension funds profit from the mean-reverting behavior of asset prices and benefit from buy low and sell high dynamics.

The Collective Defined Contribution (CDC) discussed in Chapter 2 adds to the current public debate on pension system reform in the Netherlands but also, for example, in the UK and Canada. These type of pension funds have already been introduced or are likely to be introduced in the near future for many public as well as private pension funds in these countries. With the decline of traditional Defined Benefit (DB) pension funds, they are now emerging as a viable alternative. They come in many shapes and forms however, the main idea is that the benefits of the participants are allowed to be adjusted with the returns on pension fund assets. This gives rise to the question as to

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how exactly these adjustments can be applied. Chapter 2 discusses one way to incorporate the adjustment: by smoothing out returns applied to the pension rights over many periods.

The sustainability of these schemes is very important from the point of view of both regulators and participants. Chapter 2 points out that there is tradeoff between high risk sharing and low risk sharing. High level of risk sharing is welfare improving from a utility perspective but increases the risk that the pension fund will become severely underfunded. This is because the underfunding of the fund is not passed on to the participants quickly enough. This raises questions about the sustainability of the pension funds as the future generations may refuse to take part in an underfunded system, where a big portion of their contribution will be used to pay benefits to current retirees. Therefore, the regulators have to find a balance for pension funds in a way that allows for adjustment in accruals of pension rights and promotes sustainability of the pension system as a whole but also protects the interests of future generations.