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True Partner
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Navigating the road ahead: Tackling investment risks in the Dutch pension transition

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The logo for True Partner Capital is a blue square with the text "True Partner Capital" in white, centered between two horizontal white lines.

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The logo for Northern Trust is a dark green square. At the top is a white anchor icon with the letters "NT" inside. Below the icon, the words "NORTHERN" and "TRUST" are written in white, stacked vertically.

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Introduction

At over EUR 1.5 trillion¹ the Dutch pension system is the largest in the euro area and the fifth largest in the world. When expressed as a proportion of the economy, it is the largest in the world at over 166% of GDP in 2022². The system is internationally respected and Dutch pension plans have often taken the lead in regional or global developments, for example on ESG investing and more recently on net-zero portfolios.³ The system is about to undergo a major change, creating several imminent action items for pension funds and employers.

Looking across the established global Defined Contribution (“DC”) based pension systems, it is clear there is going to be a lot to take into consideration as a result of the

pension reform; from the shift to individuals taking greater retirement risk to the wholesale changes in the member recordkeeping. One of the biggest changes we can expect in the Netherlands is the shift toward growth assets over time. We believe that investment risks should be a ‘top of mind’ topic for pension funds and stakeholders as they plan for the transition.

This article consists of four sections. Firstly, in Section One we will briefly cover what is changing. In Section Two, we will focus on likely investment shifts in the post-transition world. In Section Three, we will zoom in specifically on investment risks in the transition, with an analysis of how different market scenarios affect a hypothetical pension

1. <https://www.dnb.nl/en/statistical-news/snr-2023/dutch-pension-funds-invest-more-in-the-netherlands/>

2. Source: “Global Pension Assets Study 2023”; Thinking Ahead Institute

3. Source: “Dutch are leading European Pension Funds’ Part to Net Zero”; ESG investor, 17 December 2021

fund. In Section Four, we will discuss how those risks can be mitigated and transitioning the underlying portfolio itself. Those who are familiar with the first issues may wish to skim read this first section and head straight to Section Two and/or Section Three. With transition plan preparation

a key action item for the remainder of 2023 and 2024, we hope this is a timely aid for pension fund CIOs, trustees and stakeholders to consider as they prepare for the transition to the new system.

1. What is changing and why this article?

Under the Wet Toekomst Pensioenen (“WTP”, or “Future of Pensions Act”) the Dutch pension system will essentially migrate from a (partially contingent) Defined Benefit framework to one more geared towards Defined Contribution. The targeted format is that of ‘Collective Defined Contribution’ in which a contribution framework is paired with continued centralized management, with the potential for some elements of risk-sharing to be retained. Under the current system, individuals receive pension promises regarding the level of future benefits. Unexpected developments in longevity, investment performance and discount rates are risks mostly borne by pension funds. Inflation risk is ultimately mostly borne by participants, as indexation of benefits is usually an objective, not a guarantee. That is why we describe the current system as a ‘partially contingent’ defined benefit framework.

Under the new system, individuals will have a pot of assets based on their contributions and investment performance and will bear most of these risks themselves. There will still be centralized management of pension funds, and plans can choose a contract approach that retains elements of ‘solidarity’, i.e. some sharing of risks across plan participants. As of the time of writing, surveys suggest that most pension funds are expected to choose this ‘solidarity-based defined contribution’ model, while a substantial minority will choose the flexible defined contribution contract, which allows for a more individualised approach. However, even with the solidarity model, relative to the current model the risk sharing across participants is still significantly curtailed.

This is a major transition. It has significant implications for the regulatory framework and investment policies.

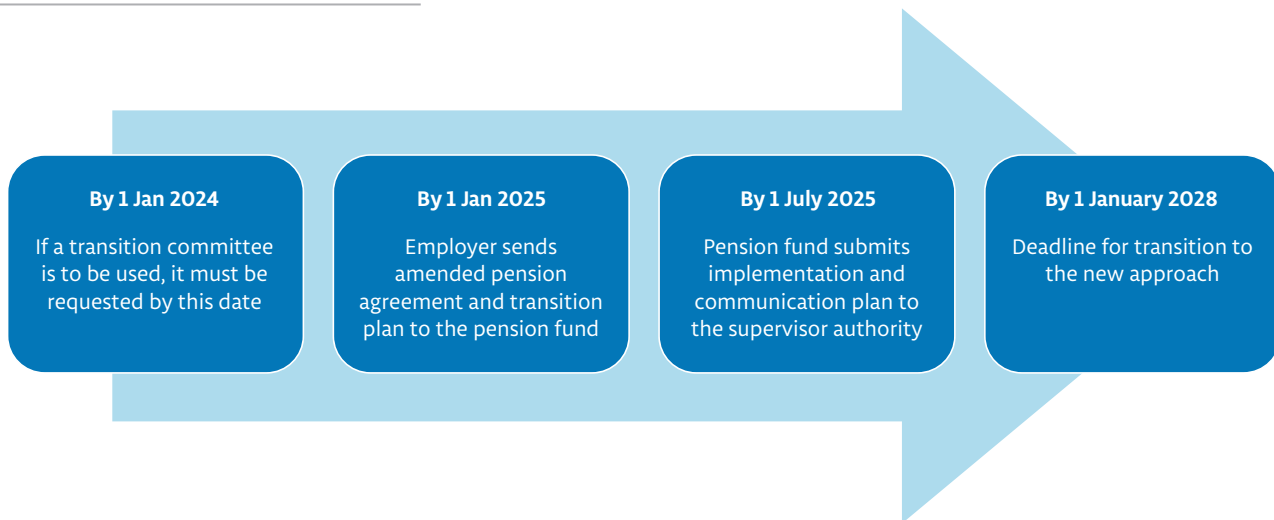
The move to individual accounts also creates significant logistical and administrative challenges, particularly as the new system also envisages easier transfers between funds and higher frequency and more easily accessible reporting of pension fund valuations. Valuation and reporting processes will need to be revisited and potentially reimagined in more efficient ways. Determining timely and high quality tradable valuations for illiquid assets raises particular challenges in this regard, as these are typically reported on a lag. A fuller exploration of that issue is beyond this scope of this article.

As centralized pension fund management will remain, the responsibility for ensuring a fair transition and the appropriate investment approach post transition is largely with professionals at pension funds (board members and investment professionals) and employers (as pension fund sponsors), under the oversight of regulators and with the involvement of other key stakeholders (representatives of pension fund members, particularly trade unions). It’s with that perspective that we have written this article, highlighting key investment risk elements that pension funds will need to consider in the period leading up to and during the transition:

- The potential for market shocks
- Protection of the Funding Ratio⁴ into the transition to the new contract
- Protection of the portfolio value into and beyond the transition date
- The differing impacts of market shocks on different age cohorts
- The changes required to the underlying portfolio

4. For simplicity in this article we will focus on the Funding Ratio. The Policy Funding Ratio, which is calculated as the average funding ratio based on daily market information of the preceding 12 months, is also of relevance, but has more path dependency.

WTP: milestones in transition process



Above we outline some important milestones. While the deadline for transitioning to the new system is 1 January 2028, the deadline for having a plan for transition is much sooner: 1 January 2025. If the parties involved are unable to agree on changing the scheme, a temporary transition

committee can be established to provide binding advice on the change. The establishment of such a committee must be requested by 1 January 2024.⁵ This makes formulating a transition plan a major current issue.

2. What will portfolios look like post-transition?

How will the investment mix change?

Pension fund savings are designed to create reliable income streams many years away, typically multiple decades in the future. Under the current system, participants accrue entitlements, which become liabilities for pension funds. Pension funds' liabilities are valued based on their present value, which is calculated as an estimate of the future payments discounted by mostly market based measures of interest rates.

If the interest rate used for discounting was zero across time, EUR 100 today would be required to fund a liability of EUR 100 at any given point in the future. Increase the discount rate, and the present value today falls. Lower the discount rate and the present value today increases – so more money is required today. If the discount rate becomes negative, it

takes more than EUR 100 today to meet a future liability of the same amount. Following the global financial crisis, an extended period of unexpectedly low interest rates made pension promises more expensive and over time we have seen pension funds in aggregate hedge more of this interest rate risk and reduce overall exposure to risk assets.

Critics of the liability-driven method of measuring risk argue that this approach has had adverse effects on how younger people's savings are invested, and this has been one reason cited for changing the system. Younger people saving for pensions are very long-term investors; in theory this should give them the ability to take more significant investment risks, for example by holding more in equities and less in government bonds. However, under a liability driven

5. Source: Loyens Loeff: The Future Pensions Act Explained

method pension funds have very long-dated obligations to these younger people, which are very sensitive to long-term interest rates. This has pushed pension funds towards holding long-term fixed income instruments on behalf of younger participants, when other assets may offer more attractive long-term prospects.

Post-transition, this risk shifts to participants, and the expectation is that we will see a shift in asset allocation. The common view is that most funds will adopt something akin to a 'life cycle' investment approach, whereby different age cohorts have different allocations. To put it simply, if you are entering a pension scheme at 18 or 21 and saving for a pension you will receive at 67, you have a longer-term investment horizon than a 65-year old and can therefore take more capital risk. Life cycle investing is a well-established framework in the investment management industry and often used as a default allocation in other defined contribution-based pension schemes such as the UK, Sweden and the US.⁶ The result is that in major global DC systems we typically see equity allocations at the overall pension scheme level of over 50%, as we will cover in more detail below.

This approach can be taken under both the solidarity contract and the flexible contract, though the manner of implementation would differ in important ways. At one end of the spectrum, funds can choose an approach that may be administratively close to their current model, continuing to run a return seeking portfolio and an interest-rate hedging portfolio. Different age cohorts then receive different predefined allocations to these two portfolios. For example, a 40 year-old may have a 100% allocation to the return seeking portfolio, while a 67 year-old may have a 100% allocation to the interest-rate hedging portfolio. Performance is then allocated according to these predefined allocations, which can be done using theoretical returns. At the other end of the spectrum, individuals can hold individual shares in different fund products selected based on their risk preferences (as for example commonly happens in the UK system). There are also several options in-between these two approaches, such as running two or three versions of return seeking and/or hedging portfolios with different profiles. Under the solidarity contract there

can also be a solidarity reserve, while under the flexible contract there can be a risk-sharing reserve.

From an investment perspective, there are material market risks into the transition regardless of the choice of contract, as we will discuss further in Section Three. As funds think about their post-transition model, there are also several investment-related considerations. To mention just two, one important factor in interest-rate hedging will be thinking about interest rate curve risk, as those starting to de-risk their portfolios away from equities do not have the same time horizon as those who are imminently to retire, a topic we will return to later in this article. Another consideration is how investments that combine interest-rate like and equity-like characteristics fit into each model, such as real estate and infrastructure, both material allocations for many pension funds. We will leave the choice of contract aside for the rest of this paper but would be happy to help pension funds think about the benefits and costs of different approaches in more depth, and to help them plan appropriately for adapting their processes to the new system.

Importantly, whether a fund chooses the solidarity contract or the flexible contract, the reforms are likely to have substantial (and intentional) implications for the fund's invested assets. The new framework will enable younger participants to assume (significantly) more equity market risk in their pension portfolios, targeting capital growth. Older participants will have a more conservative asset mix, focused more on income generating assets. Contrast that with the current framework: from a pension fund's perspective, their obligations to young participants currently have significant interest rate risk. In the new system, the portfolios held for these younger participants may have no interest-bearing component at all.

At the system-wide level in the Netherlands we expect to see an overall transfer from longer-dated fixed income to equities. For example, up to the age of 40 or 50, participants could be fully invested in equities or other risk assets, before gradually transitioning their portfolios towards lower risk investments as they approach retirement. Pensioners are likely to be predominantly invested in fixed income and

⁶ OECD Pensions Outlook 2020: 'Selecting defaulting investment strategies' (https://read.oecd-ilibrary.org/finance-and-investment/oecd-pensions-outlook-2020_1c7381db-en#page4)

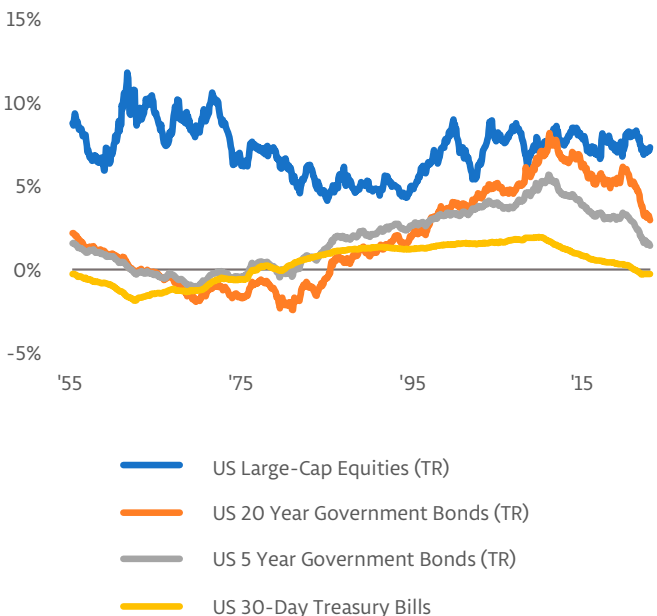
cashflow generating assets and have lower exposure to equities. With market moves in the last two years a reminder that interest rates and inflation can see large fluctuations, we may also see demand for shorter-term interest rate hedges from pensioners to provide a more managed path, as an average pensioner at retirement can still happily have a relatively long time horizon of over 15 years. With large moves in assets, transaction costs and market impact are important considerations and effective transition management of underlying portfolios will also be critical, a topic which we will revisit in Section Four.

In the chart below, we show one empirical reason this shift in assets is likely. While past performance is not necessarily indicative of future performance, over the long-term equities have outperformed bonds quite consistently across multi-decade horizons. A quick survey of long-term forecasts of asset managers and macro strategists will show that is also a common expectation for the future.

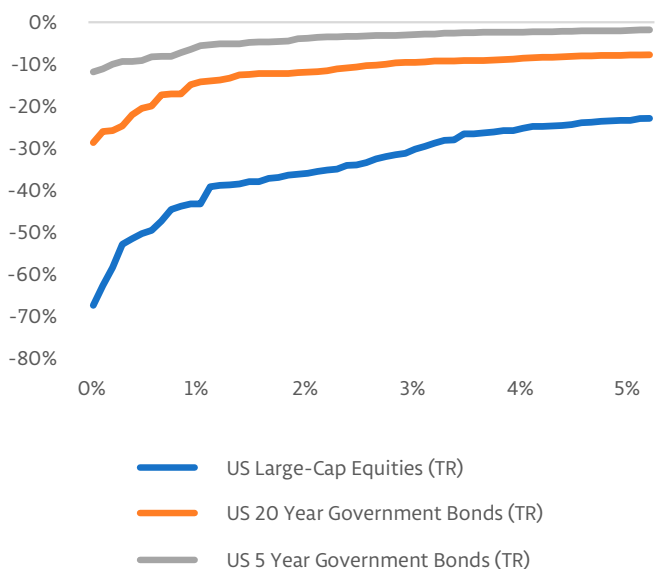
In the chart below-left we show rolling 30-year real returns for US equities and government bonds, which are the largest component of most global equity and bond indices. Equities have comfortably outperformed in most of these 30-year periods. It's also notable that there have been multi-decade periods where bonds have failed to protect against inflation.

In the right-hand chart, we illustrate a challenge for pension funds that the transition brings into focus. Here we show rolling 12-month returns for equities and bonds, and just look at the bottom 5% of observations. Thus, the number at 0% on the X axis (-68% for equities, -29% for long-term bonds) is the worst 12-month period. The number at 5% on the X axis (-23% for equities, -8% for long-term bonds) is the return in 5% of observations. As the chart shows, short-run returns for equities and bonds can deviate dramatically from their long-run averages, with equities showing a wider variation than bonds.

Rolling 30-year real total returns for US equities and government bonds ⁷



US equities and government bonds - rolling 12-month returns in the bottom 5% of observations ⁸



7. Data series are derived by True Partner from the Ibbotson [®] S&P [®] series from Morningstar Direct and published by the CFA Institute. Data as of June 2023. Rolling 12-month periods are overlapping to avoid bias to any specific choice of start date.
8. Data *ibid*. Data from Jan 1926 to Jun 2023.

Where are assets now?

As of Q2 2023, DNB data show that of the approximately EUR 1.5 trillion of pension assets, over EUR 380 billion is currently invested in equities with an additional EUR 98 billion in private equity. There is approximately EUR 640 billion in fixed income, of which around EUR 300 billion is in non-index linked government bonds. The remainder is mostly in assets that combine elements of interest rate risk and corporate risk (and idiosyncratic risk), including real estate and infrastructure. Many funds also hold significant longer-term interest rate hedges via derivatives, typically expressed via over-the-counter interest rate swaps.⁹

At the aggregate level, there are large allocations to asset classes that are typically illiquid – direct real estate, indirect unquoted real estate, private equity and infrastructure. These make up 17.3% of assets at Q2 2023. Some of these can also contain meaningful direct or indirect exposure to interest rates. That illiquid component has also increased notably over time: at the end of 2007, it stood at 5.8%.

Let us briefly compare the current 26% allocation to equities + 7% allocation to private equity in the Netherlands to other major pension schemes globally. Looking across the established global DC based pension systems, from the US to Australia, the allocation to equity investments is considerable; in the UK, the largest DC scheme covering over 10 million members currently has over 55% of its assets in direct liquid equity. This allocation to equity however tails off as an individual moves toward retirement, which in turn needs careful management based on member age.

Historically, allocations to equities in the major global

DC markets have remained fairly stable but high over the years: in Australia, a market that is over 80% DC, rising from 82% DC in 2010 to 87% DC in 2022, over this period the equity allocation remained at circa 50-60% with a 57% allocation in 2010 and 53% in the most recent figures. The equivalent figures for the US are a 61% equity allocation in 2010 falling to 50% in 2022 on a DC penetration rising from 55% to 65% over the same period. While these figures vary as markets vary and asset allocation changes it is clear that the equity allocation in DC remains the predominant asset class.

Overall, when taking into account the current portfolio mix in the Netherlands and substantial amount of longer-term interest rate hedges, it seems clear that the transition will involve significant portfolio changes. The changes are much starker when viewed through the lens of individual age cohorts, with younger cohorts looking to hold a more equity-heavy portfolio, while those nearing retirement may wish to have a higher fixed income exposure, but likely with lower duration than the current portfolio.

On top of the changes at the fund level, the changes may loom large for the participants as well. Not only is it essential that the transition takes place in a fair and equitable manner, but it is just as crucial the changes are communicated properly so that participants construe the changes as such. Transparency is a key element here. As part of the change pension funds are tasked with identifying the risk appetite of their participants as an input into asset allocation. Identifying and explaining risks will be important. We'll next turn to thinking about risks in more depth.

⁹. DNB data as of Q2 2023

3. Which investment risks are important in the transition?

What matters in the transition?

The WTP calls for implementation to occur as a 'big bang' on the targeted transition date (so-called 'invaren' or sailing in). With so many aspects of reform to consider, we think this has so far attracted insufficient attention. We explore this topic further below.

First, let's think about what matters in the transition to the overall fund and to different age cohorts. We think there are four major investment issues to think about:

Funding Ratio	<ul style="list-style-type: none"> • If the Funding Ratio is too low, a fund may not be able to transition • The Funding Ratio is an important determinant of the ability to pay pensions today
Asset values	<ul style="list-style-type: none"> • Some age cohorts will see significant portfolio changes • For younger generations who will switch towards (or entirely to) risk assets, it is arguable that the asset value is more important than the Funding Ratio, unless the Funding Ratio is so low as to prevent transition
Transition valuation	<ul style="list-style-type: none"> • Most funds are expected to use the standard method. This uses the discounted present value of liabilities and makes valuations of accrued entitlements very sensitive to changes in the level and term structure of interest rates. • This can create big shifts in the relative distribution of value across individuals.
Post transition portfolio	<ul style="list-style-type: none"> • In aggregate, what assets will need to be bought and sold to get from the current portfolio to the post-transition portfolio? • What is the most efficient way to effect that and how will this risk be managed?

That can then help us think about some of these practical questions:

Is it better to transition early or later?	<ul style="list-style-type: none"> • For younger participants who will see a significant move to risk assets, early transition may be better • If the Funding Ratio is sufficient to pay pensions in the near-term, older participants may prefer to de-risk into fixed income and/or to transition later
Should the portfolio change between now and the transition?	<ul style="list-style-type: none"> • Is the portfolio robust to different outcomes? • Are there scenarios that would be uncomfortably adverse?
How can these considerations be communicated to stakeholders?	<ul style="list-style-type: none"> • What scenarios are being discussed with stakeholders? • Are there common views on the appropriateness of risks?

Firstly, let's think about what happens on the transition date and the transition valuation. On the transition date, the pension fund's investments are to be distributed among the participants individually. The methodology used is to be agreed as part of the fund's transition plan. The amounts received will be a function of the method used to value current entitlements, the Funding Ratio of the plan and adjustments influenced by considerations of solidarity and fairness: the post-transition pension model chosen by the fund and any compensation or adjustments agreed for specific age cohorts, e.g. for pensioners who do not have time for further asset growth, or for age cohorts who may be disadvantaged by the transition due to the cessation of the "doorsneesystematiek" or "DSS" (see box for more details). Redistributions can be spread over several years and there are various regulatory constraints on the degree of redistribution.

On the transition date, funds will value their assets, and their accrued pension liabilities. Assets will be marked to market prices. For liabilities, most pension plans are expected to apply the 'standard method'.¹⁰ This uses the present value of discounted future cash flows, i.e. the same approach as currently used to value liabilities pre-transition under the existing Financial Assessment Framework (FTK). This approach makes the calculation heavily dependent on the level of interest rates and the shape of the yield curve on the transition date. As a result, the amounts received by individuals in the transition becomes subject to broad market risk on the assets held by the pension fund and interest rate risk for the valuation of their accrued entitlements.

Tackling this interest rate risk first, if all interest rates fall, this will translate into a lower discount rate for all entitlements and the present value of the entitlements (liabilities for the pension fund) will therefore rise. The biggest rise will be in the longest dated entitlements, which are those accrued by relatively young fund participants. In this scenario, ceteris

paribus, this will allot the younger participants a relatively larger share of the distribution. In contrast, a move higher in interest rates will translate into a higher discount rate for all entitlements, with the biggest decrease in the present value of the entitlements accrued by relatively young fund participants. Ceteris paribus, this will allot the younger participants a relatively smaller share of the distribution. Thus, a first observation is that the relative distribution of value is sensitive to interest rates.

Inter-generational solidarity – the end of the DSS

Under the current system there is inter-generational solidarity via the contribution system. The WTP legislation acknowledges these potentially unfair distribution effects and gives fiduciaries some leeway within the framework to establish a fair outcome ('evenwichtige uitkomst'). Consultation with stakeholders will be important in this process.

Under the current system there is a common contribution rate (the "doorsneesystematiek" or "DSS"). In the framework of DSS, all participants pay a similar contribution rate, regardless of age, and accrue entitlements of which the accumulation rate is also not age dependent. However, this creates implicit transfers between age groups. Entitlements further out carry a lower present value (and are thus 'cheaper' than the premium paid) whereas nearer entitlements carry a higher present value (and thus are more 'expensive' than the premium paid). As such, the DSS is in effect a subsidy from younger to older participants. In the new system, this will no longer exist.

Cessation of the DSS is widely held to most impact middle cohorts (e.g. between 45 and 55) as they have 'overpaid' for their entitlements (being younger participants) but will not receive the opposite benefit when they will have become older. Funds may wish to compensate this cohort in the transition.

¹⁰ The alternative to the standard method is the 'value-based asset liability management' (VB-ALM) method; this also includes discounting based on market interest rates but also attempts to value some other factors. A detailed discussion of VB-ALM is outside the scope of this article. The legislation also provides that each participant must receive at least 95% of the outcome of the standard rule, which limits the scope for adjustments motivated by the changes to DSS or other factors (Future Pensions Bill, Technical Briefing to the Senate, January 31, 2023).

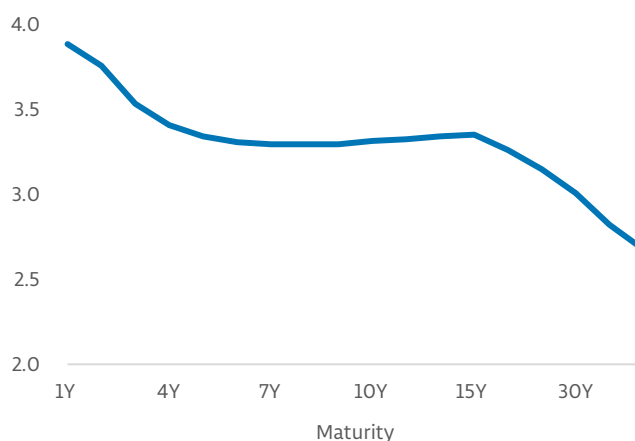
Secondly, let's think about the Funding Ratio. If the Funding Ratio is below 95%, the fund must take steps to achieve an expected entry coverage ratio of at least 95%. If the Funding Ratio is below 90%, more stringent rules also apply. If the Funding Ratio is below 105%, there are also restrictions on the fund's freedoms. Once an implementation plan is submitted, the legislative framework also restricts actions that result in a fall below the entry coverage ratio.¹¹ With the substantial rise in interest rates over the past two years, most funds now have a Funding Ratio of at least 105% (176 out of 179 funds as of Q2 2023). However, it is worth remembering that as recently as end-Q1 2020, 83% of the then 202 funds had a Funding Ratio of below 105%.¹² Most funds are now between 105% and 130%, so providing indexation is still not easy. Thus, protecting the Funding Ratio in the transition is also important.

Thirdly, let's think about asset values and the portfolios post-transition. Assume younger participants will shift to an equity-orientated allocation, and older participants will shift to a fixed income orientated allocation. This results in potentially conflicting objectives between different age cohorts regarding the current portfolio. Imagine a pension fund where half the participants are under 50 and that the plan is for these participants to move to equities post-transition. That half may be best served by having a fast transition and moving to equities sooner. Now imagine the other half of the pension fund consists of older participants on the point of retirement. They would likely want to de-risk and move to fixed income sooner. How should those conflicting objectives be taken into account in today's asset allocation process?

Think of this in the context of interest rate hedging. For older participants who will transition towards fixed income, interest rate hedging now may be similar to their post-transition objective. However, their target time horizon would likely have a lower duration than many current long-dated hedges. In a world of rapidly moving interest

rates and where the long-end of the European interest rate swap curve beyond 15 years is inverted (i.e. the interest rate is lower as you move out the curve), that matters too (see chart).¹³ For example, hedging a 15-year duration risk with 50-year swaps could be an expensive mismatch if the curve were to flatten through an increase in long-dated interest rates.

*Euro interest rate swap curve*¹³



For the younger participants looking to shift out of fixed income, the value of interest rate hedging now is more questionable. If interest rates rise and the value of hedges falls substantially, that will give them less to invest post transition once they shift to other assets. However, interest rate risk arising from their entitlements cannot be ignored into the transition, as it will continue to impact the Funding Ratio. If the fund can't transition, young people will not be able to re-allocate to risk assets and the other participants will be affected too.

What is clear is that market volatility into the transition date can impact all these factors: the Funding Ratio, the overall assets of the pension plan, the relative share of assets each individual receives and the discretion for the fund to apply policies designed to improve fairness.

11. 'Factsheet overbruggingsplan pensioenfondsen', DNB, 29 June 2023 <https://www.dnb.nl/voor-de-sector/open-boek-toezicht/sectoren/pensioenfondsen/verzamelopagina-transitie-wet-toekomst-pensioen/overbruggingsplan/factsheet-overbruggingsplan-pensioenfondsen/>

12. 'Pension funds by Funding Ratio cohort', DNB, data for Q2 2023 and Q1 2020

13. Interest rate swap curve as of 13 October 2023; source: Bloomberg

Finally, it is also important to consider the timing of the shift of the underlying portfolio: while the move from the current to the new contract will take place on a single valuation day, it may not be optimal to make all the changes in the underlying portfolio on the same day, particularly for large plans. A fund therefore may wish to think of mitigating risk in two stages: stage one being up to the transition

date (where the Funding Ratio is particularly important, alongside the other factors mentioned above); and stage two being from the transition date to the time when targeted portfolio changes have been completed (during which period there may still be a material gap between the actual and target allocations for each cohort, and changes in asset values are of paramount importance).

Illustrating investment risks in the transition – looking at market scenarios

In this section we will look at the impact of these investment risks through the lens of a hypothetical pension plan. Taking a series of market scenarios, we will analyse the impact on liabilities, assets, Funding Ratios and the distribution of assets. In order to show the impacts more clearly, we make some simplifying assumptions about the asset mix and the demographics of the pension plan.

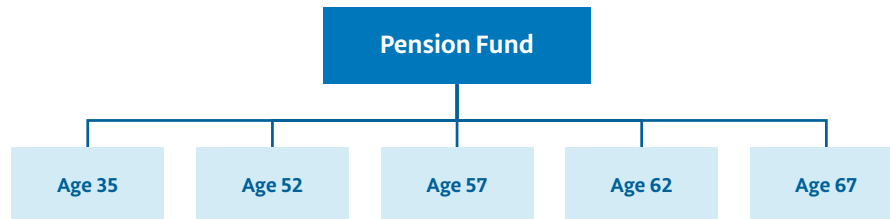
When thinking about market scenarios, we looked at some major events that we and many decision makers in pension funds and stakeholders will have in their working memories: the financial crisis centred around 2008, the drawdown

following the global outbreak of Covid in Q1 2020, and the smaller equity drawdown and moves higher in interest rates seen in 2022. Let's start with a simple overview of these events. For each of the financial crisis and 2022, we break it down into a faster move and a slower move. In both cases we can see that most of the 'big' move happened in a short space of time. For example, in the financial crisis equities fell by 31% in 2.5 months during 2008, and by 55% over 19.8 months from 2007 to 2009. Note that while we only show the 30-year swap rate in the table below, we model the impacts using the full swap curve and a full portfolio revaluation.

Market Scenarios

Scenario	2020 Drawdown	Mar - Jun 2022	Dec 2021 Oct 2022	Sep - Dec 2008	Jul 2007 Mar 2009
What happened to equities?	Fell significantly	Fell	Fell	Fell significantly	Fell significantly
Change in MSCI World TR Hedged to EUR	-33%	-10%	-17%	-31%	-55%
What happened to EUR interest rates?	Little changed	Rose significantly	Rose significantly, curve flattened	Fell significantly	Fell significantly, curve steepened
Change in EU 30y Swap Rate	-23bps	+171bps	+247bps	-176bps	-162bps
How long did this take (in months)?	1.1	3.6	10.6	2.5	19.8

To illustrate how these could affect a fund, we first need to imagine a hypothetical pension fund. We start by imagining a fund with participants in five different age cohorts:



Why these ages? First, we looked at a respected and transparent institutional Dutch pension fund to see where they would have different asset mixes for participants of different ages in their defined contribution schemes. Similarly to the sketch we made in Section Two, those under 50 generally have a high weight to risk assets, those in their 60s and retirees have a high weight to fixed income, and those between 50 and 60 transition from a higher equity component to a lower one in a couple of stages by age. Then, we looked at the members of the industry wide pension schemes in the Netherlands and looked at the weighted average age of participants within these different buckets. So, we think of this as a simplified proxy for the type of analysis that one can apply to typical industry wide pension schemes, focusing on cohorts of participants who have different target investments post-transition.

The fund's assets are being managed and regulated as one portfolio with liabilities to the five participants. The fund is managed along a typical framework with a return seeking portfolio and a matching portfolio. We assume the fund also looks at its overall interest rate risk in a typical liability management framework and hedges 50% of its interest rate risk.

Post-transition, the fund will apply a life cycle approach and the participants will receive individual portfolios and shift their investment exposures.¹⁴ The 35-year-old is expected to transition to a portfolio with predominantly equity and other risk assets – with no interest rate hedge. The 67-year-old is expected to transition to a portfolio with predominantly cash flow generating assets such as government bonds with relatively little non-interest rate risk. The portfolios for the 'middle' participants will be in between these formats, with

the allocation to risk assets for the 52-year-old exceeding that of the 62-year-old. As we look at the market scenarios, this helps us to see how each cohort could be impacted.

For simplicity, we assume that the fund only invests in equities, bonds and (for hedging only) interest rate swaps. For the weight of equities relative to bonds we started with the weights in equities and bonds across the whole pension system. For the assets that combine both corporate/credit risk and interest rate risk (e.g. real estate), we balanced between equities and bonds according to our assessment of likely risk factors. We would be happy to work with pension funds to model their portfolios using asset class specific shocks for real estate, corporate credit etc. For reference, the resulting asset mix is also quite similar to what one may get from applying a life cycle approach across the whole fund (i.e. more equities for younger participants, more bonds for older participants). Crucially though, the returns from these assets are shared across all participants equally as the fund is one shared pool – so at the cohort level some will see substantial changes in their portfolios post-transition and thus asset values are also important.

For the hedging component, we take into account the interest rate component of the bond portfolio and then add positions in interest rate swaps. While industry wide figures are not readily available, our assumption that 50% of interest rate risk is hedged is based on conversations with industry participants. For reference the BIS estimated hedging levels at the not dissimilar level of 60% in 2022.

We did not assume any hedging of equity risk. While some funds use tail hedging for equities as a structural allocation, many funds currently do not. One common reason not to

14. As noted above, individual portfolios can be implemented by receiving theoretical shares of larger portfolios, or individual shareholdings in specific funds. The implications for investment exposures are essentially the same and thus the implementation approach does not impact our analysis here in any material way.

hedge equity risk is having a very long-term investment horizon, so having the ability to ‘hold on’ through drawdowns. With the transition date creating a shorter-term investment time horizon, we believe this is an assumption that it is worth revisiting: recall the chart earlier on of left-tail outcomes for equities, and the impact of previous shocks on Funding Ratios: we saw the average Funding Ratio fall from 152% in Q2 2007 to 92% in Q1 2009, and from 102% in Q4 2019 to 90% in Q1 2020, with equity losses a material factor in this.¹⁵ We will discuss this further later.

The fund has been well-managed under the current framework, and has a Funding Ratio of 116%, i.e. assets exceed liabilities and the pension fund is able to consider indexation of benefits. We choose 116% because this was the system wide Funding Ratio at the end of 2022 and the end of Q1 2023 and is also very close to the level as of Q2 2023 (118%).

For simplicity, we assumed that each age cohort has accrued pension entitlements such that the present values of the discounted liabilities to each age cohort are the same today. People accrue pension rights over their working lives, so astute readers may note that is implicitly assuming that there are more young people (our 35-year olds who we will call Cohort A) than older people (our 67-year olds who we

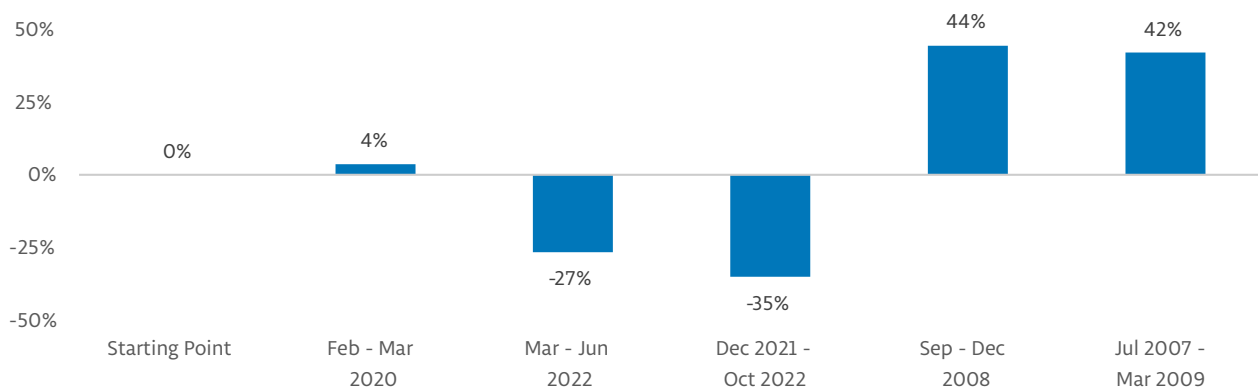
will call Cohort E). This is also similar to what we see in the actual numbers of members of industry wide pension funds in the Netherlands (48% are under 50 and 30% under 39). We would be happy to undertake this analysis on specific schemes on request, using specific cohort breakdowns.

One benefit of our assumption is that it makes it easy to see what is happening to the pension pots of the different age cohorts, as they currently have an equal share of the present value: 20% each. So, if the pension fund was split today, and had EUR 1 million in assets, each age cohort would receive EUR 200k. We call this the “Starting Point”.

Next, we apply these familiar market shocks, as described in the table above. We then look at the impact on liabilities, assets and how these together impact the Funding Ratio. The Funding Ratio is a major focus under the current regulatory framework and will remain a key regulatory measure up to the transition date. The assets will determine the amount of money available for the pension fund members to receive into their updated (centrally managed) pension scheme accounts on the transition date. We then take all these together to look at the relative distribution of liabilities (and thus assets) across the different participants.

First, we look at the impact on liabilities:

*Percentage change in value of liabilities in historical market stress scenarios:
Total Liabilities vs Starting Point*



We can see opposite effects in 2008 and 2022: in 2008 interest rates go down and therefore the present value of liabilities rises. In 2022, interest rates go up and therefore

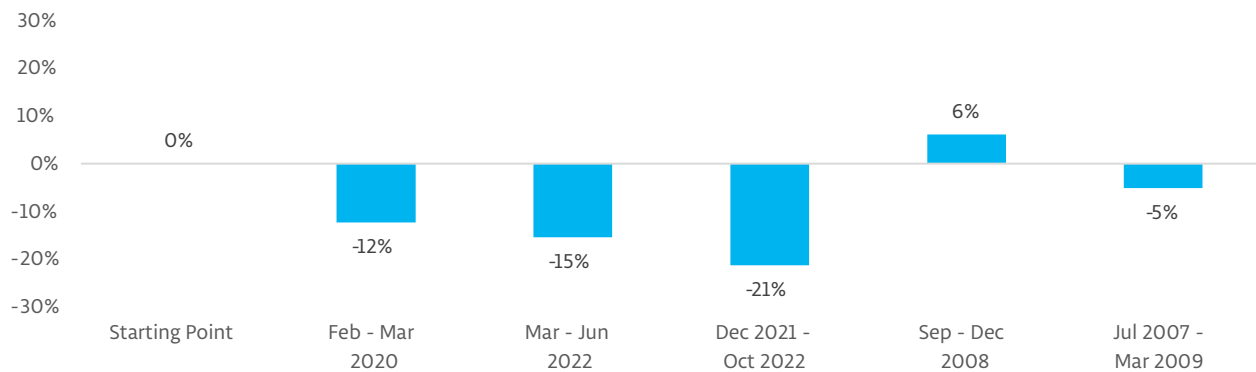
the present value of liabilities falls. There is little change in Feb/March 2020 as interest rates did not see major changes.

¹⁵ Source: DNB: <https://www.dnb.nl/en/statistics/dashboards/pensions/>

Tackling investment risks in the Dutch pension transition

Secondly, let's look at the impact on the total assets:

Percentage change in the value of assets

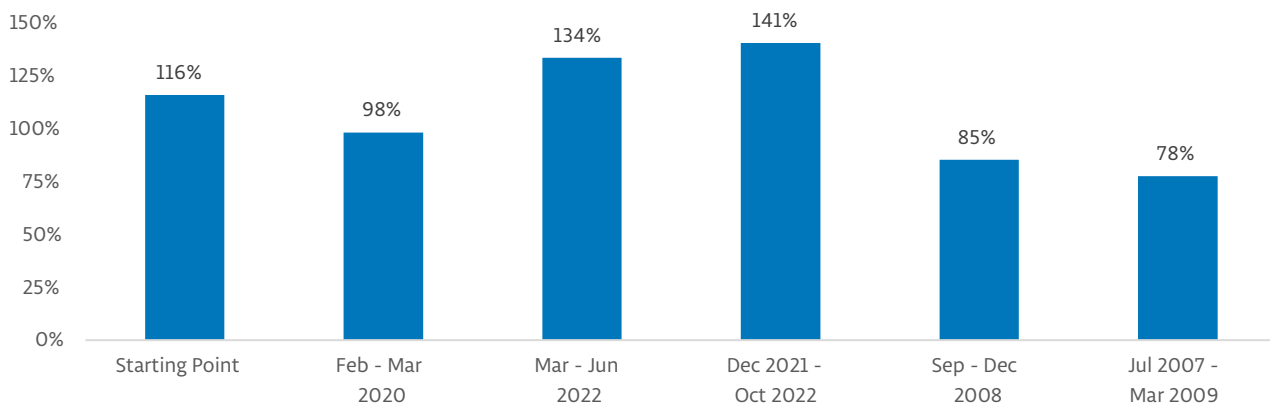


In our scenarios, falling equity prices negatively impact asset values in all cases. In 2020, the negative impact is mostly driven by falling asset prices, as equity tail risks have not been hedged. In 2022, the falls in asset prices are more than offset by the significant increase in the discount rate and thus the decrease in the present value of liabilities.

on assets. In 2022, rising interest rates result in lower values for government bonds / hedges, thus adding to the fall in asset values.

Thirdly, let's combine these two to look at the impact on Funding Ratios:

Funding Ratio vs Starting Point



Funding Ratio impacts vary significantly. From a starting point of 116%, in several of the scenarios funds would not be able to transition. In 2020, the negative impact is mostly driven by falling asset prices, as equity tail risks have not been hedged. In 2008, the negative impact is mostly driven

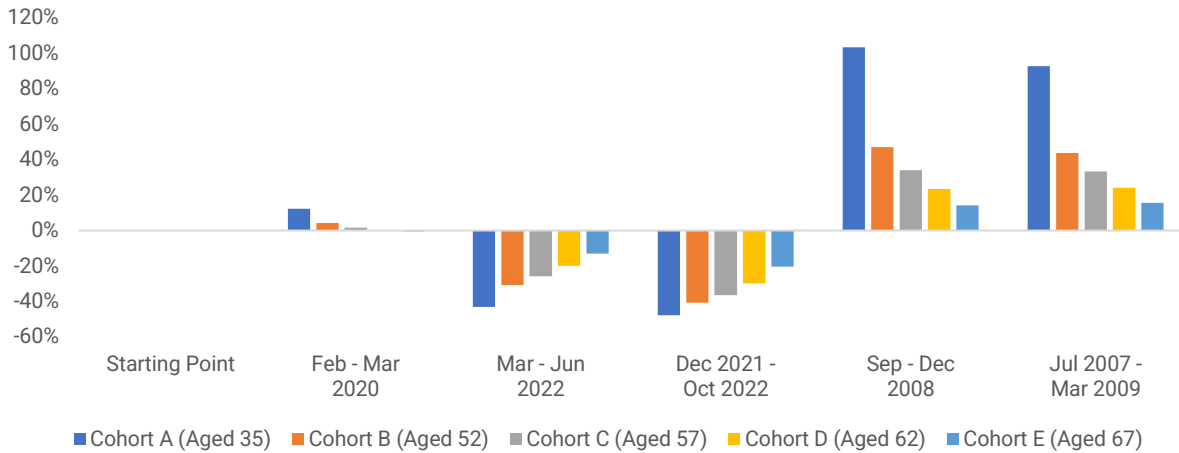
by higher liabilities, as falling equity prices and rising bond prices largely offset each other in terms of asset values. In 2022, the falls in asset prices are more than offset by the significant increase in the discount rate and thus the decrease in the present value of liabilities.



Next, let's look at how this impacts our different age cohorts. Again, let's start with liabilities and look at how the present

value of liabilities per cohort changes in each scenario. This is driven by movements in interest rates.

Percentage change in value of liabilities in historical market stress scenarios

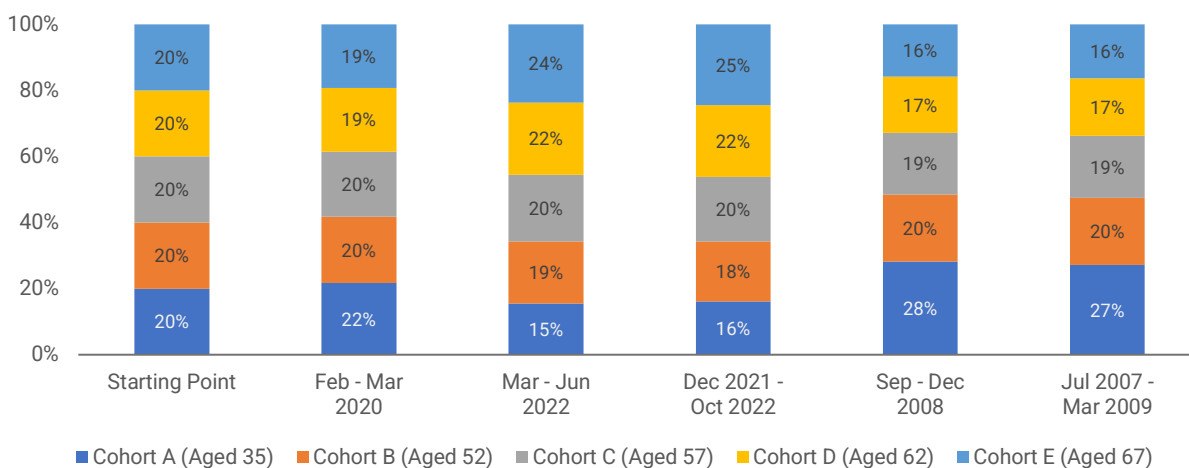


We can see opposite effects in the 2008 and 2022 scenarios. In 2008, lower interest rates result in a greater increase in the value of the longer-dated liabilities to younger participants; in 2022 higher interest rates result in greater falls in the

value of the longer-dated liabilities to younger participants. Again, Feb/March 2020 does not see such large changes as interest rates did not see large movements.

Looking at the relative distribution of liabilities shows that this results in quite different shares of the pot:

Percentage share in value of liabilities in historical market stress scenarios



Again, we see opposite effects in the 2008 and 2022 scenarios. In 2008, lower interest rates result in an increased share going to younger participants and a lower share for

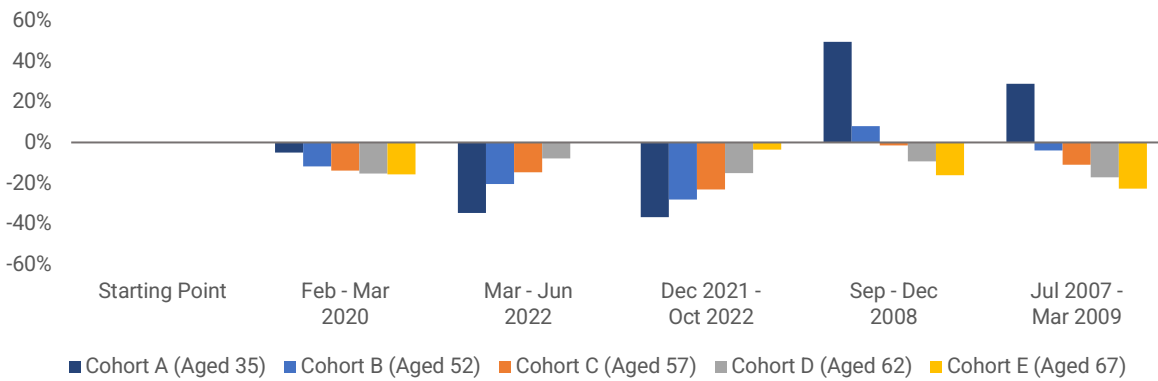
those near retirement. In 2022 higher interest rates result in a lower share for younger participants and a higher share for those near retirement.

Tackling investment risks in the Dutch pension transition

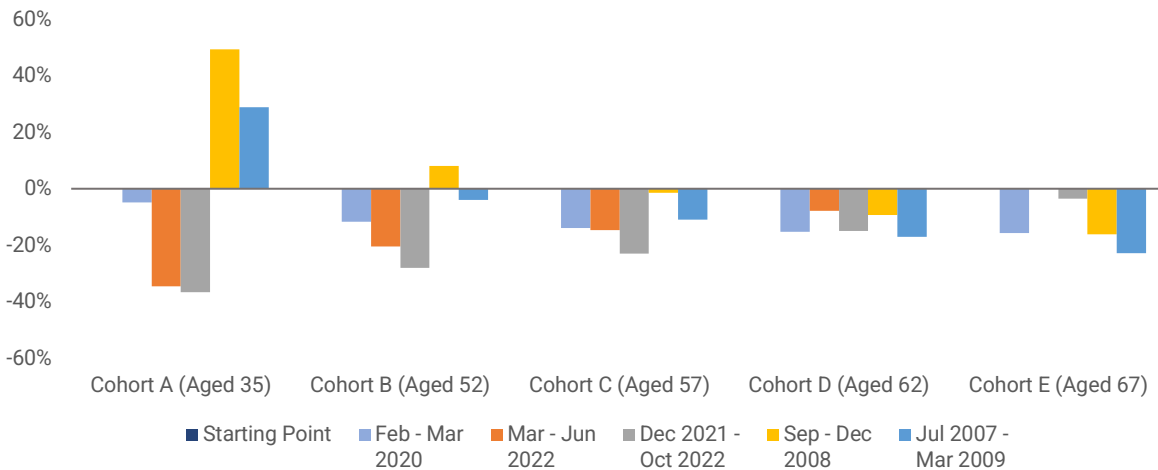
Finally, we can look at the interaction of these effects. Below we apply the shocks, then distribute the assets according to the new shares of liabilities. Thus, the Starting Point is always zero, a positive number means a cohort gets more

assets, and a negative number means they get fewer assets. We show this chart in two different ways: firstly, with the different scenarios on the X axis, and then secondly with the age cohorts on the X axis.

Percentage change in value of assets per age cohort after applying stress scenarios, assuming distribution by present value of liabilities



Percentage change in value of assets per age cohort after applying stress scenarios, assuming distribution by present value of liabilities



With participants effectively transitioning to a starting asset level to invest in a different asset mix on a defined contribution basis, these are very large variations in potential outcomes. The value of an individual's pension pot could fall or rise by close to 50% relative to its current level, simply by assuming what has happened in the past happens again – and recall some of these market moves

took only 1-3 months. Thinking about the individual level, the impacts are also potentially dramatic for those whose moves seem smaller in the chart. A 52-year-old has already accrued most of their pension entitlements, and yet is still seeing scenarios with a loss of almost 30% of asset value. Those nearing retirement (aged 62) are losing in asset terms in all scenarios.

4. How can investment risks be mitigated?

If such outcomes seem uncomfortable, the good news is that there are ways to mitigate these risks. Hedging via interest rates and equities can enable funds to truncate the distribution of outcomes. The relevant market-sensitive components of illiquid exposures can also be estimated and hedged where appropriate. A fund may only seek to protect its Funding Ratio, or may seek to protect both its Funding Ratio and asset value, or may seek to protect its Funding Ratio, asset value, and reduce the potential for major imbalances across age cohorts.

A common and legitimate concern is the cost of hedging. Fortuitously, the cost of buying protection in equity markets is currently below historical averages; in fact, it is close to long-term lows in European equities. This could make buying put options or combinations of options an attractive way to protect against tail outcomes that could cause large declines in asset values. In the absence of offsetting hedges, such declines would reduce both the Funding Ratio and the ultimate asset value available to participants. With a wide range of options structures available, there are considerable opportunities to add value in the selection and management of such hedges.

The cost of protection in interest rates is currently above historical averages, reflecting the large moves seen in rates over the past 1-2 years. However, such hedges can still be attractive for their ability to protect both Funding Ratios and asset values. If Funding Ratios become so low as to prevent transition or necessitate cuts in pensions, this is clearly problematic. At the same time, even with a stable Funding Ratio, if there are large asset losses or major changes in the relative share of assets, this will also have real world impacts. Again, there are significant opportunities to add value in how hedges are designed and managed.

Achieving fairness is a key objective within the pension fund reforms. Crucially, the existence of a fixed transition date creates a shortened time horizon for pension fund investing when viewed from the lens of individual participants, as opposed to the system as a whole. We believe that taking account of market risks and their potential effects into the transition should be a key discussion point for pension fund managers, trustees and other stakeholders. Funds have the option to take steps to protect participants through the transition by using hedges to protect against sharp declines in Funding Ratios, asset values and to consider the impact of differences across age cohorts.

Pension funds may find it helpful to think about the following questions:

Stress testing

- What would happen to the portfolio in different market scenarios?
- How will this impact the Funding Ratio and assets?
- How will it impact different age cohorts?

What is the cost of protection?

- What hedging solutions would mitigate the risks?
- What are the potential costs and benefits to Funding Ratios and asset values?
- Are there attractive trade-offs that can help to reduce the cost of protection?

How should any protection be managed?

- If there are large shifts in markets and the hedges increase in value, would the fund consider adjusting its protection?
- What are the scenarios where it may be beneficial to consider adjusting hedges?

Hedging tail outcomes could provide an opportunity to create a narrower path of potential outcomes that reduces the risk of highly adverse outcomes for pension fund participants and helps to ensure a fairer transition. Amid all the action items in the pension fund transition, we believe this deserves particular focus.

The team at True Partner Capital has experience across a wide variety of market environments and benefits from a range of proprietary quantitative tools. Working with a partner such as True Partner Capital can help pension funds to assess what kind of market scenarios could occur, how these could impact their Funding Ratio, asset value and individual age cohorts, and the benefits and costs of different types of hedging approach. We would be happy to help pension funds model these risks for their specific portfolios and demographic profiles and think about what actions they could take to help achieve a more balanced transition.

Considerations in adjusting to the post-transition portfolio

That brings us to the post-transition portfolio. Alongside managing risks through the transition, it is important to

consider what will need to change in aggregate across the portfolio. For many funds, this may involve reducing interest rate hedges, perhaps reducing the duration of bond portfolios, and changes in their underlying portfolios to shift towards risk assets. It will be important to be thoughtful about managing transaction costs and risk profile adjustments involved in such changes. Working with an experienced partner in transition management such as Northern Trust may offer opportunities for cost savings and other efficiency gains. Where a fund uses hedging strategies to help manage its risks through the transition, these can also be coordinated with planned changes to the portfolio post-transition. True Partner Capital and Northern Trust can help funds to think about this change process and work together alongside a fund's internal team and other external partners to help deliver a coordinated service.

Post-transition, we believe there is also a potential argument for hedging tail outcomes, despite the long-term horizons of most pension funds. In the early years following the transition, where participants are becoming accustomed to the new system, large swings in value could be worrying. Where protection is priced attractively and valuations relatively high – which we would suggest includes several

major equity markets – we believe there is also a case for using hedges that allow participants to participate in equity upside while limiting the prospect of large losses. Following the great financial crisis centred around 2008, it took European equities almost 10 years to recover their pre-financial crisis high. With large losses often followed by rebounds, mitigating the large loss can mean a much higher capital base from which to profit from the rebound. Over time, the compounding benefits available from avoiding large losses can be powerful. While institutional investors vary in their approaches, many investors around the world maintain structural allocations to tail hedging strategies, in part based on this view.

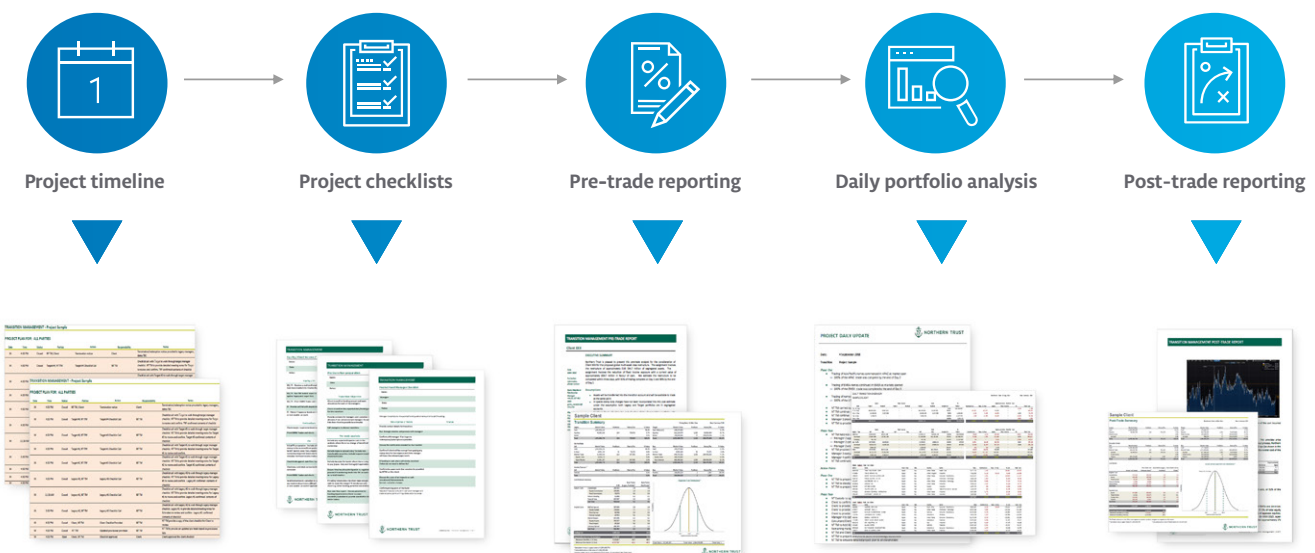
Underscoring each transition is the appreciation that pension funds will have unique sets of challenges, requiring the flexibility of a customised solution to identify risk and mitigate cost. The transition management timeline will fluctuate, dependent on the liquidity and complexity of the event, but the broad process parameters stay in place throughout. Underlying every element of the process is a

clear understanding of the fund’s objectives, in addition to the roles and requirements of stakeholders, that may be impacted through the transition event.

The lifecycle of a transition management event can be broadly categorised as follows:

Planning, coordination and strategy – This is a key priority and builds an understanding for the objectives of the fund. This initial stage will lay the foundation stones for the project more broadly and assist in ensuring that all relevant stakeholders are both informed and aware of their responsibilities. The pre-transition reports provide funds with increased insight, transparency and focus on the costs and risks associated with their restructure for review and agreement. Additionally, a customised project plan is developed, with time sensitive deliverables, targeted at both the operational and trade execution elements of the transition. Once the strategy and project plan is agreed this is clearly documented and formally agreed upon within a suitable framework.

Transition Management – Project Management, Risk Mitigation and Transparent Reporting



Implementation – On completing and documenting the agreed execution strategy, trade orders are communicated to the trading desk for execution purposes. Throughout the implementation phase, execution is tracked, with the daily reporting package providing the percentage of completion, associated costs of the event, as well as commentary on the assignment’s progress, activities undertaken and prevailing market conditions. This monitoring and communication ensures the strategy is adhered to (or modified as appropriate) and measures the

execution costs as they occur.

Post-trade evaluation – A comprehensive reporting package designed to provide full performance measurement, audit trail and comparison of actual costs versus predicted costs, promoting transparency under the construct of good fund governance. The final results will then be delivered to the fund with a full review of the transition on a quantitative and qualitative basis.

Conclusion

The pension transition is a one-off event that presents a challenge and an opportunity for pension funds. They are entrusted with the responsibility of helping to ready the Dutch pension system for the retirement of the next several generations, potentially benefiting millions of individuals. That is a privilege and an opportunity to make a positive difference, but it brings many challenges. The

teams at True Partner Capital and Northern Trust are ready to work in partnership with pension funds to help ensure a smooth transition, where risks are managed, costs are kept in check and pension participants can benefit from the collective investment experience of their pension fund teams and external experts. Please get in touch for a conversation.

About the authors

True Partner Capital



Mr. Tobias Hekster, Co-CIO of True Partner Capital, has been actively trading for the past 25 years in various different roles in several markets across the globe. Starting at IMC in 1998 as a pit trader in Amsterdam, Tobias has established the off-floor arbitrage desk, headed the Chicago office in the transition from floor trading to electronic trading and set up the Asian volatility arbitrage desk in Hong Kong. Tobias holds an MSc in Economics from University of Groningen, Netherlands. Next to his role as Senior Strategist, he taught as an Adjunct Associate Professor at the Chinese University of Hong Kong and as an Adjunct Professor of Financial Practice at National Taiwan University.



Mr. Robert Kavanagh, Head of Investment Solutions at True Partner Capital, has 19 years of industry experience. In his role at True Partner he works with the Firm's clients and together with the Firm's portfolio management and research teams to deliver effective solutions and market insights for investors. Prior to joining True Partner in 2019, Robert spent 15 years at Goldman Sachs Asset Management, where he was an Executive Director within the Alternative Investments & Manager Selection (AIMS) group, which managed over \$200 billion. Over this time, Robert was an investment professional covering hedge fund investments globally across multiple strategies and asset classes. He also worked on portfolio construction, asset allocation and the creation and management of customized portfolios, as well as with a wide range of institutional clients. Robert is a CFA charterholder and holds a First Class (Honours) BSc in Philosophy and Politics from the University of Bristol, UK.

Northern Trust



Mr. Mark Austin, leads the growth strategy for the Pensions and Insurance business across the EMEA region. Mark has over 35 years of experience in the management and administration of retirement assets. Previously, he was Head of Asset Owners, UK. Mark is Chair Trustee of the Northern Trust UK Pensions Scheme and Director of Northern Trust Fund Services Ireland Ltd. Mark is also the vice chair of the Defined Contribution Investment Forum (DCIF).

Mark's background is based in the servicing, management and stewardship of retirement assets having worked at an asset manager with a significant pension market share and two asset servicing institutions predominately servicing the UK and European defined benefit and defined contribution markets.

Mark works with clients and consultants to support the more complex aspects of pensions including the movement of asset management in house and de-risking and other deficit reduction structures as well as implementing the various pension pooling structures available.

Prior to Northern Trust, Mark was at JP Morgan covering the pension client base as well as the offshore manager constituency in various capacities from strategy to sales and relationship management.



Mr. Martin Korst, Senior Vice President in Capital Markets Client Solutions, leads Northern Trust's Capital Markets initiatives in Continental Europe. Before this, he served 8 years as Client Executive for innovative and complex Corporate & Institutional clients within the Dutch Client Service team at Northern Trust Amsterdam. Before joining Northern Trust in 2008, Martin held several senior positions with brokers, hedge funds and trading companies. During his 23-year career, he has performed various roles in sales & relationship management. These include being responsible for business development and sales at The Kyte Group in London, where he was a member of the Executive Committee. Prior to that, he acted as Managing Director for international derivatives broker InterOptions Brokerage and worked for Fortis Clearing International (now ABN AMRO Clearing N.V.) as a relationship manager.



Mr. David McPhillips, Senior Vice President of Northern Trust, leads the sales effort for Portfolio Solutions clients located in the EMEA region. His responsibilities include business development and ensuring client satisfaction. David's role includes engagement with clients, investment boards and investment consultants. David has been with Northern Trust since 2001 and has spent the majority of his career assisting clients with their transition management needs. In addition to his responsibilities within the transition management arena, he spent a number of years as Head of North American Consultant Relations, for the Corporate and Institutional Services business unit. Prior to working with Northern Trust he held positions with Mellon Corporation in Boston and Bank of Ireland Securities Services in Dublin. David holds a Bachelor of Commerce degree from University College Dublin.

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Disclaimer

Sources include True Partner Capital, Northern Trust, De Nederlandsche Bank (DNB), Organisation for Economic Co-operation and Development (OECD), Bank for International Settlements (BIS), Bloomberg, Reuters, Dutch government, Thinking Ahead Institute, Netspar, ESG Investor and the European Central Bank (ECB). The starting point date for the hypothetical pension fund analysis shown in Section Three is 16 August 2023; the same analysis performed as of dates in October 2023 and November 2023 yields similar results and conclusions. The analysis is for illustrative purposes only. Other information is the latest available as of October 2023 unless otherwise stated. Any references to individual securities, ETFs and indices are for illustrative purposes only and no opinions are expressed regarding specific securities, ETFs or indices. Past performance is not an indicator or guide to future performance. Data is from sources believed to be reliable but no representations are made regarding data sourced from third parties.

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