

# **Collective Pensions and the Global Financial Crisis:**

## **The Case of the Netherlands**

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## **Collective Pensions and the Global Financial Crisis: The Case of the Netherlands**

### Abstract

The global financial crisis triggered a major redesign of the collective pension system in the Netherlands. The current Dutch system can be characterized as a defined benefit system with nominal guarantees, which are increased in line with inflation if investment returns are satisfactory. The crisis has shown that cuts in nominal benefits cannot be excluded because investment policy does not defend the nominal guarantees. In the redesigned contract, pension incomes depend more explicitly on the investment returns with lower guarantee levels that are defended in case of low investment returns. Allowing some individual choice with respect to risk taking is currently under discussion. As a side effect of adjusting the contract in the light of the financial crisis, funds no longer insure workers against systematic longevity risk during the accumulation phase. The chapter analyzes the pros and cons of these adjustments to the contract.

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The financial crisis has had a major impact on Dutch occupational pension schemes. The direct effect was that funding rates dropped dramatically, and the crisis revealed some weaknesses of the system and therefore led to various proposals for reforms. This chapter explores the impact of the crisis on the Dutch pension system and discusses various reform proposals.

In what follows we first describe the Dutch pension system followed by a discussion of the major strengths of the system compared to mainstream defined contribution (DC) schemes. The Dutch pension system is a rather unique pension system in the sense that it contains a large funded occupation pillar with forced participation and annuitization. Next we investigate the impact of the financial crisis on the thinking about Dutch occupational pensions. We then turn to the main proposals for reform and discuss three kinds of pension rights that play a role in the current discussion. We discuss alternative pension reforms that have been proposed and end with conclusions.

### **Dutch occupational pensions**

The Dutch pension system consists of three pillars. The first pillar is a pay-as-you-go public pension scheme. It provides a basic flat pension to all older residents at a level that is related to the minimum wage. Compared to other European Union (EU) countries, the state pension in the Netherlands provides only a relatively small part of pension income for those workers earning middle and higher incomes. If these workers want to maintain their standard of living in retirement, they need additional pension income. This is where the second pillar of occupational pensions comes in. The third pillar consists of voluntary personal savings, which are tax favored up to a ceiling. This pillar can be used to tailor the pension portfolio to

individual preferences and characteristics, and is especially important for self-employed individuals who lack occupation pension provisions.

**Occupational pension schemes.** Occupational pension schemes in the second pillar are funded. These schemes are earnings-related and supplement the flat public benefit for workers who earn more than the minimum wage. These schemes cover more than 90 percent of the labor force. The pension scheme is part of the labor contract, which is typically negotiated between unions and employers in collective labor agreements. Employees are thus obliged to participate in the negotiated pension scheme.

Dutch pension funds are independent trusts with their own governance and administrative structures. The governing board of pension funds consists of equal representatives of employers and unions. The value of assets in the second pillar amounts to about 800 billion euro (125 percent of GDP). Industry-wide pension funds are organized for workers in a specific sector of the economy. These sectoral funds own more than two-thirds of the assets in the second pillar and account for more than 80 percent of the active participants. A company can opt out of an industry fund only if it offers a better pension plan than the plan offered by the sectoral fund.<sup>1</sup> This mandatory participation of firms in sectoral arrangements explains the high coverage of supplementary pensions in the Netherlands.

**Guarantees and ambitions.** The occupational plans are run like defined-benefit plans, which aim at a certain annuity level during retirement. Years of service and a reference wage typically determine the benefit entitlement. The reference wage used to be the final wage but in the last decade most funds have moved to career-average schemes. In these schemes, entitlements to deferred annuities accrue based on a percentage of the average wage level during the career. These schemes typically aim at an annuity level of about 80 percent of average pay (including the flat public benefit) after 40 years of service. This corresponds to an accrual rate of about two percent per year. The goal is to index the deferred annuity to

wage inflation during the accumulation phase. During the pay-out phase, some funds aim to index annuities to price inflation but others aspire to a link with the development of contractual wages.

The aspired annuity levels are ambitions rather than guarantees. In particular, the pension funds aim to index the pension rights to prices or wages but this indexation is not guaranteed because indexation is conditional on the financial performance of the fund. One can in fact view the system as a hybrid system of guarantees and ambitions; nominal annuities are in principle guaranteed (but see below) but the degree to which pensions rise in line with prices and wages depends on the performance of the investments of the pension funds.

Through the shift from final-pay to career-average schemes with conditional indexation of nominal pension rights, pension funds have made indexation of the pension rights of workers conditional on the financial performance of the pension fund. Conditional indexation in these career-average schemes applies not only to the pension rights of the already retired members who are in the decumulation stage but also to the indexation of the pension rights of workers who are still in the accumulation stage. These reforms have thus strengthened the impact of the indexation instrument on the funding rate because this instrument now affects all accrued liabilities of the fund (including the entitlements of workers to deferred annuities). As a result of these reforms, those in the active working population absorb more risks in terms of their pension rights. Moreover, participants rather than employers have become the main risk bearers of the fund.

**More complete contracts.** Several large sectoral pension funds now employ policy ladders -- rules that state explicitly how both the extent of indexation of pension rights and a possible recovery premium (levied on top of the cost-based premia for the newly accumulated pension benefits) vary with the funding ratio. These policy ladders can be viewed as more complete

contracts compared to the previous rather incomplete ones, which allowed for a great deal of discretion by the governing board. Indeed, in the past, funds would make only rather ambiguous statements that pension rights would be indexed as long as the financial position of the fund would allow it.

A policy ladder for a typical Dutch pension fund is shown in Figure 1, which is adapted from Ponds and van Riel (2007). The horizontal axis measures the assets of the pension fund. The nominal liabilities  $L_N$  correspond to the value of nominal annuities, while  $L_R$  measure the value of indexed annuities. The values of these nominal and real annuities are calculated by using the nominal and real yield curve, respectively. The nominal curve is derived from prices of Government Bonds and published by the supervisor. The real curve can be derived from the nominal one using observed break even inflations in the (small) OTC market for inflation products.

*Figure 1 here*

The left vertical axis measures the actual extent of indexation of the pension rights. This actual indexation depends on comparing the actual indexation reserve  $A - L_N$  to the indexation reserve that is required to fully meet the ambition to index the pension rights,  $L_R - L_N$ . If the actual indexation reserve is positive but less than the reserve needed to fully meet the aspirations (i.e.  $L_N < A < L_R$  so that the nominal funding rate  $A/L_N$  exceeds 100 percent but the real funding rate  $A/L_R$  is lower than 100 percent), then actual indexation is provided in proportion to the actual indexation reserve  $A - L_N$  as a share of the required indexation reserve  $L_R - L_N$ . If the actual indexation reserve exceeds the required reserve, then the pension fund provides so-called catch-up indexation to make up for missed indexation in the past. The dotted line in Figure 1 depicts this possibility.

The collective buffer  $A - L_N$  serves not only as an indexation reserve but also as a solvency buffer for the nominal annuities (i.e. the hard obligations of the fund). Solvency regulations stipulate that the solvency buffer should be so large that a year from now the nominal funding rate continues to exceed 100 percent in 97½ percent of the cases. If this is not the case the pension fund has a reserve shortage and should hand in a recovery plan to the supervisor. This plan should show how the fund will build up the required reserve on the expected path within 15 years. For most pension funds, the critical level of the nominal funding rate below which they suffer from a reserve shortage is around 125 percent. If the nominal funding rate is below 105 percent, the fund is underfunded. If it features such a funding shortage, the fund must make a recovery plan that shows that the nominal funding rate will exceed 105 percent on the expected path in three years.

The left vertical axis of Figure 1 also measures the contribution rate. The base contribution rate is calculated as the market value of the hybrid pension claims that are acquired by the active participants (i.e. a nominal DB guarantee and a risky DC claim). An additional so-called recovery premium may be charged if the fund exhibits a funding shortage or a reserve shortage.

### **Strengths of Dutch occupation plans**

This section discusses the main strengths of Dutch occupation pension schemes compared to mainstream DC schemes.

**Advanced risk management.** The Dutch occupational pension plans aim at achieving the ambition of a DB promise of an appropriate income level during retirement. In particular, the pension fund manages interest-rate risks and inflation risks so as to guarantee the nominal annuities and to realize its ambition to index these annuities to inflation. Hence, the hedge portfolio is defined in terms of income streams during retirement. Indeed, the main risks (e.g.

investment risk, inflation risk, interest-rate risk and longevity risk) are managed so as to hedge risks on behalf of households while at the same time exploiting the risk premia on various risk factors by optimizing the trade-off between return and risk (in terms of mismatch with portfolio hedging income risks).

**Protection against behavioral biases.** Cooperative pension plans allow individuals with scarce cognitive abilities to delegate complex saving, investment and insurance decisions to professionals. Collective pension funds assist individuals in properly exploiting their long-run investment horizon and in gaining access to complex investment strategies provided by modern financial markets. More sophisticated life-cycle investment by pension funds on behalf of long-term investors stabilizes financial markets and facilitates macroeconomic stability.

**Low expenses, substantial buying power and reduced selection.** Cooperative pension funds with compulsory participation of members reduce marketing and other transaction costs. The board of trustees can contract out various financial services to insurance companies, hedge funds or mutual funds. Accordingly, competition occurs on a wholesale level rather than a retail level. This tends to reduce transaction costs for individual members, who typically lack sufficient expertise to buy the various services that make up the pension product. Moreover, joining forces in a cooperative pension fund that is run professionally strengthens the buying power of individuals, exploits scale economies in buying complex financial products that are not available to individual investors, and helps to discipline commercial financial service providers to act in the interests of the members of the pension fund. Another advantage of forced risk pooling in a sectoral pension fund is that it reduces selection in longevity insurance. Also this helps to reduce the costs of pension insurance.

**Completion of financial markets and intergenerational risk sharing.** Collective risk pooling not only combats selection in longevity insurance but also allows members to



exchange risks that are not (yet) traded in financial markets. In particular, young members can share in longevity risks faced by older cohorts. To illustrate, if these cohorts live longer than expected, the resulting lower funding rate affects the indexation quality of the deferred annuities of the younger cohorts. In this way, the pension schemes help to fill the gaps of incomplete financial markets. Moreover, by linking pension benefits to the wages of workers, pension funds allow retirees to share in the wage risks of workers. Furthermore, young workers can share in financial market risks faced by the older members through so-called recovery contributions. In fact, the risky pension contributions produced by the mismatch risk allow the young to transform their human capital into an asset with exposure to financial risks (Beetsma and Bovenberg, 2009).

In principle, one can share financial-market shocks not only between currently living generations but also with generations that are not yet participating in the pension scheme when the shocks actually materialize. In fact, the pension fund buys risk-bearing assets on behalf of future generations by in effect borrowing from older generations. From an ex-ante point of view, this internal trade is actually welfare improving because financial shocks are shared even more broadly, namely not only with the currently participating generations but also with future generations (Teulings and de Vries, 2006).

### **The impact of the crisis**

Figure 2 displays the development of the nominal funding rates of Dutch pension funds in the last few years.<sup>2</sup> Before the onset of the financial crisis in 2007, the average nominal funding rate amounted to about 145 percent. A buffer of 45 percent of liabilities looks robust at first sight. However, a nominal funding rate of 145 percent translates into a real funding rate of close to 100 percent.<sup>3</sup> Moreover, funding rates differed across funds.

About 35 percent of the pension funds exhibited a funding rate below 130 percent, close to the level below which funds feature a reserve shortage.<sup>4</sup>

*Figure 2 here*

The crisis caused the average funding ratio to decrease substantially from 145 percent before the crisis to a trough of about 90 percent in the first quarter of 2009.<sup>5</sup> In view of the underfunding, most pension funds have handed in a recovery plan in the beginning of 2009. Currently, the average funding rate is about 105 percent – the critical level for a funding shortage.

Three main factors contributed to the fall of funding rates since 2007. First of all, the worldwide collapse of share prices played a major role in the immediate aftermath of the financial crisis. Second, a sharp decline in nominal interest rates increased the present value of nominal pension liabilities. The rise in liabilities was not insufficiently compensated by the increase in the value of bonds (or interest derivatives) on the asset side of the balance sheet because assets did not match nominal liabilities: not only were bond holdings (and derivatives hedging nominal interest-rate risk) much smaller than nominal pension liabilities, but also the duration of the bonds owned by pension funds was typically substantially shorter than that of pension liabilities. Most of the decline in the funding rate between 2007 and 2011 can be attributed to the lower nominal interest rates. The final factor behind the drop in funding rates is lower mortality. Following major health-care reforms in 2001, mortality rates for retirees have dropped more substantially than anticipated earlier. Upward revisions of life expectancy have depressed average funding rates by about five percentage points.

The financial crisis has had a major impact on thinking about Dutch occupational pensions. The main impacts are taken up next.

**Participants become more aware that they are risk bearers.** The financial crisis revealed to participants that that they have become a major risk bearer in the pension system. In part as

a result of the move from a final-pay to a career-average system, occupation pension systems are no longer pure defined benefit (DB) systems but have been moving in the direction of collective defined contribution systems in which participants rather than employers are the main risk bearers. Indeed, pension funds are relying more and more on the indexation instrument and less and less on the instrument of fluctuating recovery pension contributions to absorb risk. Table 1 shows how actual indexation to retirees has lagged indexation ambitions in recent years.

*Table 1 here*

The main reason why participants are becoming the main risk bearer is that aging and the maturation of pension funds makes recovery contributions a less effective instrument to maintain the solvency of pension funds. With a rising ratio of pensioners to workers, pension liabilities are increasing compared to wages so that large changes in contributions are required to contain fluctuations in liabilities pension benefits. Indeed, for many companies, financial and actuarial risks of pension guarantees start to dominate those of the core business for many companies. They therefore no longer underwrite the risks of their pension funds. Whereas volatile financial markets and increasing pension liabilities have increased financial risks of pension funds, employers are thus supplying less risk bearing to these pension funds. As a direct consequence, participants must supply more risk-bearing capital through pension rights that fluctuate with financial shocks.

Another reason why contributions can no longer absorb shocks is that contribution rates to Dutch occupational pensions have reached rather high levels (see Figure 3). The costs of volatile contributions are increasingly being recognized in terms of adverse demand- and supply-side effects. In particular, fluctuating recovery premia are likely to affect the demand side of the economy in a pro-cyclical fashion. As regards the supply side, the fluctuating

pension contributions distort the labor market. Indeed, higher pension contributions aimed at correcting funding deficits act as an implicit tax on labor.

*Figure 3 here*

**Lack of risk-bearing capital.** The financial crisis has also shown that the indexation instrument may not be strong enough to stabilize funding rates in times of economic stress. Indeed, the volatility of financial markets is large compared to the steering capacity of the indexation instrument. The evaluation of the Dutch government of its solvency regulations has revealed that these regulations have tended to underestimate financial risks (including liquidity risk). Whereas financial risks have increased, risk-bearing capital in pension funds has declined as a result of high contribution levels and a premium base that is declining compared to pension liabilities.

**Declining mortality rates requires higher retirement age.** Mortality rates in the Netherlands have been rather flat in the last decades two decades of the last century. Moreover, increases in pension costs due to lower mortality could easily be financed on account of booming financial markets resulting in high funding rates in the nineties. Since 2002, however, mortality rates of pensioners have started to drop substantially. It gradually became clear that this involved a structural development so that pension funds had to revise their mortality projections downward. In the face of the financial crisis and the high level of contribution rates, the associated higher structural pension costs could no longer be financed out of higher than expected returns or increased higher contribution rates.

More and more stakeholders became convinced that longer life expectancy must go together with a higher retirement age. The rule of automatically linking pensions to life expectancy avoids the political costs of discretionary decisions to limit eligibility to public pensions and tax benefits if longevity increases further. Agreeing on a risk-sharing rule *ex ante* also reduces the political risks associated with collective discretionary decision-making.

Moreover, it allows individuals and firms to gradually adapt to a longer working life by better maintaining human capital and adjusting the organization of work. An increase in spending on disability pensions and unemployment benefits is thereby avoided.

By reducing output levels, the financial crisis worsened the public finances, which were already burdened by rising health-care costs. To restore the sustainability of the public finances, the Dutch government proposed to increase the eligibility age for the public pension from 65 to 67. These proposals also include tightening the tax regime for supplementary pensions so that the retirement age of the occupation pensions rise in line with the higher retirement age for the public pension.

**Ambiguous status of nominal guarantees.** The low nominal funding rates caused by the financial crisis have complicated the investment policy of the funds. Do they defend nominal guarantees by matching these nominal obligations and de-risking their investment strategy? Or do they continue to take investment risk in order to retain up-side potential and to hedge inflation risk so as to protect the prospect that they will be able to index their nominal obligations to (wage) inflation?

The current pension contract is rather ambiguous about which investment policy pension funds should implement at low nominal funding rates. The supervisory rules do not force pension funds to match their nominal obligations if capital buffers become very low. These rules thus leave substantial discretion to the pension funds on how to respond to low funding rates in terms of their investment policies. In fact, substantial risk taking is observed even if nominal funding rates are close to 100 percent.<sup>6</sup> In this way, funds take the risk that they eventually will have to cut nominal pensions. After the nominal funding rate of a pension fund falls below 100 percent, a pension fund has three years to recover to a funding rate above 100 percent. If the fund cannot show recovery on the expected path these three years, it may have to cut nominal pension rights.

The possibility that nominal benefits could be cut came as an unpleasant surprise to many pensioners and eroded the confidence of members in pension funds. Indeed, there is a clear mismatch between what funds communicate (nominal guarantees) and how they invest. In the face of the investment policies of the larger pension funds, one can argue that the current contract does not provide guarantees and is characterized by benefits that depend on financial returns. In other words, the pension system has lost its DB nature altogether in the sense that not only indexation but also nominal pensions are no longer guaranteed. By reducing nominal funding rates, the financial crisis revealed a major weakness of the Dutch pension system, namely the ambiguity of the current pension contract in general and the status of the nominal ‘obligations’ in particular.

**Tension between nominal and real thinking: what is hedging portfolio?** This ambiguity of nominal guarantees can be explained as follows. On the one hand, nominal guarantees can be matched much easier by financial assets than real guarantees because the supply of inflation-linked bonds is very limited. Moreover, participants tend to suffer from money illusion and thus value nominal guarantees. On the other hand, defending nominal guarantees in the face of low nominal funding rates can be quite costly in terms of the ambition of the funds to safeguard the purchasing power of pension rights.

Indeed, in the face of fluctuating inflation expectations, funds must choose between stabilizing nominal or real funding rates (or alternatively, selecting nominal pension income or a real pension income as the risk-free asset that needs to be hedged). In particular, investing in short-term instruments allows funds to take advantage of rising nominal interest rates if inflation expectations increase so as to stabilize real funding rates and protecting the purchasing power of pensions. This investment policy, however, leaves open the risk that falling nominal interest rates worsen the nominal funding rate further. This tension between meeting nominal obligations and hedging inflation risks (i.e. thinking in nominal; or real

terms) has become especially stark in the aftermath of the financial crisis. On the one hand, low funding rates and the desire not to cut nominal pensions encourage funds to protect their nominal funding rate. On the other hand, uncertainty about inflation is substantial after a financial crisis so that funds want to hedge inflation risks by investing in short-term bonds.

**Ownership of risk and buffers ambiguous.** The pension contract is ambiguous in terms of not only investment policy (and the associated guarantees and mismatch risk) but also the distribution of mismatch risk. Although pension funds have strived to make risk-sharing contracts more complete through policy ladders (see Figure 1), the current policy ladders tend to be silent on what happens if the funding rate (i.e. assets as a percentage of the nominal liabilities) falls below 105 percent. Whereas most pension funds thus continue to take nominal risks at the low funding rates produced by the financial crisis, it is thus unclear who the owner of this risk is.

More generally, the ownership of the collective buffers is not transparent. It is also unclear, for example, what happens if the buffers rise above the level that is necessary to finance fully indexed pensions. Moreover, the policy ladders are at present not more than guidelines for the governing board. They have no legal status and thus do not offer the same protection as legal property rights do. Indeed, the government boards of the pension funds still dispose of substantial discretion in redistributing resources across stakeholders.<sup>7</sup> The ambiguous ownership of risks and buffers is problematic. First of all, if risk ownership is unclear, the fund cannot target its investment policy at the risk preferences of the owners of the risk. Second, incomplete and non-transparent pension contracts may give rise to unpleasant surprises and serious conflicts if shocks hit. To illustrate, when funds became underfunded after the financial crisis, it was unclear who owned these deficits and which stakeholders would have to reduce their claims on the fund or increase resources. Third, the parties who end up with the risk ex post may not be rewarded properly ex ante. Indeed, these

incomplete contracts may give rise to substantial, non-transparent value transfers between stakeholders.<sup>8</sup> To illustrate, the benefits in the Dutch occupational pension plans are currently heavily back-loaded: the pension fund charges the same price for a deferred annuity for all age groups even though the annuities for the young are cheaper. This lack of market pricing implicit in the uniform pricing of deferred annuities implies that the young are taxed on their working effort while the old are subsidized.

**Inadequate communication of risks surrounding real pension income.** The way funds communicate with their participants are still based on the DB system and has not yet adjusted to the new realities in which participants are the main risk bearers. Non-transparent communication is also related to the non-transparent pension contract (see d. e. and f. above). Pension funds typically communicate in terms of nominal pension rights but are rather silent on indexation prospects and the uncertainty about these expectations. After the transition from final-pay to career-average systems with conditional indexation, information about nominal pension rights of workers is inadequate for estimating the expected replacement rate at retirement.

The financial crisis, which has reduced the indexation potential, has made better communication of the uncertainty<sup>9</sup> surrounding the purchasing power of pensions all the more urgent. Indeed, estimates suggest that workers can expect a decline of as much as 15 percent of their replacement rates as a consequence of inadequate indexation (van Ewijk and Teulings, 2011). As residual risk bearers in pension plans, members should be informed about the risks they face so that they can take this into account in their own financial planning. Timely communication about risks is also essential to maintain the legitimacy of and trust in the system.

**Supervision focuses on nominal rights.** The solvency rules in the Dutch risk-based supervisory framework in fact focus on the unconditional, nominal rights rather than the



unconditional pension rights, which typically involve the ambition of the pension funds to index pension rights to prices or even wages. Hence, capital funding does not necessarily extend also to soft pension rights. This implies that the indexation potential of funds remains outside much of public regulation, even though this is a major part of the expected pension of especially workers with a long duration. In fact, funds are discouraged from being explicit about their indexation ambitions for fear that this leads to higher funding requirements. Hence, only nominal obligations are on the balance sheets of pension funds.

**‘One size fits all’ under discussion.** The current Dutch occupational pension plans impose uniform investment and indexation rules on all participants. This limits the scope to attune risk exposure to the needs of various cohorts. Efficient risk sharing implies that an adverse shock causes consumption of all agents to decline by the same percentage.<sup>10</sup> For younger workers, human wealth is the most important wealth component. For older members, in contrast, pension rights account for most of individual wealth. Hence, in order to achieve the same relative change in overall wealth for all cohorts (as required by optimal risk sharing), the pension wealth of young cohorts should fluctuate more than that of older generations if a shock hits the pension funds. These arguments for life-cycle investing have led to proposals to differentiate indexation rules across cohorts (see, e.g., Molenaar and Pond, 2011). Younger generations can then take more risks on their pension savings and benefit from the associated risk premiums, whereas the contract for the elderly is geared primarily towards protection of the purchasing power of the pension entitlements. This would alleviate the tensions between younger and older generations about the preferred investment policy. In particular, in aging pension funds, investment policies may become rather conservative under the influence of more numerous retirees, thereby raising pension costs for workers.

With risks increasingly being shifted unto participants, there is also increased interest in giving individuals a say in how much risk they want to bear. The social partners also

mentioned this as option in their pension agreement that will be referred to the in the next section. At the same time one is very aware of the extensive literature that individuals have difficulties in taking adequate financial decisions and that specification of defaults and nudges is an important task of the trustees of the fund.

### **Advisory committees and pension agreement**

The process to redesign the Dutch pension contract was kicked off in the spring of 2010 with the reports of two advisory committees installed by the Dutch government: the Frijns committee on investments and risk management and the Goudswaard committee on sustainability of the supplementary pension system. Goudswaard et al. (2010) emphasized that the Dutch pension contract exhibits important design features that are to be valued and protected: focus on annual income until death (i.e. annuitization) rather than pension wealth at retirement, mandatory participation, low cost levels and risk sharing of untraded risk factors such as longevity and wage risks within a collective pension fund. At the same time, this report argued that the existing supplementary pension system is not sustainable due to a gradual erosion of the risk bearing capacity and the lack of possibilities to tailor the contract to individual characteristics of the participants (such as their age or wealth level). Goudswaard (2010) stressed the trade-off between the cost of a pension contract, the ambition level (the expected annual income) and the level of certainty. Noting that the contribution rates for supplementary pensions (which can be as high as 20 percent in the Netherlands) have reached a maximum, the committee urged the social partners to either reduce either the expected annual pension income or the level of guarantees. The pension agreement by the social partners in June 2010 has made clear that they prefer to reduce the level of guarantees and introduce so-called “soft rights” in which pension income depends on changes in life expectancy and on returns on financial markets. These soft rights in effect

provide risk-bearing capital to the pension funds so that they can continue to take investment risk on behalf of the participants.

Both Frijns et al. (2010)<sup>11</sup> and Goudswaard et al. (2010) stressed potential conflicts of interest between different groups of participants within a collective pension fund. To illustrate, as many papers advocating life-cycle investing show (c.f. Bodie et al., 1992; Cocco, Gomes and Maenhout, 2005; Viceira, 2001; Teulings and de Vries, 2006), taking substantial investment risk is more attractive for young participants than for retirees. Similarly, protecting nominal guarantees by reducing equity exposure and hedging interest rate risks is primarily in the interest of the elderly. This tension is increased because many pension funds are ‘ageing giants’: more than 60 percent of total pension assets is earmarked for pensions that have already commenced or will commence within 10 years. This means that the pension funds' investment horizon is becoming shorter, thereby reducing their ability to recover from negative investment results. Major disruptions in financial markets can thus turn ageing giants into ‘sinking giants’: institutions that are no longer able to meet their commitments. This worsens the risk-return trade off so that pension funds have to invest more conservatively but this may make the investment policy unattractive for young workers.

The reports also note that the property rights of the collective buffer in the current contract are ill-defined. Among other things, this can create incentives for excessive risk taking because risks may be shifted to future generations. Both committees also emphasize that the purchasing power of the pension income is the relevant information and that communication to participants should emphasize expected real pension income and risks rather than provide information only on nominal income.

In June 2010, the social partners concluded an agreement on pensions. As regarding the public pension, they agreed that the eligibility age and the statutory retirement age for mandatory retirement will be linked to life expectancy in such a way that the average number

of pension years for each generation would be equal to the average expected pension years for the generations who started to collect the state pension between 2000 and 2009. On the occupation pensions, social partners agreed that contributions should not rise further. Hence, cost increases on account of increased longevity and financial shocks should be avoided. On longevity increases, the number of pension years for a fixed contribution period should be stabilized. At the same time, financial shocks should be absorbed in pension rights to make the system more shock proof. Social partners agreed that they would explore whether participants could be offered individual choices on their risk exposure.

In any case, new pension contracts should be transparent and complete. Pension funds should clearly communicate the risks implied by the pension contract and investment policies to participants. Social partners also agreed that the increases in effective retirement ages should be accompanied by measures to improve the employability of workers and improve the functioning of the labor market for older workers.

### **Three types of pension rights**

The existing Dutch pension contract can be characterized as having individual guaranteed pension rights as well as collective buffers.<sup>12</sup> The reform proposals advocate the introduction of individual soft rights that explicitly depend on the uncertain development of trends in life expectancy and returns on financial markets. The remainder of the Section briefly considers the strength and weaknesses of the three types of pension rights: individual guarantees, collective buffers, and individual soft rights.

**Individual guarantees.** Individual guarantees (hard rights) are important first and foremost because many individuals prefer guarantees and indicate they are willing to pay for them in terms of additional contributions to compensate for reduced investment returns (van Rooij et al., 2007). Guarantees are easy to communicate. Moreover, they are attractive from a

regulatory perspective because solvency supervision is well established (e.g. Solvency II). Last but not least, the Dutch system is rooted in what is perceived as guaranteed nominal income contracts. Hence, it seems attractive to offer these guarantees as an option when the existing pension contract is converted into a new pension contract.

Guarantees also feature considerable disadvantages. Guarantees make a given pension ambition (in terms of an expected pension outcome) more expensive because the benefits of risk premia in financial markets are foregone. Furthermore, guarantees often imply a focus on nominal pension income rather than on the purchasing power of pensions. In many countries indexed linked bond markets are not as well developed as the market for nominal bonds. This is definitely the case for the Netherlands. Bonds linked to Dutch price or wage inflation are not traded apart from small trades in the OTC market. The use of bonds linked to European price inflation yields substantial basis risks and even that market is small relative to the accumulated Dutch pension assets. The use of nominal guarantees implies substantial inflation risks.

Guarantees also discipline the investment strategy. This can be seen as either an advantage or a disadvantage. Subjective judgments by trustees are less important if guarantees are provided. If pension funds had defended their nominal guarantees during the crisis, they would have reduced investment risks, at the cost of their investment exposure when markets recovered. Finally, it should be noted that the ultimate guarantee cannot be offered. Even European sovereign bonds have shown to be potentially risky and the crisis showed that even insurers can go bankrupt. Whereas the financial crisis has stimulated the demand for guarantees, providing guarantees that cannot be honored in extreme scenarios like the crisis can be quite misleading.

**Collective buffers.** Collective buffers can smooth fluctuations in financial markets. This can be attractive if agents take too little investment risk because myopic risk aversion implies that

they react too much to short-term volatility (Benartzi and Thaler, 1995). A second argument in favor of collective buffers is that they allow risk sharing with future generations. The validity of this argument is limited by the requirement that the buffer inherited by new entrants should be large enough to make participation in the fund sufficiently attractive, as otherwise the mandatory participation will be challenged. Adequate supervision is therefore required to prevent funds from shifting too many risks unto future generations. Another drawback of collective buffers is that they reduce the scope for individual decision making that tailors investment risk to individual preferences. Moreover, they cloud information on who actually bears risks. Last but not least, collective buffers may give rise to political risks as it is unclear which stakeholders will benefit from these buffers. Indeed, the trustees have substantial discretion in allocating these buffers across participants.

**Individual soft rights.** As stated before, the reform proposals advocate the introduction of *individual soft rights*. Individual soft rights deliver pension income until retirement that depends in an ex ante defined way on developments in financial markets, for example by linking to stock market indices or interest rates. Individual soft rights can be transferred at market value e.g. when moving to another job and cannot be affected by discretionary decisions of the trustees. These individual soft rights serve multiple goals:

- They create risk absorbers for the pension fund and enable it to take substantial investment risk on behalf of the participants.
- They identify individual ownership of components in the collective buffer. This reduces discretion of the governing board to redistribute resources, thereby reducing political risk and providing transparency ex ante on the true risk exposure of participants.<sup>13</sup>
- Clear individual ownership allows capital to be transferred to other pension providers (for example, when participants move to another job).

- They allow more tailor-made risk-taking on the basis of observable individual characteristics, including age. Individual soft rights and hard rights (i.e. guarantees) can be converted in each other when changes in risk exposures are called for.
- They allow individuals to choose their own risk exposure.
- During the pay-out phase, pension funds can supplement income from nominal guarantees by income from soft rights. In this way, retirees can provide risk-taking capital without being forced to have an upward sloping consumption profile. This implies, however, that retirees face the risk that their overall income declines in nominal terms after an adverse shock.

The main challenge in introducing individual soft rights is communication. If hard rights are replaced by soft rights, pension income is no longer guaranteed, but rather it depends on uncertain future developments in financial markets and in life expectancy. Communicating this uncertainty to laymen is far from trivial. Another problem is that probability statements about possible future income levels depend on various subjective elements, such as the equity premium or the correlation between risk factors. Soft rights are not new in the Dutch pension contract because they are also implicit in existing collective buffers, which provide the funds for increasing the nominal guarantees through indexation. Possible ways to communicate the uncertainty about the purchasing power of the future pension income have already been widely discussed. Clearly, however, the reform process will make the soft rights more dominant so that adequate communication about uncertainty will become more important.

Another challenge for the implementation of pension contracts with individual soft rights is designing adequate risk sharing between stakeholders and selecting a proper investment strategy for the fund, which determines the risk features of the soft rights. One of the strengths of typical Dutch pension contracts is that risk factors that cannot be traded on

financial markets (e.g. longevity risks, inflation risks) can be traded within the pension fund (see section two). To illustrate, retirees can be protected against wage inflation if the soft rights of young workers are used to buffer these risks. The fair compensation for these young workers, however, is hard to determine objectively as wage risks are not traded on financial markets so that no market prices are available. In a similar fashion, longevity risks at older ages could be insured by soft rights – albeit objective market prices are absent due to the lack of trade in systematic longevity risk.

The investment policies of collective pension funds can be viewed as follows. First, one considers the hedging portfolios for the various participants. The nature of these hedging portfolios differs between the nominal guarantees (i.e. the hard rights) and the individual soft rights. In case of the hard rights, these hedging portfolios contain nominal bonds (with low credit risks) with durations matching the (deferred) nominal annuity payments to participants. This portfolio is a buy-and-hold portfolio.

As regards individual soft rights, the hedging portfolio matches as close as possible the average real ambitions of the participants of the pension funds, i.e. price-indexed or wage-indexed benefits.<sup>14</sup> In addition, soft rights involve a speculative portfolio that aims at maximizing the return on the mismatch risk with the hedging portfolio. This mismatch risk may involve investment risk and interest-rate risks. The weights of the hedging and speculative portfolios can be determined in a dynamic fashion; these two portfolios thus typically are not buy-and-hold portfolios. In a complete contract, how these weights depend on state variables is determined ex ante. Also the way the realized mismatch risk (which may include also mismatch risks on the hard rights if these rights cannot be completely matched) is distributed over the various participants is determined ex ante in a complete contract.<sup>15</sup> The risk premia on these mismatch risks can be distributed to the participants who bear these risks but a collective fund may distribute these premia also in another way.



In principle, individuals can be offered a choice between hard rights and soft rights. The prices at which these rights can be exchanged can be based on market prices but does not have to be.

### **Contract examples**

Above we outlined the types of pension rights that could be included in new Dutch pension contracts (individual hard rights, individual soft rights, and collective buffers) and analyzed advantages and disadvantages of the three kinds of pension rights. Next we discuss a number of specific contracts and how they combine these pension rights. We explore also how the contracts contribute to having more soft rights, in response to the experience of the pension crisis and the recommendations of the government committees on pension policy reform to increase the amount of risk-bearing capital of pension funds. Moreover, we compare the potential new contracts with the existing Dutch pension contract (see section one). The comparison with individual DC contracts as they are offered in many countries worldwide is taken up below.

**Defined Ambition.** Boeijen, Kortleve and Tamerus (2010) have suggested a pension contract that contains individual soft rights as well as a collective buffer. The contract is referred to as ‘Defined Ambition’ to distinguish it from conventional DB or DC plans. In the Defined Ambition model, the active participants annually accrue lifelong pension income as of a particular date of retirement. The real funding rate of the pension fund, defined as the market value of the assets over the market value of risk-free fully indexed pension benefits, determines possible adjustments of accrued (soft) rights to the fluctuating value of market assets and real interest rates affecting the value of risk-free indexed liabilities of the fund. If the real funding rate exceeds a certain upper limit, existing nominal pension rights (in terms of a deferred annuity) will be gradually increased by more than the rate of inflation, if the real

funding rate is less than a lower limit nominal pension income will increase by less than the rate of inflation and may even decline in nominal terms. The asset mix does not depend on the funding rate.

This contract differs in at least three important aspects from the existing contract. First of all the contract is complete and explicitly chooses not to defend nominal guarantees, i.e. not to reduce risk levels to avoid benefit cuts if the nominal funding rate fall to 100 percent. Cutting benefits is no longer a solution in last resort but a standard risk sharing mechanism. Accordingly, individual soft rights replace individual hard rights. Secondly, benefit cuts and bonuses depend on the investment returns and are not constrained by the level of inflation. Finally, the funding rate determining whether real pension incomes are increased or decreased, and it is defined in real terms and thus accounts for the effect of future inflation on the liabilities of the pension fund to younger generations. In this way, pre-mature pay-outs to the retirees are avoided if rising nominal interest rates on account of increasing inflation expectations inflate the nominal funded rate.

The contract is similar to the current contract in that collective buffers are used to share risks with future generations. In particular, also pension rights that are accumulated after financial shocks hit are affected as these shocks continue to affect the funding rate during the period afterwards, depending on how rapidly the real funding rate is brought back to its equilibrium value of 100 percent. Contracts that contain collective buffers (which may be negative) that are not directly assigned to particular individual participants are called open systems (Bovenberg and van Ewijk, 2011a). In closed systems, collective buffers are absent and the property rights of the assets of the fund are allocated to current participants so that the funding rate is always 100 percent.

A return-smoothing model, for now, seems to be preferred by the Dutch social partners. This avoids individual hard rights and consists only of individual soft rights and

collective buffers, hence it is closely related to Defined Ambition with two important differences. First, the liabilities in the real funding rate are computed on the basis of not the risk-free real rate but a discount rate that includes a risk premium based on the expected returns on the actual investment portfolio of the fund. A second difference is the way that real pension incomes are adjusted if the real funding rate differs from 100 percent. In that case, a tenth of the funding gap is distributed uniformly over all participants.<sup>16</sup>

**Age differentiation in indexation.** Many of the contracts that have been proposed contain elements of life-cycle investing. On the one hand, taking investment risk is obviously important to keep the pension system attractive for young participants. On the other hand, retirees typically prefer to take only limited investment risks. One possible way to reconcile the conflicting wishes of younger and older participants is to use age dependent indexation, which increases or decreases the (accrued) pension income using a larger percentage for the young than for the elderly (see Molenaar and Ponds, 2011). As in the Defined Ambition model, the real funding rate is computed with real interest rates as discount rates, and it determines whether rights are increased or decreased. Collective buffers are used to share risks with future generations. A similar mechanism could be used to limit the risks for other groups of participants than the elderly, e.g. low income workers. Groups who face more uncertain indexation benefit from a higher expected level of indexation.<sup>17</sup>

**Growth rate approach.** Another possibility to protect retirees against sizeable fluctuations in their annual income is to design the pension contract in such a way that during the decumulation phase the pay-out is adjusted only gradually to wealth shocks, just as in the current indexation mechanism with collective buffers.

This approach can be implemented in both closed and open systems. In the closed collective growth rate approach, the annual adjustment in the growth rate<sup>18</sup> (and the volatility in that growth rate) of the (projected) pension income is the same for all participants. The

required adjustment after a shock is determined in such a way that the pension wealth that is available in the fund is in expectation exactly sufficient to realize the stochastic pension income (i.e. not only the median but in principle the entire distribution) that is communicated, including annual adjustments according to the expected growth rate. This approach implies that the exposure to the mismatch risk is proportional to the duration of the pension income and is thus cohort-specific. Whereas the adjustment of the growth rate is similar across generations, the level of the growth rate can differ depending on the shocks people have experienced during the pay-out phase.

In the open collective growth rate approach, in contrast, also future accruals share in the return shocks through fluctuations in a collective buffer. In these open systems, not only the change but also the level of the growth rate is uniform across cohorts. This uniform growth rate between cohorts depends on the real funding rate. The growth rate approach is described in more detail in Bovenberg and van Ewijk (2011b).

**Combi-contract.** A contract with more return dependent pension income can also be achieved starting from a contract with guarantees, but with lower nominal guarantees than communicated currently.<sup>19</sup> The nominal guarantees should be matched with bonds of the same duration with low credit risk. The remaining wealth can then be invested in equities or bonds with higher credit risks. With low levels of guarantees, this remaining wealth level will be sizable. In that case, it is attractive to allocate soft rights to individuals in view of the advantages mentioned in section three. Moreover, in the pay-out phase, part of the pension income can be based on a variable annuity that can be reduced in case of adverse financial shocks.

**Escalating annuity contract.** The Danish ATP model combines individual hard rights with collective buffers. Individual rights are nominal guarantees and pension income is paid out only of these nominal guarantees so that pension income does not decline in nominal terms.

In contrast to the situation in the Netherlands, nominal guarantees are completely hedged by nominal bonds so that these nominal guarantees are defended on financial markets. In addition, ATP has a collective buffer that is invested in equity and other risk-taking capital. If this buffer exceeds 25 percent of the value of the nominal guarantees, these guarantees are increased.

This model is in fact a collective variant of an escalating annuity (see e.g. Bodie en Pesando, 1983). In an escalating annuity, pension income never declines in nominal terms and investments in risky assets are used to raise the guarantees. The amount of risky assets can be calibrated in such a way that the nominal (deferred) annuity can be expected to be increased in line with the inflation rate. For an individual, this implies that the share of risky assets in the portfolio declines with age because the duration of the pension income (and thus the capital required to raise guarantees in line with inflation) falls with age. In a collective scheme, the required share of risky assets depends on the age composition of the fund.

One can also combine a combi-contract during the accumulation phase with an escalating annuity during the pay-out phase. Accordingly, the overall expected deferred annuity may decline in nominal terms during the accumulation phase but the annuity can never decline in nominal terms during the pay-out phase. This implies that people can benefit from the risk premium during the accumulation phase and benefit from a nominal guarantee when retired.

## **Conclusion**

The main aim of the many alternatives to the existing Dutch contract is that the contract is adjusted in line with the directions chosen in the reform process by the social partners in June 2010. The new contracts should stabilize contribution rates by creating mechanisms such that investment risk can be taken and allocated explicitly to groups of

participants. Individual soft rights and limits on the buffer fluctuations will increase transparency and will prevent the shifting of funding deficits unto future generations.

The new Dutch pension contract will be a hybrid model between the DB and DC approaches. The DC component will be increased in the sense that the pension income is no longer guaranteed but depends on returns in financial markets and longevity. Nevertheless like the existing contract, the new Dutch pension contract will continue to differ in a number of important aspects from the typical DC contract implemented in many countries world-wide. In particular, the set of choice-options will be rather limited in order to protect individuals from behavioral biases. This feature contributes also to rather low cost load. This design feature is similar to the increasing emphasis on optimal choice architectures in DC schemes. In the Dutch model, however, trustees of the fund take further reaching investment decisions than managers of the mutual funds in which DC participants choose to invest. This is related to the emphasis in the Dutch model on providing annuities, which is in fact the most dominant difference between the new Dutch model and the DC world as known today. This emphasis on annuity income is rooted in the Dutch Defined Benefit tradition. A vast academic literature analyzes the advantages and disadvantages of pension income (annuities) over pension wealth (lump sum). Extensive references can be found in Mitchell and Piggott (2011). The specific case of the Netherlands, where annuities are also mandatory in case of most DC contracts, was recently analyzed by Brown and Nijman (2011).

The emphasis on annuity income rather than wealth accumulation per se implies challenges to investment strategies that are not transparent in most current DC contracts. In particular, both interest rate risk and inflation risks will be managed in the contracts outlined in section five to avoid undesired fluctuations in pension income or projected pension income. As argued in section three, if the pension wealth is to generate stable pension income eventually, the management of interest rate and inflation risks is actually equally relevant in

DC contracts. It is questionable, however, whether individuals have the skills and access to financial instruments to do so. To obtain stable real pension income, when approaching retirement, individuals should not only reduce their equity exposure (as in target date funds) but also manage interest and inflation risks, i.e. replicate or buy indexed and variable deferred annuities. The new Dutch contracts impose such investment strategies on their participants.

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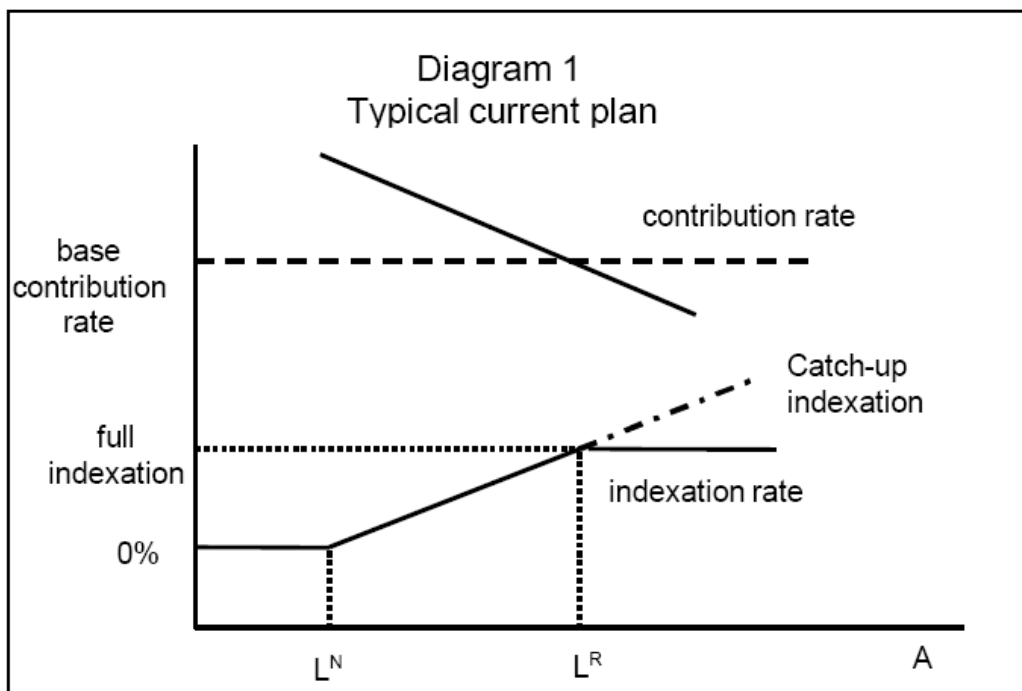
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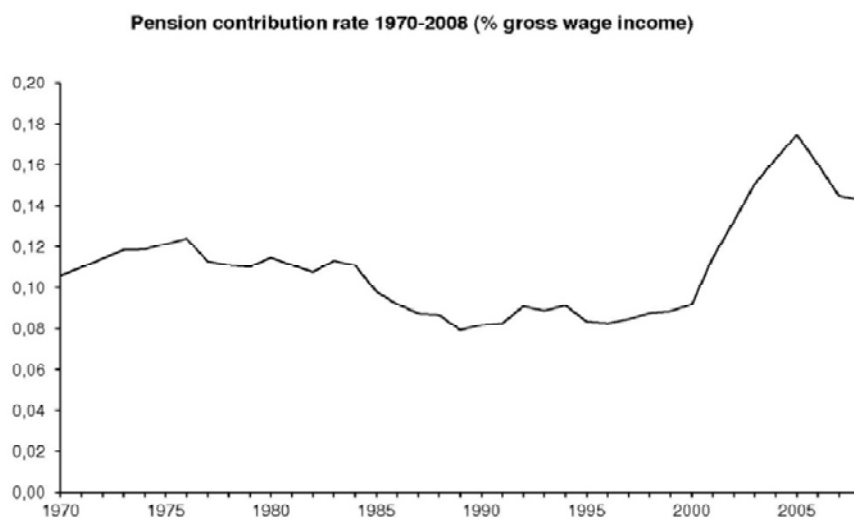
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**Figure 1** Conditional indexation and contribution mechanisms in the Dutch pension system. *Source:* Ponds and van Riel (2009).



**Figure 2** Average nominal funding rate of Dutch pension funds: 1988-2010.



**Figure 3** Average pension contribution rates as percentage of gross wage income: 1970-2008. *Source: OECD*

**Table 1** Actual increases in nominal pensions paid to retirees, compared to the indexation ambition: 2005-2011

	2005	2006	2007	2008	2009	2010	2011
Indexation ambition	0.49	0.85	2.33	1.84	3,76	1.66	1.2
Actual indexation	0.3	0.82	2.14	2.91	0.17	0.42	0.02

Source: De Nederlandsche Bank (2010).

## Endnotes

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<sup>1</sup> In terms of active participants, the most important other type of pension fund is a company pension fund. A company, however, does not have to set up its own company pension fund but can also contract out the pension scheme to an insurance company.

<sup>2</sup> The nominal funding rate of a pension fund is defined as financial wealth relative to nominal pension liabilities. The latter are defined as the sum of the nominal pension rights that the participants of the scheme have already accumulated. The real funding rate is defined in a similar way, but defines liabilities in real terms assuming full future wage or price indexation to the pension rights that participants have accumulated.

<sup>3</sup> In calculating the real funding rate, we assumed a duration of pension liabilities of 15 years, a nominal interest rate of 4.5 percent, price inflation of 2 percent, wage inflation of 3 percent and weights attached to wage and price inflation of 65 percent and 35 percent respectively.

<sup>4</sup> As pension funds with lower funding ratios tend to be relatively small they represent only about 7 percent of the participants of pension funds.

<sup>5</sup> For a more elaborate discussion of the development of the funding rates during the financial crisis, see Bonenkamp et al. (2010).

<sup>6</sup> Smaller pension funds typically reduced their exposure to nominal risks more than the larger funds. Among other things, this may be due to the fact that larger pension funds would have had to trade in rather illiquid markets during the financial crisis.

<sup>7</sup> Also the rules for transferring pension rights across pension funds show that the individual ownership of the collective buffer is not well defined. In particular, participants can take only the value of their nominal pension rights with them if they move to another pension fund on account of a change in jobs.

<sup>8</sup> Indeed, non-transparent redistribution may be a drawback of pension systems like the Dutch one that focus on individual annuities rather than individual wealth positions. By changing

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the rules for the annuities, pension funds may redistribute wealth positions across stakeholders. In traditional DC plans, in contrast, individual wealth positions are protected better. The plans, however, tend to inadequately manage the risks of providing income streams in retirement.

<sup>9</sup> Not only communications to participants but also recovery plans pay inadequate attention to risk. In particular, recovery plans are based on the expected path and do not look at the risk that recovery does not happen on account of financial risk.

<sup>10</sup> This assumes that all agents feature the same constant relative risk aversion and that utility is time-separable and separable in consumption of commodities and leisure. More generally, optimal risk sharing implies that everybody's marginal utility changes with the same percentage after a shock hits. See Bohn (2005).

<sup>11</sup> The Frijns et al. (2010) report also contains important recommendations to strengthen the role of trustees of a fund versus asset managers. We do not consider these governance issues here.

<sup>12</sup> The supervisory rules, however, do not force pension funds to match their nominal obligations if capital buffers become very low. One can therefore argue that the current contract does not provide guarantees and is characterized by return dependent benefits already. The ambiguity of the current pension contract is one of the main weaknesses of the Dutch pension system.

<sup>13</sup> One can thus argue that individual soft rights make the ownership of soft rights 'harder.' Indeed, an alternative definition of 'hard' and 'soft' rights is that, in contrast to 'hard' rights, 'soft' rights leave discretion in the hands of the governing board on how to distribute resources. With this alternative definition of soft rights, the newly introduced rights should be called 'hard.'

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<sup>14</sup> Most pension funds aim at wage-indexed pensions for workers and at price-indexed pensions for retirees. Some pension funds (particularly in the public sector and the health-care sector) aim at wage-indexation also for retirees.

<sup>15</sup> In principle, one can distribute various mismatch risks in different ways over the participants. Here, we assume, however, that all mismatch risks are distributed in the same way over the participants.

<sup>16</sup> While many argue in favor of life cycle investing, the legal requirement to avoid age discrimination for now seems to impose that relative cuts and bonuses are to be identical for all active participants. It is still unclear whether an option to choose nominal guarantees rather than a risky investment portfolio will be offered to retirees.

<sup>17</sup> The return smoothing model also implies different exposures to risk of retirees and workers. In particular, retirees bear less investment risk as their purchasing power is affected only gradually by shocks. Workers, in contrast, tend to bear the full brunt of the shocks as they tend to retire after the smoothing period has ended. A major difference with the explicit age differentiation in indexation is that those who bear more risk are not rewarded for the additional risk they bear.

<sup>18</sup> The growth rate is measured compared to the targeted indexation variable. To illustrate, if the pension contract aims to deliver wage-indexed benefits, the growth rate is measured compared to the growth rate of wages,

<sup>19</sup> As argued in section three, real guarantees cannot be hedged in financial markets because of the lack of an indexed-linked bond market in the Netherlands. Small funds can insure inflation through the OTC market.