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Opportunities for Improving Pension Wealth Decumulation in the Netherlands

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Opportunities for Improving Pension Wealth Decumulation in the Netherlands

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Abstract: This paper examines policies for the decumulation of pension wealth in the Netherlands. It suggests a design framework based on economic theory and international evidence. The central message is that a well-designed pension system has an important – although certainly not exclusive – role for annuities in the decumulation phase. Relative to the current situation in the Netherlands – and in sharp contrast to most other developed countries – this framework suggests that the welfare of citizens in the Netherlands might be improved by *reducing* the level of mandatory annuitization in order to address liquidity needs, precautionary motives, and bequests. Specifically, it suggests that instead of compulsory annuitization of all retirement wealth, individuals be required to annuitize a minimum amount in a reliably inflation-indexed annuity, and that some additional amounts of annuitization be structured as automatic with an opt-out. It also suggests that a wider array of annuity structures would be beneficial.

1. Introduction

An important element in the design of any national retirement system is the set of rules, products, and institutions that provide for the decumulation of wealth. The academic literature in economics has long emphasized the important role of annuitization in providing retirement income security by insuring that individuals cannot outlive their resources. However, there are few experts who would claim that full mandatory annuitization of all retirement wealth would be a characteristic of any optimally designed retirement system. After all, while some risks (most notably longevity risk) are indeed best addressed through life annuity products, other risks (e.g., unexpected liquidity needs) and/or preferences (e.g., a strong desire to leave bequests) are best served by non-annuitized financial wealth. Unfortunately, beyond a general consensus that neither zero nor complete annuitization is optimal, it is difficult to pin down an optimal level of annuitization that is appropriate for any one individual, let alone every individual in a heterogeneous population.

This lack of consensus on the optimal level of annuitization may explain, at least in part, the wide variation in retirement wealth decumulation policies across developed countries. While virtually every OECD country provides a minimum floor of annuitized income through a first pillar pension system, the similarities often end there. In the United States, most workers have little, if any, annuitization outside of the first pillar Social Security system, which itself provides an average replacement rate of just over 40 percent of average lifetime income (with considerable variation around this average based on lifetime income). At the other end of this spectrum is the Netherlands, where virtually all retirement wealth in the first, second, *and* third pillars is subject to mandatory annuitization. Most other countries fall at intermediate points along this spectrum.

Public policy towards annuitization is also a current “hot topic” in many countries. For example, the UK is current considering loosening its annuitization requirements, while the US is considering how to promote further annuitization. While these potential policy shifts are in opposite directions, it can also be argued that this represents a convergence of policies

because both countries are discussing a movement toward an intermediate solution. Both of these cases will be discussed in more detail below.

In this paper, we draw upon the existing body of economic theory, empirical analysis, and international experience with annuitization to develop some general guidelines as to what might constitute a well-designed decumulation policy. We then compare this benchmark policy to the actual annuitization policy in place in the Netherlands today.[1] Based on this comparison, we suggest several avenues for reform of the decumulation policies in the Dutch retirement system.

Our benchmark policy would promote sufficient annuitization to provide a real (i.e., inflation-indexed) lifetime income floor that is adequate to meet one's (and one's spouse's) most basic needs, such as food and housing. Beyond this, our benchmark policy would strongly encourage – but not mandate – additional annuitization in order to provide individuals with a high likelihood of being able to maintain their pre-retirement standard of living (which, we assume, is a higher level of consumption than simply meeting basic needs). We recognize that economists and other policy experts will disagree on what level of income is required to meet basic needs and/or maintain pre-retirement living standards. We also recognize that there may be important heterogeneity across the income distribution with regard to income replacement rates that would meet these objectives. We do not try to resolve this issue for the Netherlands in this paper. Rather, in order to move forward and provide a general framework that can be adapted based on future work and or societal preferences, we will somewhat arbitrarily assume that in order to meet basic needs, one needs to replace approximately 50% of pre-retirement income, and that in order to maintain one's standard of living, one needs to replace approximately 70% of pre-retirement income. To the extent subsequent research can more rigorously justify different standards, our suggested reforms could easily be adapted to reflect

[1] We use the term "benchmark" rather than "optimal" because our view is based on the authors' synthesis of the academic literature, as tempered by political and practical realities in the Netherlands, rather than on a formal optimization model.

those changes. We will discuss the implications of these benchmarks for our policy recommendations in more detail below.

Many retirees in the Netherlands currently have replacement rates that are quite high, largely because the Dutch system has historically targeted a replacement rate of 70% of pre-retirement income. Research by Eenkhorn and Zijlmans (2010) indicates that the first and second piers of the Dutch system together provide replacement rates of approximately 68% for active workers, and this is without consideration of third pillar assets.[2] Given these numbers, and given the heterogeneity that these averages mask, it is likely that many Dutch citizens may be *over*-annuitized relative to what is individually optimal. Indeed, the Netherlands may be one of the few countries (perhaps even the only) where moving in the direction of providing more financial flexibility and less annuitization may enhance average welfare, as it would allow individuals to address liquidity issues, precautionary motives, and bequest motives.

We offer several potential avenues for reform. First, we suggest moving away from a requirement that all retirement wealth be annuitized and to a requirement that individuals annuitize enough to have a real income floor that is sufficient to cover basic needs. Second, we argue that this minimum floor needs to have more secure inflation protection, and that the unnecessary degree of purchasing power uncertainty that is introduced due to the second pillar's "conditional indexation" approach" should be reduced. Third, above this minimum floor, additional annuitization should be encouraged, but not mandated. One avenue for achieving this would be to rely on automatic annuitization with an opt-out (i.e., an annuity default) rather than mandates in the second pillar. Fourth, we argue that above the minimum floor, retirees should have more flexibility in their choice of annuity products, including having access to nominal, variable, deferred and other annuity payouts. However, we note that the recently

[2] There are a few important caveats to these numbers, in addition to the exclusion of the third pillar. First, it is much higher for employees, and substantially lower for self-employed individuals (who are not subject to mandatory participation). Second, these projections assume that pension benefits will always be indexed for inflation, which as we will discuss below, has not been true in recent years.

introduced “bank saving” products should not be viewed as substitutes for life annuity products, as these products offer no longevity insurance and are essentially the exact opposite of a deferred life annuity. We also discuss the protection of spouses, and note that the “guaranteed income floor” requirement be applied to spouses as well as to retired workers. We specifically note that the ability to convert joint-and-survivor income into single life income be constrained sufficiently to protect elderly widows/widowers. Relatedly, we observe that couples might be given more flexibility to allow the primary pension amount to be reduced upon the death of either the worker or the spouse in order to allow for a more equal allocation of resources across various survival states.

This paper proceeds as follows. In section 2, we briefly review the academic literature on the optimality of annuitization as well as research on reasons why individuals so often appear to be averse to annuitization. In section 3, we outline our benchmark annuitization policy. We contrast the Dutch system with this benchmark in section 4. International experience is presented in section 5. In section 6, we make outline several possible avenues for reform. Section 7 concludes.

2. The academic perspective of literature on the pros and cons of annuities

2.1 The “optimality” of annuitization

Life annuity products (by which we mean products that offer a stream of payments that will last for as long as one lives) exist to help solve a consumer problem that arises due to uncertainty about one’s length of life. Put simply, financial planning for retirement would be much easier if individuals knew exactly how long they would live, as this would allow them to simply spread their wealth over a fixed time horizon. In reality, individuals face several significant sources of uncertainty, including uncertainty about length of life, future expenditure needs (such as for uninsured medical expenses), and future real rates of return, among others.

The financial implication of this length-of-life uncertainty is that an individual must balance the risk of consuming too aggressively, which runs the risk of resulting in a large consumption drop at advanced ages, against the risk of consuming too conservatively, which will subject him to a lower of level of consumption than he could otherwise afford.

Life annuities eliminate longevity risk by allowing an individual to exchange a lump-sum of wealth for a stream of payments that continue so long as the individual (and possibly a spouse) is alive. At least since Yaari's (1964) seminal paper, economic theory has shown that life annuities can substantially increase individual welfare by eliminating the financial risks associated with uncertain lifetimes and providing consumers with a higher level of lifetime consumption. Indeed, Yaari showed that risk averse individuals would find it optimal to annuitize 100 percent of their wealth, although this result was based on a number of assumptions that may not hold in practice – including the absence of bequest motives, time-separable utility, and exponential discounting, to name a few.

More recently, Davidoff, Brown and Diamond (2005) extended the results of Yaari by showing that full annuitization remains optimal even after many of these restrictive assumptions are relaxed. Indeed, they showed that as long as one does not value bequests and markets are relatively complete, full annuitization remains optimal. The basic intuition can be seen through an over-simplified case in which an individual without a bequest motive who cares only about his consumption in the current period and one period hence. If this individual invests $1,000 in a non-annuitized asset with a rate of return 4 percent, then next period he will be able to consume $1,040. On the other hand, if the individual invests $1 in an annuity, and if with probability 0.03 the individual will not survive to receive the payment next period, then the insurer is able to pay $1,040/(1-0.03) = $1,072 to the annuitant, conditional on survival. The extra return provided to surviving annuitants is sometimes called the "mortality premium" or "mortality credit," because it is provided in return for giving up one's right to the wealth upon death (Milevsky, 2005). Conditional on surviving, the rate of return on the annuity is greater

than the rate of return on the non-annuitized asset, and thus individuals who do not care about bequests would rationally annuitize all wealth.

Similarly, Peijnenburg, Nijman and Werker (2010a) show that if agents save optimally out of annuity income, full annuitization can be optimal even in the presence of liquidity needs and precautionary motives. Peijnenburg, Nijman and Werker (2010b) extend these results and derive a simple rule of thumb that shows that only if agents risk substantial liquidity shocks early after annuitization, and only if they do not have liquid wealth to cover these expenses, would full annuitization be suboptimal. This result is shown to be robust to the presence of significant loads.

While most of the literature on the optimality of annuitization has focused on rational utility-maximizing models, annuities can also be welfare-enhancing in at least some models that account for behavioral biases. For example, annuities can serve as a very effective commitment device for individuals who exhibit hyperbolic discounting and who are aware of their tendency to do so.

2.2 So why not mandate full annuitization?

The various conditions under which full annuitization has been shown to be optimal rarely hold in reality. As a result, there are a large number of rational and behavioral reasons that individuals may choose not to fully annuitize. In this sub-section, we quickly review some of the reasons, and provide references to papers that explore each of these topics in more detail.

Bequests: The academic literature has long debated the salience of bequest motives in influencing both wealth accumulation and wealth decumulation. For example, Hurd (1989) finds little evidence of bequests in terms of how it differentially influences wealth decumulation patterns of households with and without children. Brown (2001b) finds that stated importance of bequest has little impact on intended annuitization behavior in the Health and Retirement

Survey, conditional on controlling for the life-cycle value of annuitization. On the other hand, Lockwood (2010) suggests that bequests are the factor most able to explain patterns of wealth decumulation, annuitization and long-term care insurance in the U.S. Despite the difficulty coming to a consensus view on the salience of bequest motives, it is well-understood that even small bequest motives render 100% annuitization sub-optimal.

Pricing: In private annuity markets, there are three reasons that prices for annuities may deviate from actuarially fair levels. First, private annuity providers must cover their expenses (including selling expenses, underwriting expenses, etc) and earn a reasonable market return on their capital. Second, there is considerable evidence that annuity markets are subject to the forces of adverse selection (i.e., longer lived individuals are more likely to buy annuities). A third potential reason that annuity prices may exceed actuarially fair levels is that insurance companies who provide the annuities may demand a risk premium due to exposure to aggregate, non-diversifiable mortality risk.[3]

As with most countries, the administrative and selection costs are quite low in the Dutch first pillar. They also appear low in the second pillar (in the range of 30-70 basis points), especially for large pension funds (Bikker and de Dreu 2009).[4] In the third pillar, however, the costs are much more substantial, as is true in the third pillar of most countries that have been studied. Indeed, bank saving products (which we will discuss in Section 6.5) were introduced in part to provide an alternative to third pillar annuity products that were deemed to be too expensive.

Inflation Risk: There are two aspects of inflation that are important to retirees. First, even relatively low, stable rates of inflation can cause significant deterioration of purchasing

[3] Brown and Orszag (2006) discuss ways that insurance companies can partially hedge aggregate risk.
[4] Note however that participation in the second pillar can be unattractive because of the fact that accrual and contribution rates are not age dependent. One can become self-employed e.g. and thereby avoid expensive annuities when young.

power over the typical length of retirement. For example, an annual rate of inflation of 3% will halve the purchasing power of a nominal annuity stream in roughly 23 years.

The second and more important aspect of inflation is the *uncertainty* about the future rate. Inflation uncertainty introduces an undesirable fluctuation in the real purchasing power of a fixed nominal annuity stream. Simulation work shows that fully rational, risk-averse consumers should value inflation-indexed annuities more highly than nominal annuities (Brown, Mitchell and Poterba (2001)).

Lack of Equity Market Exposure: A reasonably large literature has shown that the inability to diversify into equities when mandated to purchase fixed annuity contracts may be welfare-reducing. For example, Inkmann, Lopes and Michaelides (2007) study the demand for annuities in a life cycle model in which consumers can access equity market returns only by investing in stocks because only fixed life annuities are available. They report that "the flexibility associated with investment in the stock market rather than locking into the fixed annuity payout seems to be an intuitive explanation for a number of households choosing not to buy an annuity."

Horneff, Maurer and Stamos (forthcoming) derive the optimal portfolio choice in a life cycle model when households face mortality risk, capital market risk, and labor market risk. In a stylized model, they find that individuals will begin investing in annuities at very early ages (20) as long as they have sufficient financial wealth, and that by age 50, annuities crowd out bond investments. By age 78, they find that annuities crowd out stocks as well.[5] Relevant for the Dutch system is the fact that the complete conversion from stocks into annuities is not optimal until well into the retirement years.

As noted by Davidoff, Brown and Diamond (2005), there is no theoretical reason that equity exposure cannot be provided in an annuitized form. Indeed, the leading annuity

[5] When they account for actuarially unfair prices, annuity purchases are postponed until closer to retirement age (or beyond if the person has limited financial wealth).

providers in the United States – TIAA-CREF – has long provided annuity products with payments that are linked to underlying diversified portfolios.[6] Such products provide longevity insurance, while still maintaining exposure to broader equity markets.

In the past few years in the U.S., there has also been a growing demand for variable annuity products that offer minimum retirement income guarantees, such as a "guaranteed minimum withdrawal benefit" (GMWB). These products have witnessed substantial growth in recent years.[7] Unlike a true life annuity, these products allow account balances (if any) to be left to one's heirs after death, and therefore do not pay a "mortality premium." As a result, the amount of income that is guaranteed by variable annuities with a GMWB is lower than what a fixed life annuity would provide. Nonetheless, there is a "life-annuity" aspect to these products to the extent that they provide a floor of guaranteed lifetime income.

Illiquidity of Annuities: Primarily due to concerns about dynamic adverse selection, it is difficult to allow annuitants to substantially alter the timing of annuity payouts once they have begun or to undo the choice to buy annuities. Agents that annuitize all their wealth may therefore experience significant welfare losses if they are hit by liquidity shocks, such as the need to pay for health care expenditures or other high and unexpected costs (see e.g. Turra and Mitchell (2008), Pang and Warshawsky (2010) and Peijnenburg, Nijman and Werker (2010a)).

Incomplete annuity markets: Koijen, Nijman and Werker (2007) emphasize the role of access to a menu of annuities in a life-cycle model. In a model that allows for time varying interest rates, inflation and risk premia, along with mortality risk, they show that consumers optimally will allocate wealth at retirement to a mix of nominal, inflation-indexed, and variable annuities depending on the state of the economy. They show that the welfare costs of annuity market incompleteness are quite significant. Relative to an optimal annuity portfolio that

[6] Disclosure: one of the authors of this study (Brown) is a Trustee of TIAA.
[7] For example, Prudential Financial reports that the GMWB option was available on nearly 80 percent of the variable annuities sold in the first quarter of 2006, up from 44 percent in 2003.

provides access to all three types of annuities, the authors find that if the portfolio choice is restricted to inflation-indexed annuities, even conservative investors suffer a welfare loss of nearly 10 percent. Restricting choice to only nominal annuities results in even greater losses, ranging from 22 to 55 percent.

Reverse solidarity / redistribution: It is well known that mortality rates and life expectancy are not identical across the population. For example, individuals with lower education have a life expectancy that is several years shorter than that of high educated individuals of the same sex.[8] Thus, one implication of a policy that mandates the annuitization of all pension wealth at a uniform conversion rate is that it creates financial transfers from lower to higher education groups based on differences in life expectancy (see Brown (2002) for the US and Bonekamp (2007) for the Netherlands.)[9] Such "reverse redistribution" is a particularly important political and policy reason to limit the amount of mandatory annuitization.

Behavioral factors: A growing literature is raising questions over the extent to which consumer aversion to annuities is fully rational. For example, a recent paper by Brown et al (2008) suggests that individuals might be easily influenced by how the features of annuities, in comparison with alternative investments, are framed. They show that when annuities are presented in an investment frame, about 80% of respondents believe that annuities are inferior to traditional savings products. In contrast, when annuities are presented in a consumption frame, nearly 70% of prefer the annuity product. Numerous other behavioral explanations have also been suggested, although few of them have yet been tested empirically.

[8] While we are focusing on mortality differences by education, there are mortality gradients across a range of demographic characteristics, including income, race and ethnicity, to name a few.

[9] Of course, as noted by Brown (2003), consideration of utility consequences partially mitigates some of this financial redistribution. The intuition is that because low education / high mortality rate individual have smaller probability of living to advanced ages, saving for such a small probability outcome is very inefficient. Thus, an annuity – even one that is not actuarially fairly priced for that individual – is quite beneficial in terms of allowing this individual to avoid saving financial for an unlikely outcome This partly off-sets the actuarially unfairness of having to annuitize at unfavorable rates and makes the welfare loss smaller than the loss in market value.

3. A Benchmark Decumulation Policy

As discussed at length by Einav, Finkelstein and Schrimpf (2010), it is difficult to accurately assess the social welfare consequences of social insurance programs in a heterogeneous population, thereby making it quite difficult to determine an "optimal" annuitization policy. Based on our knowledge of the academic work and industry practice around the world, however, we feel comfortable outlining a few broad-based principles that we think should guide any well-designed decumulation policy. As noted above, for illustrative purposes we will arbitrarily use a 50% replacement rate as a benchmark for a minimum income floor to cover basic needs, and a 70% replacement rate as a benchmark for smoothing lifetime consumption (and thus maintaining one's living standard in retirement.) As additional data and research provides clearer guidance on the appropriate levels of income in the future, these benchmarks can and should be adjusted. However, we believe the broader conceptual principles which we outline below are robust and can be easily adapted to changes in the benchmark levels of income.

3.1 A minimum annuity floor

Standard life cycle models of consumer behavior suggest that rational individuals will maximize their lifetime well-being (i.e., utility) by allocating money across different time periods and states of the world to equate the marginal utility of consumption across periods and states. If a consumer's utility function (i.e., the happiness they derive from spending on consumption) is not time-varying, then this implies smoothing of consumption levels (i.e., equal consumption each period) over one's lifetime.[10]

[10] While there is some evidence that the marginal utility of consumption depends on health (e.g., Finkelstein et al (2008)), the magnitude of the effect on overall consumption is small. Note that it is quite possible that the *composition* of the consumption bundle may change over the lifecycle. What matters for consumption smoothing is that the marginal utility of another dollar spent on an optimal consumption bundle is the same across ages.

In practical terms, this suggests that a natural starting point for policy is to think in terms of providing a level of income in retirement that is defined in relation to the amount of consumption that individuals had during their working lives. A replacement rate of 70% appears to be widely accepted in the Netherlands as a reasonable benchmark, and thus we use this as our benchmark for maintaining one's pre-retirement standard of living.

However, we believe that it is not necessary for policy to mandate a 70% replacement rate. First, the academic literature itself is quite split on the question of what constitutes an optimal replacement rate (see, for example, the very different views of Scholz et al (2006) and Munnell et al (2007)). Additionally, these studies have primarily focused on a U.S. context, which is quite different from the Netherlands along a number of salient margins. For example, differences in both the level and the variance of uninsured health expenditures, or differences in the progressivity of the tax system, may lead to very different optimal replacement rates across countries. Furthermore, the direction of these effects is complex: for example, to the extent that the Netherlands provides more comprehensive health insurance in retirement than does the U.S., this may lower the income required to maintain living standards in retirement. On the other hand, it also suggests that one of the arguments against annuitization – the cost of an annuity's illiquidity in the face of uninsured shocks – is less salient in the Netherlands than in the U.S. Thus, more work is needed to determine a reasonable replacement rate that is specifically appropriate to the Netherlands.

Second, we recognize that there is substantial heterogeneity in society, and 70% will be too high for some and too low for others, especially when one considers the complications of a progressive tax system, heterogeneity in household composition, etc. Ideally, target replacement rates would be based on after-tax income both before and after retirement. Thus, to the extent that retirement income receives certain tax advantages relative to pre-retirement income, this would call for lower replacement rates than those we have chosen as our benchmark case.

Third, as a practical concern, mandating that individuals annuitize enough to provide an inflation-indexed replacement of 70% of average lifetime income may require even higher savings rates than are currently required in the Netherlands. Thus, we set a lower benchmark – for discussion purposes, we use 50% -- as a level that should be sufficient to cover a retiree's most basic needs, i.e., food and shelter.

Fourth, as noted above, excessive mandatory annuitization can lead to "reverse solidarity" outcomes due to the expected financial transfers that flow from lower education/income individuals to higher education/income individuals as a result of mortality differences.

In contrast to what we believe is a sub-optimal requirement to annuitize all retirement wealth, we believe that there is substantial rationale for mandating sufficient annuitization to ensure a guaranteed, real income stream sufficient to cover basic needs. Among other reasons, mandatory annuitization overcomes problems with adverse selection (and thus improves pricing), and also prevents households from gaming the welfare system by spending their resources too quickly and then falling back on public assistance.

Before continuing, it is worth discussing the consequences for our conclusions of using admittedly arbitrary 50% and 70% income replacement benchmarks. In general, most of the arguments made in this paper would still follow if, for example, one where to use 40% and 60% instead. An important exception would be that if it were determined that the first pillar were sufficient to meet the basic needs of most of the population, then this would obviate the need for our proposal to strengthen inflation indexation in part of the second pillar. Indeed, with a sufficiently large first pillar, many of the arguments that we have made about the third pillar (e.g., the desirability for more flexibility, etc.) would apply to the second as well.

It is also worth noting that an alternative to our replacement rate approach would be to mandate annuitization up to a fixed real Euro floor, rather than basing it on a fraction of income. Such an approach would arguably be less burdensome from an administrative perspective, especially if it were implemented by adjusting the size of the first pillar to match the desired

floor. While conceptually appealing, however, a difficulty with this approach is that it would be difficult to find a floor that was meaningful for middle and higher income households while not providing an income floor that was "too high" relative to the lifetime consumption needs of those at the lower end of the income distribution. Estimating an appropriate replacement rate target for the Netherlands would require substantial empirical work that is beyond the scope of this paper.

3.2 Indexing this annuity floor for inflation

Economic theory (and common sense) is very clear that individuals receive their well-being from consuming real goods (not from the nominal Euros used to buy those goods). Thus, the theory of consumption-smoothing over the lifecycle is typically thought of in terms of real, i.e., inflation-indexed, consumption. Indeed, research (Brown, Mitchell and Poterba 2002) shows quite clearly that in the presence of inflation uncertainty, inflation-indexed annuities improve welfare to a greater degree than fixed, nominal annuities.

Of course, we recognize that many individuals suffer from "nominal illusion," and thus like fail to understand the value of accepting a lower initial payment in return for being protected from inflation. Thus, the political sustainability of an emphasis on real rather than nominal annuities may require that individuals be continually educated on the value of such products.[11]

3.3 Default annuitization above the floor

Above this minimum floor of inflation-indexed annuitization – and at least up to the 70% target that we have set as an appropriate goal for maintaining one's living standard – additional

[11] An often heard argument suggests that habit formation might justify nominal annuities. This implicitly assumes inflation to be constant. In most habit formation models, the habit is thought to be a "real" and not a nominal habit. As shown in Davidoff, Brown and Diamond (2005), depending on whether the habit level of consumption is high or low relative to the initial annuity amount can cause annuities to be more or less attractive. Nominal annuities can be damaging to the welfare of an individual with a "real" habit, because inflation would impose real deviations away from the habit-level of consumption.

annuitization should be encouraged, although not required. This could be achieved, for example, through the use of annuities as a default distribution option in which individuals have the right to opt-out.

There is reason to believe that default annuitization would be effective at promoting annuitization, while still preserving individual choice. For example, Beshears et al (2006) note an important change in the regulations about annuitization options with defined benefit plans in the U.S. The Employee Retirement Income Security Act (ERISA) of 1974 required that the default annuity option from DB plans be a joint-and-one-half survivor annuity, unless the individual opted out of this by choosing a single life annuity with higher monthly benefits. In 1984, the regulations were amended to require an annuitant to obtain a notarized signature of his or her spouse in order to opt-out of the joint-and-survivor annuity requirement. Holden and Nicholson (1998) show that before 1974, less than half of married men chose a joint-and-survivor annuity. Following the passage of ERISA in 1974, use of the joint-and-survivor annuity rose by roughly 25 percentage points. Aura (2001) reports that the adoption of the spousal consent regulations in 1984 further increased the use of joint and survivor options by up to ten percentage points.

Butler and Teppa (2007) provide evidence that is strongly suggestive of the importance of default options on annuity choice in Switzerland. They examine the annuitization decisions of over 4,500 individuals in ten company pension plans. In nine of the ten companies, the annuity is the default payout option (with a partial or full lump-sum as alternative options). The remaining company "provides a lump sum payment (amounting to the last working year's salary) as the standard option." Annuitization rates are quite high in these plans overall: in 8 of the 10 plans, annuitization rates exceed 50 percent. In the one company that does not use the annuity as the default option, the annuitization rate is only 10 percent.

3.4 More flexibility in options above the minimum income floor

Simple textbook financial theory indicates that even risk averse individuals benefit from having some exposure to equity markets. Importantly, there is really no reason that the optimality of having some equity market exposure suddenly changes as one exists the labor force. As noted above, research indicates that the optimal portfolio of retirees includes equity exposure as well as annuities. Given heterogeneity in financial literacy, risk preferences, and so on, we believe it is very important that individuals be able to choose the mix of annuity and non-annuity products that best meets their needs. Ideally, individuals would have access to a rich market of fixed, inflation-indexed, variable, and deferred annuity payout products from which to choose.

In particular, we believe that variable annuities (with lifelong income linked to an underlying diversified portfolio) have a potential role to play. Under the current system, retirees only have equity exposure quite indirectly through the loss of inflation protection when funding ratios fall. It may be advantageous to provide additional options for investing in annuities that are linked to equity market performance, akin to the variable payout annuities offered by TIAA CREF in the United States.

Another type of product that may be a useful addition to the menu of products available over and above the minimum annuity floor are delayed payout annuities (e.g., an annuity purchased at an early age, such as 65, that does not begin paying out until a later, age, such as 85). Scott, Watson and Hu (2006, 2009) show that such products can be an efficient approach, because individuals can provide a higher income floor at advanced ages by allocating only a small part of their pension wealth to delayed pay-out annuities.

Of course, in recommending that individuals be given more options, we are cognizant of the behavioral economics research indicating that there is such a thing as “too much” choice. Botti and Iyengar (2006), for example, in an article reviewing the literature on choice proliferation, discuss how “decision makers’ happiness with the outcomes of their increased choices depends not only on their ability to preference match but also on their social values …

their mispredicted expectations during the decision process … and their feelings of responsibility associated with the act of choosing." (p. 35). Thus, if policymakers move toward an environment in which more choice is provided, it is important to think about structuring the choice set in a manner that maximizes the possibility of welfare-improvement by thinking carefully about choice architecture.

3.5 Protection of spouses

In many countries, the protection of elderly widows or widowers is an important policy concern. Poverty rates among widows/widowers are often higher than for married individuals of the same age. A straightforward way to reduce the likelihood of poverty upon entering widowhood is to ensure that annuities provided through retirement plans are "joint and survivor" annuities that continue to provide payments for as long as either spouse is alive. Of course, economic evidence on "equivalence scales" suggests that the ratio of survivor benefits to couples benefits need not be 100%, but neither is it likely as low as 50%. In other words, while there are some economies of scale in consumption within a household, these economies are not one-for-one. From the perspective of designing a decumulation policy, it is critical to ensure that the minimum income floor will still be available to widows/widowers after the death of the primary retiree.

There are several policy approaches that are helpful in providing adequate spousal protection. First, minimum annuity rules can be written in such a manner that they provide a minimum income floor that is adequate not only when one spouse is alive, but also upon the death of either spouse. Second, for annuities above this amount (such as automatic enrollment in annuities), a joint-and-survivor payout stream can be the default. Individuals should only be allowed to deviate from this default if the spouse agrees. Third, both the minimum annuity floor and any default rules should specify that spouses are treated symmetrically. For example, the ratio of survivor benefits to couple benefits should be the same regardless of whether it is the

primary worker or the spouse who dies first. In many plans around the world, there is asymmetric treatment: often, the primary worker gets unreduced benefits after his or her spouse dies, while the dependent spouse does see a reduction if the primary workers dies first. While there is good economic rationale for allowing for survivor benefits to be less than couple benefits, there is really no economic rationale for an asymmetry based on which member of the couple dies first.

4. Current decumulation policy in the Netherlands

The Dutch pension system consists of three pillars, each of which provides annuities with few exceptions. Here, we discuss the decumulation policy in each of these pillars.

4.1 Annuitization in the First Pillar (AOW)

The first pillar (AOW) provides basic income above the level of the minimum wage as of the age of 65 until death for singles, and about 170% of this amount for couples. AOW income is not means tested, and it is financed on a pay-as-you-go basis. Full AOW income is available for everyone who lived in the Netherlands for 50 years as of the age of 65.[12] People that lived in the Netherlands for a shorter period (e.g. immigrants, Dutch knowledge workers that worked abroad) get the analogous fraction of full AOW.[13] The current proposal for adjusting the eligibility age for AOW to improved life expectancy states that for every year that one postpones benefit the annual income will be increased by 5%[14]. In the spring of 2010 there was an active policy discussion whether or not people should be allowed to take AOW income before the extended entitlement date. Decreases in life-long income of 6.5% - 8% were quoted for people

[12] In 2020 and 2025 the age at which people will be entitled for full AOW income is likely to be increased to 66 years and to 67 years respectively.
[13] They might be entitled for additional social benefits if they would fall bellow the poverty line.
[14] This raises many issues, some of which are analyzed in Sanders, de Waegenaere and Nijman (2009). The 5% compensation is low and in many cases it will be beneficial to take the money early and buy additional annuities in the market if one likes have more income at higher ages. Of course this depends on the prevailing interest rates as well as on other factors.

who would use that option. In some proposals taking this option would only be allowed for low income workers, in the government proposal only for physically or mentally demanding professions (a list of these professions would have to be agreed on). The most recent consensus in the policy debate seems to be that all individuals will be allowed to take AOW as of the age of 65 but with actuarially fair (for the average recipient) adjustments for taking AOW before the statutory age which will increase in 2020 and 2050 as indicated. AOW will have to be claimed no later than at the age of 70.

4.2 Annuitization in the Second Pillar

The second pillar of the Dutch pension system consists of (almost always) mandatory[15] contributions to a pension fund or insurer. A typical arrangement is to have 2/3 of the contributions paid for by the employer, and the remaining 1/3 by the employee. Social partners (i.e. employers and employees) set the percentage of labor income[16] that is to be contributed to the fund, and are also responsible for fund governance. Most second pillar entitlements are typically characterized as defined benefit (DB) plans and we will follow that convention. However, one should keep in mind that because real pension income is not guaranteed, but rather is dependent on the funding status of the pension fund, the contract is sometimes characterized as a hybrid.

The binding (or "hard") pension rights generate a nominal annuity income as of the target date. The standard annual accrual is 1.75% for final wage schemes and 2.0 – 2.25% for career average schemes. After 40 years of participation in the labor force the total annuity income would be 70% in final wage schemes and 80%-90% of average wage in career average schemes.[17] The target date currently is 65 years. Social partners (i.e. labor unions and employer organizations) have agreed that the target date will be linked to life expectancy and will

[15] Both the level of payments and the selection of the pension fund are mandated
[16] After correcting for AOW income
[17] Many funds shifted form final wage to career average wage in the years 2002 – 2004.

therefore be increased roughly simultaneously with the AOW age. Every individual can claim second pillar benefits as early as age 62, or can delay beyond age 65, and the adjustment is actuarially fair for the average participant.

Second pillar pension income comes in the form of annuities and individuals are generally not allowed to convert pension income to a lump-sum payment. There is a (limited) possibility to have higher or lower annual income in earlier than in later years (but the lower income should at least be 70% of the higher income). Second pillar pension wealth can also be used to generate an income stream at the level of AOW income to "bridge" AOW income in an actuarial fair way for people who retire before the statutory age.[18]

With regard to spousal benefits, the standard offering is to provide spousal and survivor benefits that are equal to 70% of the pension benefit. However, before the first pension payment, and upon the agreement of both spouses, individuals have the opportunity to convert these partner pensions to additional "own" old age pension.[19]

With regard to inflation protection, an unusual but important feature of the 2nd pillar Dutch DB pension entitlements is the annual decision of the pension fund whether or not to compensate the pension entitlements for (price or wage) inflation. Many funds have announced that they will fully compensate inflation if the nominal funding ratio (i.e., the market value of assets divided by the present value of liabilities) exceeds 140%. No indexation will be given if the funded rate is less than 110%, partial indexation in the intermediate range. Missed compensations for inflation will usually be compensated in subsequent years. This system, which is often referred to as "conditional indexation," was introduced in 2003. In the years before 2003, inflation indexation was almost universal. Since 2003, however, funds have failed to index several times, including in 2009 when nearly all funds chose not to index. This

[18] Note that this option is not available for low income workers and that it can exhaust all pension wealth in the second pillar for people with small pensions.
[19] The conversion factor depends on the average age of men and women in that fund, not on individual characteristics.

occurred because, in the spring of 2009, the nominal funded rates of many funds were below 100%. The recovery plans of 14 of these funds indicated that nominal benefits would have to be cut unless the financial markets recovered. While these funds recovered somewhat by the end of 2009, by mid-2010 the nominal funded rates were still less than 100% on average (driven largely by declining interest rates increasing the value of the liabilities). As recently as August 2010, the supervisor (De Nederlandsche Bank, or DNB), has announced that 14 funds might have to cut nominal benefits as of January 2011.

While this "conditional indexation" has a benefit of helping to stabilize the funding of the plan, it also generates uncertainty in the real income stream available to retirees. Not only does it not guarantee the real income level, but its structure is such that the real income reductions will come at exactly those points in time when such cuts are most harmful (e.g., when the marginal utility of income is high because the economy is performing poorly, other assets are down in value, etc.) In essence, this conditional indexation can be viewed as a combination of a nominal annuity with a complicated call option that can increase the income by up to the rate of inflation if the pension funding ratio is high enough. It is worth considering whether retirees might be better off receiving a lower initial level of annual income, in return for more secure inflation-indexation.

In June 2010 the social partners reached an important agreement on the future of the Dutch pension system. In order to support the sustainability of the system and to stabilize the required contribution rates it was agreed that the level of guarantees ("hard" pension rights) will be reduced. As of 2010, a larger fraction of the benefits of the system will be dependent on the investment returns in ways which are currently under discussion. Technically the promise will be close to that of a variable annuity. Likewise, as discussed before, the target date for pension income generated by second pillar products will be linked to life expectancy.

While most second pillar schemes are DB, a limited number of firms offer Defined Contribution (DC) schemes in the second pillar. Like the more prevalent DB plans, these DC

plans are mandatory and are also required to be annuitized. In these schemes the participants usually have ample choice opportunities, in particular with respect to the investment strategy. Unlike in DB schemes the participant faces investment, interest and longevity risks directly. The rules and legislation for these second pillar DC funds are close to those for third pillar products.

Transparency is currently an important 2nd pillar policy issue in the Netherlands. Pension providers in the second pillar already have to classify the "indexation quality" of their schemes in five categories. This "indexation label" is computed using asset-liability matching (ALM) models and reports the expected loss of purchasing power of pay-outs from the scheme on a fifteen year horizon as well as the loss of purchasing power in a pessimistic scenario. Recently, an advisory committee[20] to the Dutch government proposed to report expected purchasing power and an outcome in a pessimistic scenario on an *individual* basis,. Moreover this transparency requirement would apply to all pension providers, be they first, second or third pillar.[21] The same committee has also proposed to allow more general pension products to be offered in the Netherlands. Their proposals include variable annuities in the second pillar, deferred annuities which provide monthly income as of a future date that would depend on life expectancy, and life cycle accumulation in the second pillar so that young participants would invest a larger fraction of their wealth in equities.

4.3 Annuitization in the Third Pillar

The third pillar of the pension system, which is essentially a DC system, consists of tax exempt, voluntarily-purchased pension products from insurers or banks. This pillar of the system is in particularly important for 5% of the working of the population that is self-employed and who do not have second pillar coverage. The third pillar is also used by participants in pension funds

[20] Committee on the sustainability of supplementary pension schemes (the Goudswaard committee). One of the authors of this paper (Nijman) was a member of this committee.
[21] This will be technically possible once the new pension register, which provides a portal to the administration of all pension providers, has been realized.

who judge their first and second pillar coverage as insufficient, such as those with more limited work histories. The rules governing the tax deductibility of contributions require that the accrued pension is less than a certain percentage of income.

Generally speaking, the legislation allows two forms of decumulation of pension wealth: life annuities purchased through insurers, and "bank-saving" products, which essentially return principal and interest to the participant over a fixed number of years. These bank saving products allow for bequest, but do not offer any longevity insurance.[22]

In this third pillar, individuals choose their own contributions and bear the investment and conversion (interest and longevity) risks. Some of the products that are offered contain rate-of-return guarantees during the accumulation phase. A few years ago, duty of care legislation has been introduced which forces insurers to offer only investment strategies that manage the conversion risks to annuities. These regulations require that, close to the target date, the exposure to equities be reduced and the duration of the fixed income portfolio approximate that of the annuity to be bought.

Another distinguishing feature of the third pillar products is that no inflation protection is offered. The pay-outs are nominal, although they sometimes increase annually with a fixed percentage. While this is not unusual when compared to other countries, it is nonetheless an unfortunate feature, as it subjects individuals to uncertainty in the real purchasing power of their retirement income stream. Generally two reasons are put forward to explain this lack of inflation protection in the Netherlands, as well as in most other countries where annuities lack inflation protection. The first potential driver is "money illusion" on the side of individuals who are not willing to accept the lower initial payment in return for the long-term preservation of purchasing power. The second potential driver is the lack of bonds indexed to Dutch inflation. Issuers of real annuities in the Netherlands would have to use bonds linked to European inflation to hedge

[22] Another possibility is a temporary (additional) income for at least five years. This is restricted to 20,000 Euro annually. It resembles the flexibility of the 100%:75% income levels in the second pillar.

their risks and the corresponding basis risk makes it unattractive for insurers to issue such products.

The legislation allows for variable annuities in which the level of the annual payments would depend on the investment returns. As noted above, these are potentially important as they allow individuals to potentially benefit from the higher expected returns to equities. This is attractive as the life expectancy at the annuitization date can be as large as 20 years, and much research is supportive of the notion that the optimal equity share should not fall to zero just because someone enters retirement. In reality, though, hardly any variable annuity products are offered in the Netherlands at this time.

After much media attention, the cost level of third pillar pension products has become a major policy concern in the Netherlands. Many insurers charge annual fees in the order of 150 basis points (in contrast to the largest second pillar provider's charge of 30 basis points). When this cost difference is compounded over many decades, the impact can be quite substantial. In response, "bank saving" products were introduced in 2007. These products carry the same fiscal incentives but differ in two crucial aspects from the annuities offered by insurers. First, these products are fixed term (minimum twenty years) rather than life long and therefore do not provide insurance against outliving one's assets if one gets very old. Second, in case of premature death of the insured the money is transferred to the heirs rather than to the pool of annuitants.

5. Pension Wealth Decumulation Around the Globe[23]

When looking around the globe, there are significant differences in the extent of overall annuitization of retirement wealth, arising primarily in the treatment of assets in the second and third pillars. In this Section we provide a brief summary of the key features of the legislation in

[23] In what follows, we provide a very brief overview of second pillar arrangements in a sampling of OECD countries. This is far from an exhaustive overview, but rather is meant to simply help place the Netherlands into a comparative context.

five countries. More details and analysis for more countries is provided e.g. in Mitchell and Piggott (2011). First-pillar systems appear to be almost universally annuitized. There is tremendous heterogeneity in the extent of annuitization in the second pillar. In the third pillar, the Netherlands is a notable exception to the general rule that annuitization is typically voluntary – and quite rare – in most countries.[24]

5.1 The United States

The first pillar in the U.S., covering over 90 percent of workers, is Social Security. Paid out in the form of a mandatory life annuity, Social Security benefits are automatically indexed to inflation each year[25] Social Security provides an average replacement rate of approximately 42 percent of income, although it is much higher for lower income households, and much lower for higher income households. Social Security is considered by most economists and financial planners to be insufficient, by itself, to maintain living pre-retirement living standards through retirement, except possibly for those at the low end of the lifetime earnings distribution.[26]

The second pillar in the U.S. consists primarily of employer-provided retirement plans. Coverage in the second pillar is far from universal: even when one considers not only current pension coverage, but also pensions from prior jobs, Gustman et al (2010) report that approximately two-thirds of respondents age 51 to 56 have some employer-provided pension coverage. Over the past three decades, the private pension system in the U.S. has witnessed

[24] As noted by Lindeman and Yermo (2002), "except in a few OECD countries, annuities markets either do not yet exist or are still in an incipient stage of development." Mitchell et al (1999) report on the small size of the voluntary market in the U.S. MacKenzie (2006, p.27) reports that "annuities markets in France, Germany, Italy and Japan are small." In a study examining the Australian annuity market, Knox (2000) reported that "the market for private life annuities with longevity insurance is very small." An IMF (2007) study of the pension annuity market in Mexico in the decade following the 1997 pension reform reports that "the pension annuity market in Mexico is very small." A study of annuity markets across the OECD comes to the general conclusion that there is an "apparent paradox in the findings: despite good value for consumers, demand for annuities remains weak" (Lindeman and Yermo, 2002).

[25] The overwhelming majority of those not covered by Social Security are public sector workers covered by various federal, state and local pension plans which also pay benefits primarily in the form of annuities.

[26] While the view that Social Security is in adequate as a sole source of annuitization for most households is widely held, it is not universal. Bernheim (1991) argued, on the basis of extensive life insurance holdings among the elderly, that many households were over-annuitized by Social Security. Brown (2001a) provides contrary evidence using more recent data.

a dramatic decline in 2nd pillar annuitization for two reasons. First, the private sector DB plan is all but disappearing in the U.S. and being replaced with 401(k) plans and other forms of DC plans. Whereas, historically, annuitization was the standard distribution option from DB plans, most DC plans do not even offer participants an opportunity to annuitize. According to Hewitt Associates, the fraction of 401(k) plans (currently the most common employer-provided plan in the U.S.) offering annuities as a payout option fell from 31 percent in 1999 to only 17 percent in 2003. Second, among those DB plans that still exist, Salisbury (2002) points out that over half of them now offer a lump-sum benefit at retirement. In addition, he reports that "nearly all of the over 500" cash balance, or hybrid, plans offer lump-sum distributions as a payout option. As a result of these two trends, the Congressional Research Service (2005) reports that 85% of the 61.1 million workers age 21 or older who were included in a retirement plan at work participated in a plan that offered a lump-sum distribution as a payment option.[27]

Like many countries, annuitization in the third pillar – namely, the system of both tax-deferred and taxable private savings – is extremely rare.

Concern over low and declining levels of annuitization has led the Obama Administration's Treasury and Labor departments to issue a joint "Request for Information" (RFI) in February 2010, seeking input on ideas related to promoting annuitization within 401(k) plans. Indeed, a key U.S. Treasury official – prior to joining the Obama Administration – co-authored an influential policy paper that called for treating annuitization as the default payout option from 401(k) plans (Gale et al 2008).

The Gale et al paper, as well as a paper discussing one might implement an automatic annuitization policy (Brown, 2009b), suggest several rationale for default annuitization. The current incarnation of the U.S. system is best thought of as a "quasi-accidental" design. In

[27] In contrast, the second pillar in the public sector – namely, pensions for federal, state and local workers – continues to be dominated by defined benefit plans. However, there is currently a politically charged debate in the U.S. about the sustainability of these plans due the large unfunded liabilities that they present, a situation that has been exacerbated by the recent economic downturn.

particular, section 401(k) of the Internal Revenue Code (the U.S. tax code) was originally designed in the late 1970's as a way to provide tax benefits to *supplemental* retirement plans that were "elective" on the part of participants. Because they were designed as supplemental, rather than as core, plans, little attention was paid to decumulation issues: after all, the 401(k) was not intended as a primary source of retirement income. Over the past three decades, however, the U.S. retirement system evolved in such a way that the 401(k) is now the single most common type of plan. However, it is a system based on wealth accumulation, not a system based on providing retirement income security. For example, very few 401(k) plans offer annuities: indeed, until the passage of the Pension Protection Act of 2006, most pension lawyers advised plan sponsors to avoid annuities due to the additional fiduciary risk that they created for the sponsors.

The "accumulation culture" that has built up in the U.S. over the past three decades has created an environment in which most citizens do not fully understand annuities, how they operate, or the benefits they provide. Thus, they do not demand them from their employers. This lack of demand – combined with the fiduciary risks that employers have historically faced if they offer them – means that employers have traditionally been very happy to avoid offering annuities altogether. Thus, a primary rationale for those promoting automatic annuitization is to "change the conversation" in the U.S. back to one focused on retirement income security. Proponents believe that policy action is needed to achieve this.

While the Obama administration initially appeared supportive of automatic annuitization and/or requiring that 401(k) plan sponsors at least offer annuity options, they appear to have backed off of this position recently. In part, this may be because the public response to the "Request for Information" resulted in a surprising degree of negative feedback from the public at-large. Indeed, some high profile politicians used it as an opportunity to politicize the discussion. Possibly as a result, in September 2010, high ranking Administration officials stated

that while the Administration is still interested in seeing more annuitization, they would prefer to see firms do this on their own without compulsion on the part of policymakers.

5.2 The U.K.

The U.K. annuity market has long been better developed, both in terms of the size of the market an in terms of the selection of products available, than markets in the U.S. and many other countries. As discussed by Finkelstein & Poterba (2002), the development of the U.K. annuity market is due in large part to the fact that the U.K. has long required partial annuitization of DC pension schemes in the second pillar by the age of 75. To be more specific, individuals can draw down from their pension wealth before the age of 75 up to a maximum of 120% of the annual income that a fair annuity would offer. At the age of 75, at least 75% of the remaining annuity wealth has to be annuitized.

Interestingly, at the same time that the U.S. has begun policy discussions about whether to promote additional annuitization, discussions in the U.K. are heading in the opposite direction. As discussed in Blake, Cannon and Tonks (2010), "the Conservative—Liberal-Democrat Coalition Government that came to power on 11 May 2010 announced that it was going to end the requirement for pension scheme members to purchase annuities by the age of 75." Legislation to this effect was proposed in June 2010. The proposal is to introduce a minimum income requirement (MIR) and to drop the obligations to annuitize if one can show that a life time minimum income is assured. The use of the MIR emphasizes that people should not be allowed to run down their wealth and then become eligible for social assistance (see Buetler et al (2010) for evidence of this in Switzerland). The MIR drops the starting point that an adequate lifetime pension income is to be related to life time earnings. Blake, Cannon and Tonks (2010) argue that it will hardly be feasible to define a relevant MIR because the environment in which the means tested benefit scheme would operate is to be forecasted a long time in the future. As a transitional arrangement to the expected abolition of the

compulsory requirement the 75 age limit to annuitize 75% of wealth will be extended up to age 78. For now the ultimate policy outcome remains uncertain.

5.3 Germany

Cannon and Tonks (2008) refer to the German pension system as a "traditional continental model," consisting of a first-pillar pay-as-you-go system that provides relatively high replacement rates. Because of these high replacement rates, second pillar pensions are quite small, comprising only 5 percent of average retirement incomes.

The Riester reforms of 2001 were designed in part to stimulate second and third pillar plans through the use of tax subsidies. At least 80 percent of accumulations in these "Riester plans" must be annuitized before the age of 85, although these plans are new enough that there is insufficient data to analyze the extent of annuitization that will occur. (Cannon and Tonks 2008).

5.4 Sweden

Sweden undertook a significant reform of its pension system in 1998, at which time it changed its second-pillar from a fairly standard DB system to a notional defined contribution (NDC) system. The notional account provides annuities, and may do so as early as age 61. The Swedish system incorporates an "automatic rebalancing mechanism" to protect system finances, meaning that annuity rates are adjusted to keep the system in fiscal balance. The annuity level is dependent on shocks in fertility and longevity, not on financial markets

Sweden also has an additional second pillar – known as the Premium Pension Plan – which offers hundreds of investment funds through a DC account. Accounts accumulated under this system also face mandatory annuitization at rates set by the agency which regulates the plan.

5.5 Switzerland

Switzerland's second pillar is mandatory, but is organized through various occupational schemes. At retirement, the Swiss can choose either to annuitize or to take a lump sum. The decision taken is highly dependent on the default option that is offered, as documented by Buetler and Teppa (2007). An important aspect of this choice is also that social benefits are mean tested in Switzerland. Buetler, Peijnenburg and Staubli (2010) show that this affects annuity choice in that lower income groups are more inclined to take lump-sums as they have life-time protection for their consumption level anyway.

5.6 Australia

In terms of the prevalence of annuitization, Australia bears similarity to the U.S. As discussed by Bateman, Kingston and Piggott (2001), Australia has a universal first pillar that provides an average replacement rate of 37 percent (Cannon & Tonks, 2008, p. 98). The second pillar – known as the Superannuation Guarantee, which was introduced in 1992 – provides tax incentives to take payouts as an annuity. Despite this, Bateman et al (2001) report that 75 percent of benefits were taken as a lump-sum in 2001.

5.7 Some General Lessons from Abroad

Taking into account the lessons of the six countries analyzed above, plus the experience of other nations, there are a few general lessons that appear to hold across countries.

First, as noted at the outset, annuitization is virtually universal in first-pillar systems. Second, when annuitization is voluntary, few individuals choose to purchase them, despite the substantial benefits that academic research suggests should accrue to risk averse consumers. Third, the Netherlands is an "outlier" in terms of mandating annuities in all three pillars of its retirement system. Fourth, with the exception of the U.S. (which has very limited annuitization

outside of Social Security), most policy discussions appear to be in the direction of providing more flexibility in the upper pillars.

6. Possible Avenues for Reform of the Dutch Decumulation System

In this section, we use our benchmark design, as well as international experience, to suggest a few avenues for reform in the Netherlands.

6.1 Reduce the Mandated Annuitization Amount to an Amount Sufficient to Meet Basic Needs

As discussed above, Dutch legislation imposes that all pension wealth be converted to annuities at (or close to) retirement.[28] Some mandated annuitization is beneficial, in that it helps to overcome information problems that might otherwise unravel a private market in annuities. It might also be beneficial if individuals are failing to recognize or fully value the insurance aspects of annuities, as might be the case according to some behavioral explanations.

However, the current requirement that all retirement wealth be annuitized is likely welfare-reducing for many Dutch citizens. As argued above, in case of bequest motives, liquidity concerns, incomplete annuity menus or significant costs of purchasing annuities it can be attractive to annuitize only part of the pension wealth. This is because annuity income and liquid wealth can be viewed as serving different economic purposes. Annuitized income provides a minimum consumption floor and is the most efficient way to provide guaranteed consumption for life in the presence of longevity risk. On the other hand, financial wealth provides liquidity which can be quite important in the presence of uncertain and potentially "lumpy" expenditure items. In the academic literature, uninsured health expenditures are usually referred to as the prime example of such risks, as these are quite dominant in the US. For countries like the Netherlands where health costs are largely insured, other expenditure categories such as expenditures for housing and house maintenance, or intervivos transfers to

[28] Bank saving (fixed term "annuities") is the exception to this rule and will be discussed in Section 6.6 below.

children, or bequests, might be equally important. In short, an optimal retirement portfolio should include both annuitized and unannuitized resources.

6.2 Provide More Secure Inflation-Indexation for the Mandated Annuity Income

Essentially, true inflation-protection in the Netherlands is limited to the first pillar. In 2nd pillar DC plans, as well as in the third pillar, annuity choices are typically limited to fixed nominal annuities (although the Dutch legislation does not impose this, Dietvorst et al (2010)). In the second pillar hybrid DB plans, the "conditional indexation" is a way of indirectly providing retirees with equity market exposure on top of their pension benefit. More specifically, the conditional indexation approach provides individuals with a *nominal* annuity plus a rather complicated call option. This option is one that makes a partial or full inflation adjustment only if the funding status of the pension – which in turn depends on contributions, payouts, portfolio allocations, and asset prices – exceeds certain thresholds. If equity returns are not highly correlated with inflation rates, the inflation protection can be low.

As discussed above, when it comes to meeting basic needs through the 50% annuitization requirement, the case for more reliable inflation-indexation is strong. While the first pillar AOW is inflation-indexed, the first-pillar income (identical for all who are fully eligible) is sufficient to meet the 50% replacement rate that we recommend only for low income workers. As such, we would suggest that at least *part* of the 2nd pillar – that which would be sufficient to meet the 50% replacement rate – be required to be explicitly inflation-indexed to the extent that adequate investment products are available to implement these pension promises.[29] In conjunction with this, the appropriate way to handle pension funding would be to calculate at least this part of the funding liability based on real – not nominal – pension payouts, and to

[29] Currently there is no market for indexed linked bonds tied to Dutch inflation. There is a small over-the-counter market for inflation swaps.

ensure that there is sufficient asset-liability matching to have high confidence that these payments will be made.

Above this "guaranteed" level of income, social partners should have the flexibility to design the risk and return characteristics the best suit the needs of the employers and employees. We will discuss this more below. However, for these benefits above the minimum floor, we would still recommend that when pension funding falls short relative to what was promised, such adjustments ought to be made in a manner that is concentrated more on younger workers, and less on retirees. Younger workers have many more years during which to adjust labor supply, saving and investment behavior to offset future benefit changes. Current retirees have few such options, and thus the loss of benefits has a larger utility consequence.

6.3 Encourage, but do not require, additional annuitization above the minimum

An emerging strand of research in behavioral economics suggests that people may be averse to annuitization for reasons that are not fully rational (see, for example, Brown 2009a, Brown 2009b and Brown et al 2008). As such, we are sympathetic to the view that individuals may need to be "nudged" in the direction of annuitization. One way to do this would be to offer annuitization as the default payout option for 2nd pillar balances that are in excess of what is minimally required.

As noted in section earlier, there are reasons to believe that default annuitization rules would still result in a high level of annuitization. However, it has the obvious advantage over compulsory annuitization of maintaining consumer choice. In particular, those individuals for whom additional annuitization would clearly be welfare-reducing (e.g., those with short remaining life expectancies, those with particularly strong bequest motives, etc) would have the ability to opt-out of the default.

6.4 Provide More Flexibility in Annuity and Non-Annuity Choice Above the Minimum Amount

As noted above, a large and growing body of research suggests that retirees may be better off with a more broadly diversified portfolio than one consisting solely of fixed nominal or real annuities. Most life-cycle simulation models, for example, suggest that some continued equity exposure into retirement years remains optimal.

While the current Dutch system provides equity exposure indirectly through its conditional indexation model, this approach obfuscates the link. In addition, it does not allow individuals to adapt their portfolio to their own preferences. An advantage of offering a richer array of products during the retirement phase is that it allows for customization that reflects the preference heterogeneity in the population.

6.5 Keep an Eye on Spousal Protection

In general, we believe it is important to ensure that the minimum annuitized income floor is sufficient to meet minimum needs of the both a retired worker and his or her spouse, including possible states of widowhood after the death of the retired worker. It appears that the Dutch system has a reasonable approach in place for protecting spouses in the form of providing spousal and survivor benefits. In Dutch DB plans the default is that the insured gets a level of old age pension income and that if he or she passes away while the partner is alive, the partner will receive 70% of that income until death.

At retirement, however, the couple has the right to swap old age and partner pension. If both agree, the partner pension can be dropped and converted in an actuarially fair way to additional old age pension for the insured. One might question the policy rationale for allowing this. From a paternalistic perspective, one cannot help but wonder if a decision to trade-off survivor benefits for “own” benefits is driven less by an optimal re-allocation and more by a mis-understanding of the value of survivor annuities.

Related to this, the actuarial compensation for converting between spousal and own benefits is computed for the average participant in the fund, rather than on population mortality

rates. This implies that the actuarial adjustment depends on the relative fraction of women versus men in the fund. It seems worthwhile to consider replacing this rule by an adjustment that is actuarially fair using population wide survival probabilities. This would, of course, make the funding status sensitive to such conversions, as the gender mix of survival rates that is used to value liabilities is fund specific. But doing so would at least provide economically appropriate incentives for individuals making the choice.

The existing conversion rules also exhibit an important asymmetry. . Specifically, the income of the primary worker is not affected by the death of his spouse. However, the death of the primary worker does affect the income of his or her spouse. As noted above, there does not seem to be any economic reason for such an asymmetry to be the norm. In effect, the rule can generate a mismatch, such that the insured gets too much income if he would be the only survivor, and too little income in states of the world in which both partners are alive or the spouse is alive.[30] Sanders (2010) argues that the welfare effect of this can be as large 10%.[31] A simple way to adjust the legislation would be to have the default rule be one in which the annuity amount is calculated on the basis of a joint and (symmetric) survivor annuity for couples.

6.6 Removing special treatment for bank savings products

As explained above, the general rule for decumulation of pension wealth in the Netherlands is that the pension wealth is to be converted to an annuity. The exception to the rule is "bank saving," which was introduced recently. These third pillar products carry all the tax benefits of annuities but differ from them in two crucial aspects. First, these products are fixed term (minimum twenty years) rather than life long and therefore do not provide insurance

[30] The same issue arises US DB schemes where both partners initially have single life annuities that can be converted to survivor pensions. If one of them has all the accrued rights the income level for this individual will not be affected if his spouse passes away. These are sometimes called "joint and contingent" annuities (Brown and Poterba 2000).
[31] The 10% number assumes that the pension wealth is generated by only of the of the partners and the level of joint consumption is low.

against outliving your assets if one gets very old. Second, in case of premature death of the insured the money is transferred to the heirs rather than to the pool of annuitants. Historically the main motivation to introduce these products in 2007 was to promote competition and to reduce cost levels in the third pillar which was dominated by a small number of providers of annuities.

To the extent that policy-makers are trying to ensure that individuals have adequate insurance against the risk of outliving their assets, bank saving products make little sense as a product choice. Two arguments are available that support the use of bank saving for retirement: lower cost levels than third pillar annuities and its role as a commitment device, i.e. it makes it less attractive to spend more in later years than planned. However, these products do not offer insurance benefits, and do nothing to protect individuals against outliving their income. In an important sense, they are the "anti" delayed payout annuity. That is, instead of providing income during advanced ages where individuals are at risk of experiencing consumption declines, bank savings products pay out all the income during the earlier period of retirement, and thereby increasing the longevity risk that individuals face. Scott, Watson and Hun (2006, 2009), for example, show that allocating only a small part of pension wealth to delayed pay-out annuities generates very sizable welfare gains under the standard assumptions. The counterpart to this is that it is quite inefficient to lock pension wealth in illiquid accounts that can not be invested in the stock market or protected against inflation risk while at the same not covering the risk of outliving your assets at advanced ages. In short, bank savings products are *not* substitutes for life annuities. Indeed, they appear to have some of the worst aspects of annuities (i.e., imposing illiquidity) without any of the benefits of annuities (i.e., guaranteed income for life).

To the extent that policy makers wish to provide more flexibility in the third pillar, as we have endorsed here for those with adequate life time income, a better approach would be to

open the set of allowable investment options to the full array of financial products (e.g., mutual funds, direct holdings of stocks, bonds, etc). We see little reason to favor bank-saving products over other savings and investment vehicles.

6.7 Managing Conversion Risk

While many Dutch penson plans generate annuities by construction, in third pillar plans and in second pillar DC plans pension wealth is to be converted to pension income. Pension providers are subject to "duty of care" legislation. In order to avoid a situation in which the pension income is strongly affected by financial market shocks shortly before conversion to annuities, the Authority for the Financial Markets (AFM) has published guidelines to manage the conversion from capital to annuities.[32] AFM expects the exposure to equities to be reduced to zero close to the conversion date. Moreover, AFM suggests that the duration of the overall portfolio to be equal to the duration of the (nominal) annuity to be bought in order to manage interest rate risk. In spirit these are adequate guidelines to check whether pension providers manage pension wealth adequately in the interest of the individual.

To the best of our knowledge other countries do not have similar 'duty of care' rules to protect individuals. In some cases, the financial crisis has had very significant impact on the pension income of many individuals in these countries. Despite being "ahead of the curve" in this regard, the Dutch recommendations still have some limitations. For example, AFM seems to assume that pension wealth will always be converted to fixed annuities. In the previous section we have argued that this is not necessarily optimal (and also not imposed by current legislation). Such standards may not be appropriate – as written – if a wider selection of annuity products (e.g., variable or deferred) are part of the plan. Regulation may be better suited to specifying

[32] Note that even if no equity exposure is present at conversion a 1% drop in interest rate just before conversion can have a 5% impact in pension income if the difference in the duration of the annuity and that of pension wealth would be 5. The shocks in equity markets can obviously easily be of similar magnitude, even if only part of the wealth is invested in equities.

the degree of “risk tolerance” around the conversion, rather than specifying the precise mechanism that must be followed prior to conversion.

7. Conclusions

The Dutch system for the decumulation of pension wealth is to be commended for placing a high priority on ensuring that individuals are provided with sustainable levels of life-long income. This emphasis on annuitization stands in stark contrast to many other countries – such as the U.S. – in which the retirement system is more focused on wealth accumulation than on retirement income security.

However, the Dutch system may be a case of “too much of a good thing is a bad thing.” The requirement that virtually *all* retirement wealth in the first, second and third pillars be annuitized has the effect of likely over-annuitizing many citizens relative to what would be individually optimal for them. While mandating some level of annuitization is sensible, excessive annuity mandates can reduce welfare by imposing liquidity constraints and by making it more costly to leave bequests.

In this paper, we propose that the amount of compulsory annuitization be scaled back, and only mandated to the extent necessary to ensure that retirees’ basic needs are covered. This minimum annuity requirement should provide adequate inflation protection and adequate spousal protection. Above this, we argue that additional annuitization should be encouraged, but not mandated, and we discuss “automatic annuitization with an opt-out” as a promising policy approach. We also suggest that above the minimum annuity amount, consumers be provided with a richer set of options, including variable annuity products, deferred payout products, and even non-annuity products.

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