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Best solutions for payout arrangements for personal pension products

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1) Importance of the payout phase for personal pension programs

Traditionally people in retirement rely on a combination of family transfers, asset drawdowns, owner-occupied housing, income from public social security programs and occupational pension plans.[1] Faced with rising life expectancy of population, low fertility rates, an ongoing low return environment, financial strains on public social security pensions and an increasing number of workplace pensions shifted from defined benefit to the defined contribution type, many countries have engaged in reforms to complement the traditional retirement income sources by (tax-qualified) personal pension products. These are long-term saving products usually offered by regulated financial intermediaries (insurers, asset managers, banks, pension funds) and signed on a voluntary basis, which allow workers to accumulate assets in tax-qualified accounts and during retirement, they spend these assets in an orderly fashion. While various personal pension products already exist in the EU member states, an important recent development are Pan-European Personal Pension Products (PEPP). In 2016 the European Insurance and Occupational Pensions Authority (EIOPA) has published its final advice on the possible framework for PEPPs. On 29 June 2017 the European Commission (EC) launched a proposal for a regulation on a PEPP. This EC-proposal was commented by the EIOPA occupational pensions stakeholder group (OPSG) in December 2017.

Most attention is focused on the accumulation phase of personal pension products, Yet it is crucial to recognise the importance of adequate solutions for the payout phase. For many people, their pension saving pot may well be their most significant financial asset, and deciding on how to convert accumulated assets into retirement income is one of the most important financial decisions they will ever make.

2) Key factors for optimal payout solutions payout phase

Optimal arrangements for payouts are complex and depend on *individual characteristics* (other pension benefits, family status, age, sex, financial literacy, accumulated assets), *market factors* (available products, regulation and prices), and *exogenous risk factors* such as[2]:

- *Inflation risk* is caused by fluctuation of the general price level and can result that the value of retirement payments in real terms erodes.
- *Investment risk* is caused by fluctuations of the value of accumulated assets and could result in volatile retirement income.
- *Longevity risk* is caused by uncertain individual lifetimes (*idiosyncratic longevity risk*) and uncertain general life expectancies (*systematic longevity risk*) and can result in exhausting accumulated assets during retirement.

[1] See Mitchell 2018.

[2] See Somova and Maurer 2009, 7

- *Health risk* is caused by the uncertain health status of an individual and can result in substantial out-of-pocket (i.e not covered by health insurance programs) medical expenses, long-term care costs, and changing life expectancies.

Payout solutions should mitigate and strike a balance between the main potential financial risks faced by individuals in retirement.

3) Payout options of retirement assets

In general, there are three basic decumulation solutions of accumulated assets aiming to generate a regular income in retirement: *life annuities* (pooled solution), *programed drawdown* plans (non-pooled solution), and *lump sum payments combined with delayed claiming of* Social Security benefits. These solutions offer different advantages and disadvantages for the retiree, in particular in terms of their flexibility and risk coverage. *Hybrid* solutions combine these approaches.

3.1 Life Annuities provide a regular lifelong income to the retiree in exchange for a non-refundable premium paid to the annuity provider. They offer protection against longevity risk by preventing the beneficiary from outliving one's assets.

In the private market place annuities are primarily offered by life insurance companies or pension funds. Yet from a financial perspective lifelong payments are also generated by the mandatory national pension system. The key difference, however, is that state pension annuities are in most countries financed on a pay-as-you-go basis, while annuities in the private market are funded by setting aside financial assets. In turn, the insurer collects non-refundable premiums (calculated on based on the actuarial principle of equivalence) from the annuitants and invests them in financial assets backing the life contingent payment promise. The pricing of annuity bases on the actuarial principle of equivalence, i.e. the premium is equal to the expected present value of future benefits. The price calculation depends on (actuarial) assumptions on mortality, interest rates, and cost charges. If the number of annuitants is sufficiently high and mortality risks are independent, the insurer can hedge its liabilities by pooling mortality risk across a group of annuity purchasers. Surviving annuitants receive the reserved funds of other pool members who die. In this way, the life annuity is a *collective* (*or pooled*) *product* and the redistribution of funds among surviving members can generate an extra return higher than the capital market return of assets with similar risk profile. This extra return is sometimes referred to as the *survival credit*.[3]

Because annuity contracts involve guaranteed lifelong income, annuity providers must meet regulatory solvency requirements. To price annuities life insurance companies use specific mortality tables, which assume lower mortality rates compared to the general population. This is justified by adverse selection and solvency requirements.[4]

Different kinds of annuities exist in the market – by nature of payouts (nominal fixed, escalating, inflation indexed, investment linked, or participating with profit annuity[5]), number of lives covered (single, joint annuity), and waiting period when payouts starts (immediate, deferred annuity). In the case of a *guarantee period* the periodical payments will be made to the annuitant or to the heirs for a certain period of time, such a five or ten year period, independently of whether the annuitant is alive. *Longevity income annuities* are special kinds of deferred annuities. They commence benefit payments only at an advanced age (e.g. 85), and offer a low-cost way to hedge longevity risk.

Empirical evidence shows that in most countries few retirees voluntary convert accumulated assets into life annuities (sometimes called the *annuitization puzzle*). Explanations are low flexibility in the use of accumulated assets, high expense loadings, crowding-out-effects by pre-existing

[3] As pointed out by Hubener et al. 2014 the survival credit is the excess return that surviving annuitants receive as the insurance company redistributes the funds of the deceased members of the annuity pool.
[4] See Finkelstein and Poterba 2004.
[5] See Maurer et al. 2013 on participation life annuities.

annuitized wealth (e.g. social security programs, owner-occupied housing, family transfers), bequest motives, incomplete annuity markets, and behavioural reasons.[6]

3.2 Programmed drawdown plans provide periodic payments, typically progressively diminishing the capital by using a systematic withdrawal pattern.[7] Usually asset management companies offer such products. In this case, the retiree allocates his wealth across various asset categories (e.g., equity, bonds, balanced) typically represented by mutual funds. The funds earn (uncertain) returns and the retiree withdrawn periodically a certain amount.

The key difference to a life annuity is that a programmed withdrawal plan does not offer pooling of mortality risk. The drawdown plan is an individual (or non-pooled) product whereby the retiree is in the position of an *owner* of assets, managed by an investment management company. In contrast, the life annuity is a collective (or pooled) product whereby the annuitant is in the position of a *creditor* to the insurance company.

The various products in the market differ in term of the *withdrawal rule* (fixed payouts versus variable payouts), the *portfolio strategy* (dynamic, static, balanced), and the *asset categories* (stocks, bonds, money market) incorporated in the drawdown plan. These products have the advantage of providing retirees with greater control over assets, flexibility and the opportunity of bequeathing any remaining assets to a beneficiary. While they could expose the retiree to both longevity and investment risks, they also offer potentially higher retirement income resulting from superior investment returns and greater opportunity to hedge against inflation by using a diversified portfolio.

3.3 *Delayed claiming and lump sums:* In many countries monthly lifelong benefits paid from the public pension program depend on work history and claiming age with a reduction if the worker claim prior to the normal retirement age, and an increment for delaying claiming after that age. Hence, the retiree has also access to annuity benefits by delaying claiming benefits from the national pension programs in exchange for a higher lifelong benefit. If the worker retires from work before he claims benefit, he could live in the interim period (e.g. for two or three years) on lump sum payments (or high drawdowns) from accumulated retirement assets. The increments for delaying claiming are pre-specified and could be quite attractive compared to annuities offered in the private market, especially within a low interest rates environment.

For example, if a German worker delays claiming benefits after the normal retirement age (currently age 65 and 4 months) lifelong benefits increase by 6% (0.5%) for each year (month) of deferred claiming without requiring her to work longer. Assume that such a German worker has € 30.000 accumulated assets in a personal pension product and retires at age 65. Her yearly retirement benefits from the national pension system amounts to € 15.000 per year. If she gives up her yearly retirement benefit of € 15.000 for two years, draw down € 30.000 (= 2 * 15.000) from her personal pension plan (to finance consumption) and claim benefit at age 67, she receives an increased lifelong benefit of 16.800. In other words, for a premium of € 30.000 she buys a (deferred) annuity of € 1.800 p.a. (or € 150 per month) for life. Especially in a low return environment, such price-benefit ratios for annuities are hardly to find in the private market.

3.4 Hybrid solutions combine certain characteristics of lump sum payments, life annuities and drawdown plans given the delayed claiming options from the national pension programs. These integrated solutions provide both guaranteed lifelong retirement payments as well as the flexibility, bequest potential and upside investment potential of non-pooled solutions. A popular strategy recently suggested by the US-Treasury for 401(k) pension plans and also used in German *Riester-plans* is to combine a *longevity income annuities* offered by life insurance companies with an investment linked drawdown plan offered by asset management companies. Longevity income

[6] Recent work on possible explanations of the annuity puzzle includes Benartzi et al. 2011, Brown et al. 2017, Inkmann et al. 2011, Reichling and Smetters 2015, and Peijnenburg et al. 2016a, 2016b,

[7] See Maurer/Somova 2009, p. 10.

annuities are are deferred life annuities that start lifelong payouts at an advanced age (e.g., age 85). Such instruments provide a low-cost way to hedge the risk of outliving one's assets.

4) Regulatory environment for payout solutions – Existing regulation and rules are complex and heterogeneous

The current regulation of existing tax-qualified funded pension schemes in the various member states are complex and heterogeneous. A survey of the regulation of payout options in European member states shows that some states favour life annuities in order to protect retirees from old age poverty by mitigating investment and longevity risk.[8] A second regulatory objective is to prevent retirees from spending their accumulated funds too rapidly, thereafter reverting to living off social security benefits. These pension programs usually require mandatory annuitisation of at least some parts of accumulated assets. For example, German Rürup pension products require full mandatory annuitization of all accumulated assets. German Riester plans allow for hybrid solutions using a programmed withdrawal plan and a deferred annuity starting benefits at age 85.

The situation is very different for funded DC pension schemes (such as 401(k), 403(b), IRA) in the United States and the UK. A requirement to mandatory convert some of accumulated assets into a life annuity (or any other payout product) does not exist. In UK workplace defined contribution schemes it is possible to take out the entire pension pot as a lump sum (whereby 25% is tax-free). In the US only rules for Required Minimum Distribution (RMD-rues) exist. The RMD rules require that participants take a minimum withdrawal from their retirement plans from age 70.5 onwards, defined as a specified age-dependent percentage of plan assets, or else they must pay a substantial tax penalty. Yet recently the US Department of the Treasury launched an initiative to facilitate lifelong payouts into private sector DC pension plans by converting retirement assets into *longevity income annuities* (LIAs).[9] What this means is that an employer with a 401(k) plan can offer longevity income annuities as a *default option* within the retirement plan, so long as they commence payouts not later than age 85 and cost less than 25% of the retiree's account balance (up to a limit).[10]

Currently for European PEPP no specific rules exist for the payout phase, neither in form of a mandatory annuitization nor in terms of possible default options.

5) Results from economic modelling of optimal payout solutions

Various studies exist in the academic literature to analyse optimal retirement strategies. Earlier studies compare the various types of programmed drawdown plans with life annuity and calculate the shortfall-risk of running out of money.[11]

More advanced studies use a dynamic lifecycle consumption and portfolio approach to identify the best mix of capital market instruments typically represented by mutual funds (stocks, bonds or a balanced portfolio), lump sum payments and the various annuity products offered by life insurance companies.[12] Such research takes into consideration various risk factors (investment risk, uncertain mortality, inflation risk, health risk), important institutional and regulatory characteristics (e.g. taxation, required minimum distributions, mandatory annuitization, solvency), existing benefits from DB pensions and Social Security (including delayed claiming), family patterns, housing, and preferences on risk, time and bequest.

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[8] See Horneff, Kaschützke, Maurer, and Rogalla (2014) and Maurer and Somova (2009)

[9] Specifically, in 2014 the U.S. Treasury amended the required minimum distribution regulations for 401(k)s "to provide a measure of additional flexibility" for plan sponsors and retirees (Iwry 2014). The Treasury/IRS Administrative Guidance letter explaining this change opined that deferred income annuities can now be a 401(k) default option, referring to them as "qualifying longevity annuity contracts" or QLACS (US Treasury 2014).

[10] For a detailled analysis on deferred annuities as default options in US 401(k) plans see Horneff et al. 2017.

[11] See Dus et al. 2005.

[12] See Stamos et. al. 2008, Horneff et al. 2008, Maurer et al. 2013, Horneff et al. 2015, Horneff et al. 2015, Hubener et al. 2014, 2016, and Horneff et al. 2017.

A key finding of this research is that a single best product does not exist, i.e. neither programmed drawdown plans are superior to life annuities nor vice versa. Rather hybrid solutions consisting of drawdowns plans, life annuities and the possibility to take lumps sums generate the best retirement income security for most workers. Two important hybrid solutions should be mentioned:

- The possibility to increase annuity income by delaying benefits from the public pension program in combination with a programmed withdrawal plan (to finance consumption until claiming benefits) could be an attractive for many retirees. Yet the attractiveness depends mainly on the financial incentives to delay public pension benefits.
- The combination of a programmed payout plan with a deferred (longevity income) annuity starting benefits late in life (e.g. 80 or 85) provides for most retirees a substantial increase in welfare compared to a solution without using annuities at all.

Research shows also that regulatory requirements of mandatory annuitization could be very costly in terms of welfare-loss for the retiree.[13] Yet allowing the use of (longevity) income annuities in conjunction with a programed withdrawal plan as a *default payout solution* is beneficial for many workers.[14]

6) Summary and Policy recommendations

Life annuities and programmed payout plans are the most important solutions to convert accumulation assets into retirement income.

OSPG does not make any kind of recommendation in favour of a specific type of payout product. Hybrid solutions consisting of programmed drawdowns plans, life annuities and the possibility to take lumps sums generate the best retirement income security for most workers.

Lump sum payments can be useful to pay-off housing loans, to finance nursing home or to increase benefits from national program by delayed claiming.

OSPG recommends that product providers of PEPP should be allowed to implement default payout solutions. The combination of a programmed payout plan with a deferred (longevity income) annuity starting benefits late in life (e.g. 80 or 85) provides for most retirees a substantial increase in welfare compared to a solution without using annuities at all.

The possibility to increase annuity income by delaying benefits from the public pension program in combination with a programmed withdrawal plan and or lump sum (to finance consumption until claiming benefits) could be an attractive for many retirees. Yet the attractiveness depends mainly on the financial incentives for workers to delay public pension benefits.

[13] Horneff et al. 2015 reports that mandatory immediate full annuitization of retirement assets could reduce welfare by up to 54% of pension wealth.
[14] See Horneff et al. 2017.

List of References

Benartzi, S., Previtero, A. and Thaler, R. 2011. Annuitization puzzles. *The Journal of Economic Perspectives*, 25: 143-164.

Brown, J.R., A. Kapteyn, E. Luttmer, and O. S. Mitchell. 2017. Cognitive Constraints on Valuing Annuities. *Journal of the European Economic Association*, forthcoming

Finkelstein, A. and J. Poterba. 2004. Adverse Selection in Insurance Markets: Policyholder Evidence from the UK Annuity Market. *Journal of Political Economy* 112: 183-208.

Dus, I., R. Maurer, an O.S. Mitchell. 2005. Betting on Death and Capital Markets in Retirement: A Shortfall Risk Analysis of Life Annuities versus Phased Withdrawal Plans. *Financial Service Review* 14: 169-196.

Gale, W., J.M. Iwry, D.C. John, and L. Walker. 2008. Increasing Annuitization of 401(k) Plans with Automatic Trial Income. Retirement Security Project Report 2008-2. Brookings Institution.

Horneff, W., R. Maurer, O.M. Mitchell, and I. Dus. 2008. Following the Rules: Integrating Asset Allocation and Annuitization in Retirement Portfolios. *Insurance: Mathematics and Economics* 42: 396-408.

Horneff, W., R. Maurer, R. and M. Stamos. 2008. Life-cycle asset allocation with annuity markets. *Journal of Economic Dynamics and Control*, 32: 3590--3612.

Horneff, V., R. Maurer, O.S. Mitchell, R. Rogalla. 2015. Optimal Life Cycle Portfolio Choice with Variable Annuities Offering Liquidity and Investment Downside Protection. *Insurance: Mathematics and Economics* 63: 91-107.

Horneff, V., B. Kaschützke, R. Maurer, and R. Rogalla. 2015. Welfare Implications of Product Choice Regulation during the Payout Phase of Funded Pensions. *Journal of Pension Economics and Finance* 13: 272-296.

Horneff, V., R. Maurer, and O.S. Mitchell. 2017. Putting the Pension Back in 401(k) Plans: Optimal versus Default Longevity Income Annuities. NBER Working Paper 22717

Hubener, A., R. Maurer, and O.S. Mitchell. 2016. How Family Status and Social Security Claiming Options Shape Optimal Life Cycle Portfolios. *Review of Financial Studies* 29: 937-978.

Hubener, A., R. Maurer, and R. Rogalla. 2014. Optimal Portfolio Choice with Annuities and Life Insurance for Retired Couples. *Review of Finance* 18: 147-188.

Inkmann, J., P. Lopes, and A. Michaelides. 2011. How Deep is the Annuity Market Participation Puzzle? *Review of Financial Studies* 24: 279-319.

Iwry, J. M.. 2014. Excerpted Remarks of J. Mark Iwry, Senior Advisor to the Secretary of the Treasury and Deputy Assistant Secretary for Retirement and Health Policy. For the Insured Retirement Institute, July 1.

Maurer, R. and B. Somova. 2009. Rethinking Retirement Income Strategies - How Can We Secure Better Outcomes for Future Retirees? Brussels https://www.efama.org/Publications/Public/Long-Term_Savings_and_Pension_Steering_Committee/Maurer_Rapport.pdf

Maurer, R., O.S. Mitchell, R. Rogalla, and V. Kartashov. 2013. Lifecycle Portfolio Choice With Systematic Longevity Risk and Variable Investment-linked Deferred Annuities. *Journal of Risk and Insurance* 80: 649-676.

Maurer, R., R. Rogalla, and I. Siegelin. 2013. Participating Payout Life Annuities: Lessons from Germany. *ASTIN-Bulletin* 43: 159-197.

Mitchell, O.S. 2018. Enhancing risk management for an aging world. *Geneva Risk and Insurance Review* (forthcoming).

Peijnenburg, K., T. Nijman, and B. J.M. Werker. 2016a. The Annuity Puzzle Remains a Puzzle. *Journal of Economic Dynamics and Control* 70: 18-35.

Peijnenburg, K., T. Nijman, and B. J.M. Werker. 2016b. Health Cost Risk: A Potential Solution to the Annuity Puzzle. *Economic Journal* 127: 1598-1625.

Reichling, F. and K. Smetters. 2015. Optimal Annuitization with Stochastic Mortality and Correlated Medical Costs, *American Economic Review* 105: 3273-3320