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Effectiveness of early retirement disincentives: Individual welfare, distributional and fiscal implications

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ABSTRACT

In aging societies, information on how to reform pension systems is essential to policy makers. This study scrutinizes effects of early retirement disincentives on retirement behavior, individual welfare, pensions and public budget. We employ administrative pension data and a detailed model of the German tax and social security system to estimate a structural dynamic retirement model. We find that retirement behavior is strongly influenced by the level of disincentives. Further, disincentives come at the cost of increasing inequality and individual welfare losses. Still, net public returns are about three times as high as monetarized individual welfare losses. Our estimates also suggest that similar levels of net public returns, if achieved by indiscriminating pension cuts, are associated with individual welfare losses that are more than twice as high.

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1. Introduction

Aging populations exert increasing financial pressure on pension systems around the globe. Therefore, this central feature of modern welfare states is, and has been, subject to many fundamental reforms. Facing similar problems, many governments opted for a variety of pension reforms (e.g. Gruber and Wise, 2007). Typical examples include increasing eligibility ages (Mastrobuoni, 2009; Staubli and Zweimüller, 2013; Ataly and Barret, 2015), pension level adjustments (Haan and Prowse, 2014), and pension system restructuring (Laun and Wallenius, 2015). Apart from austerity debates fueled by the Great Recession, the imminent retirement of baby-boomer cohorts calls for fundamental reforms of old age security in most welfare states in the near future. Thus, evaluations on different pension reforms are highly relevant when discussing future pension policy design.

The German case is an excellent example. Until the late 1970s, the German pay-as-you-go (PAYG) system was expanded. It became one of the world's most generous programs, both in terms of replacement rates and early retirement provisions. Population aging, German reunification, and high unemployment rates since the late 1970s, however, caused a rising fiscal imbalance. Since the early 1990s, the eligibility age has been increased, replacement rates have been lowered, and subsidies stimulating private old-age provisions have been introduced (e.g. Bönke et al., 2010). These reforms have direct implications for the financial situation of Germany's current and future pensioners. They alter the

legal framework under which individual labor supply, retirement, savings, and fertility decisions are made (e.g. Börsch-Supan, 2000; Blundell et al., 2002). The effects are vast as statutory pensions account for about 85% of the average household disposable income for the elderly population (Börsch-Supan and Reil-Held, 2001).

This study scrutinizes permanent pension deductions that increase with the distance between actual and normal retirement age and thus penalize early retirement. In short, the deductions disincentivize early retirement in a very particular way and are labeled as "disincentives for early retirement" in the following. The disincentives give individuals the choice to retire within a certain period and thus influence their level of actuarial adjustments. Since individuals are left with a (limited) choice, disincentives differ from indiscriminating pension cuts or an increase in the legal eligibility age for early retirement. Further, from a theoretical perspective, Diamond and Mirrless (1978) find similar reforms to reduce moral hazard problems in the pension scheme.

We analyze to what extent the disincentives are able to steer retirement behavior and present indication for distributional, individual welfare and fiscal implications. To provide comprehensive evidence, we model a broad range of disincentive levels. The range includes pension deductions of 0.3% per month of early retirement, which were actually introduced through a major pension reform in Germany in 1992 (Hanel, 2010; Lüthen, 2016). Typical for pension reforms, the institutional changes were phased in, impacting birth cohorts to different degrees. Thus, the evaluation is not trivial due to the lack of intra-cohort

variation. We incorporate comprehensive dynamic incentives of labor market participation and retirement behavior by estimating a structural dynamic retirement model (e.g. Rust and Phelan, 1997; Gustman and Steinmeier, 2015). The model assumes forward-looking agents who consider option values of possible retirement decisions and recognize the impact of their choices on the accumulation of pension wealth and future consumption possibilities. Further, we account for the incentives of wealth on retirement behavior by considering savings and wealth accumulation over the life-cycle. For an accurate estimation, we model the German tax and social security system in great detail and utilize high quality German administrative pension data. This enables us to disentangle other changes in the tax and pension system from the introduction of the disincentives. These induce cohort specific dynamic incentives, which help identifying the structural parameters of our retirement model (e.g. Manoli et al., 2014) as individuals account for the entire future stream of pension benefits (Coile and Gruber, 2007). Based on the estimated parameters, we simulate a variety of economic outcomes for a number of counterfactual scenarios with changing levels of retirement disincentives.

For working males and the deduction level of the 1992 reform, we find a retirement entry delay of 4.1 months. Our model further shows that increasing the disincentives causes further delay: a tripling of the 1992-deduction level encourages most individuals to abandon early retirement completely. We also find disincentives to increase inequality in expected earnings and pensions, to cause individual welfare losses, and to lead to positive net public returns. All three outcomes increase with the disincentive level, although with diminishing marginal effects. The welfare losses are heterogeneously spread across the earnings distribution and greatest for medium income earners. Still, at each disincentive level, the net public returns are about five times as high as monetarized individual welfare losses. Further, depending on disincentive level, net public returns account for up to 16% of total pension expenditure per individual. It follows that early retirement disincentives are able to substantially increase the pension system's financial stability. When comparing disincentives to indiscriminating pension cuts, we find that at similar levels of net public returns, pension cuts result in individual welfare losses that are more than twice as high.

The remainder of the article is structured as follows. The next section describes the institutional setting in Germany and the data. Section 3 illustrates the conceptual framework. The core of the paper is Section 4, where we present our estimation results and conduct a policy analysis. Section 5 concludes.

2. Institutional setting and data

2.1. German pension scheme

The German statutory pension system is a pay-as-you-go system of Bismarckian variety. The great majority of employees is mandatorily insured and contributes a percentage of their gross earnings up to a contribution ceiling. For their contributions, the insurants acquire pension entitlements in form of earnings (or remuneration) points. The number of points is based on the ratio of individual wage to average wage. An individual earns exactly one point (per year) if its yearly wage corresponds to the average yearly wage. Employees accumulate earnings points over their working life until retirement. At retirement, the individual pension level is calculated on the basis of these accumulated earnings points (EP). Thus, the pension level mirrors the length of the working life and the average position in the earnings distribution. The *pension formula* (§ 64, Sozialgesetzbuch VI) provides the details on how to calculate the monthly pension $p_{n,t}$ for individual n:[1]

$$p_{n,t} = A_t \cdot RA_n \cdot Z_n \cdot EP_n$$

where A_t corresponds to the *pension value*. Basically, the pension value is the amount of money that is multiplied with the sum of earnings points EP to calculate the monthly pension. The value is adjusted every calendar year (for an overview see Table 1 below). RA represents the pension type, which is 1 for old-age pensions. The factor Z is introduced by the 1992 reform (see Table A3) and accounts for the actual retirement age and corresponding early retirement deductions: $Z = (1 - deduction)$.

The pension scheme offers various retirement possibilities depending on the retiree's individual situation. We focus on agents who have a choice between continuing to work and retirement, therefore abstracting from previously unemployed or disabled individuals. The individuals considered are able to claim the *normal old-age pension* at age 65 or the *pension for long-term insured* after age 63, which is conditioned on having spent at least 35 years in the pension system.[2] Retiring before age 65 is considered as early retirement. Women are excluded due to their diverging pension prospects and the low number of cases when conditioning on similar early retirement eligibility. In sum, we concentrate on men with a strong labor market attachment who are eligible to retire at age 63, even if they choose to work longer.

2.2. Introduction of early retirement disincentives

In 1992, Germany introduced a major pension reform to equalize different retirement ages monetarily. The aim was to balance the pension wealth[3] of early retirees and normal retirees. However, the budget relief was also needed to ensure financial stability (e.g. Schmähl, 2011). Since early retirees have a prolonged benefit period, reducing their pension wealth simultaneously serves both goals. The reform implemented permanent pension deductions of 0.3% per month of early retirement. The deduction level results from the distance (in month times 0.3%) between the actual retirement age and normal retirement age of 65.[4] For instance, retirement at age 64.5 implies 6 month of early retirement and therefore a deduction of $6 \cdot 0.3\% = 1.8\%$ from the monthly pension for the rest of the retirees' life. The deductions were gradually phased in for the 1937 and 1938 cohorts and fully affect those born thereafter (see Appendix A.2 for details). Still, all cohorts were allowed to retire at 63. As these deductions are a disincentive to early retirement, we use the terms "disincentive" and "deduction" synonymously throughout the paper.

2.3. Data

To calculate pension entitlements as described above, the pension insurance collects information on all contributors' earnings biographies. The data we use, the Insurance Account Sample (*Versicherungskontenstichprobe*, VSKT), is a stratified random sample of these records. Each wave contains information on individuals aged between 30 and 67 in the reference year.[5] From ages 14 through 65, the VSKT provides a monthly history of employment, unemployment, sickness, and earnings points. The latter are used to compute monthly gross earnings and

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[1] Appendix A.1 provides an overview on key institutional figures. For further details on the calculation of pensions in Germany see Lüthen (2016).

[2] We disregard individuals claiming old-age pensions for previously unemployed or disabled persons. These can be claimed at age 60 under different eligibility criteria like time spend in the pension system. These "waiting periods" consist of periods of contributions, wage replacement benefits (unemployment, sick-pay, invalidity), child-raising and times of education. A detailed overview on eligibility and pension types is provided in Lüthen (2016).

[3] Pension wealth is defined as the present discounted value of the future expected pension benefits in 2010 real values at age 63. For the calculations, we assume an annual real interest rate of 2% (consistent with the model assumptions).

[4] The reform also introduces a pension bonus of 0.5% per month retiring after 65, but this affects only a negligible amount of individuals (about 0.1% of our sample). Due to wide spread collective bargaining for West German men of the cohorts considered (Antonczyk et al., 2010), most contracts force workers to retire at 65. Official statistics reveal that about 1.5% of all West German men retire after age 65 (see Table B2).

[5] We use the scientific use files for on-site-use (waves SUFVSKT2002 to SUFVSKT2012), provided to researchers by the Data Research Center of the German Federal Pension Insurance. We use all 10 waves in our analysis (see Appendix B.1 for further information on data assembly and sample selection).