The Effect of Pension Subsidies on Retirement Timing of Older Women: Evidence from a Regression Kink Design

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Motivation

Retirement income adequacy is an important concern for vulnerable groups, such as female workers, who are at much greater risk of old-age poverty than older men. In Germany, the pension benefit of an average woman is only about half that of an average man. This issue is of particular importance during times of reducing public pension replacement rates due to the aging population. Furthermore, low income workers are disproportionately affected by the recent pension reforms that penalize claiming pension early. One way to ensure workers have adequate incomes in old age is via income support programs. However, policymakers face an important trade-off: how to provide income support to elderly people without hurting incentives to work. Therefore, it is important to understand the extent to which additional pension benefits affect low-income workers' retirement timing.

However, this question is understudied. It is partly due to the difficulty of isolating exogenous variations in the parameters of the public pension system, including benefit levels, pension eligibility age, penalties for claiming pension early, etc. In this paper, I explore a specific feature of the German pension system, which allows me to identify the effect of additional pension benefits on retirement decisions in an environment in which the statutory pension eligibility age is unchanged.

Empirical Setting

In this paper, I explore a pension subsidy program for low pay workers in Germany, implemented in 1992. I exploit the very sharp kink in the schedule of benefits as a function of predetermined past contributions to implement a regression kink design (RKD). This empirical design allows me to identify the causal effect of additional pension benefits on retirement decisions. In detail, I use administrative data from the Research Data Center of the German Pension Insurance to study a pension subsidy program for low pay workers (Mindestentgeltpunkte bei geringem Arbeitsentgelt, SGB VI 262 ) introduced by the 1992 Pension Reform Act in Germany. Several features of this pension subsidy program make it a good instrument.

Figure 1(a) shows the policy schedule. First, it provides a source of exogenous variation in pension benefits. This is because the subsidy size is predetermined by contributions before 1992 and past relative wage position. It provides an exogenous variation in subsidy sizes without manipulation behaviors. Second, the subsidy size has a kinked relationship with average wage income before 1992. In other words, the slope of the pension subsidy changes discontinuously at a kink point. This enables me to implement the regression kink design by estimating the induced slope change in the outcome variables. Lastly, the change of pension benefits does not associate with a change in statutory retirement age. In other words, statutory pension eligibility age and other parameters of the pension system remain unchanged around the kink. This allows me to isolate the impact of changes in pension benefits.

1 See Section 2.3 in the paper for details on the policy schedule of the pension subsidy program.
Main Contributions

This paper makes three main contributions. First, it complements and extends studies on the magnitude of the causal impacts of additional pension benefits on retirement decisions. In particular, it provides a clear and transparent setting by exploring the pension subsidy program in Germany. This approach has never been used to study the effect of additional pension benefits, to the best of my knowledge. Second, it provides a unique application of the RKD. Compared to studies such as maximum UI benefit schedule, the slope change of the subsidy program is more stark. In other words, the slope change creates a more acute angle than other applications of RKD. Lastly, this paper complements other efforts to elicit evidence on the labor supply of a particular population group - low-income older women. This group is of particular interest because women are more exposed to old-age poverty than men. Moreover, compared to men, women’s labor supply elasticities are larger and women on average live longer. Therefore, pension subsidy programs targeting at older women are more likely to have a larger financial consequence.

Institutional Background and Dataset

In Germany, pension benefit level is closely tied to employment. The pension benefits increase with contribution year and relative wage income. For the female workers in my sample, the earliest age they can retire is age 60 via the old age pension for women. The pension subsidy to low pay workers (Mindestentgeltspunkte bei geringem Arbeitsentgelt) essentially provides a built-in subsidy that offers additional benefits to workers with low lifetime contribution. It was introduced by the 1992 Pension Reform Act in Germany. Along with reforms aiming at prolonging working life and raising the statutory retirement age, the primary policy consideration of this subsidy program is to ensure adequate old-age income for low wage workers. According to the Research Data Centre of the German Pension Insurance, in December 2015, 14% of old
age pensioners - 4% of all male pensioners and 26% of all female pensioners - are recipients of this subsidy program. The total payments for this subsidy program were approximately 3 billion euros in 2015. The target group of the subsidy constitutes workers with a relatively long work history and relative low wage income.

The dataset employed in this paper is the Insurance Account Sample of the German Federal Pension Register. The main dataset is assembled from 11 years of cross-sectional from 2002, 2004 to 2014. Each cross-sectional dataset contains 5% of all individuals with an active public pension insurance account, who were between the ages of 30 and 67 at time of data collection. The pension insurance account data includes time-invariant information of the insured person at the time of data collection, such as accumulative pension points, gender, birth month, number of children and age claim pension. It also contains monthly biographical information from age 14 up to the data collection year for each insured person, such as social employment status that are relevant for pension benefit calculation and pension points. However, information on years of education and occupation are not accurately measured. Additionally, it is not possible to observe marital status and link spouses in the data.

The baseline sample consists of female subsidy recipients in West Germany who are at least 63 years old at the sample year, have never worked in East Germany, and are not civil servants and self-employed. I further restrict the sample to workers who are older than cohort 1952 and have at least 15 years of pension contribution. It is to ensure that all individuals in the sample are eligible to retire at age 60 via old age pension for women. The final sample contains 6,021 individuals, covering cohorts from 1935 to 1951. It amounts to 3.7 million person-month observations.

Main Results

I focus on three main outcome variables: age of claiming pension, age of exiting employment and labor supply behaviors during the bridge years. Figure 2 shows the relationships between the assignment variable and age of claiming pension and hazard rate to claim a pension at age 60 around the kink. There is a clear change in the slope of age of claiming pension at the kink. The slope becomes flattered at the left of the kink. The estimation suggests that 100 euros additional monthly pension benefits induce female recipients to claim old age pension earlier by around ten months and the hazard rate to claim a pension at age 60 increases by 17%. I also investigate the impact on age of exiting employment. I define age exit employment as the age of the last job, including both regular jobs that contribute to the pension system and marginal employment. The estimated impacts on the age of exiting employment have the same magnitude but is noisy. 100 euros additional monthly pension benefits increase the hazard rate to exit employment at age 60 by 14%.
Because it is common for workers not to transition directly from full-time employment to retirement in Germany, I also investigate the impacts of additional pension benefits on workers’ activities during those bridge years. On average, 43% of the female recipients enter to pension claiming via regular employment; 5% of them enter via marginal employment; 30% of them enter via unemployment insurance. I find that the effects of pension subsidy on age of last regular jobs is noisy, but with a magnitude close to zero. More pension incomes reduce low-income female workers’ time spent in marginal employment during the bridge years. More pension incomes also increase recipients’ probability to use UI as a pathway to retirement and prolong their time spend in UI during the bridge years.

Policy Implications

The main policy implications of the findings are the following: First, the primary objective of this subsidy program was to provide additional income support to older workers at retirement. However, this program is being phased out gradually. Low income workers started contribution after 1992 are not eligible for this pension subsidy program. From a policy perspective, It would be interesting to know what the retirement age of female workers would be if the subsidy amount stays at a high level. A simple extrapolation exercise suggests that the phasing out of this subsidy program in the past decades can account for one third of the increasing trend in age of claim pension for female population in West Germany. Second, Pension subsidy program for low income female workers, implemented retrospectively, is relatively less distortionary than other social welfare programs. While additional pension benefits induce low-income female workers to claim pension earlier, it has little impact on the probability to exit regular jobs, which are jobs with mandatory social security contribution obligations. Third, a back-of-the-envelope calculation suggests that the ratio of the behavioral cost to the mechanical cost of this subsidy program is 0.3. It implies that in order to increase the lifetime income of the low-income pensioners by 1 euro, 1.3 euros have to be raised by the government, either via taxes or pension contributions. This ratio is smaller than that of other anti-poverty programs, such as Earned Income Tax Credit and UI benefit duration extensions.