



# Labour supply effects of early retirement provision<sup>☆</sup>



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## HIGHLIGHTS

- I estimate labour supply effects of an Early Retirement (ER) programme.
- I characterise paths towards retirement and take account of benefit substitution.
- 50% of ER pensioners would be working at the age of 66.5 had ER not been an option.
- 70% would be working at the age of 63 had the age limit been 64 rather than 62.
- Most of the benefit substitution is from disability insurance benefits.

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## ABSTRACT

The main objective of this paper is to estimate labour supply effects of an early retirement programme in Norway. Detailed administrative data are employed in order to characterise full paths towards retirement and account for substitution from other exit routes, such as unemployment and disability insurance. By exploiting a reduction in the lower age limit for early retirement as a source of exogenous variation in individual eligibility I obtain robust difference-in-differences and triple differences estimates indicating that more than two out of three pensioners would still be working at the age of 63 had the age limit been 64 rather than 62. Hence, although successful in creating a more dignified exit route for early leavers, the programme also generated substantial costs in terms of inducing others to retire earlier.

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## 1. Introduction

Over the last decades, the fiscal sustainability of public pension systems in most industrialised countries has been put under heavy pressure due to a combination of increased longevity and lower age at retirement. Although the trend towards early retirement now

appears to have come to an end, life expectancy is still increasing, and more so than average age at retirement. Encouraging longer working lives is therefore one of the main pillars of recent policy advice from the OECD (see e.g. OECD (2011)), and reforms aimed at increasing the age at retirement are looming in most Western countries. With this need for reforms, the need for solid knowledge about the labour supply responses to changes in the incentive structures of retirement schemes is intensified.

Many countries have programmes or institutions allowing different groups of workers to permanently retire prior to the normal retirement age. Public pension systems often operate with both an early retirement age and a normal retirement age, and unemployment and disability insurance programmes sometimes provide preferential treatment for elderly workers. While such programmes are effective in insuring workers against productivity shocks occurring at late stages of the career, the fact that shocks to individual productivity are unverifiable to the insurer might create moral hazard problems and efficiency losses. The success of early retirement programmes therefore hinges on the magnitude of induced retirement effects, or the extent to which workers

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are induced to retire early even if they are not hit by negative productivity shocks.

When evaluating the effects of programmes connected to the labour market, the main challenge lies in the non-observability of counterfactual outcomes, or the simple fact that we do not know how workers would have behaved had the programme not been in operation. In this particular setting, the aim is to estimate *net* induced retirement effects of an early retirement programme, taking account of any substitution from other informal exit routes, such as disability or unemployment, that are known to play roles similar to that of early retirement programmes in many countries (see e.g. Gruber and Wise (1999)). To obtain estimates with causal interpretations I will be exploiting two potentially exogenous sources of variation in individual eligibility for early retirement in order to define treatment and comparison group workers, and take the observed changes in outcomes of comparison group workers as an approximation to the unobserved counterfactual changes in outcomes of treatment group workers.

The early retirement programme AFP (hereafter simply referred to as ER) was phased in during the nineties in terms of step-wise reductions of the lower age limit, from 66 to 62. Workers in ER-affiliated firms who meet a set of individual labour market criteria may start receiving ER pension benefits from the month after they reach the eligible age. The ER scheme is rather generous, as the benefits replace about 70% of after-tax earnings, on average, and there are no actuarial adjustments for early or late withdrawal. As benefits are earnings tested there are only very limited gains from combining receipt of pension benefits and continued work. The reductions in the lower age limit for ER therefore represent significant changes in the incentives to retire, or in the disincentives to continue working, affecting some but not all workers.

By comparing changes over time in labour market outcomes for workers in ER-affiliated firms faced with different lower age limits, I obtain difference-in-differences estimates which may be given a causal interpretation provided that the changes in outcomes are affected by year of birth only through the lower age limit for ER. In order to adjust for possible biases arising from different cohorts of workers being observed under different labour market conditions, I make use of changes in outcomes of workers in non-affiliated firms to estimate triple difference average treatment effects. The two sets of estimates are generally of similar magnitudes, and indicate that more than two out of three ER pensioners would still be working at age 63 had the lower age limit been 64 rather than 62. At this age there is only relatively modest substitution from other exit routes.<sup>1</sup> However, while the differences in work and retirement propensities diminish from age 64, when workers in both cohorts have access to ER, the results indicate that most of the difference in retirement propensities that remains at age 66.5 can be attributed to benefit substitution. Another set of estimates, obtained by comparing changes in outcomes of ER-affiliated workers with those of non-affiliated workers within a single cohort, draws a similar picture: Benefit substitution effects are initially rather modest, but increasing in relative magnitudes as the workers are ageing. Disability insurance stands out as the single most important alternative exit route.

While there exists a rather extensive literature addressing the effects of financial incentives on the timing of retirement,<sup>2</sup> the literature on labour supply effects of ER provision is relatively scarce and provides mixed evidence. Baker and Benjamin (1999) find that ER reforms in Canada led to a marked increase in pension receipt, but had little effect on labour supply. On the other hand, both Staubli and Zweimüller (2012) and Manoli and Weber (2012) document positive and non-negligible labour supply effects of increased early

retirement age in Austria. Staubli and Zweimüller (2012) report that between 30 and 40% of all workers who retire later do prolong their employment, but there is also substantial substitution to unemployment insurance benefits.<sup>3</sup> Earlier studies of ER provision in Norway have documented significant labour supply effects, without providing definitive guidance on the nature and magnitude of benefit substitution. Examples include Hernæs et al. (2000), Røed and Haugen (2003) and Bratberg et al. (2004), of which only the last two attempt to estimate benefit substitution effects. Røed and Haugen (2003) conclude that the ER programme does not substitute for disability pensions and long-term unemployment, while Bratberg et al. (2004) find that substitution from other exit routes is quite substantial. What the two papers have in common, however, is that identification is based exclusively on retirement incentives for workers in ER-affiliated firms being different from those of workers in non-affiliated firms. Hence, one might suspect that parts of the discrepancies are due to selection biases arising from non-random selection of workers into ER-affiliated firms.

This contribution adds to the existing literature in the following ways: First, a clear distinction between a voluntary ER programme and other quasi-voluntary exit routes is possible due to detailed register data covering the full population of Norway. Such a distinction is essential for obtaining a better understanding of the relative importance of different productivity shocks and retirement incentives in determining elderly workers' labour supply. Second, the combination of rich register data and an exogenous policy change enables identification of policy relevant effects of early retirement provision that are not readily available in other settings. The most important general insights from the paper may be summarised in two points. First, the sizable labour supply effects of the ER programme clearly suggest that economic incentives have a central role in determining the timing of retirement. On the other hand, the non-negligible benefit substitution effects indicate that mechanisms other than economic incentives are also playing important roles in pushing or pulling elderly workers out of the labour market.<sup>4</sup> The fact that the lion's share of the substitution is from disability pension benefits suggests that the most important shocks against which elderly workers need insurance are health related.

The paper proceeds as follows: Section 2 describes the institutional setting, the data and the constructed samples of elderly workers. Section 3 discusses identification, spells out the main econometric framework and employs this to investigate the induced retirement effects of reducing the lower age limit from 64 to 62 on labour market outcomes at different ages. In Section 3, the age pattern of benefit substitution effects is investigated further by comparing changes in outcomes for ER-affiliated workers with those of non-affiliated workers. Section 5 concludes.

## 2. Institutional setting and data

### 2.1. Institutional setting

AFP (AvtaleFestet Pensjonsordning) is a subsidised voluntary early retirement scheme that was introduced January 1 1989 as a result of the central tariff negotiations in 1988. The scheme started out with a lower age limit at 66 years, which was reduced to 65 from January 1 1990, to 64 from October 1 1993, to 63 from October 1 1997, and finally to 62 years from March 1 1998. In the public pension scheme the retirement age is 67, and prior to 1989 there were no purely

<sup>1</sup> In the following, *benefit substitution* (or exit route substitution) is to be understood as the extent to which ER substitutes for other exit routes such as disability or unemployment insurance benefits.

<sup>2</sup> Some recent examples include Coile and Gruber (2007), Liebman et al. (2009) and Mastrobuoni (2009).

<sup>3</sup> Examples of other studies focusing on benefit substitution effects include Karlström et al. (2008), Duggan et al. (2007) and Inderbitzin et al. (2012).

<sup>4</sup> Workers exiting otherwise than via the voluntary ER programme may of course also be acting on economic incentives, but individual choice is clearly limited by medical screening being part of the requirements for sickness leave and disability insurance benefits, and by job loss being a prerequisite for receipt of unemployment benefits.

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