

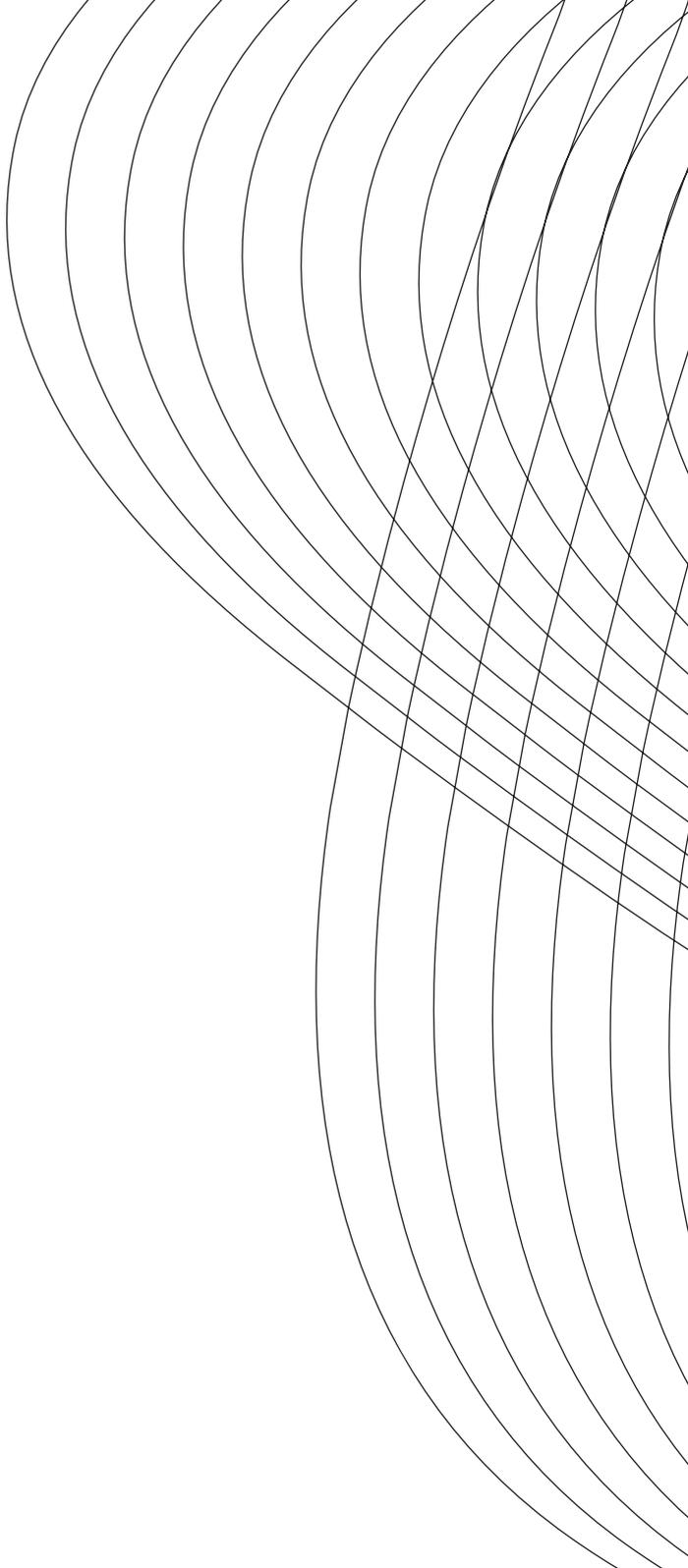


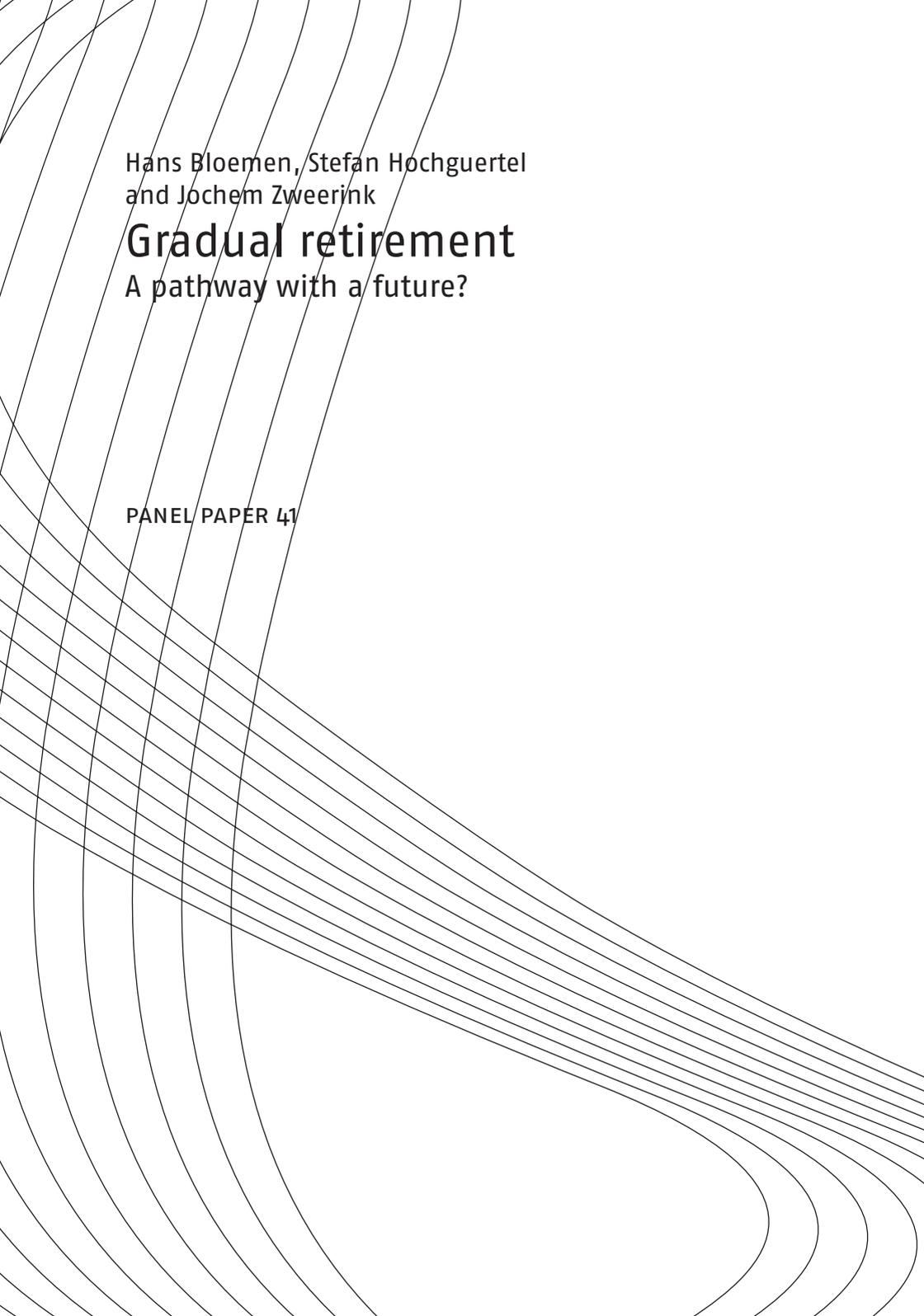
Network for Studies on Pensions, Aging and Retirement

Netspar PANEL PAPERS

*Hans Bloemen, Stefan Hochguertel
and Jochem Zweerink*

Gradual retirement A pathway with a future?



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Hans Bloemen, Stefan Hochguertel
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Gradual retirement

A pathway with a future?

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PREFACE

Netspar stimulates debate and fundamental research in the field of pensions, aging and retirement. The aging of the population is front-page news, as many baby boomers are now moving into retirement. More generally, people live longer and in better health while at the same time families choose to have fewer children. Although the aging of the population often gets negative attention, with bleak pictures painted of the doubling of the ratio of the number of people aged 65 and older to the number of the working population during the next decades, it must, at the same time, be a boon to society that so many people are living longer and healthier lives. Can the falling number of working young afford to pay the pensions for a growing number of pensioners? Do people have to work a longer working week and postpone retirement? Or should the pensions be cut or the premiums paid by the working population be raised to afford social security for a growing group of pensioners? Should people be encouraged to take more responsibility for their own pension? What is the changing role of employers associations and trade unions in the organization of pensions? Can and are people prepared to undertake investment for their own pension, or are they happy to leave this to the pension funds? Who takes responsibility for the pension funds? How can a transparent and level playing field for pension funds and insurance companies be ensured? How should an acceptable trade-off be struck between social goals such as solidarity between young and old, or rich and poor, and individual freedom? But most important of all: how can the

benefits of living longer and healthier be harnessed for a happier and more prosperous society?

The Netspar Panel Papers aim to meet the demand for understanding the ever-expanding academic literature on the consequences of aging populations. They also aim to help give a better scientific underpinning of policy advice. They attempt to provide a survey of the latest and most relevant research, try to explain this in a non-technical manner and outline the implications for policy questions faced by Netspar's partners. Let there be no mistake. In many ways, formulating such a position paper is a tougher task than writing an academic paper or an op-ed piece. The authors have benefitted from the comments of the Editorial Board on various drafts and also from the discussions during the presentation of their paper at a Netspar Panel Meeting.

I hope the result helps reaching Netspar's aim to stimulate social innovation in addressing the challenges and opportunities raised by aging in an efficient and equitable manner and in an international setting.

Roel Beetsma

Chairman of the Netspar Editorial Board

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GRADUAL RETIREMENT

Policy recommendations

- Gradual retirement can be most effectively stimulated for workers who have reached the normal retirement age. For this group of workers, the probability that gradual retirement drives workers partly from the labor market is small, although the potential for a positive effect on hours worked is large. Retirement at an age past the normal retirement age should be permitted to allow effective promotion of gradual retirement beyond that age.
- Workers and employers could be made more aware of the benefits of gradual retirement. In the minds of both workers and employers, retirement is still a binary choice. If both groups would be more aware of the possibility and benefits of gradual retirement, they may consider retiring gradually as a serious alternative to continuing working full-time and full retirement.
- Gradual retirement can best be facilitated and promoted in all industries. Because job mobility across industries is low, gradual retirement will only become more widespread if all industries have gradual retirement opportunities.
- Relatively low wages during gradual retirement and high labor costs of older workers are barriers for gradual retirement, for workers and employers, respectively. Introducing a tax bonus for older workers would increase the net wage and decrease labor costs. The tax bonus would provide workers an incentive to retire gradually rather than fully and would thus

postpone full retirement. The tax bonus would at the same time provide employers an incentive to offer gradual retirement opportunities. For the government the additional tax revenues of an extended working life outweigh the costs of the tax bonus (compared to the situation where workers leave the labor market early).

- The barrier of relatively low wages during gradual retirement could also be lowered in another way. Wage profiles of career jobs could be made flatter in such a way that the career job wage at the end of a worker's career would be lower than it currently is. If the wages of older career job workers were lower, the difference between career job wages and bridge job wages would be smaller. This would improve the attractiveness of especially partial retirement for workers. Wage profiles should not be lowered too much, because then the benefits of upward sloping wage profiles for employers would be lost. The benefits to employers of wage profiles sloping upward include, for instance, that it provides workers an incentive to stay in the job.

Abstract

Gradual retirement involves gradual transition from career job employment to retirement. As workers may prefer full retirement over full-time work and gradual retirement over full retirement, gradual retirement has the potential to increase labor force participation of older workers. This makes it a potentially important pathway for labor force withdrawals.

Using Dutch administrative data, we find that the prevalence of gradual retirement has been modest so far. We investigate why gradual retirement is not more frequent than it currently is. We identify various factors that restrict gradual retirement and propose policy measures that would give workers the incentive to retire gradually and employers the incentive to facilitate gradual retirement.

1. Introduction

The population of developed countries is ageing rapidly, leading to an increase in dependency ratios. This increase is a potential risk for the sustainability of pension systems, especially for those financed on a pay-as-you-go (PAYG) basis. One way in which further increase in dependency ratios can be limited is to induce workers to retire later. Gradual retirement is considered to be an instrument that can be used to induce workers to retire later. Contrary to full retirement at once, gradual retirement involves a gradual withdrawal from the labor market. It can be effected through partial retirement, i.e. switching from the career job to a less demanding and usually lower paid bridge job later in working life, or through phased retirement, i.e. staying in the career job but reducing the number of hours worked in the later years of working life. Gradual retirement can serve as an instrument to induce the later retirement of older workers who do not want to work full-time anymore, but who would like to continue to work on a part-time basis.

Gradual retirement is not very common in OECD countries. This paper studies the current state of gradual retirement in the Netherlands and considers the incentives for workers to retire gradually and for employers to facilitate gradual retirement. We analyze whether gradual retirement has the potential to become popular and under what conditions its prevalence might be increased. Related literature includes, among others, Kim and DeVaney (2005), Cahill et al. (2006), Thomson (2007), Kantarci and Van Soest (2008) and Euwals et al. (2009).

This paper contributes in three ways. First, it takes a close look at gradual retirement in the Netherlands using administrative data that cover the entire Dutch population. Second, it provides

industry-specific analysis of gradual retirement, in which we distinguish twelve different industries. Third, this paper analyses whether and how gradual retirement in the Netherlands can be promoted.

We identify sufficient demand for gradual retirement on the part of workers, sufficient willingness to facilitate gradual retirement on the part of employers and pension funds, and sufficient institutional facilitation of gradual retirement as requirements for making gradual retirement popular. We provide policy recommendations that are aimed at promoting each of these requirements.

Section 2 reviews the literature on gradual retirement. Section 3 describes gradual retirement in the Netherlands. Section 4 concludes and provides policy recommendations.

2. Literature review

2.1 Concepts

Gradual retirement is the family name for phased and partial retirement, indicating gradual withdrawal from the labor force. The concepts of phased and partial retirement do not have established definitions and are not consistently used in the literature. We mainly use the same definitions as used by Ruhm (1990), Scott (2004), Kantarci and Van Soest (2008), and others. Kantarci and Van Soest (2008) provide a detailed discussion on the measurement of the different concepts. Phased and partial retirement involve the stage between working in the career job (a job with more than ten years of tenure) and full retirement. We define phased retirement as staying in the career job at the same employer but working fewer hours. We define partial retirement as the transition from the career job to a usually less demanding bridge job or to self-employment. Less demanding as used here refers to work load or number of hours worked. Transitioning from the career job to a bridge job may involve a change of industry or a change of occupation (Ruhm, 1990). Part-time retirement is also relevant in the context of gradual retirement. Part-time retirement is defined as reducing the number of working hours and earning part-time pension benefits. Concepts such as flexible retirement, early retirement, and unretirement are related to full retirement. Flexible retirement is full retirement where the age of complete withdrawal from the labor force can be chosen by the worker. Early retirement is full retirement at an earlier age than the normal retirement age. Unretirement is re-joining the labor force after having retired fully. This paper focuses on gradual retirement.

2.2 Incidence of gradual retirement

Gradual retirement is prevalent in the United States, and is becoming more frequent in Europe. The incidence of gradual retirement in the United States has been reported in several studies based on data from the Health and Retirement Survey (HRS) for workers aged 51–61 in 1992. Scott (2004) reports for data from the first five waves (1992–2000) that 4.48% of full-time career workers entered phased retirement within two years and that 9.05% entered partial retirement within two years. This is an interesting observation, as it suggests that partial retirement may be more attractive or feasible from the perspective of workers and/or employers than phased retirement. Cahill et al. (2006) report for the first five waves of HRS data for respondents who worked initially that up to twice as many respondents retired partially than retired fully. Kantarci and Van Soest (2008) explore partial retirement in Europe and the United States, using data from the European Community Household Panel (ECHP) and the Panel Study of Income Dynamics (PSID) for workers aged 51–65 for the 1994–2000 period. They show that the prevalence of gradual retirement varied largely across European countries. They do not find clear time trends in gradual retirement in Europe for the 1994–2000 period. The authors find that the two-year transition rate from full-time to part-time work was highest in the Netherlands (9.7%), followed by Ireland (8.9%) and Greece (8.3%). The United States had a relatively modest two-year transition rate from full-time to part-time (6.5%). This is due to gradual retirement in the United States involving mainly workers in their mid-60s and older. In the United States, the transition rate from full-time work to full-time work (85.4%) was much higher than in the Netherlands (74.9%), Ireland (78.5%), and Greece (70.1%). Austria

and Spain had the lowest two-year transition rates from full to part-time retirement, with 2.2% and 3.7% respectively.

2.3 Gradual retirement and hours worked

The relation between gradual retirement and hours worked has been studied extensively in the literature. Ghent et al. (2001) study the impact of the introduction of a phased retirement program on retirement behavior and hours worked at each of the 15 campuses of the University of North Carolina. They find descriptive evidence for the hypothesis that workers who retired part-time were mainly people who would have continued to work full-time if they had not had the phased retirement option. The introduction of the phased retirement program thus has a negative impact on hours worked. Ilmakunnas and Ilmakunnas (2008) study the impact of eligibility for part-time pensions on expected retirement behavior. They use the increase in the eligibility age for part-time pensions for several birth cohorts as the source of exogenous variation in retirement expectations. Using Finnish survey data on the aspirations of workers regarding their retirement behavior, the authors find that eligibility for partial retirement does not increase the probability of preferring to work longer. Wadensjö (2006) comes to a different conclusion. He studies the impact of gradual abolition of a part-time retirement arrangement in Sweden on retirement behavior and hours worked. His descriptive analysis shows that the abolition of the part-time retirement arrangement mainly prevented part-time retirement among workers who were planning to retire fully. The author concludes that the presence of the part-time retirement arrangement has a positive effect on hours worked. Vroom et al. (2012) estimate a transition model and perform microsimulations using Dutch administrative data for the 2005–2008 period. They use the policy change that obliged

pension funds to offer part-time retirement opportunities in 2006 as a source of exogenous variation in gradual retirement rates. Their results indicate that gradual retirement has a negative effect on hours worked.

Van Soest et al. (2007) estimate phased and full retirement preferences for a sample of Dutch workers and former workers using a stated-preferences approach. They asked survey respondents to rate hypothetical retirement scenarios. Subsequently, they simulated the phased and full retirement choice probabilities using the elicited preferences on phased and full retirement and the information provided on gradual retirement opportunities. Their simulations illustrate that offering phased retirement has the potential of increasing labor supply substantially. Kantarci and Van Soest (2008) likewise conduct a stated-preferences approach. They use a similar group of respondents as Van Soest et al. (2007) but obtain a higher response rate, propose different retirement scenarios and conduct their survey in a later year. They find that policy interventions may influence retirement behavior. Fouarge et al. (2012) study the effect of introducing flexibilities in the pension system on hours worked. They use survey data on retirement expectations of workers who accumulate pensions at a large Dutch pension fund. They find that introducing flexibility into the pension system, e.g. by offering part-time retirement opportunities, may induce workers to postpone retirement. The authors also find that part-time retirement opportunities induced workers who were planning to continue to work full-time to reduce their working hours. They find that the introduction of flexibility into the pension system has no effect on labor supply. The direction of the impact of gradual retirement on hours worked differs across the various studies. Kantarci and Van Soest (2008) point

out that the differences in results are partly due to differences in the generosity of pension arrangements across studies. This is important to keep in mind, because it tells us that the direction of the effect of gradual retirement on hours worked partly depends on the generosity of part-time pension arrangements.

2.4 Benefits of gradual retirement

Besides possibly postponing full retirement of workers, gradual retirement has other advantages. Gradual retirement allows workers to achieve better smoothing of leisure, and thus of the marginal utility of leisure, between working life and life after retirement. Watson Wyatt Worldwide (2004) report that about half of the workers who entered into phased retirement did so voluntarily to have more leisure time. Another advantage of gradual retirement is that it allows workers with lower health, who are not able to continue working the same number of hours but who are able to work fewer hours, to continue their working life (Pagán, 2009). Gradual retirement may also help workers to limit the loss of cognitive skills due to ageing (Rohwedder and Willis, 2010; Bonsang et al., 2012). Also, possibly related to the advantage of intertemporal smoothing of leisure, the freedom of choice in work intensity provided by gradual retirement has a positive impact on the happiness of workers (Calvo et al., 2009).

2.5 Benefits of phased retirement over partial retirement

Phased retirement has several advantages over partial retirement. From the perspective of employers, phased retirement allows them to keep workers who are productive and workers with firm-specific human capital that are difficult to replace (Hutchens, 2010; Johnson, 2011). If phased retirement induces workers who wish to retire part-time to stay in their current job, employers do

not need to fill the gap that would arise if these workers were to retire fully. This saves recruitment costs for the employer and job application costs for the worker. Workers also benefit from phased retirement if they have some firm-specific human capital, because such human capital has value for the employers, and the employers may share some of this value with the workers. Firm-specific human capital from the career job does not have any value for employers who provide bridge jobs. Therefore, a bridge job employer may not wish to reward bridge job workers for having firm-specific human capital gained with their previous employer. This may induce a bridge job employer to pay a lower wage during partial retirement than a career job employer would pay during phased retirement.

2.6 Barriers to gradual retirement

Despite the benefits that gradual retirement may have for workers and employers, there are substantial barriers to gradual retirement as well. Several barriers have been documented in the literature.

First, employers may not want workers to work part-time. This may be for several reasons. Quasi-fixed employment costs such as hiring and training may make part-time workers unattractive for employers (Hurd, 1996; Siegenthaler and Brenner, 2001). Hiring costs also include future firing costs that have to be made when workers become redundant. These costs are especially relevant in the case of long-term or permanent contracts in countries where employment protection is high. In the Netherlands, employment protection is high, especially for long-term or permanent contracts (Euwals et al., 2009). Part-time work may also be unattractive for companies with team production or full-time production with expensive capital goods (Hutchens, 2010; Even and Macpherson,

2004). Jobs may in this context be seen as indivisible units of 40 hours per week (Moen and Roehling, 2005). This barrier may especially be relevant in manufacturing.

Second, workers need to make an effort to arrange gradual retirement. They either need to find a bridge job in case of partial retirement or to create a phased retirement arrangement for themselves. Hutchens (2003) finds that, although 73% of surveyed employers permitted an employee to reduce working hours before official retirement, only 14% of those employers had a formal written phased retirement policy that applied broadly to their employees.

Third, pension coverage may limit gradual retirement. Even and Macpherson (2004) report that workers covered by pension plans are less likely to transition into part-time work than those not covered by pension programs; and of those that do make the switch to part-time work, those with pension coverage are more likely to make a switch of employers in the process. There are various pension features that may form a barrier to gradual retirement. There may be rules that do not allow working while drawing pension benefits (Grace-Martin and Hutchens, 2006).¹ Another limiting pension feature, especially relevant in the United States, is that workers who wish to switch to part-time work may have to switch employers in order to access their pension wealth.² Pensions with a final pay regime make gradual retirement unattractive because such retirement typically leaves workers with a low final wage (Chen and Scott, 2006; Grace-Martin and Hutchens, 2006). In the Netherlands, most pension funds switched from a final pay regime to an average pay regime around 2005. The average pay

1 In the Netherlands, pension arrangements other than part-time pensions do not allow the sum of pension benefits and other income during retirement to exceed the average or final earned wage.

2 This forms a barrier to phased retirement.

regime gives workers less incentive to finish their career with a high wage compared to the final pay regime; it is thus less of a barrier to gradual retirement than the final pay regime.

Fourth, anti-age discrimination law, as in the United States, may induce employers not to offer phased retirement opportunities, as offering a reduction in working hours to older workers may be regarded as age discrimination of younger workers (Hutchens, 2010; Johnson, 2011).

2.7 Barriers to partial retirement over phased retirement

Phased retirement may be easier to arrange than partial retirement because, in the case of phased retirement, workers are already hired by an employer. In the case of partial retirement, older workers have to be hired. However, employers may not wish to hire new workers, or they prefer to hire younger workers. Hiring workers is a barrier for employers, especially when older workers are involved. Employers may not wish to hire older workers because of negative stereotypes. Employers may associate older workers with factors such as resistance to change and problems with technology, particularly computer technology (McGregor and Gray, 2002). Other negative stereotypes that older workers are associated with by employers are high labor costs and high absenteeism (Remery et al., 2003).³ Employers also associate older workers with lack of creativity, flexibility, and physical capacity (Van Dalen et al., 2010).⁴ Positive stereotypes of employers concerning older workers are reliability, loyalty, and job commitment (McGregor and Gray, 2002). Employers associate older workers with social skills and accuracy as well (Van Dalen et al., 2010).

³ Remery et al. (2003) is based on data from the Netherlands.

⁴ Van Dalen et al. (2010) use Dutch data.

2.8 Incidence of gradual retirement opportunities for workers

In this section, we review incidence rates on gradual retirement opportunities as reported in the literature. These incidence rates are interesting because, if employers or pension funds do not allow workers to retire gradually, this may limit gradual retirement rates. Abraham and Houseman (2004) study differences between actual and planned labor market transitions, using HRS data for older workers. They find that workers who were planning to quit working before the next interview were three times more likely to realize their planning than workers who were planning to retire gradually. Charles and Decicca (2007) study phased retirement using data from the first three waves of HRS. About 80% of the full-time employed workers aged 55–64 stated that they could not work part-time in their current job. Hutchens (2010) conducted a telephone survey with 950 establishments in 2001–2002, selected from Dun's Strategic Marketing Record. Sixty-seven percent of the establishments interviewed indicated that it is possible for white-collar workers to opt for phased retirement. Another 15% indicated that phased retirement would be feasible in some cases. Kantarci and Van Soest (2008) report for a survey conducted on Dutch workers and former workers in 2007, that 47.3% of the respondents stated that their employer offers phased retirement opportunities. Van Soest et al. (2007) find for a survey conducted among Dutch workers and former workers in 2004 that only 34.2% of the respondents would be offered the chance to opt for phased retirement at their current employer.⁵ Kantarci and Van Soest (2008) noticed that the difference between their finding and that by Van Soest et al. (2007) was due to the largest pension funds in the Netherlands having created transparent part-time pension

5 This result is based on the same question asked in the CentERPanel survey used by Kantarci and Van Soest (2008).

opportunities in 2006. In Section 3.4, we will compare the phased retirement offer rates in the sample of Dutch respondents of Van Soest et al. (2007) with realized phased retirement rates in the Netherlands.⁶

2.9 Self-employment

Self-employment may be an attractive alternative for workers who prefer to retire gradually but do not have the opportunity to do so if working for an employer. Self-employed workers are more likely to realize phased retirement because they have more control over their working hours than wage-employed workers (Kim and DeVaney, 2005; Parker et al., 2005). The flexibility offered by self-employment may be especially attractive for workers who are quite willing to pay for having control over their work hours. Gu (2009) studies retirement behavior of workers who become self-employed at a later age and finds retirement behavior that confirms the hypothesis that workers choose for self-employment in order to be able to work fewer hours. We will present self-employment rates in the Netherlands in Section 3.7.

6 We will not compare phased retirement rates with the phased retirement offer rates reported by Kantarci and Van Soest (2008), because their data were obtained after the implementation of the 2006 law that required pension funds to offer part-time pensions. Our data mainly cover years before 2006. The data used by Van Soest et al. were collected in 2004.

3. Gradual retirement in the Netherlands

In this section, we analyze gradual retirement in the Netherlands using Dutch administrative data. We discuss the incentives workers have for retiring gradually and the incentives employers have for offering gradual retirement opportunities to workers. We compare these incentives with the gradual retirement patterns observed in the data. We also compare observed gradual retirement patterns across industries and try to find plausible explanations for differences and/or similarities in gradual retirement patterns across industries.

3.1 Data

The data that we use for our analyses are Dutch administrative data on individuals aged 55–64 for the period 1999–2008.⁷ These data were administered by Statistics Netherlands and cover all residents registered with Dutch municipalities. We have access to data on self-employment and on job and personal characteristics from various administrative sources that can be linked with a personal identifier.⁸ A partner identifier allows us to link data from partners.⁹ The self-employment file provides the industry code and annual profits for self-employed workers. The job characteristics file provides information on all jobs that an individual has been employed in during the year of observation.

7 We use Dutch administrative data on a different group of individuals in Sections 3.7 and 3.8.

8 The original file names are *Zelfstandigentab (1999–2008)*, *SSB Banen (1999–2008)*, *SSB Personen (1999–2008)*, *LMR (1999–2005)*, *Doodsoorzaken (1999–2008)* and *PARTNERBUS (2010)*. Statistics Netherlands only provides data that come from governmental institutions. These data are rather limited in terms of the number of variables. Data on pension benefits, for instance, are not available. Moreover, data are only available for certain years. Data on financial wealth, for instance, are not available for the years of study.

9 Partners include spouses and so-called registered partners.

For every job, both start and end date, industry code, and annual wage are available. The job characteristics file also contains data on hours worked per working week.¹⁰ We can only use the hours-worked data for the years 2001–2005.¹¹ The personal characteristics file contains information on demographic characteristics such as nationality, marital status, year and month of birth, and health characteristics such as information on hospitalizations.

3.2 Measurement of concepts

We measure phased retirement as staying in the career job and experiencing on average a working time reduction of at least four hours per week. We measure partial retirement as a shift from the career job to a bridge job. The career job is defined as a job in which a worker has been continuously employed during the ten years prior to the year of observation. We define a bridge job as a job that

- starts within three months after the end of the career job, but not earlier than three months before the end of the career job; and
- has a lower starting wage than the final wage earned in the career job.¹²

We define full retirement as complete withdrawal from the labor force without re-entering the labor force during later years of observation.¹³ Analyses that use full retirement only cover the data for the period 1999–2005, so that the definition of full retirement

10 This is measured by the variable 'deeltijdfactor'.

11 These data are not available for the years 1999 and 2000. They are available for 2006, but values for that year cannot be compared with those for 2001–2005 due to differences in measurement methods.

12 Wages earned during only a part of the year are converted to annual wages.

13 Data on pension benefit payments are not available for the years of study.

in 2005 is that workers have withdrawn from the labor force in 2005 and have not re-entered in 2006, 2007, or 2008.

3.3 Incentives provided by the Dutch pension system and savings bonuses

1999–2005

Occupational pension funds typically offered early retirement pensions or flexible pensions to their participants. Early retirement pensions allowed full retirement as of a specific age, e.g. age 61. Flexible pensions provided workers the freedom to choose their full retirement age from a range of ages, e.g. from the 60–70 age range. The age as of which workers could retire, whether pension benefits were based on final or average earned wage, and the generosity of pension benefits for the two types of pensions varied substantially across pension funds.^{14 15 16} The age at which workers could retire early generally varied from 60 to 62. The age as of which flexible retirement was allowed varied from 55 to 60. With respect to using flexible pensions to retire after age 65, it is important to notice that retiring after having reached the normal retirement age was and still is in practice difficult, because many collective labor agreements include a clause on mandatory retirement at the normal retirement age. Eighty percent of Dutch workers are covered by collective labor agreements (Euwals et al., 2009).

14 There are approximately 80 pension funds in the Netherlands. About 55 of these are profession-wide or sectoral pension funds, while 25 are firm-specific pension funds.

15 Across the years of observation, a large number of pension funds switched from a final earned wage regime to an average earned wage regime. The public sector pension fund, which is the largest pension fund in the Netherlands, was one of the earliest switchers with its conversion on January 1, 2004.

16 Replacement rates of the pension benefits depended on, amongst others, the number of contribution years.

Early retirement benefits for individuals born before January 1, 1950 are facilitated under Dutch tax law.¹⁷ Until January 1, 2006, early retirement benefits for all individuals were fiscally facilitated. The fiscal facilitation of early retirement contributions implies that the early retirement benefits are taxed, but that the early retirement premiums paid by workers and employers are exempted from taxation. As the income of workers is generally higher than that of early retirees, and as Dutch income is taxed at progressive rates, the marginal tax rate applying to the early retirement contribution by workers is higher than the marginal tax rate applied to the early retirement benefits. As less tax is effectively paid, the fiscal facilitation makes early retirement very attractive for eligible workers and employers. Because of the repeal of the fiscal facilitation of early retirement benefits for individuals born on or after January 1, 1950, early retirement arrangements for these individuals have disappeared.¹⁸ Flexible retirement pensions became less generous because of the fiscal facilitation of early retirement benefits. As the fiscal facilitation of early retirement and the flexible pensions induced early full retirement among older workers, it limited the scope for gradual retirement.

The fiscally beneficial savings plan called 'spaarloonregeling' promoted individuals to save to, for instance, finance gradual retirement. The 'spaarloonregeling' allowed individuals to deduct savings up to 613 euros per year from their taxable income. These savings could be taken up free of tax later on. The savings plan was restrictive because it allowed individuals to take up savings

17 Early retirement benefits include all pension benefits received by individuals younger than the normal retirement age.

18 The final cohort of early retirees benefiting from the fiscal facilitation of early retirement benefits reaches the normal retirement age in 2014.

only after at least four years.¹⁹ As of September 15, 2010, this restriction no longer applies. As of January 1, 2012, individuals are no longer allowed to save using this plan.

2006 to this day

On January 1, 2006, another fiscally beneficial plan, the life-course savings plan or 'levensloopregeling', was introduced. This savings plan allowed savings up to 12% of annual gross wages to be deducted from the taxable income.²⁰ Eighty percent of the savings were subject to tax when withdrawn from the savings account. The amount that could be deducted from taxable income was generally much higher than with the 'spaarloonregeling', although savings were partly taxed when they were withdrawn, contrary to the 'spaarloonregeling'. Individuals were not allowed to use the 'spaarloonregeling' and 'levensloopregeling' simultaneously. The idea behind the 'levensloopregeling' was that workers could save money to finance a sabbatical, or early or gradual retirement. This scheme was closed to new participants on January 1, 2012. As of 2006, pension funds started to offer part-time pensions to their participants. Most pension funds in the Netherlands allow workers to retire part-time as of a certain age, e.g. age 55 or 60. Part-time retirement implies that workers reduce their working hours and start receiving pension benefits.²¹ There is much variety among pension funds regarding the age as of which workers can retire part-time, the generosity of pension benefits, and whether pension benefits are based on average or

19 There were some exceptions to this rule. Savings could be taken up within four years if spent on day care or the purchase of a house.

20 Workers born between January 1, 1950 and January 1, 1955 were allowed to deduct savings higher than 12% of the annual gross wages from their taxable income.

21 These are reduced pension benefits that intend to compensate for the wage reduction that is due to working fewer hours.

final earned pay.²² The age as of which workers can retire part-time varies from 55 to 60. Part-time pensions clearly facilitate gradual retirement. Since 2013, the normal retirement age goes up by one month per year.

3.4 Phased retirement in the Netherlands

Van Soest et al. (2007) report that 34.2% of respondents in a sample of Dutch workers and former workers were offered the opportunity to enter phased retirement. We find that approximately 18% of career job workers aged 56 have entered phased retirement within eight years. This suggests that roughly half of the workers who had the opportunity to enter phased retirement did not use this opportunity. Workers may not retire phased for various reasons. For instance, limited financial resources and limited accrued pension wealth may induce workers to continue working full-time. Another possible reason is that the conditions for gradual retirement may be unfavorable. This may induce workers to either retire early or to continue working full-time.

Figure 1 shows that phased retirement rates were much higher for women than for men. This might be due to differences in preferences between men and women and/or due to employers being more flexible in allowing women to enter phased retirement than men. Women may also have selected jobs that allow phased retirement more often than men. Phased retirement rates for men and women generally increased monotonically with years and birth cohorts. For men, phased retirement rates also increased monotonically across age. For women, this was not the case. Phased retirement rates for women show a clear jump between ages 59 and 60. Figure 2 suggests that the jump in

²² Replacement rates depend on such factors as the number of contribution years.

phased retirement rates at age 60 was mainly driven by women working in health care. The figure also shows that there was considerable heterogeneity in phased retirement rates across industries. The differences in phased retirement rates across industries can be explained by supply and demand factors. First, differences in employer attitudes towards phased retirement across industries are important. Phased retirement rates were, for instance, lower in manufacturing than in health care. In manufacturing, production in teams or 24-hour production with expensive capital goods may make part-time work inconvenient for employers. Manufacturing is an industry dominated by men. Men employed in manufacturing may be fine working full-time. Consequently, employers may not be asked to allow phased retirement opportunities. This may have resulted in relatively low phased retirement rates in manufacturing. Conversely, relatively many women work in health care. Employers in health care need women to fill their jobs. Because women prefer to work part-time, employers offer part-time jobs. Employers who offer part-time jobs may also be more flexible in offering phased retirement opportunities. This may have resulted in higher phased retirement rates in health care than in manufacturing. Second, differences in worker preferences for phased retirement across industries may explain part of the observed differences in phased retirement rates across industries. Workers with specific preferences may select into industries that meet their preferences. For instance, female workers who prefer to not reduce their working hours at the end of their career may choose to go into manufacturing, inducing phased retirement rates in manufacturing to be low. Female workers who prefer to reduce their working hours when growing older may opt to work in health care.

Figure 2: Fraction of career job workers entering phased retirement, by age group (as percentage)*

Figure 2a: men

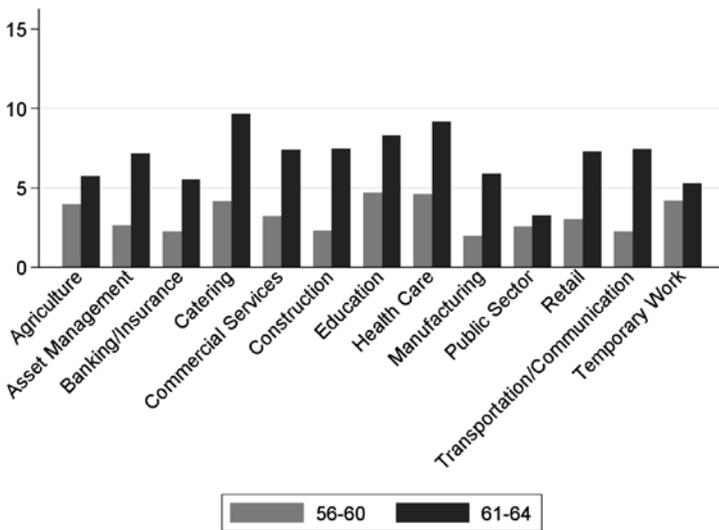
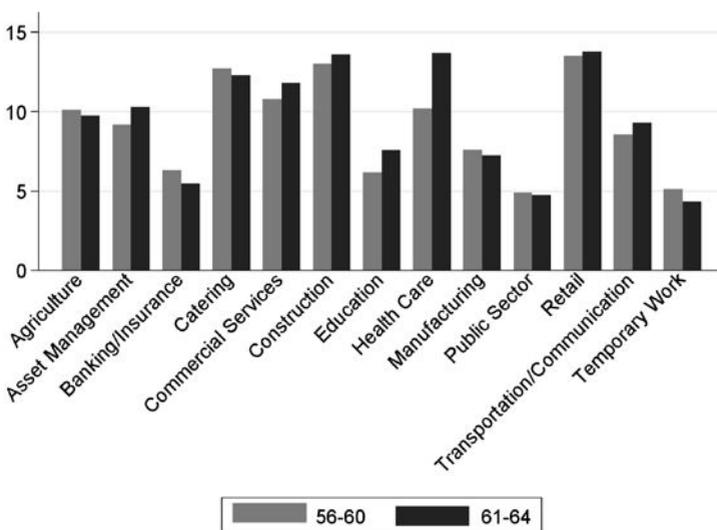


Figure 2b: women



* Temporary work is not an industry. Workers doing temporary work may be engaged in any industry.

3.5 Partial retirement in the Netherlands

Figure 3 shows that for most birth cohorts, the fraction of career job workers who opt for partial retirement was about one-and-a-half times higher at age 60 than at age 59. The fraction of career job workers who retired partially was 0.5% to 2% per year for men, and 0.5% to 1.5% per year for women. The jump in partial retirement rates at age 60 might be explained by workers who retire early continuing to work in a bridge job after early retirement. Partial retirement is far less frequent than phased retirement in the Netherlands, both for men and women. This may be due to phased retirement being more attractive for workers and employers than partial retirement. From the workers' perspective, if workers could stay in the career job, they would only prefer partial retirement if their willingness to pay for entering a bridge job is higher than their willingness to accept leaving the career job. The willingness to pay for entering a bridge job depends on, for instance, the willingness to pay for working fewer hours and the willingness to pay for changing to another employer. The willingness to accept leaving the career job depends on, for instance, the wage reduction resulting from leaving the career job and the willingness to accept the loss of solid employment protection. If workers are laid off from their career job, partial retirement is only preferred if their reservation wage is sufficiently low, i.e. lower than the bridge job wage. In the Netherlands, severance pay and notice periods for older career job workers are high, inducing older workers who are laid off from the career job to have a high reservation wage (Euwals et al., 2009). From the employer's perspective, offering phased retirement may be an attractive way to reduce the workforce if fewer workers are needed. Partial retirement may occur due to career job workers being laid off from their job. Employers may not wish to lay off

Figure 3: Fraction of career job workers retiring partially, by birth cohort (as percentage)

Figure 3a: men

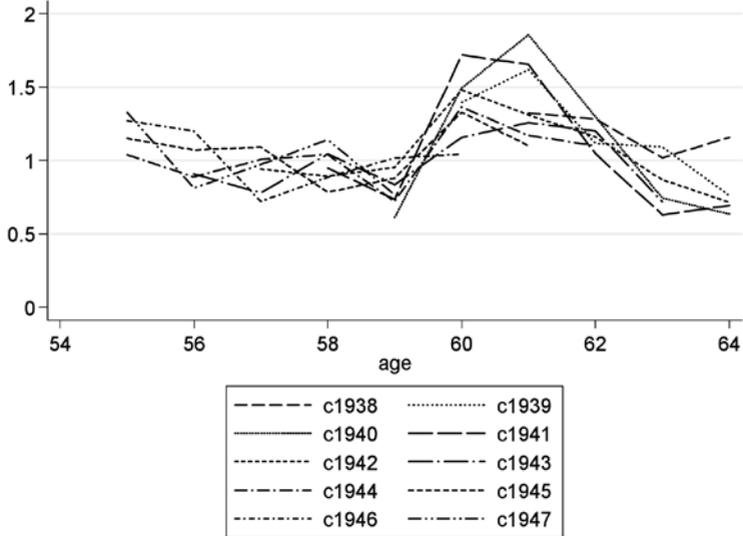
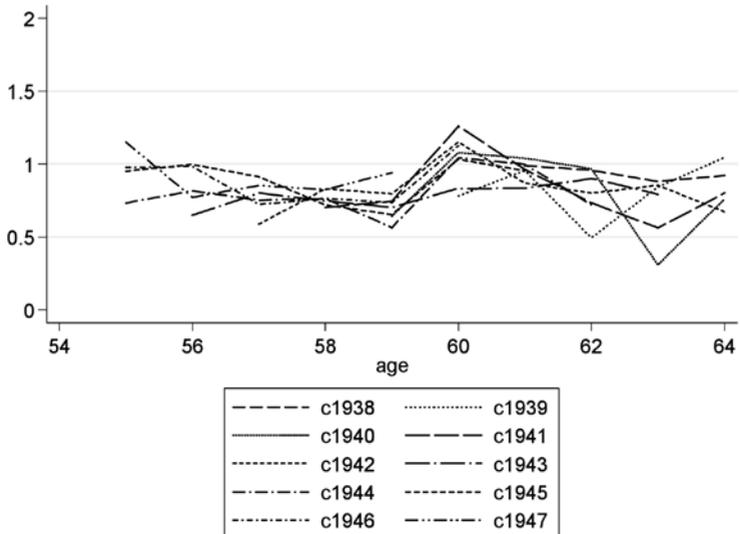


Figure 3b: women



older career job workers, because laying off these workers is costly because of high employment protection. Employers may also not wish to offer bridge jobs to older workers because they may have negative stereotypes about older workers.²³

Table 1 shows all transitions from career jobs to bridge jobs across industries for workers in the 55–64 age category in 1999–2008. In total there were 31,637 transitions for men and 11,537 transitions for women. There was a large heterogeneity in job mobility across industries, especially for women. For men, 40–65% of job switches from a career job to a bridge job took place within the same industry. For women, this was 35–85%. The disproportionately low fractions of transitions from career jobs to bridge jobs in other industries may indicate that job mobility across industries is low.²⁴ Low job mobility across industries may suggest that workers and skills in one industry cannot be properly applied in other industries.²⁵ Interestingly, we do not observe many job switches from industries in which part-time jobs were relatively scarce towards industries in which part-time jobs were relatively abundant. However, we do observe a high inflow into bridge jobs in agriculture, an industry with relatively many part-time jobs. Inflow into bridge jobs was high for temporary work as well. We do not observe a large job shift from industries with relatively many physically demanding jobs, such as construction and manufacturing, to industries with physically less demanding jobs, such as banking, insurance, and commercial services. There was also no visible shift from industries with relatively many mentally demanding jobs, such as banking, insurance, asset management, and health care, to industries with relatively few

²³ This was discussed in Section 2.7.

²⁴ Low compared to the size of the industries.

²⁵ Inflow into bridge jobs compared to career jobs was relatively high in temporary work. This was due to the temporary nature of the work involved.

*Table 1: Transitions from career jobs to bridge jobs (as a percentage of the num**Table 1a: men*

	AG	AM	BI	CA	CS	CO
Agriculture (AG)	2.61	0.05	0.09	0.52	0.60	0.15
Asset Management (AM)	0.05	1.19	0.13	0.12	0.37	0.15
Banking/Insurance (BI)	0.05	0.09	1.91	0.36	0.83	0.02
Catering/Retail (CR)	0.07	0.08	0.16	2.91	0.52	0.08
Commercial Services (CS)	0.08	0.06	0.10	0.23	2.44	0.08
Construction (CO)	0.07	0.09	0.12	0.21	0.41	3.12
Education (ED)	0.03	0.00	0.01	0.04	0.11	0.00
Health Care (HC)	0.05	0.02	0.04	0.13	0.14	0.04
Manufacturing (MA)	0.07	0.04	0.08	0.38	0.54	0.09
Public Sector (PS)	0.09	0.04	0.04	0.17	0.29	0.06
Transportation/ Communication (TC)	0.11	0.14	0.11	0.25	0.44	0.08
Temporary Work (TW)	0.12	0.08	0.16	0.20	1.02	0.24
Sector size	8,152	9,690	33,206	68,581	48,457	66,492
Inflow in bridge jobs	6.32	4.18	1.69	2.37	5.85	0.70

Table 1b: women

	AG	AM	BI	CA	CS	CO
Agriculture (AG)	2.99	0.00	0.30	0.25	0.41	0.05
Asset Management (AM)	0.03	1.29	0.15	0.18	0.27	0.09
Banking/Insurance (BI)	0.04	0.14	1.17	0.17	0.71	0.01
Catering/Retail (CR)	0.04	0.05	0.08	3.34	0.39	0.02
Commercial Services (CS)	0.05	0.04	0.07	0.22	4.19	0.04
Construction (CO)	0.00	0.21	0.15	0.23	0.51	1.11
Education (ED)	0.01	0.00	0.00	0.03	0.05	0.01
Health Care (HC)	0.02	0.01	0.02	0.07	0.07	0.01
Manufacturing (MA)	0.03	0.03	0.03	0.34	0.46	0.02
Public Sector (PS)	0.00	0.01	0.01	0.06	0.20	0.00
Transportation/ Communication (TC)	0.02	0.24	0.16	0.17	0.44	0.03
Temporary Work (TW)	0.00	0.00	0.19	2.27	2.65	0.00
Sector size	1,975	3,330	10,909	48,445	22,403	3,891
Inflow in bridge jobs	4.10	3.42	1.27	0.68	2.97	1.11

* Industries are grouped according to the Standard Firm Classification 1993 (SBI '93), version 2004, of Statistics Netherlands. We have merged health care and other care, car manufacturing and manufacturing, and catering and retail.

** The table includes frequencies for all types of jobs, thus not only for career jobs or bridge jobs.

ber of career jobs in the sector) * and **

ED	HC	MA	PS	TC	TW	Sector size	Outflow
0.02	0.12	0.15	0.06	0.20	0.47	8,152	2.42
0.01	0.21	0.13	0.08	0.12	0.27	9,690	1.66
0.06	0.18	0.11	0.08	0.17	0.46	33,206	2.40
0.05	0.17	0.41	0.03	0.47	0.48	68,581	2.51
0.19	0.26	0.37	0.15	0.16	0.58	48,457	2.26
0.03	0.11	0.18	0.03	0.12	0.36	66,492	1.71
1.93	0.52	0.04	0.11	0.06	0.17	61,217	1.09
0.11	1.92	0.07	0.12	0.10	0.30	58,395	1.14
0.04	0.13	1.95	0.05	0.23	0.47	191,932	2.11
0.23	0.46	0.16	1.71	0.32	0.52	122,162	2.37
0.06	0.18	0.46	0.08	3.40	0.49	65,134	2.40
0.12	0.12	0.24	0.24	0.49	2.27	2,463	3.05
61,217	58,395	191,932	122,162	65,134	2,463		
1.04	2.82	0.63	0.37	2.30	129.76		

ED	HC	MA	PS	TC	TW	Sector size	Outflow
0.05	0.25	0.35	0.05	0.05	0.66	1,975	2.43
0.03	0.30	0.09	0.09	0.09	0.57	3,330	1.89
0.03	0.28	0.06	0.01	0.06	0.33	10,909	1.84
0.02	0.28	0.14	0.03	0.07	0.33	48,445	1.44
0.11	0.48	0.17	0.08	0.07	0.42	22,403	1.76
0.05	0.18	0.18	0.00	0.05	0.39	3,891	1.95
2.44	0.34	0.01	0.04	0.01	0.11	43,652	0.62
0.04	2.25	0.02	0.03	0.01	0.17	136,404	0.47
0.04	0.26	1.49	0.08	0.12	0.29	26,557	1.69
0.56	0.40	0.06	0.97	0.04	0.43	28,305	1.79
0.07	0.44	0.07	0.12	2.20	0.48	12,022	2.25
0.00	0.19	0.38	0.00	0.00	3.60	528	5.68
43,652	136,404	26,557	28,305	12,022	528		
0.61	0.50	0.70	0.49	1.09	166.10		

Table 2: Frequencies of part-time and full-time jobs for workers aged 55–64

Table 2a: men

Sector	Number of jobs		Fraction of jobs (%)	
	Part-time	Full-time	Part-time	Full-time
Agriculture	9,232	16,539	35.82	64.18
Asset management	3,878	17,298	18.31	81.69
Banking/Insurance	7,543	47,021	13.82	86.18
Catering/Retail	32,868	112,491	22.61	77.39
Commercial services	21,941	99,777	18.03	81.97
Construction	11,247	106,116	9.58	90.42
Education	24,762	81,806	23.24	76.76
Health care	30,669	88,178	25.81	74.19
Manufacturing	36,648	251,841	12.70	87.30
Public sector	21,633	141,566	13.26	86.74
Transportation/ Communication	23,021	23,718	49.25	50.75
Temporary work	25,15	98,902	20.27	79.73
Total	248,592	1,085,253	18.64	81.36

Table 2b: women

Sector	Number of jobs		Fraction of jobs (%)	
	Part-time	Full-time	Part-time	Full-time
Agriculture	12,319	3,658	77.10	22.90
Asset management	4,957	4,644	51.63	48.37
Banking/Insurance	10,602	12,220	46.46	53.54
Catering/Retail	96,663	37,677	71.95	28.05
Commercial services	49,814	28,312	63.76	36.24
Construction	4,992	4,289	53.79	46.21
Education	56,592	38,973	59.22	40.78
Health care	203,946	82,108	71.30	28.70
Manufacturing	28,089	32,122	46.65	53.35
Public sector	24,984	26,826	48.22	51.78
Transportation/ Communication	22,911	6,872	76.93	23.07
Temporary work	18,218	11,513	61.28	38.72
Total	534,087	289,214	64.87	35.13

mentally demanding jobs, such as agriculture and manufacturing.²⁶ The absence of such shifts may reflect a mismatch between the skills and experience offered by workers in physically or mentally demanding jobs and those required for jobs in industries with relatively less physically or mentally demanding jobs.

3.6 Part-time employment

Part-time jobs are an essential ingredient of gradual retirement. If it is not possible to work part-time, then it is not possible to enter phased or partial retirement. We define part-time jobs as jobs that involve on average fewer than 32 working hours per working week. Full-time jobs are defined as jobs with on average at least 32 working hours per working week. Table 2 shows that industries with a high fraction of male workers, such as construction, manufacturing, and banking and insurance, were characterized by a high fraction of full-time jobs. Part-time jobs were relatively more prevalent in agriculture, an industry with relatively much flexible employment. Part-time jobs were relatively more prevalent in transportation and communication as well. Health care and transportation and communication, industries in which part-time jobs constitute the majority of jobs, featured neither high inflow into bridge jobs nor high phased retirement rates. Industries dominated by full-time jobs, such as construction, manufacturing, and banking and insurance, do not show particularly low phased retirement rates or low inflow into bridge

²⁶ Based on negative stereotypes of employers about workers with respect to willingness to learn and ability to use new technologies, we may expect bridge job employers for jobs in which willingness to learn, or ability to use new technologies, is important, to be more reluctant to hire older workers than others. However, assessing or predicting in which industries willingness to learn or ability to learn new technologies is particularly important is not straightforward. Especially in the case of bridge jobs, if the job is new, workers have to learn new things and may need to use new technologies anyway.

Figure 4: Fraction of workers being self-employed, by birth cohort (as percentage)

Figure 4a: men

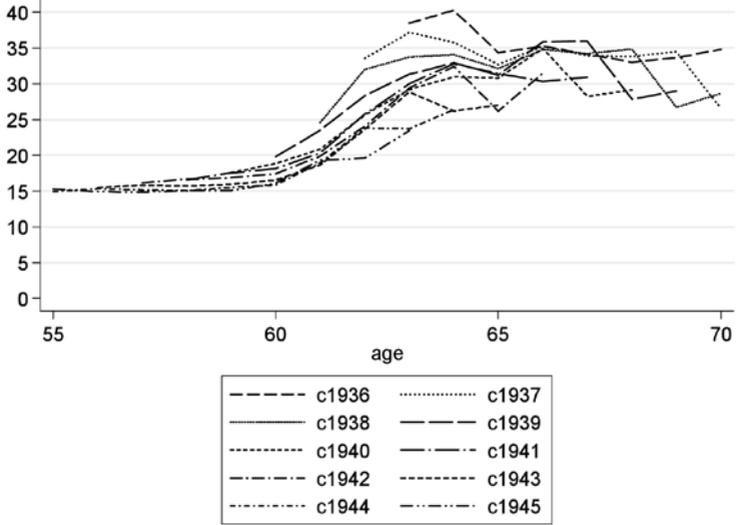
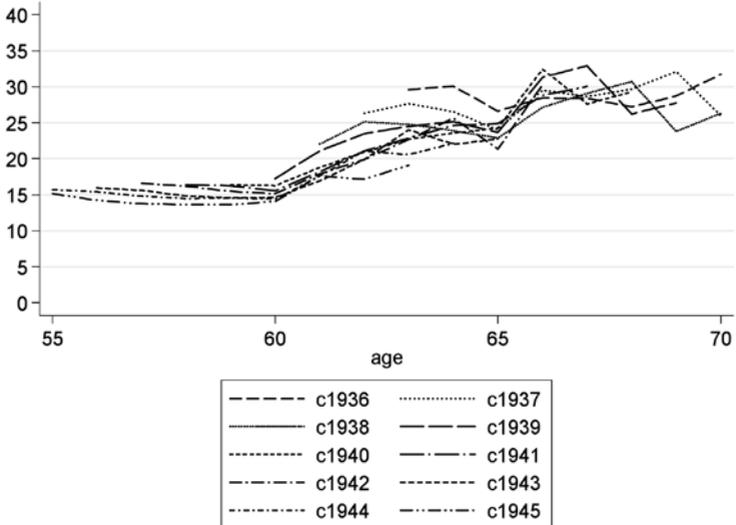


Figure 4b: women



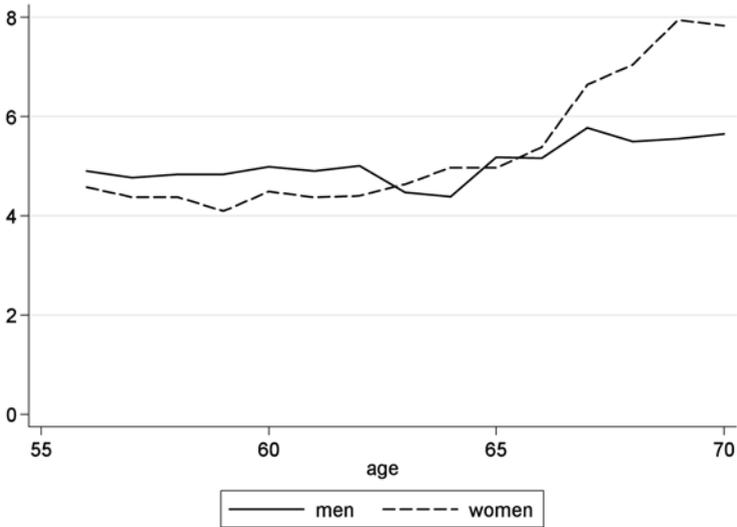
jobs. From this we can conclude that even though part-time jobs are necessary for gradual retirement, retirement opportunities are not necessarily more widespread in industries with a relative abundance of part-time opportunities.

3.7 Self-employment

Partial retirement may involve a change from career job to self-employment. Figure 4 shows the fraction of the Dutch workforce that is self-employed across time.²⁷ The fraction of the Dutch population that is self-employed has decreased less quickly across the ages of 60 to 65 than the fraction of the Dutch population that has an employer. This is for three reasons. First, as Figure 5 shows, inflow into self-employment at older ages is substantial. There are several explanations for this: (a) entering self-employment does, by definition, not require job application; (b) older workers who become unemployed may have problems finding a new job, for example because of negative stereotypes that employers have about older workers; (c) if older workers are unable to find an appropriate new job, they may choose for self-employment. Second, as also found by Cahill et al. (2006) and Kim and Devaney (2005), self-employed workers often retire at an older age than wage-employed workers. Self-employed workers may not have accrued enough pension wealth and may therefore need to work to a later age to secure an income after retirement. In addition, self-employed workers may have better opportunities for gradual retirement and may be more flexible in terms of choosing working times. This may induce retirement at a higher age. Third, collective

27 Individuals can be employed and self-employed simultaneously. Self-employment was not included in the transition matrix in Section 3.5. That is because there are hardly transitions from career jobs to self-employment. Workers instead start working on a self-employed basis when still working in the career job.

Figure 5: Inflow into self-employment as a percentage of the number of self-employed workers, by gender



labor agreements may make continuing to work in a paid job past the age of 65 difficult or even impossible.

3.8 Retirement decision model

In the remainder of this section we will try to give a further understanding of the mechanisms that underlie phased and partial retirement rates. We do so by estimating a multinomial logit model for phased, partial and full retirement. The outcome variable in our multinomial logit model is retirement status and has four different outcomes. Workers can enter phased, partial or full retirement, or do something else.²⁸ The latter we

²⁸ We do not consider the alternative employment exit route of retirement through disability insurance (DI), because recently tightened benefit eligibility criteria have made DI a less common exit route (De Vos et al., 2012).

refer to as continuing to work full-time. Because phased and partial retirement cannot be ranked in a natural way, we use a multinomial logit model rather than an ordered logit or ordered probit model.

3.8.1 Related empirical estimates

Gradual retirement decisions have been studied extensively in the literature. Most studies model gradual retirement decisions using multinomial logit models. Thomson (2007) estimates a multinomial logit model for gradual and full retirement. She uses data from four waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey for workers aged 50 and older. She finds that the coefficients on various personal characteristics point in the same direction for gradual and full retirement, although signs of coefficients differ between men and women. Men were more likely to experience gradual retirement than women. Cahill et al. (2006) estimate a multinomial logit model for HRS data on respondents aged 51–61. Their results indicate that bridge jobs were more common among younger respondents, respondents without defined-benefit pension plans, and respondents at both the lower and upper ends of the wage distribution scale. Self-employed men and women had a higher probability of continuing to work full-time than wage-employed workers, and self-employed men had a higher probability of entering a bridge job in case a job transition was made. Similarly, Kim and Devaney (2005) find that high wages encourage workers to continue working, based on multinomial logit model estimations on HRS data for workers aged 51–61. They also find that self-employed workers continued working longer than wage-employed workers and that they had a higher probability of gradual retirement. They do not find effects for physically or mentally demanding work.

There are also several studies that use retirement expectations or stated preferences on retirement as outcome variable. Ilmakunnas and Ilmakunnas (2008) estimate a multivariate probit model on data from the Finnish Quality of Work Life Survey (QWLS) for workers aged 56–63. They use retirement expectations as dependent variable. The authors find that the probability of continuing to work is lower for workers with high wages. In addition, they find that private sector workers are more likely to expect to retire after age 63 than public sector workers. Kantarci and Van Soest (2013) estimate a multinomial logit model using stated preference data from the American Life Panel for workers aged 40 and older. They find that the lower the earnings in the bridge job, the less likely workers are to choose partial retirement. They also find that the larger the size of the household, the later workers prefer to retire. Blue-collar workers were found to choose gradual rather than early retirement. Having a job that requires much physical effort was found to have no effect on preference for gradual or full retirement. Workers in jobs that require intense concentration are less likely to prefer phased retirement than early retirement. Borland and Warren (2005) study partial retirement of different age groups. They map different paths to retirement, using Australian HILDA survey data on retirement expectations of workers aged 45 and older. They estimate probit models on partial and full retirement separately and find that working in the public sector induces male workers to expect to continue working full-time instead of retiring partially.

3.8.2 Multinomial logit model

The four possible outcomes of labor force status (the dependent variable in our multinomial logit model) are defined as in the previous sections. Continuation of working full-time is the

base outcome. The independent variables in our model include variables on personal and job characteristics.²⁹ The personal characteristics variables include age minus 51, as well as its square and third power, dummies for the frequent retirement ages of 60, 61, and 62, a dummy for having the Dutch nationality, a dummy for being married, and worker's age minus worker's partner's age. One-year lagged dummies for hospitalization and hospitalization of the partner are the remaining personal characteristics. The variables on job characteristics include worker's one-year lagged wage income, a one-year lagged dummy for retirement status of the partner, one-year lagged wage income of the partner, and a set of industry dummies. Wage income of the worker and worker's partner is measured in thousands of deflated euros.³⁰ We use the public sector as the base sector.³¹ The final independent variables we include are dummies for the years 2003–2005. We estimate our multinomial logit model for observations on workers who were in a career job in the first year that we observe them. We use observations on the years 2002–2005 only.³²

3.8.3 Results

Table 3 shows the marginal effect estimates on labor force status for men and women aged 60 who have an average wage income, who were not hospitalized in the previous year, who are married, and whose partner earned an average wage income and was not

29 We have no access to data on pension benefits, but we do have access to data on partners and industry dummies. The industry dummies allow us to control for differences in pensions across industries.

30 We include one-year lagged variables on wage income because lagged variables are predetermined.

31 We distinguish between the catering and retail industries here.

32 We estimate our model using observations for the years 2002–2005 on workers who were 51–64 years old during the years observed. We cannot define phased retirement for the years 1999–2001 and 2006. This was discussed in Sections 3.1 and 3.2. We do not use observations on years in which individuals die.

hospitalized in the previous year. The age difference between the worker and the partner is as large as the average age difference between all workers and their partners.³³ Most marginal effects are significant at the one percent significance level, but are small in size. The marginal effects on partial retirement are generally smallest, and the marginal effects on phased retirement are generally smaller than the marginal effects on full retirement. This is due to partial retirement being least frequent and phased retirement being less frequent than full retirement. The marginal effect of age on full retirement indicates that the probability to retire fully jumps when workers turn 61. This may be explained by the presence of arrangements that allow early retirement as of age 61. The marginal effects of age on phased and partial retirement are of the size and direction we would expect them to be, given the phased and partial retirement rate changes between the ages of 60 and 61 in Figures 1 and 3. Hospitalization during the previous year has a positive effect on full retirement for men and women. A plausible explanation for this result is that workers with health problems may decide to retire fully rather than continue working full-time.

Male workers who earned more during the previous year are less likely to continue working full-time than to retire fully. This is in line with the finding of Kim and Devaney (2005). The marginal effect estimates of the industries show that there is a large variety in phased, partial, and full retirement behavior across industries. The marginal effects on phased retirement of

33 For women, the average one-year lagged wage income is € 28,579, the average one-year lagged wage income of their partner is € 23,681, and the average age difference between the worker and the partner is -0.43 years. For men, the average one-year lagged wage income is € 42,480, the average one-year lagged wage income of their partner is € 12,485, and the average worker-partner age difference is 2.81 years.

being employed in asset management, education, and health care are positive for men. This is what we expected given that, for men, as shown in Figure 2, phased retirement rates for asset management, education, and health care were higher than for the public sector. The marginal effects of being employed in asset management, education, and health care on partial and full retirement are negative for men. The sign of the marginal effects on partial retirement is also in line with what we expected, given that partial retirement rates for asset management, education, and health care for men were lower than those for the public sector, as shown in Table 1. The marginal effects indicate that phased retirement is relatively prevalent in asset management, education, and health care compared to in the public sector, but that partial retirement and full retirement is relatively less frequent in asset management, education, and health care compared to the public sector. One reason for this result is that it is relatively difficult for workers employed in the public sector to opt for phased retirement than for those employed in the other three sectors. Workers employed in the public sector who would wish to work fewer hours may retire partially or fully rather than on a phased basis. Differences between conditions under which workers employed in the public sector and those employed in the other sectors could retire fully may also have influenced the size and direction of the marginal effects on full retirement.

The marginal effect of the age difference between the worker and the partner on full retirement is negative for both men and women. In other words, the worker's probability to retire fully rather than continue working full-time increases with the partner's age. The mechanism underlying this effect could be the coordination of retirement within couples. The older the employed partner is, the more likely the partner is to retire.

Table 3: Marginal effect estimates for the multinomial logit model

Table 3a: men

	Phased retirement		Partial retirement		Full retirement	
	Marg. eff.	Std. err.	Marg. eff.	Std. err.	Marg. eff.	Std. err.
Age	0.008***		-0.001***		0.087***	
Dutch	0.005***	0.001	-0.001**	0.000	0.002	0.002
Married	-0.003***	0.000	-0.003***	0.000	-0.051***	0.002
Hospitalized [t - 1]	0.003***	0.001	0.000	0.000	0.061***	0.002
Year	0.000	0.000	-0.004***	0.000	-0.014***	0.002
Wage income [t - 1]	-0.001***	0.000	0.000***	0.000	0.000***	0.000
Agriculture	0.015***	0.002	0.001	0.001	-0.101***	0.008
Asset management	0.006***	0.002	-0.005***	0.001	-0.091***	0.007
Banking/Insurance	0.002	0.001	0.003***	0.001	0.002	0.004
Catering	0.019***	0.002	0.004***	0.001	-0.170***	0.011
Commercial services	0.015***	0.001	0.000	0.001	-0.115***	0.004
Construction	-0.002	0.001	0.001**	0.001	-0.034***	0.003
Education	0.030***	0.001	-0.006***	0.001	-0.121***	0.004
Health care	0.027***	0.001	-0.002***	0.001	-0.128***	0.004
Manufacturing	-0.010***	0.001	-0.001***	0.000	-0.042***	0.002
Retail	0.010***	0.001	0.002***	0.001	-0.109***	0.004
Transportation/ Communication	-0.003***	0.001	0.004***	0.000	-0.034***	0.003
Temporary work	0.010***	0.002	-0.008***	0.002	-0.052***	0.007
Base sector: public sector						
Age difference with partner	0.000	0.000	0.000***	0.000	-0.002***	0.000
Partner hospitalized [t - 1]	-0.001	0.001	0.002**	0.001	0.000	0.003
Partner retires [t - 1]	0.003**	0.001	-0.002**	0.001	0.056***	0.004
Wage income partner [t - 1]	0.000***	0.000	0.000***	0.000	0.000***	0.000
Fraction of workers	0.034		0.017		0.169	
N	1,100,525					

*** indicates significance at the 1% significance level, ** indicates significance at the 5% significance level and * indicates significance at the 10% significance level. The marginal effects on labor force status are reported for a man aged 60 who has an average one-year lagged wage income (€ 42,480), who was not hospitalized in the previous year, who is married, and whose partner has an average one-year lagged wage income (€ 12,485) and was not hospitalized in the previous year. The age difference between the worker and the partner is as large as the average age difference between workers and their partners (2.81 years). The marginal effects are based on one-year lagged wage income of the worker and worker's partner, measured in thousands of deflated euros. The model controls for second and third order age effects and year fixed effects for the ages 60-62. Because the marginal effects on age are computed using multiple age variables, no standard errors are reported for the marginal effects on age. The p-values on age are p-values for the joint significance of all relevant age variables. The fractions of workers retiring phased, partially or fully are based on observations for male workers aged 60 who were not hospitalized in the previous year, who were married, and whose partner was not hospitalized in the previous year.

Table 3b: women

	Phased retirement		Partial retirement		Full retirement	
	Marg. eff.	Std. err.	Marg. eff.	Std. err.	Marg. eff.	Std. err.
Age	-0.003***		-0.001***		0.028***	
Dutch	0.008***	0.001	0.000	0.000	-0.007**	0.003
Married	0.010***	0.000	-0.002***	0.000	-0.007**	0.003
Hospitalized [t - 1]	-0.006***	0.001	0.000	0.000	0.067***	0.004
Year	-0.001*	0.001	-0.002***	0.000	-0.010***	0.003
Wage income [t - 1]	-0.001***	0.000	0.000***	0.000	0.000	0.000
Agriculture	0.043***	0.003	0.005***	0.001	-0.064***	0.014
Asset management	0.045***	0.003	0.000	0.001	-0.094***	0.011
Banking/Insurance	0.014***	0.002	0.003***	0.001	0.040***	0.006
Catering	0.063***	0.002	0.006***	0.001	-0.082***	0.009
Commercial services	0.054***	0.001	0.005***	0.000	-0.086***	0.006
Construction	0.062***	0.002	0.000	0.001	-0.055***	0.010
Education	0.025***	0.001	0.001**	0.000	-0.113***	0.005
Health care	0.059***	0.001	0.000	0.000	-0.162***	0.005
Manufacturing	0.027***	0.001	0.001**	0.000	-0.025***	0.005
Retail	0.064***	0.001	0.003***	0.000	-0.046***	0.005
Transportation/ Communication	0.035***	0.002	0.001**	0.001	-0.011*	0.006
Temporary work	0.001	0.005	0.001	0.001	-0.007	0.011
Base sector: public sector						
Age difference with partner	0.000**	0.000	0.000	0.000	-0.002***	0.000
Partner hospitalized [t - 1]	-0.001	0.001	0.000	0.001	-0.008	0.006
Partner retires [t - 1]	-0.006***	0.001	0.001*	0.001	0.086***	0.004
Wage income partner [t - 1]	0.000***	0.000	0.000***	0.000	0.000	0.000
Fraction of workers	0.047		0.008		0.143	
N	767,604					

*** indicates significance at the 1% significance level, ** indicates significance at the 5% significance level and * indicates significance at the 10% significance level. The marginal effects on labor force status are reported for a woman aged 60 who has an average one-year lagged wage income (€ 28,579), who was not hospitalized in the previous year, who is married, and whose partner has an average one-year lagged wage income (€ 23,681) and was not hospitalized in the previous year. The age difference between the worker and the partner is as large as the average age difference between workers and their partners (0.43 years). The marginal effects are based on one-year lagged wage income of the worker and worker's partner, measured in thousands of deflated euros. The model controls for second and third order age effects and year fixed effects for the ages 60-62. Because the marginal effects on age are computed using multiple age variables, no standard errors are reported for the marginal effects on age. The p-values on age are p-values for the joint significance of all relevant age variables. The fractions of workers retiring phased, partially or fully are based on observations for female workers aged 60 who were not hospitalized in the previous year, who were married, and whose partner was not hospitalized in the previous year.

Table 4: Marginal effect of age on labor force status estimates for the multinomial logit model

Table 4a: men

	58	59	60	61	62
Phased	0.003***	0.008***	0.008***	0.002***	-0.001***
Partial	0.001***	0.003***	-0.001***	-0.001***	0.001***
Full	0.019***	0.076***	0.087***	-0.012***	-0.094***
N	1,100,525				

Table 4b: women

	58	59	60	61	62
Phased	0.0003***	0.017***	-0.003***	-0.005***	-0.001***
Partial	0.0001***	0.001***	-0.001***	-0.0004***	0.0004***
Full	0.019***	0.094***	0.028***	-0.002***	-0.055***
N	767,604				

*** indicates significance at the 1% significance level, ** indicates significance at the 5% significance level and * indicates significance at the 10% significance level. Because the marginal effects on age are computed using multiple age variables, no standard errors are reported for the marginal effects on age. The p-values reported are the p-values for the joint significance of all relevant age variables.

Because the worker and the partner prefer to spend time together after retirement, the probability that the worker accepts an (early) retirement offer increases with age of the partner.³⁴ The retirement status of workers is generally not sensitive to hospitalization of the partner. The marginal effect of the partner having retired fully in the previous year on full retirement is positive for men and women. This may also indicate that workers would wish to spend time with their partners.³⁵ Wage income of the partner has a positive marginal effect on the probability of retiring fully or

³⁴ The model only controls for one-year lagged retirement status of the partner, not for retirement status of the partner in the current year.

³⁵ Joint retirement and the joint leisure time effect have been extensively discussed in the literature, e.g. by Hurd (1990) and Pozzebon and Mitchell (1989).

gradually over continuing to work. The intuition behind this result may be that the more the partner earned in the previous year, the more a household can afford the worker's retirement.

Table 4 shows the marginal effects of age for workers with the same characteristics as in the previous analysis, but with different ages. For full retirement, the marginal effects of turning 60 for workers aged 59 are much higher than those for workers aged 58 turning 59. The marginal effects of turning 61 for workers aged 60 are high as well, especially for men, indicating that more individuals retire at age 61 than at age 60. The marginal effects of turning 62 for workers aged 61 are small and negative, and the marginal effects of turning 63 for workers aged 62 are large and negative. This is all in line with the incentives provided for full retirement, as most early retirement schemes allowed early retirement at age 60, 61 or 62. For phased retirement, the marginal effects of age are positive for turning 59–62 for men and turning 59–60 for women. This may be due to phased retirement programs that allow working time reduction at the end of the career. As part-time pensions have only become available after the period observed, we may expect the marginal effects of age on phased retirement to be larger if estimated for the most recent years. We would also expect the marginal effects of age on full retirement to be lower for workers turning 60 and 61 for data on the most recent years. This reflects the fact that the eligibility age for full retirement is going up and that generous early retirement arrangements have nowadays mostly disappeared.

4. Conclusions

Gradual retirement involves a smooth transition from working life into retirement, allowing workers to smooth leisure and the marginal utility of leisure. Phased retirement allows employers to keep workers who are productive, or workers with firm-specific human capital, that would otherwise have retired fully. Although gradual retirement has clear advantages for both workers and employers, gradual retirement occurs only on a limited basis in the Netherlands. Especially partial retirement rates are low. This reflects major institutional barriers, such as strong employment protection and inconvenience for employers to offer part-time employment.

We have identified three conditions that must be satisfied for gradual retirement to become more frequent. First, workers need to have a demand for gradual retirement. If they do not want to retire gradually, gradual retirement will never become popular. Interest on the part of workers may be increased by informing them about the possibility and advantages of gradual retirement. Labor unions and pension funds could be asked to play an active role in this. Pension funds could also be asked to make workers more aware of the availability of part-time pensions. A higher bridge job wage or a higher wage during phased retirement may also increase worker interest in gradual retirement. This would especially be true if labor supply is elastic, i.e. if workers are responsive to wages. Increases of bridge job wages or wages during phased retirement could be facilitated by tax reductions. If there is relatively little firm-specific human capital involved in a career job and, closely related, if the career job has a relatively flat wage profile, then the difference between the career job wage and the bridge job wage may be relatively small. In such case a

relatively small increase in the bridge job wage is needed to make the bridge job financially interesting for career job workers. If a career job involves relatively much firm-specific human capital and the career job has a relatively steep wage profile, then the difference between the career job wage and the bridge job wage may be relatively large. This is because the firm-specific human capital does not have any value for the bridge job employer, so that the bridge job employer will not be willing to pay for hiring such a worker. The firm-specific human capital accumulated in a career job does have value to the career job employer, so the career job employer will be willing to pay for hiring a worker who has such human capital. In the case of a relatively steep wage profile of the career job, a relatively large increase in the bridge job wage is needed to make the bridge job financially interesting for the career job worker.

Second, employers need to offer gradual retirement opportunities, i.e. to facilitate reductions in hours worked and to offer bridge jobs. Employers that facilitate gradual retirement are needed in all industries, because low job mobility across industries prevents the switch from career jobs in industries with few bridge jobs to bridge jobs in industries with relatively many bridge jobs. Employers will only facilitate gradual retirement if they have an incentive to do so. In the case of phased retirement, workers stay within the same firm. This allows employers to keep productive workers. This may be attractive for employers and productive workers, especially if workers have firm-specific human capital. An employer would have more incentive to facilitate gradual retirement if taxes and labor costs are reduced. If employers have an incentive to make their workers retire gradually, they may also promote gradual retirement among their workers. This would further boost the prevalence of gradual retirement. From a public

finance perspective, granting tax reductions for bridge jobs and offering phased retirement opportunities may only be interesting if such measures have a positive effect on labor supply. Whether this will be the case depends, for example, on whether the wage elasticity of supply of labor will be positive, i.e. whether the substitution effect of a net wage increase will be larger than the income effect.

Third, the government and labor unions must facilitate and encourage gradual retirement. Permitting retirement at ages higher than the normal retirement age in collective labor agreements is needed to facilitate gradual retirement beyond the normal retirement age. Complementary to this, we propose to introduce a fiscal bonus that may provide workers an incentive to retire gradually rather than fully and that may serve as an incentive to employers to offer gradual retirement opportunities. For example, the fiscal bonus might reduce income tax for the portion of earned wage income above € 10,000 and below € 20,000 for workers older than age 64. The fiscal bonus would increase net wages for workers aged 65 and older, giving older workers an incentive to continue working (part-time). If the fiscal advantage of the worker is shared with the employer by means of a gross wage reduction, employers would have more incentive to facilitate gradual retirement. The windfall costs of the fiscal bonus are small, because the labor force participation rate for workers aged 65 without such an incentive is low. The revenues from the additional income tax collected by the government could be substantial if the incentive is effective in inducing workers to postpone their retirement. The government may thus profit financially from offering the fiscal bonus. This instrument is interesting because it has similarities with the fiscal bonus that was introduced on January 1, 2009 and abolished four years later. That scheme, the

so-called 'doorwerkbonus', reduced income tax for earnings above € 9,000 for workers who were born in 1950 or earlier. The level of the bonus depended heavily on the year in which workers were born and also varied across years. In 2012, for instance, the bonus was 1% of earnings above € 9,000 for workers born before 1946 and 10% of earnings above € 9,000 for workers born in 1948 (Rijksoverheid, 2010).³⁶ In 2013, a less generous tax reduction facility for older workers called 'werkbonus' was introduced (Belastingdienst, 2013). The 'doorwerkbonus' was in place in a period when many workers could retire early using generous early retirement benefits. Nowadays, generous early retirement benefits have mostly disappeared, so that the tax bonus we propose is expected to be more effective in decreasing full retirement rates of workers in their early or mid-60s now than the 'doorwerkbonus' was several years ago. Another difference is that we target on older workers than the 'doorwerkbonus' did, so that the windfall losses of the tax bonus are expected to be smaller than those for the 'doorwerkbonus'.

One of the main reasons for gradual retirement being promoted is that it may induce workers to postpone full retirement. If gradual retirement induces workers who would otherwise choose to completely retire to continue working part-time, then it may have a positive effect on hours worked. Gradual retirement can be most effectively stimulated for workers aged 65 years and older. In this group, there are relatively few full-time workers. Thus the risk of full-time workers being driven into part-time work is small, although the potential for inducing workers to postpone full retirement is large.

³⁶ The 'doorwerkbonus' was introduced to promote older workers to continue working rather than to retire early. The bonus applied to birth cohorts that were able to use very generous early retirement arrangements. Because the early retirement arrangements for the relevant birth cohorts were so generous, the bonus did not have the desired impact.

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Gradual retirement

One way in which further increase in dependency ratios can be limited is to induce workers to retire later. Gradual retirement is considered to be an instrument for this. Gradual retirement involves gradual transition from career job employment to retirement. This paper by Hans Bloemen, Stefan Hochguertel and Jochem Zweerink (VU) studies the current state of gradual retirement in the Netherlands and considers the incentives for workers to retire gradually and for employers to facilitate gradual retirement. They analyze whether gradual retirement has the potential to become popular and under what conditions its prevalence might be increased.