Article

Gradual Retirement in the Netherlands: An Analysis Using Administrative Data

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Abstract

Gradual retirement by which individuals leave their career jobs and withdraw incrementally from the labor force is an important empirical phenomenon in the United States. We analyze the current state of gradual retirement in the Netherlands using administrative data that allow much more precise tracking of labor market transitions than most survey panel data. We estimate multinomial transition models, taking into account competing pathways out of career employment at older ages, and discuss institutional aspects that limit the scope of gradual retirement, such as financial incentives to retire early.

Keywords

partial retirement, phased retirement

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Introduction

Workers retire in many ways (Cahill, Giandrea, & Quinn, 2006; Maestas, 2010). The term gradual retirement is typically applied to an array of heterogeneous pathways out of the labor force at older ages whereby individuals do not leave their career jobs abruptly into permanent inactivity but rather in a stepwise fashion, possibly going through a number of stages and taking on a number of intermittent jobs and employment positions. Workers may choose such paths to benefit from the possibility of intertemporally smoothing their marginal utility of leisure, if prompted by deteriorating health over time, or due to various shocks (including unemployment or disability). A possible side effect is that gradual retirement allows the worker to keep working beyond an age at which he or she otherwise would have retired completely. Indeed, gradual retirement has been considered to be a suitable instrument to induce workers to retire later (Van Soest, Kapteyn, & Zissimopoulos, 2007; Wadensjö, 2006). This aspect makes gradual retirement interesting from a policy perspective when public finances are strained due to the impact of worsening dependency ratios on pay-as-you-go pension systems (Ilmakunnas & Ilmakunnas, 2008).

Gradual retirement has become a widespread phenomenon across Organization for Economic Cooperation and Development (OECD) countries (Kantarci & van Soest, 2008, provide an overview), although most of the empirical evidence to date comes from the United States.[1] In this article, we study gradual retirement in the Netherlands. We limit ourselves to two salient forms of stepwise withdrawal, phased and partial retirement. These are the main forms of gradual retirement that are relevant in the country under study. Phased retirement involves a continued employment relationship with the career employer, albeit working fewer hours, and partial retirement requires taking on an often less demanding and usually lower paid bridge job with a different employer. We also consider workers who reenter the labor market after a spell of absence or retirement (sometimes dubbed "unretirement"; Maestas, 2010), and this phenomenon is intimately related to the definition of partial retirement. We shall, partly owing to space limitations, not touch upon other interesting aspects that have been discussed in the literature, including self-employment choices at older ages (Sappleton & Lourenço, 2015) and re-careering late in working life (Johnson, Kawachi, & Lewis, 2009).

The Netherlands is an interesting country in the context of gradual retirement. First, part-time work prevalence in the Netherlands is the highest among OECD countries. With part-time jobs being ubiquitous, there is

somewhat of a "part-time culture." This is important because part-time employment is a defining feature of gradual retirement (OECD, 2013). Second, the country has a strong duality in the labor market with highly protected permanent jobs on the one hand and a substantial and strongly increasing share of low protected flexible employment relations on the other hand (Van den Berge, Erken, de Graaf-Zijl, & van Loon, 2014). This fact may explain why, despite the high incidence of part-time jobs, gradual retirement is somewhat limited to date but may also lead one to expect a possible future shift in the cultural norm away from traditional complete withdrawal after the career job ends.

This article contributes in important ways. First, we study gradual retirement using administrative data that cover the entire population. This is unusual, and for the Netherlands it has not been done before. The vast majority of articles instead employs retrospective survey data covering a single cross-section or short panel data with often a 2-year spacing between survey waves. Our administrative panel contains precise spell data for individual employment and non-(wage) employment episodes. We use this information to define long-tenure career jobs as point of departure, avoiding measurement issues associated with respondents' recall error. We can also be very precise in our definition of the onset of a post-career spell, such as commencement of a bridge job as opposed to reentry behavior that is characterized by an intermittent spell of non-(wage) employment.

Second, in this article we distinguish 12 different industries in our analysis of gradual retirement patterns. Industry differences are important as different industries show distinctly different patterns of gradual retirement, an aspect that has found little resonance in the empirical literature. The implication is that preretirement career choice determines gradual retirement pathways through state or path dependence.

Third, we discuss that in the past early retirement pensions may have induced full retirement before the normal retirement age and may so have restricted the scope for gradual retirement before the normal retirement age within the Dutch institutional context. In other countries studied in the gradual retirement literature, including the United States, early retirement pensions were less frequent and/or much less generous than in the Netherlands.

Literature Review

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. For the purposes of this short review, we follow 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 (which we define to be a job with the same employer with more than 10 years of tenure) and full retirement. Phased retirement is staying in the career job with the same employer but working fewer hours. Partial retirement is the transition from the career job to a usually less demanding bridge job or to self-employment. By less demanding, we mean reduced 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).

Incidence of Gradual Retirement

Gradual retirement enjoys high popularity in the United States and is becoming more frequent in Europe. Kantarci and Van Soest (2008) explore partial retirement in Europe and the United States, using data for workers in the age category 51–65 from the European Community Household Panel and the Panel Study of Income Dynamics for the 1994–2000 period. They show that the prevalence of gradual retirement varied largely across European countries. The authors find that the 2-year transition rate from full-time to part-time work was highest in the Netherlands (9.7%). The United States had a relatively modest 2-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. Henkens and Van Solinge (2014) find that between 15% and 35% of career job workers entered bridge jobs, using data for workers born in the 1931–1941 period from three waves (2001, 2006, and 2011) of the Dutch NIDI Work and Retirement Panel. Cahill, Giandrea, and Quinn (2013) study gradual retirement using data for workers born in the 1931–1953 period from the first 10 waves (1992–2010, biennial) of the U.S. Health and Retirement Study (HRS). They find that between 30% and 39% of the men employed in full-time career jobs moved to bridge job employment and that between 36% and 41% of the women employed in full-time career jobs moved to bridge job employment. Similar percentages have been reported as well in other articles using similar data. Cahill et al. (2013) also find that between 11% and 13% of the men employed in full-time career jobs entered phased retirement and that between 6% and 10% of the women employed in full-time career jobs entered phased retirement.

Gradual Retirement and Hours Worked

The relation between gradual retirement and hours worked has found some echo in the literature. Ghent, Allen, and Clark (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 report 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. Wadensjö (2006) comes to a different conclusion. He studies the impact of a gradual abolition of a part-time pension arrangement in Sweden on retirement behavior and hours worked. Under that scheme, workers could receive partial pension benefits while continuing part-time employment with their current employer. The descriptive analysis shows that the abolition of the part-time pension arrangement mainly prevented phased retirement among workers who were planning to retire fully. Fouarge, De Grip, and Montizaan (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 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.

Related Empirical Estimates

Gradual retirement decisions have been studied extensively in the literature. Many 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 annual waves (2001–2004) of the Household, Income and Labour Dynamics in Australia survey. 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 than women to experience gradual retirement. Cahill et al. (2013) estimate a multinomial logit model for the first 10 waves of HRS data. Their results indicate that bridge jobs were more common among younger respondents and respondents without defined benefit pension plans. 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 self-employed workers continued working longer than wage-employed workers, and that they had a higher probability of gradual retirement. Their multinomial logit model estimates on the first and fifth waves of HRS data (years 1992 and 2000) also show that high wages encourage workers to continue working.

The Dutch Pension System

We study gradual retirement in the Netherlands, whereas most articles study gradual retirement in other countries, including the United States.[2] Differences in institutional environments across countries may affect gradual retirement patterns. To provide context, we first sketch main features of the pension (and social security) system and then briefly comment on a comparison with the United States.

The Dutch pension system (Bovenberg & Meijdam, 2001; Henkens & Van Solinge, 2014; Van Vuuren, 2011) rests on three pillars. The first pillar is the public old-age pension (social security), financed on a pay-as-you-go basis. Contributions stem from workers and employers. All residents registered in the Netherlands accrue public old-age pension rights (levels are linked to duration of legal residence in the country). Benefits are flat and tied to the minimum wage. They were provided as of the normal retirement age of 65 during the period we study and were not conditioned on work history or employment status.

The second pillar consists of occupational pensions, overwhelmingly of the defined benefit type. They provide benefits as of the normal retirement age. Occupational pensions are funded pensions and are typically managed at the industry level and sometimes at the firm level (for large employers). About 90% of all workers actually participate in occupational pension plans. The widespread participation in occupational pension plans may be explained by collective labor agreements, covering about 90% of all workers, typically including a clause on compulsory participation in occupational pension plans. Contributions to these pension plans stem from both workers and employers. The aggregate of first and second pillar pension benefits provides pension benefits as of age 65 with gross replacement rates of up to 70% of the previously earned wages. Net replacement rates could be considerably higher but could not exceed 100%. Owing to the large number of occupational pension plans, there is considerable heterogeneity in pension conditions.[3] The generosity of pension benefits is among the pension conditions that vary across pension plans.

Occupational pension funds typically offered early retirement pensions to their participants during the period we study. Early retirement pensions allowed full retirement as of a specific age younger than the normal retirement age. As early retirement pensions promoted full retirement at ages before 65, they may have limited the scope for gradual retirement. Eligibility criteria and eligibility ages for early retirement benefits varied across pension funds. The early retirement eligibility age generally varied from 60 to 62. Eligibility criteria for early retirement benefits may include a minimum number of contribution years or having contributed to the pension fund continuously during a minimum number of years prior to early retirement.[4] Due to stipulations in the Dutch tax law, early retirement benefits were generous and favorable for the retirees.[5] Early retirement benefits provided before normal retirement are higher than occupational pension benefits provided as of the normal retirement age to (partly) compensate early retirees for not receiving public old-age pension benefits before normal retirement. The third pillar consists of private provisions. Those include among others annuity insurance and accumulated savings.

The institutional environment of the United States, the most frequently studied country in the literature, differs largely from the institutional environment of the Netherlands. In particular, in the United States, social security is less generous than public old-age pensions in the Netherlands, employers are supported but not required to offer pension arrangements to their workers and pension benefits are typically of the defined contribution type. In the Netherlands, participation in the public old-age and occupational pension schemes is typically compulsory, early retirement schemes were more common than in the United States, and pension benefits are generally of the defined benefit type. Pension benefits of the defined contribution type, as popular in the United States, leave retirees with a higher uncertainty on pension income than those of the defined benefit type, as in the Netherlands. Differences in generosity of pension benefits, participation in (early retirement) pension schemes, and uncertainty regarding pension income may have induced workers in the United States to retire fully on a later age than those in the Netherlands.

Gradual Retirement in the Netherlands

Data

The data we use are Dutch administrative panel data on all individuals and jobs over the period 2001–2007. These data are administered by Statistics Netherlands and cover the universe of residents registered with Dutch

municipalities. We have access to data on job and personal characteristics.[6] The job characteristics file provides information on all jobs that a worker has been employed in during the year of observation. For every job, both start and end date, industry code, and annual wage are available. The personal characteristics file contains information on demographic characteristics such as nationality, marital status, and year and month of birth. A partner identifier allows us to link data from spouses (and registered partners).

Measurement of Concepts

The data structure requires that we use specific definitions of phased and partial retirement, which on occasion deviate from the definitions used elsewhere in the literature. On the other hand, our data allow a much more precise measurement of transitions than what is being used in the articles based on (biennial) survey data (such as Cahill et al., 2006 or Maestas, 2010). We keep individuals in the sample for ages 52 through 64,[7] or until we observe a transition into phased retirement, partial retirement, unretirement, or full retirement, if that occurs earlier (or until death, if that occurs earlier).

Point of departure for every worker in our sample is a career job. This we define as a job at a particular employer, with a continuous job tenure at this employer of at least 10 years (measured from the year of observation) and total earnings of at least 20,000 euros per year in every year of the observation period.[8,9] We are in particular interested in documenting transitions into gradual retirement. We measure phased retirement as staying in the career job and experiencing a wage reduction of at least 20%. We measure partial retirement as a shift from the career job to a bridge job. Since it is difficult to assess whether bridge employment was planned as a voluntary or deliberate end-of-career-path choice, the comparison with phased retirement is most meaningful when we concentrate on direct career job-to-bridge job transitions. Therefore, we define a bridge job as a job that:

- starts within 1 month after the end of the career job,[10]
- has a starting wage that is at least 10% lower than the final wage earned in the career job, and
- is with a different employer than the career job.

We deliberately restrict the definition of bridge jobs by requiring a start very soon after leaving the career job. Our definition of bridge jobs ensures that partial retirement concerns an almost direct transition from the career to a bridge job. We define full retirement as complete withdrawal from the

labor force without reentering paid employment during later years of observation.[11] Unretirement (or reentry) is measured as leaving the career job and entering any other job starting at the earliest, that is, 1 month later. Notice that the definitions of partial retirement (using a bridge job) and unretirement are directly and inversely related to one another, and their relative incidence is driven by the window width that we allow for intermittent spells of non-(wage) employment. Because in essence, unretirement indicates that workers retire from their career jobs and reenter paid employment later, 1 month of non-(wage)employment after departure from the career jobs may be too short a non-(wage)employment spell to claim that workers are retired. Therefore, we shall explore the sensitivity of results to our definition of unretirement, redefining unretirement as reentry into paid employment within 2 full years after departure from the career job. The latter is the upper bound that may occur in many survey data articles.[12,13]

Gradual Retirement

We analyze phased and partial retirement patterns at the industry level. By doing this, we hope to get a better view of the heterogeneity in phased and partial retirement rates across industries. Industry-level differences in phased and partial retirement rates are particularly interesting because of the institutional context provided by occupational (early retirement) pensions in the Netherlands. We also hope to get insights on job mobility for older career job workers who enter partial retirement. We aim to add to the study of Johnson, Kawachi, and Lewis (2009), who study job mobility across industries for re-careering older workers. We distinguish between 12 different industries in our analyses. The industries are grouped according to the Nomenclature statistique des activités économiques dans la Communauté européenne (NACE) classification 1993, version 2004 (Statistics Netherlands, 2004). In our analyses, we also distinguish between men and women. We do so, because retirement patterns are quite different for men and women (Cahill, Giandrea, & Quinn, 2013; Thomson, 2007).

Phased Retirement

Figure 1 shows phased retirement rates for the Netherlands from our register data, separately by gender. Phased retirement rates were higher for women than for men. Phased retirement transitions became particularly noteworthy from the age of 60 onward. These patterns are thus very different from what is reported by Cahill et al. (2013) for the United States. Figure 2 shows a large

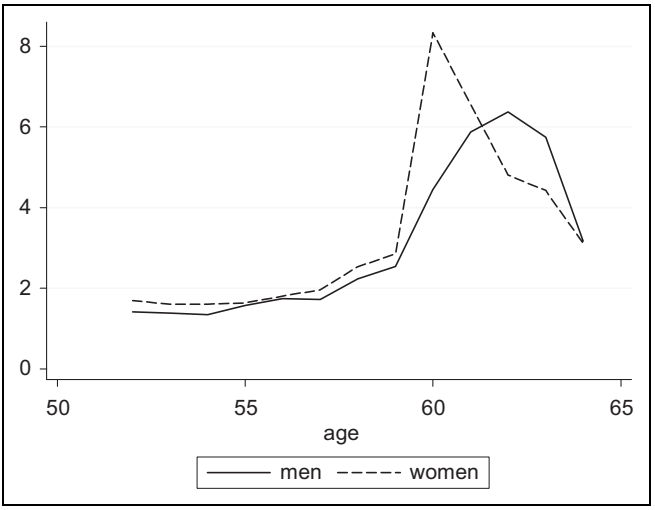

Figure 1. Fraction (percentage) of career job workers entering phased retirement, by age and gender.

heterogeneity in phased retirement rates across industries, and in particular for workers aged 60–64. Asset management, education, and the public sector were the industries with the lowest phased retirement rates for both men and women in the age category 60–64. Phased retirement for this older age-group of men and women was most frequent in health care and second most frequent in construction.

Partial Retirement

Figure 3 shows that partial retirement rates were much lower than those reported in other studies, such as Cahill et al. (2013) and Henkens and Van Solinge (2014). This is to an important extent due to the difference in measurement of partial retirement. As we observe the start and end dates of jobs, we can measure partial retirement transitions very precisely. We define partial retirement as a worker leaving the career job and entering a bridge job within 1 month. Studies that rely on biennial survey data, such as Maestas (2010) and Cahill et al. (2013), typically define partial retirement as working in a bridge job 2 years after having worked in the career job. Figure 4 shows that if we redefine partial retirement as commencement of a bridge job within 2 years after departure from the career job, partial retirement rates were

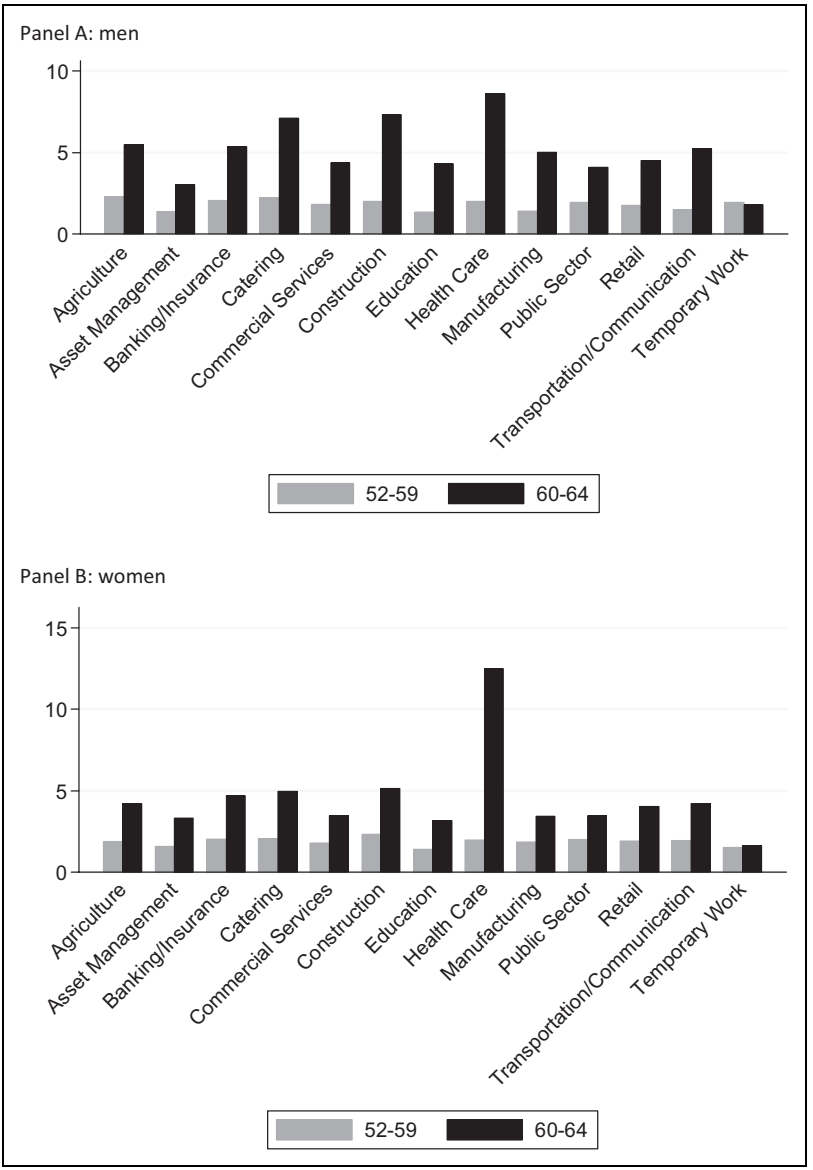

Figure 2. Fraction (percentage) of career job workers entering phased retirement, by industry and age group. Panel A: men and panel B: women.
Note. Temporary work is not an industry. Workers doing temporary work may be engaged in any industry.

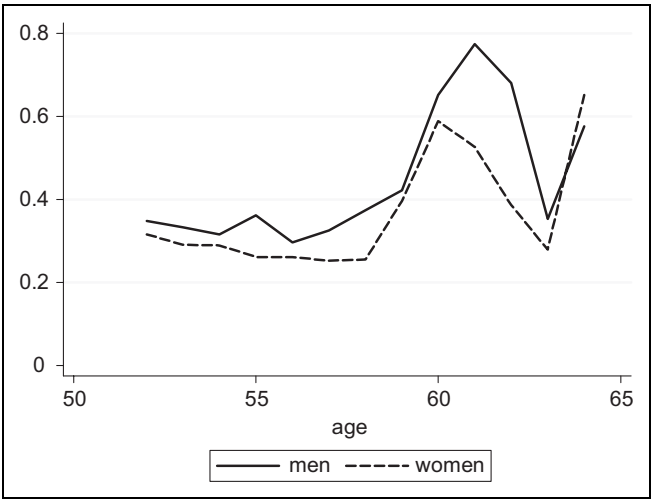

Figure 3. Fraction (percentage) of career job workers retiring partially, by age and gender.

multiple times higher than those of our original definition of partial retirement as used in Figure 3. This suggests that partial retirement rates are upward biased in studies using biennial data, implying that the demarcation with unretirement (reentry) is not always very clear.[14]

Figure 3 shows that partial retirement was more frequent among men than among women. This is consistent with the evidence provided by Thomson (2007). At age 60, partial retirement rates show a similar jump as phased retirement rates. The fraction of career job workers who retired partially was between 0.3% and 0.8% per year for men and between 0.2% and 0.7% per year for women. Partial retirement was 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.

Workers may have preferred phased retirement over partial retirement for several reasons, in particular as phased retirement may have offered both better employment protection and higher wages. Phased retirement with the same employer allowed the continued benefit from the solid employment protection offered by the career job. In addition, when wages reflected the marginal product of labor and the latter increased with firm-specific human capital and tenure, workers who entered phased retirement may have kept benefiting from their firm-specific skills that employer-switching bridge job

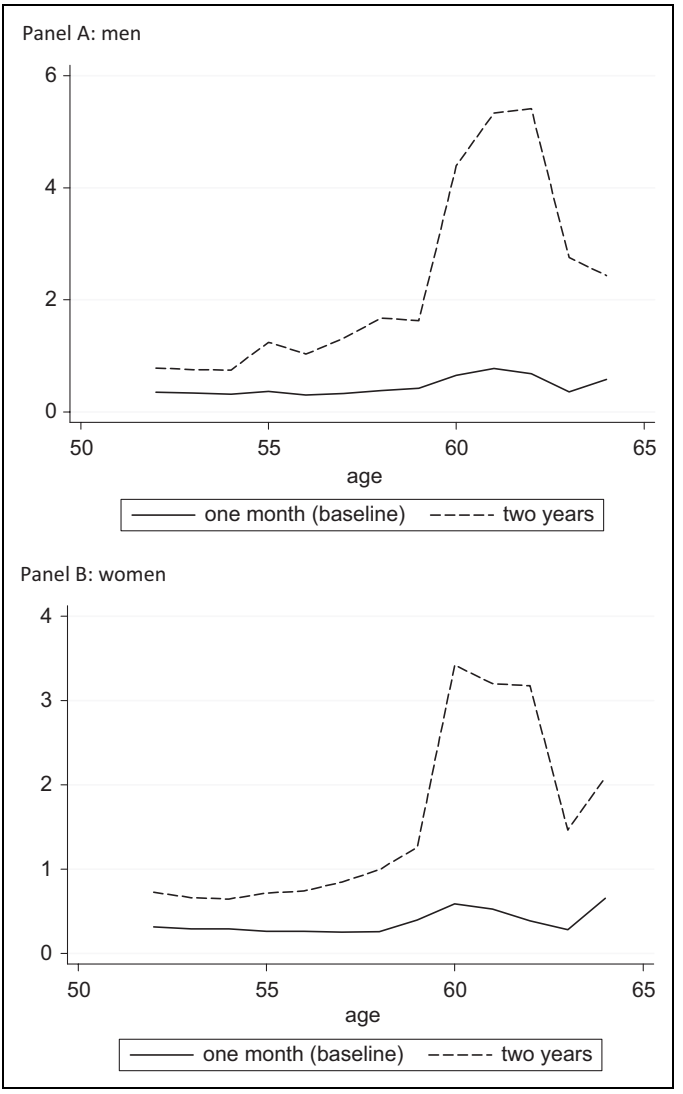

Figure 4. Fraction (percentage) of career job workers retiring partially, by age and horizon. Panel A: men and Panel B: women.
Note. Definition partial retirement horizon: bridge job starts within 1 month (baseline) or 2 years after the end of the career job.

workers lost. Second, as severance pay was high and notice periods for older career job workers were long in the Netherlands, those who involuntarily left their career jobs tended to have high reservation wages (Euwals, De Mooij, & Van Vuuren, 2009).[15]

Employers, likewise, may not have been favorable to creating bridge job positions that facilitate partial retirement for older workers. In case of phased retirement, employers were already hiring older workers. In case of partial retirement, employers were going to hire older workers. In the latter case, employers could have avoided hiring older workers with zero cost. Employers may not have wished to hire older workers because they had negative stereotypes about older workers. Employers may have associated older workers with factors such as resistance to change and adaptation problems to technology, such as computer technology (McGregor & Gray, 2002).[16] Other negative stereotypes that older workers may have been associated with by employers are high labor costs and high absenteeism (Remery, Henkens, Schippers, & Ekamper, 2003).

Table 1 shows the distribution of transitions from career jobs to bridge jobs across industries for workers in the 52–64 age category in 2001–2007. In total, there were 14,221 transitions for men and 3,339 transitions for women. The rows show the number of transitions from career jobs in the row industry to bridge jobs in the column industry as a percentage of the total number of partial retirement transitions originating from the row industry. Inter-industry inflow into bridge jobs, inter-industry outflow from career jobs, and the number of career jobs in a particular industry are measured as a percentage of, respectively, inter-industry inflow into bridge jobs, inter-industry outflow from career jobs, and the number of career jobs in all industries. We document a large heterogeneity in job mobility across industries, especially for women. For men, 25–65% of job switches from career jobs to bridge jobs took place within the same industry. For women, this was 20–75%. The large fractions of partial retirement transitions involving job transitions between industries indicate that job mobility across industries was high. This is consistent with Johnson et al. (2009), who find that 27% of workers employed full-time at age 51 to 55 change occupations by age 65 to 69. High job mobility across industries may suggest that workers and skills in one industry could have been properly applied in other industries. There were large shifts from career job workers employed in banking and insurance to bridge jobs in commercial services and the public sector. There was a large shift from career job workers employed in manufacturing to bridge jobs in commercial services as well. Partial retirement rates for workers employed in the female-dominated industries education and health care were low

Table 1. Transitions From Career Jobs (Rows) to Bridge Jobs (Columns).[a,b]

	AG	BI	CS	CO	ED	HC	MA	PS	RE	TC	TW	Inter-industry outflow from career jobs (%, add up to 100%)	Career jobs (%, add up to 100%)	Career jobs (#)
Panel A: men														
Agriculture (AG)	42.7	1.9	12.6	3.9	1.5	2.9	3.4	5.3	8.7	5.8	11.2	1.3	0.9	4,028
Banking/insurance (BI)	0.3	32.4	19.0	0.7	1.2	4.0	3.5	15.7	13.3	5.0	5.0	11.0	4.5	19,636
Commercial services (CS)	1.1	6.2	41.6	3.1	3.6	5.8	12.5	5.1	8.6	5.1	7.3	9.0	6.4	27,610
Construction (CO)	1.0	2.5	9.0	60.0	0.9	3.0	7.6	1.5	6.5	2.6	5.3	5.4	7.8	33,875
Education (ED)	0.4	0.3	5.7	0.7	58.9	13.8	1.5	7.0	1.5	4.6	5.5	4.2	9.2	39,916
Health care (HC)	0.6	1.8	8.1	0.7	6.0	59.2	3.1	6.3	5.7	3.2	5.3	5.1	9.0	39,046
Manufacturing (MA)	0.7	1.9	14.0	2.1	1.4	3.8	47.1	1.7	11.5	6.3	9.5	24.5	25.4	110,473
Public sector (PS)	1.1	2.4	9.9	1.6	6.4	12.3	5.2	29.5	7.5	12.3	11.6	19.9	18.0	78,284
Retail (RE)	0.6	3.2	11.8	2.5	1.1	3.8	12.1	0.9	50.0	8.2	5.7	10.5	9.7	42,296
Transportation/ communication (TC)	0.7	1.1	6.5	1.8	1.7	3.3	4.7	1.4	11.7	61.5	5.7	8.6	8.7	37,625
Temporary work (TW)	1.6	9.8	21.3	6.6	4.9	4.9	14.8	1.6	4.9	6.6	23.0	0.5	0.3	1,328
Inter-industry inflow into bridge jobs (%, add up to 100%)	1.4	4.3	20.4	3.4	5.0	10.7	9.7	6.8	16.2	11.6	10.5			

(continued)

Table 1. (continued)

	AG	BI	CS	CO	ED	HC	MA	PS	RE	TC	TW	Inter-industry outflow from career jobs (%, add up to 100%)	Career jobs (%, add up to 100%)	Career jobs (#)
Panel B: women														
Agriculture (AG)	30.0	10.0	20.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	20.0	0.4	0.3	508
Banking/insurance (BI)	0.4	38.6	18.9	0.7	0.7	8.8	4.2	8.4	12.3	3.2	3.9	10.6	4.4	8,781
Commercial services (CS)	0.3	4.7	48.1	0.6	1.9	14.9	7.8	2.8	9.3	2.8	6.8	10.1	5.3	10,479
Construction (CO)	0.0	8.9	17.8	20.0	0.0	11.1	11.1	0.0	20.0	0.0	11.1	2.2	1.0	1,891
Education (ED)	0.0	0.9	2.3	0.3	75.8	10.4	0.9	4.6	1.2	1.1	2.6	9.6	17.5	34,737
Health care (HC)	0.0	1.1	6.5	0.1	4.4	75.8	0.7	3.3	2.6	0.4	4.1	19.7	39.5	78,606
Manufacturing (MA)	0.0	1.8	19.1	0.3	2.7	10.7	35.2	2.4	11.3	4.5	11.9	13.1	7.9	15,768
Public sector (PS)	0.0	1.5	8.8	0.5	24.3	17.0	1.0	29.3	5.0	2.3	10.5	17.1	11.9	23,620
Retail (RE)	0.4	2.8	10.0	1.5	2.0	8.9	4.1	1.3	62.0	1.3	5.7	10.6	8.7	17,322
Transportation/ communication (TC)	0.5	3.2	11.4	0.0	1.6	12.4	1.6	1.6	14.6	47.0	5.9	5.9	3.4	6,735
Temporary work (TW)	0.0	0.0	33.3	0.0	5.6	5.6	5.6	5.6	0.0	0.0	44.4	0.6	0.2	351
Inflow into bridge jobs (% of total)	0.3	4.5	21.3	1.1	11.7	19.7	5.3	7.9	12.8	3.8	11.5			

Note. As a percentage of the total number of partial retirement transitions originating from the row industry.

[a]The rows show the number of transitions from career jobs in the row industry to bridge jobs in the column industry as a percentage of the total number of partial retirement transitions originating from the row industry. Inter-industry inflow into bridge jobs, inter-industry outflow from career jobs, and the number of career jobs in a particular industry are measured as a percentage of, respectively, inter-industry inflow into bridge jobs, inter-industry outflow from career jobs, and the number of career jobs in all industries. [b]We have merged asset management, catering, and retail compared to the analyses done in the Partial Retirement and Retirement Decision Model sections. We have done so to meet privacy regulation of Statistics Netherlands regarding minimum number of unit observations should be based on.

compared to their respective sector sizes. The relatively low partial retirement rate for workers employed in health care may be explained by career job workers entering phased retirement rather than partial retirement. Partial retirement rates for workers employed in the male-dominated industries banking and insurance and commercial services were high compared to their respective sector sizes.

Retirement Decision Model

In this section, we estimate a multinomial logit model for labor force status of workers who were initially employed in the career job. Multinomial logit models are commonly used (Kim & DeVaney, 2005; Thomson, 2007) to get a better picture of the heterogeneity in retirement rates across job and personal characteristics of career job workers. A valuable feature of these models is that they allow making a good comparison between the results for the different retirement paths. The dependent variable in our multinomial logit model distinguishes between five different outcomes: (i) workers can stay in their career jobs, (ii) enter phased retirement, (iii) enter partial retirement, (iv) leave the career job to reenter paid employment (or unretire) later on, or (v) enter full retirement.[17,18] Because the possible outcomes cannot be ranked in a natural way, we use a multinomial rather than an ordered choice model. We estimate the multinomial logit model for men and women separately. We do so, because, as previously documented, there exist large differences in retirement patterns between men and women (also see Cahill et al., 2013; Thomson, 2007).

Multinomial Logit Model

Continuing working in the career job is the base outcome in our multinomial logit model. The independent variables in our model include variables on demographic, income, and employment characteristics. Kim and DeVaney (2005) and Thomson (2007) use variables on the same categories, and education, health, and wealth. We do not have comprehensive enough data on the latter three categories of variables for our sample. The demographic characteristics variables include age minus 52, as well as its square and third power, dummies for the frequent retirement ages of 60, 61, and 62 that equal 1 if an individual reached the relevant age in the year of observation and 0 otherwise, a dummy that equals 1 if an individual had the Dutch nationality in the year of observation and 0 otherwise, a dummy that equals 1 if an individual was married in the year of observation and 0 otherwise, and the

age difference between the worker and his or her partner (spouse). If an individual was not married, the dummy for being married equals 0 and the age difference is set to 0. The variables on income and employment characteristics include worker's 1-year lagged wage income, a 1-year lagged dummy that equals 1 if the partner retired and 0 otherwise, 1-year lagged wage income of the partner, and a set of industry dummies. If an individual was not married, the 1-year lagged dummy for the partner being retired and the partner's 1-year lagged wage income equals 0. Wage income of the worker and the worker's partner is measured in thousands of deflated euros.[19] We use the public sector as the base industry. The final independent variables we include are year minus 2001, as well as its square and third power.

Results

Table 2 shows the average relative marginal effects on labor force status for a representative male and female worker who are aged 59, are employed in a career job in the public sector, and are married to employed spouses. Relative marginal effects are marginal effects divided by the mean probability that a worker enters a particular retirement path. We refer to the average relative marginal effects as relative marginal effects in the remainder of this article. Estimating relative marginal effects for representative workers with a particular value for dummies has the advantage that it provides a natural interpretation of the relative marginal effects on the dummy variables. We estimate the relative marginal effects for a representative worker aged 59, because 59 is an interesting age in the presence of early retirement arrangements. In the remainder of this article, we refer to the representative male worker as men or male workers and to the representative female worker as women or female workers.

Most relative marginal effects are significant at the 1% significance level. The relative marginal effects on phased and partial retirement are in absolute terms generally smallest and those on unretirement and full retirement are the largest. The relative marginal effect of age on full retirement indicates that the probability to retire fully jumped when workers turned 60. This is explained by the presence of arrangements that allowed early retirement as of age 60. There is a clear and significant difference between relative marginal effects for men and women, reflecting the differences in labor market behavior between the two genders.[20] The relative 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 59 and 60 in Figures 1 and 3.

Table 2. Relative Marginal Effect Estimates for the Multinomial Logit Model. Baseline Definition Partial Retirement: Bridge Job Starts Within 1 Month After the End of the Career Job.

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Panel A: men[a]								
Base outcome: stay in the career job								
Age	42.26	.000	50.56	.000	91.07	.000	96.54	.000
Dutch	1.79	.117	0.31	.934	−1.32	.444	4.61	.000
Married	−4.35	.000	10.62	.001	10.14	.000	−16.71	.000
Wage income ($t-1$)	0.58	.000	0.45	.000	0.23	.000	−0.42	.000
Agriculture	16.02	.000	0.42	.973	−54.67	.000	−23.22	.000
Asset management	−30.46	.000	−49.88	.000	−67.70	.000	−31.39	.000
Banking/insurance	−8.17	.000	57.29	.000	32.91	.000	10.21	.000
Catering	25.32	.000	25.50	.076	−39.39	.000	−66.85	.000
Commercial services	−14.28	.000	1.81	.724	−57.79	.000	−54.40	.000
Construction	14.66	.000	−15.02	.010	−44.47	.000	0.53	.720
Education	−20.78	.000	−51.51	.000	−107.51	.000	−60.19	.000
Health care	16.74	.000	−22.53	.000	−60.46	.000	−54.05	.000
Manufacturing	−9.60	.000	−7.51	.066	−19.82	.000	−12.20	.000
Retail	−8.12	.000	−2.26	.652	−55.54	.000	−47.06	.000
Transportation/communication	−5.27	.001	36.74	.000	26.37	.000	4.65	.001
Temporary work	−1.03	.850	−17.90	.369	−14.99	.059	−10.94	.026
Age difference with partner	0.35	.042	1.29	.028	0.77	.003	−1.09	.000
Partner retires ($t-1$)	10.44	.000	7.24	.279	9.29	.001	25.71	.000
Wage income partner ($t-1$)	−1.17	.000	−2.50	.014	−3.61	.000	−0.05	.877
Mean probability to enter retirement phase		3.51		.50		2.36	7.34	

(continued)

Table 2. (continued)

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Panel B: women[b]								
Base outcome: stay in the career job								
Age	80.84	.000	25.09	.000	83.18	.000	84.65	.000
Dutch	4.51	.002	−0.52	.799	−0.36	.869	0.23	.849
Married	4.70	.001	2.02	.257	0.00	.999	−1.04	.331
Wage income ($t-1$)	1.21	.000	0.40	.000	0.59	.000	−0.17	.000
Agriculture	8.68	.376	1.26	.935	−5.74	.694	−16.35	.048
Asset management	−13.56	.019	1.86	.814	−34.75	.000	−12.32	.002
Banking/insurance	4.93	.096	30.10	.000	48.85	.000	18.47	.000
Catering	19.17	.000	35.09	.000	−9.50	.226	−19.95	.000
Commercial services	−8.66	.003	17.83	.000	−16.54	.000	−23.97	.000
Construction	17.66	.000	11.10	.125	−10.36	.199	−7.23	.082
Education	−21.97	.000	0.46	.877	−45.98	.000	−35.09	.000
Health care	31.51	.000	5.87	.016	−23.03	.000	−37.06	.000
Manufacturing	0.25	.918	6.11	.075	5.28	.090	4.20	.014
Retail	3.69	.131	10.84	.001	−21.96	.000	−12.65	.000
Transportation/communication	7.55	.020	19.67	.000	33.89	.000	11.91	.000
Temporary work	−11.57	.306	30.96	.004	2.49	.858	17.35	.009
Age difference with partner	−1.07	.000	−0.25	.472	−0.03	.935	−1.45	.000
Partner retires ($t-1$)	10.96	.000	12.16	.002	10.84	.009	32.10	.000

(continued)

Table 2. (continued)

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Wage income partner ($t-1$)	−0.48	.016	0.20	.230	−0.37	.268	0.42	.000
Mean probability to enter retirement phase	2.91		0.74		1.98		9.21	

Note. RME = relative marginal effects.
[a]$N = 1{,}690{,}471$ for men. [b]$N = 819{,}197$ for women. The average relative marginal effects are estimated for men/women aged 59 who are Dutch, employed in the career job as a civil servant at the start of the observation period, and have a wife/husband who is employed. The relative marginal effects are computed by dividing the marginal effects by the fraction of workers with the characteristics as just mentioned entering a retirement trajectory. The p values are based on the standard errors of the marginal effects. The model also conditions on a polynomial in year (not shown). Likewise, age is specified to enter as a polynomial.

Male workers who earned more during the previous year were more likely to continue working full-time than to retire fully. This contradicts the finding of Kim and DeVaney (2005), who find an effect with the opposite sign. The relative marginal effect estimates of the industries show that there was a large variety in retirement behavior across industries. The signs of these effects on phased and partial retirement are in line with what we expected, given the phased and partial retirement rates in the public sector (base industry) compared to those in other industries as shown in Figure 2 and Table 1. Partial retirement and unretirement rates were relatively low in female-dominated industries such as health care and education. Although it is not straightforward to lend a precise interpretation to the particular industry differences, the fact that industry mattered for the various transitions suggests the presence of career path dependency for gradual retirement possibilities and outcomes.

The relative marginal effect of the age difference between the worker and his or her 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 increased with the partner's age. The mechanism underlying this effect may be the coordination of retirement within couples. The older the employed partner was, the more likely the partner was to retire. Because the worker and the partner may have preferred to spend time together after retirement (Gustman & Steinmeier, 2000), the probability that the worker accepted an (early) retirement offer increased with age of the partner.[21] The relative marginal effect of full retirement of the partner in the previous year on the probability to retire fully is positive for men and women. This may also indicate that couples coordinated their retirement.[22] Wage income of the partner in the previous year had a negative effect on the probability of entering phased retirement for men and women. It had a negative effect on the probability to enter partial retirement and unretirement for men and a positive effect on the probability to enter full retirement for women. Wives with a low wage in the previous year may have entered phased retirement, partial retirement, or have temporarily left paid employment. Men may have responded to the retirement transition of their partners by also entering phased retirement, partial retirement, or unretirement.

Sensitivity Check

For comparison, we estimate the multinomial logit model on labor force status with partial retirement and unretirement being measured in alternative ways. The length of the non-(wage) employment spells after departure from the career job as used in the definitions of partial retirement and unretirement

is extended from 1 month to 2 years. Hence, partial retirement is now defined as any bridge job starting within 2 years rather than 1 month after departure from the career job. Unretirement is redefined as reentry in paid employment that occurs more than 2 years rather than 1 month after departure from the career job. The alternative definition of unretirement may be more appropriate than its baseline definition, because it may capture less unemployment and other nonretirement spells than the alternative definition of unretirement.

As Figure 4 shows, the alternative definitions of partial retirement and unretirement imply that a large share of transitions that were previously considered as unretirement are now considered as partial retirement. Table 3 shows the relative marginal effects estimated using the multinomial logit model on labor force status that uses the alternative definitions of partial retirement and unretirement. The relative marginal effects on partial retirement are much larger than those based on the baseline definitions of partial retirement and unretirement (that are displayed in Table 2). The relative marginal effects on unretirement are much smaller than those in Table 2. This indicates that the way partial retirement and unretirement are measured can make a large difference in the results.

Conclusions

Gradual retirement involves a slow or step-wise 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.

We analyze gradual retirement in the Netherlands, using administrative data. We find that phased retirement is widespread in the Netherlands, but we find that partial retirement has a limited prevalence. The latter is inconsistent with evidence on the United States provided by Cahill et al. (2013) and evidence on OECD countries provided by Kantarci and Van Soest (2008), who use biennial data and find that partial retirement is widespread. Differences in findings between our study and existing studies can arguably be attributed to definitions in partial retirement. We define partial retirement as leaving the career job and entering a bridge job within 1 month. Studies using biennial data may define partial retirement as working in the career job in 1 particular year and working in the bridge job 2 years later. This definition potentially captures a lot of unretirement, that is, workers who subsequent to leaving their career job were out of the labor force for a while, and got

Table 3. Relative Marginal Effect Estimates for the Multinomial Logit Model. Alternative Definition Partial Retirement: Bridge Job Starts Within 2 Years After the End of the Career Job.

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Panel A: men[a]								
Base outcome: stay in the career job								
Age	42.49	.000	89.48	0.000	30.13	0.000	96.38	0.000
Dutch	2.01	.079	−0.67	0.691	−1.87	0.444	4.51	0.000
Married	−4.20	.000	10.63	0.000	3.35	0.121	−16.58	0.000
Wage income ($t-1$)	0.59	.000	0.28	0.000	0.11	0.001	−0.42	0.000
Agriculture	16.36	.000	−43.77	0.000	−25.42	0.039	−23.03	0.000
Asset management	−30.29	.000	−79.04	0.000	13.41	0.014	−31.66	0.000
Banking/insurance	−8.60	.000	40.89	0.000	6.43	0.080	10.23	0.000
Catering	25.99	.000	−41.27	0.000	30.20	0.000	−67.50	0.000
Commercial services	−14.03	.000	−48.96	0.000	−6.56	0.084	−54.44	0.000
Construction	14.82	.000	−38.57	0.000	−26.17	0.000	0.39	0.793
Education	−20.71	.000	−103.07	0.000	−18.38	0.000	−60.19	0.000
Health care	16.80	.000	−60.59	0.000	2.84	0.331	−54.04	0.000
Manufacturing	−9.43	.000	−18.86	0.000	−4.12	0.133	−12.31	0.000
Retail	−8.12	.000	−47.31	0.000	−9.80	0.014	−47.12	0.000
Transportation/ communication	−5.44	.001	33.11	0.000	−19.48	0.000	4.58	0.001
Temporary work	−2.02	.714	−25.02	0.003	30.24	0.000	−11.29	0.022
Age difference with partner	0.30	.084	0.87	0.001	0.43	0.257	−1.10	0.000
Partner retires ($t-1$)	10.32	.000	12.68	0.000	−12.79	0.032	25.85	0.000
Wage income partner ($t-1$)	−1.22	.000	−3.57	0.000	−0.88	0.187	−0.04	0.902
Mean probability to enter retirement phase		3.51		2.76		0.10		7.34

(continued)

Table 3. (continued)

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Panel B: women[b]								
Base outcome: stay in the career job								
Age	80.84	.000	76.85	.000	12.07	.000	84.83	.000
Dutch	4.29	.003	−1.43	.476	0.69	.463	0.34	.784
Married	4.52	.001	−0.54	.780	1.99	.061	−0.91	.399
Wage income ($t-1$)	1.20	.000	0.63	.000	0.11	.000	−0.17	.000
Agriculture	8.73	.373	−5.42	.706	0.10	.983	−16.36	.049
Asset management	−13.43	.020	−29.52	.001	−1.06	.680	−11.90	.003
Banking/insurance	4.71	.112	57.80	.000	−4.56	.035	18.34	.000
Catering	20.09	.000	16.00	.012	−1.79	.519	−20.25	.000
Commercial services	−8.78	.002	1.15	.742	−7.50	.003	−24.53	.000
Construction	18.11	.000	4.05	.567	−12.00	.032	−6.51	.116
Education	−21.87	.000	−31.00	.000	−8.64	.001	−35.27	.000
Health care	31.41	.000	−13.58	.000	−3.80	.008	−37.33	.000
Manufacturing	0.38	.876	12.26	.000	−6.40	.005	4.23	.013
Retail	3.61	.139	−8.03	.027	−6.16	.006	−12.83	.000
Transportation/ communication	7.54	.020	42.52	.000	−9.13	.007	11.71	.000
Temporary work	−11.43	.311	24.44	.038	−7.02	.308	16.71	.012
Age difference with partner	−1.07	.000	−0.13	.699	−0.20	.187	−1.39	.000

(continued)

Table 3. (continued)

	Phased retirement		Partial retirement		Unretirement		Full retirement	
	RME	*p* value	RME	*p* value	RME	*p* value	RME	*p* value
Partner retires ($t-1$)	12.53	.000	12.88	.001	0.41	.808	32.50	.000
Wage income partner ($t-1$)	−0.46	.021	−0.03	.531	−0.19	.184	0.39	.002
Mean probability to enter retirement phase		2.91		2.15		0.57		9.21

Note. RME = relative marginal effects.
[a]$N = 1{,}690{,}471$. for men. [b]$N = 819{,}197$ for women. The average relative marginal effects are estimated for men/women aged 59 who are Dutch, employed in the career job as a civil servant at the start of the observation period, and have a wife/husband who is employed. The relative marginal effects are computed by dividing the marginal effects by the fraction of workers with the characteristics as just mentioned entering a retirement trajectory. The p values are based on the standard errors of the marginal effects. The model also conditions on a polynomial in year (not shown). Likewise, age is specified to enter as a polynomial.

reemployed later on. This causes a strong upward bias of partial retirement rates. When we use a definition that is similar to the one used in studies using biennial data, we find that partial retirement is multiple times more frequent than it was when we measure partial retirement more precisely.

We argue that gradual retirement, and in particular, phased retirement, may have clear advantages for both workers and employers over full retirement. Yet, there are factors that may have limited the frequency of gradual retirement. During the period studied, early retirement arrangements provided incentives to retire fully at relatively young ages, limiting the scope for gradual retirement for workers at those ages. Employers' reluctance to offer part-time work may also have had a negative effect on gradual retirement rates.

We observe that transitions from career jobs to a bridge job in another industry were frequent, suggesting that the job mobility across industries was high. The multinomial logit marginal effect estimates show that there was substantial heterogeneity in partial retirement across industries. Phased retirement rates varied substantially across industries as well.

Most articles in the literature study gradual retirement in countries other than the Netherlands, including the United States. Gradual retirement is more frequent in the United States than in the Netherlands. Early retirement arrangements in the Netherlands during the period studied limited the scope of gradual retirement. In the Netherlands, most individuals have accumulated enough pension rights to be ensured of a stable income after normal retirement with net replacement rates of up to 100%. In the United States, many workers do not have this luxury and have to continue working to prevent large income drops. Gradual retirement facilitates this, as workers at older ages may not need, want, and/or be able to continue working full-time.

Further research is needed to find out to what extent particular measures promote gradual retirement and what the net effect of the introduction of such measures on the economy would be. Additional insights can possibly be gained when more recent data become available, spanning the period during which early retirement schemes have been fully phased out. Future research is also needed to bring clarity on whether workers prefer or become happier of retiring gradually rather than full-time at once.

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Notes

1. Early important contributions include articles by Quinn (1981) and Ruhm (1990). We shall review a number of subsequent studies, including some that cover international data in the Literature Review section.
2. We refer to Gruber and Wise (2008) for a detailed comparison of pension systems across countries (including the Netherlands and the United States).
3. There are approximately 80 pension funds. About 55 of these are profession-wide or sectoral pension funds, while 25 are firm-specific.
4. For instance, early retirement arrangements of the public sector pension fund, which is the largest pension fund in the Netherlands, required workers to have contributed to the public pension fund continuously during the 10 years prior to early retirement and to have contributed to the public sector pension system during 40 or more years, depending on the year of birth.
5. For individuals born before January 1, 1950, early retirement benefits were taxed, whereas premiums paid by workers and employers were exempted from taxation. As the income of workers was generally higher than that of early retirees, and as labor income was taxed at progressive rates, the marginal tax rate applying to the early retirement contribution by workers was often higher than the marginal tax rate applied to the early retirement benefits. This fact made early retirement very attractive for both eligible workers and employers. For individuals born on or after January 1, 1950, the tax advantage was abolished at the beginning of 2006 and early retirement arrangements for these individuals have disappeared in recent years.
6. The original file names are Zelfstandigentab (1999–2008), SSB Banen (1999–2008), SSB Personen (1999–2008), Doodsoorzaken (2000–2008), 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.

7. For every of the years 2001–2007, we select observations on workers turning 52–64 in that year only.
8. We do not have access to a comprehensive and consistent series of hours worked data for all years used (for instance, Cahill, Giandrea, & Quinn, 2006; Cahill et al., 2013 condition on 1,600 or more reported hours per year). Our definition instead conditions on income. The income value of 20,000 euros corresponds to about 125% of the annual minimum wage in 2008 at full-time employment.
9. We do not have access to information on self-employment at the same level of accuracy (in particular spell data), and we disregard the self-employed in our initial sample. When we speak of (non-) employment following a career job, we mean (non-wage) employment.
10. If multiple jobs start within 1 month after the end of the career job, the bridge job is the job that starts first. If there is a tie between jobs starting first, the bridge job is the job with the highest wage.
11. This definition may suffer from slight biases due to censoring. Alternative definitions making use of receipt of early retirement benefits are not possible with our data.
12. Maestas (2010) and other contributions using the U.S. Health and Retirement Study (HRS) identify transitions from wave-to-wave changes in current labor market status.
13. Note that our sample starts with employees with a relatively long tenure who benefit from strong employment protection. These individuals will thus be less likely to make a voluntary transition away from their career jobs. The definition of career jobs both in terms of tenure and in terms of income will provide for a reasonably "clean" reference group, perhaps with the exception that some workers may be drawing partial disability benefits with a large residual work requirement.
14. It should be mentioned, however, that some survey data sets contain self-reported information on retirement status, which in principle may help to distinguish periods of job search when unemployed from periods of nonparticipation. Our data do not, by design, contain such self-reported information.
15. Workers who were laid off due to their poor functioning did not have any employment protection.
16. 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 have hired 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 was new, workers had to learn new skills and may have needed to use new technologies anyway.

17. Staying in the career job also includes leaving the career job and entering another job within 1 month after leaving the career job if the next job pays more, equal, or less than 10% less than the career job.
18. 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, Kapteyn, & Kalwij, 2012).
19. We include 1-year lagged variables on wage income because lagged variables are predetermined.
20. We test this by estimating our multinomial logit model on observations for men and women, adding a dummy for being a female interacted individually with all independent variables (and a constant) to the original model. The relative marginal effects of the interactions are jointly significant at the 1% significance level (χ^2 value = 3,441.90, corresponding p value = .000).
21. The model only controls for 1-year lagged retirement status of the partner not for retirement status of the partner in the current year.
22. Joint retirement and the joint leisure time effect have been extensively discussed in the literature, for example, by Hurd (1990) and Pozzebon and Mitchell (1989).

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