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Unretirement of Old-Age Pensioners

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INSTEAD OF BOWLING ALONE?
UNRETIREMENT OF OLD-AGE PENSIONERS

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Instead of Bowling Alone? Unretirement of Old-Age Pensioners.*

Jan Pettersson[†]

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We study re-entry to the workforce of fully retired persons, so-called unretirement, and whether the decision to resume work depends primarily on social or economic reasons. Using Swedish register data for already retired individuals older than 55, we find unretirement to vary between 6 and 14 per cent under two different definitions. Our results largely support an interpretation that unretirement is a life-style decision rather than a response to a realized negative economic situation post retirement. However, economic motives seem to be more important for younger pensioners.

JEL Classification: J14, J26

Keywords: Retirement, Unretirement, Pensions, Labour supply

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1 Introduction

In most richer countries, combinations of decreasing fertility, declining labour force participation among older individuals and increases in life expectancy imply that more and healthier pensioners are being provided for by a shrinking labour force. This increase in dependency ratio and its resulting fiscal consequences give economic reasons and create political incentives to make the workplace an attractive alternative to retirement for elderly. There are a number of policy options to keep older persons in the labour force, ranging from sticks to carrots: Reforming the pension system includes measures such as increases in the mandatory retirement age and changes in the relation between contributions and benefits; changes in the work environment includes larger possibilities to phased and partial retirement, facilitating for elderly to remain in the labour force. Additional to the choice of staying in the labour force, already retired individuals can chose to re-enter the labour market (unretire) in full or partially. Research on unretirement is scarce and has previously been performed exclusively on U.S. survey data. Knowing the determinants of unretirement is important to know if and how incentives to unretire should be designed. This paper aims at adding to the literature by using register data from a country with a different institutional setting, Sweden.

The decision to re-enter the labour market is either planned prior to retirement or based on experiences post-retirement. There are several reasons to expect unretirement to be a planned, anticipated and fully voluntary action: an individual may chose to retire in full to spend time with or care for relatives (an older spouse or grandchildren) and then start working again; a person may want an extended holiday before commencing a final career in a different type of job (bridge employment). Furthermore, since older persons often are ineligible for unemployment benefits, it is possible that the retirement spell would correspond to a spell of unemployment for a younger person. It is, however, also possible that, if individuals are unexpectedly pleased with

their life as retired, many would-be-returners chose not to unretire.

There are also reasons to expect unretirement to be unplanned, unanticipated and involuntary as a result of negative experiences of being retired. These "shocks" may occur beyond personal influence (such as a stock market crash) but most plausibly are they results of individual misjudgement over retirement income and costs and/or over retirement preferences. The financial reason to unretire implies that a retiree has unexpected problems in making ends meet and is therefore hindered to lead her anticipated life as pensioner. This implies that old-age pensioners resume work to make money. The preference, or social, explanation is instead related to unforeseen feelings of social isolation and low self-esteem, suggesting that old-age pensioners resume work to feel useful, making new friends and keeping old, and to provide structure to life. If there is anything to the argument that individuals can be largely described as disconnected from each other in their everyday life outside work (the decline in bonding and bridging capital in the words of Putnam, 2000), exiting the labour force through retirement would potentially constitute a social shock.

Is unretirement a desirable phenomenon? From the perspective that elderly persons that are physically able to work also want to work and succeed in finding work when they demand so, it may be seen as positive, leading to increased incomes for elderly and increased labour force participation with associated fiscal gains.¹ In a longer perspective unretirement may also have a positive impact on labour supply among elderly through normative change via a social multiplier effect. However, if unretirement is an effect of unex-

¹Clearly, employers need to chose to employ retirees from the pool of available labour so unretirement occurs when a person who wanted to return to work was successful in doing so, see, for example, Rau and Adams (2005) for a study on how to attract older workers. Furthermore, if elderly and youth employment are substitutes, one would suspect increased labour force participation among elderly to increase youth unemployment. This "boxed-economy" hypothesis gets no empirical support in Gruber and Wise (2010). Instead, the elasticity of youth unemployment to 55-64 employment is found to be almost negative unitary.

pected realisations post retirement, be it social or economic realisations, any increase in the number of persons facing such unexpected shocks implies an increase in the uncertainty of life as retired. It is not evident that this could be considered as welfare enhancing.

Mainly due to data limitations, the focus in this study is on the extensive margin (the event of returning to the labour force) and not on hours of work post re-entry. Apart from studying the extent of unretirement, we also study the driving forces behind this decision. Our main research question is: What makes an elderly person start working again after having experienced a period of retirement? Using register data from Sweden for persons aged 56 and above between 1994 and 2007, we find unretirement to be a more than marginal phenomenon. Defining unretirement as lifting any positive amount of work related income, we find around 14 per cent of fully unretired individuals to unretire at least once during the period. A more conservative definition of work gives a six per cent incidence. Persons unretiring are predominantly higher educated men who tend to resume work similar to their previous occupations even though a substantial share changes line of business. Self employment is not a widespread unretirement path in our data. Regarding determinants of unplanned unretirement, our prior is that the financial incentives to re-enter the labour force post retirement are limited in the Swedish context (due to comparably ambitious social insurances). Hence, the hypothesis, which is broadly supported in the empirical analysis, is that the chief reason for unretirement is a lower satisfaction with full retirement in a broader sense than a pure, narrowly defined, economic sense, that is, social desire rather than economic need drives unretirement. However, we find the financial incentives to be age dependent for the probability to unretire.

The paper is organised as follows. The next section reviews the existing literature on unretirement. Section 3 briefly describes the Swedish pension system. Section 4 presents raw data on retirement as well as the transitions between full, partial and no retirement and section 5 studies these transitions

in some greater detail. Section 6 presents the empirical specification of the regression based analysis performed in section 7. Finally, section 8 concludes the paper.

2 Previous studies on unretirement

While there is a voluminous literature on the incidence and effects of gradual retirement (e.g. Allen et al., 2004; Gustman and Steinmeier, 1984b, 1985; Honig and Hanoch, 1985; Wadensjö, 2006, to mention a few) the process of returning to work after a period of full retirement has not been very much studied and, to our knowledge, these studies have been performed on U.S. survey data only.

Hardy (2006) reports that about half of older workers in the U.S. experience retirement as a once-and-for-all withdrawal from full-time employment. The other half phases into full retirement via partial retirement (fewer hours worked), bridge jobs (lower paid jobs, different from previous career jobs) or unretirement. She further reports unretirement to be most common among retirees in their early and mid fifties, to occur within the first two years of retirement, and to endure four years on average. Jobs for unretirees are similar to bridge jobs and unretirees are more likely to be self-employed.

Kantarci and van Soest (2008) reports that, in the U.S. Health and Retirement Study (HRS) between 1994-2000, on average 35 per cent of fully retired workers moved into partial retirement (13 per cent) or full-time work (22 per cent) two years later. A similar figure is presented in Clark and Quinn (2002). Studying a cohort of retirees aged 51-61 in 1992, Cahill et al. (2006) find that about 9 per cent of those who were out of the labour force for at least two consecutive HRS waves (interviews are performed every second year) reentered the labour force by 2002.

Using the Panel Study of Income Dynamics (PSID) in a sample of 51-65 years old individuals, Kantarci and van Soest (2008) report an average

two-year transition rate of 7.5 per cent, with comparable measures for 13 European countries using the European Community Household Panel (ECHP) ranging from 1.3 per cent (Belgium) to 8.4 per cent (Ireland).² Using the Retirement History Survey (RHS), Honig and Hanoch (1985) find a transition rate of at most 17 per cent in the data (for 58 year old U.S. white married males between 1969 and 1971) and, also using the RHS, Gustman and Steinmeier (1984a) report an average two-year transition rate of 6.5 per cent for white men between the age 58-69 in 1969-1975. Ruhm (1990) reports a 14.4 per cent two-year transition rate for men aged 60-65, while, using household heads, 24.9 per cent re-enter the labour force during the 8 years of observation (1971-1979). Reversal was found to be more common for nonwhite, lower educated, younger males without pension coverage in the career job.³

Probably most related to this work are Haywall et al. (1994) and Maestas (2010).

Using the National Longitudinal Survey of Older Men (NLS), Haywall et al. (1994) study 695 occurrences of unretirement into full-time or part-time work among men that retired at over 55 years of age between 1966 and 1983. They describe re-entry into part-time and full-time employment as two distinct events. The majority of workers re-enter the type of job held prior to retirement, i.e., full-time workers predominantly re-enter into full-time jobs and part-time workers re-enter into part-time work. Using a hazard model, they find the probability of re-entry to be negatively associated with age, disability, health (only for full-time re-entry) being married (in particular to a wife not working, and in particular for re-entry into full-time employment) and to the unemployment rate (only for full-time employment) and positively

²Note, however, that the definitions of the not working state here is "did not work for money or did not work at all" (PSID) and "unemployed, discouraged worker, or economically inactive" (ECHP) so everyone in the sample are clearly not fully retired.

³However, as pointed out by Blau (1994), being not employed in the RHS may represent temporary withdrawal rather than retirement, in particular since the spells are more common for lower ages: "such men could be temporarily idle due to a layoff or health problem, and many appear to retain an attachment to the labour force" (p. 124).

associated with previous self-employment and inflation (only for part-time employment, interpreted as a response to the decrease in the real value of pension benefits). Interestingly, they find no variable measuring financial resources to have any effect on the re-entry probability.

Using the US Health and Retirement Study (HRS) for individuals of 50 years and older that appears at least twice between 1992 and 2002, Maestas (2010) finds 21.1 per cent to move from full retirement to at least some work.⁴ Requiring at least six years of observations instead yields a transition rate of 26.9 per cent (Maestas, 2010, Table 3). However, only around 34 per cent of those defining themselves as retired also received pension income.⁵ Higo and Williamson (2009) note that many older persons that self-report being retired probably rather belong into a discouraged worker category (a result of so-called justification bias). Since the HRS includes questions on expectations of work status during retirement it is possible to study the extent to which unretirement is actually planned prior to retirement. In a multinomial logit, when including stated expectations and demographics (Table 6, column 2), being man and black is positively related to unretirement as is retirement resources (as proxied by occupational groups). Education has no predictive power for unretirement. The variable "plans to keep working in retirement" has a large positive effect on the probability to unretire whereas post-retirement variables are generally not individually significant (though they are jointly significant). Exeptions are negative health shocks that affects the unretirement probability negatively and "more worried about not being productive" that increase the unretirement probability. She concludes that

⁴The first cohort interviewed was born in 1931, so the oldest individual in the sample is 71 at most.

⁵The definition of (subjective) retirement status is those who report not working and describe themselves as retired. An alternative definition uses reported work only in which the retired sample also includes what would be self-reported unemployed persons. The definition in this study, using register data, is an observation of any form of pension income together with no work-related income (full retirement) or together with a positive work-related income (partial retirement).

unretirement is mainly planned prior to retirement and that the extent of unexpected unretirement is driven by preference shocks rather than negative news about financial position. Unretirement jobs are in general less stressful and lower paid. 61 per cent of the unretired are found to change occupation, the main flow going from manufacturing to services.

In sum, previous studies of unretirement (in the U.S.) find unretirement to be quite common. Estimates vary widely however and in many of the surveys used, the distinction between unemployment and retirement is not always obvious. In general, unretirement jobs seem to be lower paid jobs that differ from the previous held career jobs. Unretirement has been found to be more common among non-white, healthy, younger males. Low education, previous self-employment and retirement income may also be positively related to unretirement. As we shall see, both the incidence of unretirement and the determinant factors differ, at least partly, in the Swedish context.

3 The institutional context

With a phase-in period between 1999 and 2003, the Swedish public pension system was reformed, moving from a defined benefit system to a defined contribution system. Persons born before 1938 (i.e. turning 65 during 2002 or earlier) have their pensions in full from the old system. For birth cohorts 1938-1953 (65 between 2003 and 2018), pensions are given as a combination between the old and the new system (4/20 of the new system if born 1938 and 19/20 from the new system if born in 1953). People born later than 1953 pertain in full to the new system.

The old system consisted of two parts. The basic pension (folkpension) was indexed by changes in the price level and provided a low, though general, pension income. The second part, the "general supplementary pension" (allmän tilläggspension, ATP) was based on the 15 best years of income from work between the age 16-64 (with reductions made if the number of years in

the workforce fell short of 30).

The new system uses all lifetime incomes (from work and social security, including standard compensations for periods of studies, child care and military service) in the build-up of individual pension wealth in a notional account (this account has two parts, the income pension, being placed by the pension authorities, and the premium pension, being placed in securities at the individual savers' discretion). At retirement, the balance of the income pension account is divided by a divisor which size depends on the expected remaining life-years for the relevant birth cohort, adjusted for the expected growth rate of the economy. Linked to both systems are income dependent social safety parts (guaranteed pensions and housing allowances) in order to secure a minimum level of old-age income.

Both systems acknowledge retirement from 61 years of age (60 until 1998). The associated cost in the old system was a reduction in the ATP pension by 0.5 percentage points per month of early retirement (that is, before the month the person turns 65). In the new system, pension income is negatively affected by a lower lifetime income financing a longer period in retirement. In the old system it was possible to delay the outtake of ATP until 70 years of age, increasing the pension with 0.7 percentage points per month delayed (that is, each month older than 65). In the new system, delayed retirement has no upper age-limit and simply implies an increased balance on the notional account to be divided on fewer expected remaining life-years.⁶

Unretirement under the new system will increase lifetime pensions through the increase in pension wealth.⁷ Under the old system, if once retired, a resumption of work did not affect future pension income.⁸ Hence, the new

⁶The official retirement age was 67 until 1975 and 65 between 1976 and 2002. From 2003, there is no official retirement age. The employment security bill prohibits mandatory retirement before the age of 67. Furthermore, for an individual pertaining to both systems, all incomes post 65 years of age are credited the new part of the pension system.

⁷If the individual also renounce pensions during the spell of unretirement, future pensions will also increase through a lower divisor.

⁸The potential exception is a retired individual under 65 years of age with less than 30

pension system provides more explicit economic incentives to unretirement additional to the increased current income streams from resumed work.⁹ Except for the social safety part of the pension system, the public old age pensions are not reduced in response to resumed work.

In addition to the public pension system, occupational pensions have a non-negligible effect on retirement income, amounting to around 10-20 percent of the final wage as employed. There are four large agreements on occupational pensions: the local and regional government; the state; the private service sector; and for workers in the private sector. All of them allow flexibility in when to start drawing pensions (61 years in state, 55 years in the others). All agreements allow some form of work for persons below the agreed upon normal retirement age (65 years of age, with some exceptions) at the same time as occupational pensions are being lifted. In terms of resumption of work of already retired individuals, only individuals previously employed by the local and regional government may be affected.¹⁰ Occupational pensions are insensitive to resumed work after the age of 65.

In essence, while resumed work does not increase future pension income in all instances, current pensions can in general be complemented by current work with the main exception being pensioners relying on social allowances.

years of work career.

⁹There is however a "guaranteed rule" for those born 1938-1953 which may lead to a zero effect on future pensions. Essentially, the rule states that the pension under the two systems combined cannot be lower than what the pension would have been if it was based on the rights to pension in 1994, using the old system in full. This leads the guaranteed part to be reduced one for one with increased income pension.

¹⁰If a retiree from the local or regional government unretire to work within this sector, this may imply a reduced income (notice that it is the wage that is reduced, not the pension), but exceptions to the rule are allowed at the employers discretion (Svenska Kommunförbundet, 1989, §29, mom2; SKL, 2011, §19, mom 3).

4 A glance at the data on retirement and unretirement in Sweden

Is there a substantial potential for an increase in the old-age labour force? To say anything about this, data on old-age labour force participation (LFP) is needed as well as some indication on the labour supply responsiveness of individuals to changes in work incentives. Labour force participation as a share of relevant age group population is presented in Table 1. For the age group 55-64 years, LFP increased by around three percentage points between 2001 and 2005 and is throughout the period about 6 percentage points higher for men than for women. For 65-74 years, LFP has been almost constant at ten percent between 2001-2007 (corresponding to about 90.000 individuals in 2007).¹¹ Participation is higher among men (13-15 percent over the period compared to 6-8 percent for women) and is much higher for the sub group 65-69 than for the 70-74 year group.

Table 2 gives information about the degree of activity, in terms of weekly work hours, among those in the labour force. An absolute majority of employed individuals younger than 65 works 35 hours or more per week (the lowest observation in the data is 51 per cent, for women aged 55-64 in 2003; the highest observation is 90 per cent, for men aged 19-54 in 2007).¹² As shown in the table, among those 65-74, an absolute majority works less than 35 hours, most commonly less than 20 hours (32-54 per cent over the period). However, for the sub group aged 65-69 (only available from 2005), work activity is quite evenly distributed at around 1/3 per time range. Finally, in the 70-74 year group a larger fraction works 1-19 hours per week. The most plausible explanation for this pattern is that, given that a person stays in

¹¹Data from the Labour Force Survey (LFS) from Statistics Sweden. Individuals over 74 are not sampled in the LFS.

¹²Some subtleties concerning data: Before 2005, "usually worked hours" are reported while "agreed upon work hours" are reported for later years. Hence, even though within shares are used, figures are not strictly comparable.

the labour force, a successive phasing out from work is the general strategy. However, a similar pattern would emerge if part-time workers keep on working part-time post-65 while full-time workers chose to retire. Since the data is not longitudinal, we cannot discriminate between these two explanations. In brief, and unsurprisingly, the vast majority of individuals aged 65 and over does not work. If they do, they generally work less than full time.

If the amount of elderly not working represents potential labour supply or not depends on the responsiveness to (economic and other) incentives within this group. Do elderly people want to work? Do persons under 65 foresee and accept labour market participation post-65?

Table 1: Labour force by age and sex, per cent of sex-age group population.

	Total				Men				Women						
	2001	2003	2005	2006	2007	2001	2003	2005	2006	2007	2001	2003	2005	2006	2007
16-54 yr	80	80	82	82	83	82	81	84	84	85	78	78	80	80	81
55-64 yr	70	72	73	73	73	73	75	76	76	76	67	69	69	70	70
65-74 yr	09	10	10	10	11	14	14	15	14	15	06	06	06	07	08
65-69 yr	13	12	14	13	15	17	16	19	17	19	09	09	09	10	11
70-74 yr	06	07	05	07	07	10	12	09	11	10	03	02	02	03	04

Notes: Data from LFS, Statistics Sweden. See text for details.

Table 2: Employed, by age, sex and weekly work hours (per cent).

Age	Whrs	Total			Men			Women								
		2001	2003	2005	2006	2007	2001	2003	2005	2006	2007					
16-54 yr	1-19 hrs	09	10	05	05	05	06	08	04	03	03	13	14	07	07	07
	20-34 hrs	24	25	17	17	17	17	19	07	07	07	33	33	29	29	28
	35- hrs	67	64	77	78	78	77	74	89	90	90	55	53	64	65	65
55-64 yr	1-19 hrs	10	10	04	04	04	07	07	03	03	03	12	13	04	05	05
	20-34 hrs	27	28	22	23	22	20	21	12	12	12	36	36	33	34	33
	35- hrs	63	62	74	74	74	73	72	85	85	85	52	51	62	61	62
65-74 yr	1-19 hrs	47	44	34	44	44	43	40	34	43	40	53	53	32	45	52
	20-34 hrs	26	28	30	28	24	28	29	29	24	24	23	26	33	34	24
	35- hrs	26	27	35	28	31	28	29	37	31	36	23	21	32	20	22
65-69 yr	1-19 hrs			32	38	39			34	38	35			26	39	45
	20-34 hrs			31	30	25			30	27	24			34	36	25
	35- hrs			37	31	35			36	34	40			38	25	26
70-74 yr	1-19 hrs			41	57	59			34	55	53			62	65	75
	20-34 hrs			27	22	22			27	19	23			28	30	19
	35- hrs			30	20	19			38	26	25			03	03	06

Notes: Distribution of work hours among employed individuals 65 years and older. Figures before 2005 report "usually worked hours" while data from 2005 and on report "agreed upon work hours". Hence, even though within shares are used, figures are not strictly comparable. Data: Own calculations from LFS, Statistics Sweden. See text for further details.

Between 1984 and 1998, The Household Market and Nonmarket Activities (HUS) project (Klevmarken and Flood, 2000) measured peoples attitudes toward work. One question, posed to respondents between 50-64 years of age, was phrased: "Would you like to quit work entirely or to work less before [the age entitled to full pension], even if that would mean a lower pension, or do you want to continue with your current work hours until retirement?", with the associated answers (i) Yes, quit entirely; (ii) Yes, work less; (iii) No, continue; (iv) Uncertain, doesn't know. The responses are given in Figure 1. The increase in "quit entirely" over the period is large, in particular in 1998.¹³ In every year, around 30% (35% in 1993) answered that they would like to work less. While the measured attitudes are admittedly dated, there is a quite clear trend over the period towards higher preference for leisure over work already before the age of 65.

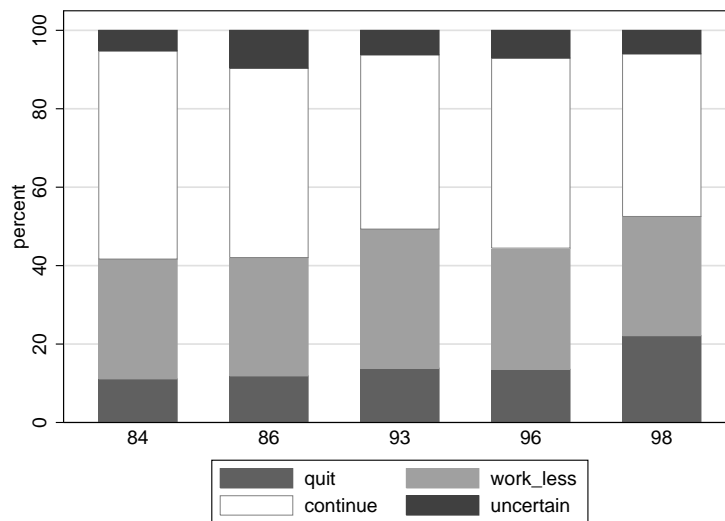


Figure 1: Attitude towards quit work in advance for lower pension.

¹³Series in percentage terms are, for 1984-1986-1993-1996-1998: 11-12-14-14-22. Also, the age distribution is similar among those who answer "quit entirely" and those who answer to the question. Sample sizes are, however, quite small, the number of respondents to this question was, for 1984-1986-1993-1996-1998: 324-497-657-650-868.

In a sample of over 6,000 randomly selected not yet retired individuals between 16-69 years of age the insurance company Länsförsäkringar (2010) reports the share of persons that would like to retire before 65 years of age to have decreased from 63 per cent in 2006 to 47 per cent in 2010. At the same time the share that actually believe they will retire before 65 was around 20 per cent, indicating a substantial amount of financial constraints (or wishful thinking).¹⁴ They report a positive association between being a high income earner and preference for early retirement. The share that wants to continue working after 65 was 6 per cent.¹⁵ These results provide little hope that small changes in incentives would produce any sizeable positive effects on labour supply for persons over 65 years of age.

Turning to register data, we use the LINDA database, a random representative panel of approximately 3 per cent of the Swedish population containing detailed information on incomes and sources of incomes (see Edin and Fredriksson, 2000). Since data is not survey based, there are no self reported information on for example attitudes towards work and retirement, self-perceived health etc. We define individuals as belonging into one of three categories: A *nonretired* individual lifts work-related income but no pension, a *fully retired* individual lifts pension but no work-related income, and a *partially retired* individual lifts both pension and work-related income.¹⁶ The present paper does not (and with the data used, cannot) discriminate between part-time and full-time labour market participation as did Haywall et al. (1994). The term partial retirement will be used for any individual lifting both pension income and work-related income during the same year. For inconsistencies in the use of terminology, see, e.g., Kantarci and van Soest

¹⁴In 2006 this figure was 27 per cent, so the "ratio of realism" (those who believe over those who wish) is about the same.

¹⁵The share that believe they will work post-65 was 14 per cent.

¹⁶The definition of retirement status in this section defines a person with *any* positive work-related income, no matter how small, as unretired (no retirement income) or partially retired (positive retirement income). In later sections we will use an alternative definition, using a threshold level on work-related incomes.

(2008, p. 116).

Figure 2 graphs retirement status (Nonretired, Partially retired and Fully retired) for persons aged 56 and above for the years 1997, 2002 and 2007. In all years, every individual lifts at least some retirement income after 67 years of age. The share of persons under the age of 65 that are not retired has increased substantially during the period; as panel (d) shows, the share of 63 years old that did not lift any retirement income increased from around 20 to 40 per cent between 1997 and 2007. Similarly, the share of fully retired individuals aged 65 decreased from 56 per cent to around 43 per cent between 1997 and 2007.¹⁷

Table 3 presents yearly transition probabilities between the Not or Partially Retired state and the Fully Retired state for three age-groups: over 55, over 60 and over 65 years of age. Around a third of the not retired or partially retired moves into full retirement the following year.¹⁸ Of primary interest in this article is the transition from full retirement to, at least some, labour market income. The yearly flow rate in this direction is small. Depending on age, between 1.4 and 1.7 percent of the sample of fully retired individuals derived some kind of labour related income one year later, thereby being defined as not or partially retired.¹⁹

¹⁷The Appendix Table A1 presents the data in more detailed form and for more years. Among the older of the old, at least from 72 years of age, retirement status has not changed much over the years. Thus, while later cohorts work more at comparable ages, maybe due to better health, this seems true only for the younger cohorts. As noted above, the vast majority of individuals over 65 is fully retired and this share (unsurprisingly) increases with age. Not many persons work without lifting pensions after age 65, so work at older ages are almost exclusively in terms of partial retirement.

¹⁸Since data are on yearly basis, a person fully retiring within a year will be classified as partially retired, probably making the transitions into full retirement too small. Transitions from retirement to work does not suffer from this problem, so yearly transitions are used in the analysis later.

¹⁹Using instead a higher limit of income in order to be defined as working (as discussed below) the flow lies between 0.3 and 0.5 per cent. The corresponding flow in Gustman and Steinmeier (1984a) is 6.5 per cent.

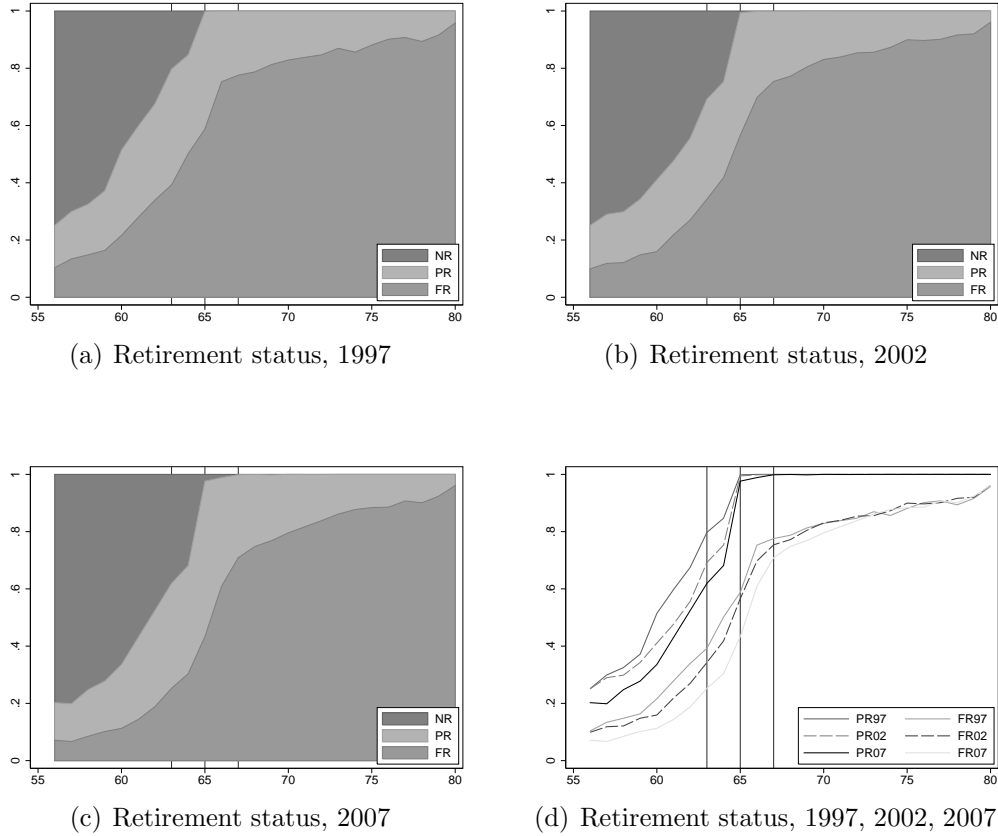


Figure 2: Retirement status, Non Retirement, Partial Retirement and Full Retirement, 1997, 2002 and 2007.

Table 3: Yearly transitions between not retired, partially retired and fully retired, 1993-2007.

\uparrow	over55		over60		over65	
	NR/PR	FR	NR/PR	FR	NR/PR	FR
NR/PR	65.88	34.12	64.81	35.19	63.82	36.18
FR	1.70	98.30	1.62	98.38	1.42	98.58
Total	4.97	95.03	4.61	95.39	3.93	96.07

Notes: See text for details.

Table 4 presents means and standard deviations for a number of variables used in estimations. We use data between 1994 and 2007. Since register data are on annual basis, we are subjected to some limitations. First, the transition into retirement may not be as smooth as our data would suggest since any transition into full retirement within a year would be recorded as a partial retirement. Hence we use as a precondition to be included in the sample one full year of full retirement, thus the decision under consideration is whether to stay fully retired or to unretire conditional on being fully retired the year before.²⁰ Second, this further imply that we probably miss a number of short span unretirement episodes: those who retire fully within a year and then unretire the same year or the following year will be recorded as being partially retired both years.

Descriptives are for two different groups, individuals who never unretire during the sample period and individuals who unretire at least once. Retirement and unretirement are defined in two alternative ways. Our first definition uses all work-related income, no matter how small, to classify a person as working (both in terms of not yet retired and in terms of unretired). Our second definition uses a higher level of income as a cutoff for classification, specifically, we use a yearly income of half one "basic price amount" (BPA) as a lower level.²¹ Half one BPA corresponds roughly to one monthly salary for a local level employee aged 60-64. This would be about the yearly wage for a person working, say, one day a week during the school semesters. Our samples consist of 87,995 (def. 1) and 93,584 (def. 2) individuals with 727,697 (794,343) person-year observations between 56 and 107 years of age. Of these, 12,196 (5,552) fully retired individuals go back to work at least once during their spell of retirement, corresponding to about 14 (6) per cent of the stock of fully retired persons. This is not an economically

²⁰That is, our raw data starts in 1993.

²¹BPA is a standard amount used to calculate the levels of social insurances. BPA follows the consumer price index but is formally decided by the government each year.

insignificant number.²²

Turning to the other variables, we note that the share of men unretiring is higher than the share of men in the group of retired. Persons unretiring have higher education (in terms of at least secondary education), higher retirement income, higher household wealth, are younger, less dependent on welfare (in terms of social and housing allowances) and are married to a higher extent. In particular, having a spouse that is working is more common in the unretirement sample, 27 (26) per cent compared to 16 (10) per cent (i.e. the ratio of working spouses to married in respective group, 0.160/0.584 et c). Contrary to our priors, there is no major difference in the share of persons born in Sweden and born abroad. Furthermore, those who unretire work during a third of the sample period after the first experience of full retirement. On average, persons that do unretire do so after almost three years of full retirement.²³ The average unretirement spell is 2.8 (2.6) years and the average number of unretirement episodes are 1.2 (1.1). Comparing the two definitions, putting a higher limit on wages to be counted as working makes unretired persons more masculine, younger, higher educated, less dependent on housing allowances, and having a somewhat higher pension income.

²²The increase in sample size might appear odd. However, consistency in definitions between who enters the sample (being defined as fully retired if having an income less than the cutoff) and who unretires (having an income over the cutoff), implies both a lower incidence of unretirement and a larger sample size. Ignoring this consistency naturally increases the unretirement rate somewhat, to 6.3 per cent (5,552/87,995).

²³Years of retirement before unretiring is a lower bound since individuals may enter the sample as already fully retired.

Table 4: Descriptive statistics

Unretired?	Definition 1		Definition 2	
	0	1	0	1
female	0.583 (0.493)	0.416 (0.493)	0.562 (0.496)	0.373 (0.484)
education, at least secondary	0.303 (0.460)	0.503 (0.500)	0.331 (0.470)	0.617 (0.486)
born in Sweden	0.895 (0.307)	0.918 (0.275)	0.899 (0.301)	0.900 (0.300)
age	75.870 (8.478)	72.589 (7.282)	75.162 (8.434)	69.200 (6.707)
age at first re-entry		69.393 (6.961)		65.704 (5.983)
social allowances	0.010 (0.098)	0.005 (0.068)	0.009 (0.094)	0.005 (0.068)
housing allowances	0.288 (0.453)	0.117 (0.322)	0.258 (0.437)	0.061 (0.239)
married	0.400 (0.490)	0.424 (0.494)	0.447 (0.497)	0.477 (0.499)
married, spouse working	0.076 (0.264)	0.160 (0.367)	0.050 (0.218)	0.168 (0.374)
pension (1980) SEK	44,932 (26,310)	56,511 (35,710)	46,887 (27,893)	59,911 (43,654)
household wealth (1980) SEK	86,160 (491,692)	159,686 (670,583)	96,684 (521,831)	191,818 (718,530)
years of retirement	6.844 (3.746)	4.131 (2.756)	6.977 (3.781)	4.153 (2.772)
- to first year of re-entry		2.955 (2.639)		2.559 (2.479)
years of unretirement		2.765 (2.328)		2.621 (2.178)
Observations	616,827	110,870	750,396	43,947
Individuals	75,799	12,196	88,032	5,552
Observations, unretirement		36,553		14,546
Episodes, unretirement		15,093		6,320

Notes: Averages of respective variables with standard deviations presented in parentheses. With the exception for Born in Sweden in column (3) and (4), every variable differ in their distribution at $p < 0.01$ in a Man-Whitney test for equality in distribution.

5 Returning to old jobs or returning to odd-jobs?

When a person unretires, does she generally enter a job with similar characteristics to the previous occupation or does the job, for voluntary or involuntary reasons, differ from the previous position?²⁴ Note that we use the term unretirement to denote any form of transition from full retirement to work and do not make any distinction between different forms of unretirement. In particular, we do not use the term bridge employment since the various definitions of it may lead to confusion.²⁵

The register data do not contain detailed information on the exact type of job held.²⁶ The employers line of business is, however, available through SNI, the Swedish Standard Industrial Classification. SNI is a list of the line of business at the five-digit level, classifying companies after the activity carried out. The list contains around 800 classes at five-digit precision.²⁷

²⁴No conclusion drawn in this section is changed if the alternative definition of unretirement is used or if we instead look at individuals over 60 or over 65 years of age.

²⁵For example, Cahill et al. (2006, page 517) define bridge jobs as "new jobs (i.e., with a new employer or, if self-employed, at a new business) that follow full-time career employment and are either part-time jobs or full-time jobs of shorter duration", not demanding a spell of retirement between the career job and the bridge employment. Quite the contrary, Rau and Adams (2005) define bridge jobs as necessarily involving a spell of formal retirement, and, as we understand it, define all forms of re-entry as bridge employment. Clark and Quinn (2002) instead define bridge jobs as one form of re-entry to the labour force of already retired persons. Thus, depending on definition, unretirement jobs are identical to bridge jobs, bridge jobs are a sub set of unretirement jobs, or bridge jobs are a form of transitory jobs that can be entered from employment as well as from retirement.

²⁶The occupational code SSK is only available in LINDA for 1999.

²⁷The classification is based on the European Union's recommended standard NACE. Until 2002, activities were classified on the standard adopted in 1992, SNI92. From 2003 and onwards, classifications are based on the revised standard, SNI 2002. There are around 150 discrepancies between the two standards. In order not to introduce false changes due to different classifications between years, we used the "transition key" provided by Statistics Sweden. Some of the 1992-codes that were ramified were given the 1992-codes from 2003. However, some classes were forked in a way that precluded this procedure. This led us to simply lump some quite heterogeneous activities together (the most dramatic one is probably that "hotels" are coded together with "care in special forms of accomodation").

With the help of this list, we compare the last known registered activity for a persons employer before his first retirement to the registered activity for the employing company during unretirement. Coverage is not complete. Using our largest sample of persons aged over 55, codes for both spells are available for 7,156 individuals (59 per cent) out of the sample of 12,196 persons that ever unretire. In order to narrow down the categories, we use, in addition to the five-digit codes, the three-digit positions (223 classes) and two-digit positions (59 classes) as well as a broader classification containing 14 types of business quite arbitrarily classified by us as containing "similar activities".²⁸

Table 5 gives the number of changers for four different kinds of classification. Unsurprisingly, the more narrow the categorisation of work type, the more individuals change category when unretiring as compared to the final job held before first retirement. Using the broadest 14-category classification, 2,819 individuals, or 39 per cent, changed classification from the last employment before retirement.²⁹ Appendix Table A2 lists the distribution of the line of business before and during unretirement and Appendix Table A3 presents a transition matrix for the 14-category classification. The main category of work before retirement is "Education" including schools as well as research institutions. When unretiring, instead, the main class is "Business" (the mode being "Property management of tenant-owners' associations"). Persistence within sector is quite high. As much as 78 per cent (Publishing and printing) stays in the same category as before retirement. The highest percentage of changers are found in "Manufacture of equipment" with 39 per cent non-changers, and about 17 per cent moving into "Real estate and

Hence, our final five-digit classification consists of somewhat fewer codes than the original classification.

²⁸The 14 codes are: Natural resources; Manufacturing, raw materials; Publishing and printing; Manufacturing, equipment; Manufacturing, other; Construction; Sales; Health-related activities; Transportation; Finance; Real Estate and Business; Education; Public administration; Other. Details available from the author.

²⁹If missing observations are not similarly distributed, this would not provide a correct picture. Thus, the smallest estimate is $2,819/12,196$, i.e., 23 per cent, assuming none of the missing observations contain a changer.

business” and 14 per cent into ”Education”. This suggests unretirement to, in a majority of cases, be occupations similar to the ones held during the previous work career. However, a substantial number of cases seems to be more similar to bridge employment than to a return to the old job.

Table 5: Changers of line of business

Coding:	SNI5	SNI3	SNI2	OWN
Changers	3282	3168	2984	2814
Per cent	46	44	42	39

Notes: Sample used are persons aged over 55, 1993-2007, and ever unretiring (using the broadest definition). SNI codes are available for 7156 individuals out of 12196, i.e. 59 per cent of the number of persons in the sample that ever unretires. See text for description of SNI* and OWN.

Do persons that unretire become self employed to a larger extent? Among our sample of 12,196 persons ever unretiring, we have information on the employment/self-employment status before their first spell of retirement for 10,802 individuals. Table 6 reports that out of the 8,538 former employees, 761 (9 per cent) unretired in the form of self-employed whereas 230 out of 2,264 formerly self-employed individuals unretired as employees. Although the fraction of self-employed persons increase from 21 per cent (2,264/10,802) to 26 per cent (2,795/10,802) from pre-retirement to retirement, the figures do not suggest this to be a widespread path to unretirement.³⁰

³⁰Looking at the part of the sample with SNI-codes available, only 1.5 per cent (under 1 per cent) of individuals changing (not changing) SNI-code went from being employed to self-employed. This probably illustrates the low coverage of SNI codes for elderly self employed persons than anything else (the shares of self-employed in these samples are 3 and 2 per cent compared to the 26 per cent reported above).

Table 6: Transitions to employment/self-employment between work before retirement and during unretirement

\uparrow	Employed	Self-employed	Total
Employed (per cent)	7,777 (91.09)	761 (8.91)	8,538 (100)
Self-employed (per cent)	230 (10.16)	2,034 (89.84)	2,264 (100)
Total (per cent)	8,007 (74.13)	2,795 (25.87)	10,802 (100)

Notes: Sample used are persons aged over 55, 1993-2007, and ever unretiring (using the broadest definition). Codes for both periods of employment are available for 10802 individuals out of 12196, i.e. 89 per cent of the number of persons in the sample that ever unretires.

6 Empirical specification

We consider a binary response logit model. Our dependent variable takes the value 0 if a retired person continues as retired and 1 if she starts lifting some work-related income during a year. One potential problem with our dependent variable concerns underreporting of incomes. Underreporting incomes implies lower taxes and, for some poorer retirees, a possibility to maintain means tested social benefits. We are, however, not aware of any empirical support of poorer pensioners underreporting incomes to any higher or lesser extent than richer pensioners.

Our goal is to use variables that will help us assess whether the decision to unretire is based on a lower satisfaction with retirement than anticipated (in a broader sense than a pure economic one, the social-reasons hypothesis) or if it is based on a worse financial situation than expected (the economic-reasons hypothesis). Our independent variables are those presented in Table 4 above

and include measures on age, education, the log of previous year's pension income, previous year's household wealth and indicator variables for income from any means tested welfare program (lagged), marital status, spouse's activity, sex, and whether the person was born in Sweden.³¹

For some of these variables we do not have a clear opinion about what sign to expect. We argue that the effect from these variables are non-trivial and will discriminate between the economic and social reasons behind unretirement. Variables that we are agnostic about are the size of pensions, wealth, marital status and the labour force status of the spouse. Pension income and household wealth would decrease the probability of re-entry if unretirement is mainly explained by bad economic situations while a positive effect on unretirement would support the social-reasons hypothesis. If being married increases the likelihood of unretirement, this supports the economic-reasons hypothesis (although one might imagine a social effect driven by boredom over a long marriage). If the labour force status of the spouse has a positive effect on the probability of re-entry, we interpret this as support for the social-reasons hypothesis (since family income would presumably be less strained with a working spouse, this would decrease pure economic motives for returning to work).

For the other variables we do have a clear prior. Being male and born in Sweden may either increase or decrease the probability of unretirement. Both men and Swedish born might be expected to have had higher incomes when working and hence higher pensions but are at the same time expected to have lower search costs if they want to re-enter the labour force. Since we are controlling for pension income, we expect the variables to proxy search costs and hence expect a negative effect from being female and a positive effect from being born in Sweden. Given that we control for pensions, we

³¹Common time effects are also included in the specification. The possibilities to unretire are also dependent on demand factors which would suggest inclusion of e.g. the annual unemployment rate. General labour market conditions would however be captured by the time dummies.

expect education to enter with a positive sign, assuming higher education not only to be correlated with better health but in particular correlated with greater possibilities to participate in the labour force at older ages. We expect the age variable to enter with a negative sign, i.e., older already retired individuals will have a lower probability of re-entry. Poorer pensioners depending on welfare allowances are limited in their possibilities to improve their economic situation at the margin through labour market participation due to social security thresholds, that is, earnings tests tend to penalize paid work. Among developed countries, and, in particular, in countries with an expanded welfare system, there is also a relatively high standard of living at the lower end of the earnings distribution implying limited economic incentives for poorer pensioners to return to work. It is also likely that being dependent on welfare allowances proxies for lower productivity and hence for a lower probability to succeed in attempts to unretire. We control for this by using indicator variables for social and housing allowances.³² We expect welfare support to influence the probability of re-entry negatively, that is, social and housing allowances would enter with a negative sign. Another apparent impediment to unretirement is health limits to work capabilities. There are no information in our data on individual health status but income and health are in general found to be positively correlated (see, e.g., Deaton and Paxson, 2001) so pension income might be interpreted as carrying some information on health status as well.

7 Results

Table 7 presents estimates in the form of odds ratios from a logit regression of the event of unretirement on the variables presented in the previous section. Estimation is first performed on the full sample. Thereafter, we limit the

³²The income tested "guaranteed pension" was first introduced in 2003 and is therefore not used. However, individuals lifting guaranteed pension most probably also receive housing allowances.

sample in the age-dimension, first to persons aged 61 and over and then to individuals aged 66 and over. In all our estimations, we use both definitions of retirement status.

For a majority of variables, the effects (in size as well as in significance) are remarkably similar over samples and definitions: The likelihood to unretire being a woman is about half that of men, and even lower when using the more conservative definition 2. Being born in Sweden increases the probability to unretire, as do education. Concerning income from means tested welfare programs, social allowances as well as housing allowances (which is much more widespread than social allowances) decrease the probability to unretire, which may be interpreted either as support for the threshold effect, or as proxy for lower productivity.³³ Marriage is also associated with lower unretirement probabilities, given that the spouse is not working. If a person instead has a spouse in the labour force, he or she is more likely to unretire, and having a working spouse becomes even more important when elderly.³⁴ Within each sample, the probability to unretire decreases with age. Household wealth shows a robust, though quantitatively modest, positive correlation with the probability to unretire.³⁵ Turning to the factor that seems to differ substantially between samples, we note that, in the full sample, pension income has a negative effect on the probability to unretire. This would support the hypothesis that lower income pensioners unretire to a higher extent. However, restricting the sample to consist of those over 60 only, the odds ratio is fairly close to one, and when further restricting the sample to those over 65 only, the coefficient estimate actually suggests that

³³“Social allowance” is however quite imprecisely estimated in all regressions.

³⁴Note that we do not know whether the spouse is not yet retired or unretired. Also, one should probably not interpret the effect as causal since correlation in retirement preferences are likely to drive both spouse’s (un)retirement decisions (see, e.g., Gustman and Steinmeier, 2000).

³⁵Overall, the fit of the model, as represented in the table by the Hosmer-Lemeshow statistic (using 10 quantiles), is low, even though the fit is better when including older pensioners only.

unretirement is positively associated with pension income. The same holds true in the conservative definition of unretirement, the differences between ages being even larger. A tentative interpretation of this change in the effect of pension income is that high income earners (from work or pension) that do retire early do so voluntarily as a planned lifestyle decision and hence has no or low incentives to retire. A lower income earner that has (voluntarily or involuntarily) retired before the age of 65 instead unretire for economic reasons. With increasing age however, it is possible that many high income earners would like to work but experience that they have been forced out of the labour force. In sum, earlier retired high income earners are financially and socially happy with their retirement decision whereas earlier retired low income earners need to make money (and increase future pensions).

Results show that females unretire to a lesser extent than do men. Do the reasons behind the decision to unretire differ between women and men? Dividing the sample according to gender yields remarkably similar estimates for the groups. The most noticeable difference is probably that "Married, spouse not in the labour force" in all regressions has a much smaller odds ratio for women (around 0.55 in all regressions) than for men (just over 1 in all regressions). Having a spouse in the labour force is positively related to the probability to unretire for both sexes, but somewhat smaller for females than for males (around 1.2 vs. 1.9 using the first definition of unretirement). Moreover, since the Swedish pension reform only affect persons born in 1938 and later, and since the new system entails more economic incentives to resume work, we further divided the sample according to year of birth. We found very small differences between the two groups born in 1937 and earlier and those born after 1937. These results are not presented but available from the author.

A more direct way of controlling how the effect from income on unretirement depends on age is to interact pensions with age. Results in terms

Table 7: Estimating determinants of unretirement

	Definition 1			Definition 2		
	(1) over55	(2) over60	(3) over65	(4) over55	(5) over60	(6) over65
Female	0.511 (-30.824)	0.513 (-28.282)	0.513 (-22.993)	0.447 (-26.245)	0.421 (-23.630)	0.402 (-16.434)
Log Pension	0.862 (-8.708)	0.964 (-1.700)	1.152 (4.274)	0.690 (-22.612)	0.812 (-8.301)	1.294 (4.143)
Age	0.936 (-46.546)	0.930 (-42.713)	0.926 (-34.538)	0.881 (-50.675)	0.872 (-39.636)	0.871 (-26.836)
Social allowance	0.727 (-2.726)	0.575 (-3.651)	0.631 (-2.392)	0.878 (-0.855)	0.808 (-0.974)	1.183 (0.541)
Housing allowance	0.463 (-22.133)	0.508 (-18.349)	0.553 (-14.320)	0.261 (-18.272)	0.315 (-13.387)	0.420 (-8.288)
Married, spouse not in LF (or NA)	0.801 (-9.809)	0.820 (-8.530)	0.824 (-7.383)	0.900 (-3.130)	0.967 (-0.880)	1.041 (0.836)
Married, spouse in LF	1.498 (14.603)	1.589 (14.921)	1.935 (15.761)	1.656 (12.433)	1.982 (13.217)	4.733 (17.943)
Education (HS)	1.521 (19.571)	1.452 (16.421)	1.399 (12.792)	1.711 (17.234)	1.619 (13.521)	1.512 (8.817)
Swedish born	1.561 (12.209)	1.514 (10.449)	1.484 (8.250)	1.374 (6.444)	1.264 (3.969)	1.172 (2.015)
Wealth	1.026 (11.295)	1.023 (9.787)	1.022 (8.024)	1.032 (10.087)	1.033 (9.301)	1.030 (6.604)
Observations	695,125	666,369	595,330	781,785	744,192	654,521
Persons:	87995	84639	78008	93584	89423	81679
Log likelihood:	-67044	-61353	-48839	-31196	-25317	-16532
Pseudo R2:	0.0782	0.0738	0.0688	0.151	0.123	0.111
H-L, $\chi^2(8)$:	50.06	31.11	15.06	39.62	22.37	7.74
(<i>p-value</i>)	0.000	0.000	0.058	0.000	0.004	0.460

Notes: Results in the form of odds ratios from a logit regression with *Unretirement* as dependent variable. The regression includes time dummies (not shown). Robust t-statistics in parentheses, clustered on individual level. H-L is the Hosmer-Lemeshow statistic using 10 groups. All estimates are significant at least at one per cent except for: pensions in (2); social allowance in (3)-(6); married, spouse not in LF in (5)-(6) and Swedish born in (6).

of logits, and calculated changes in predicted probabilities, are presented in Table 8 along with the original estimates. The interaction effect is not quantitatively strong and does not affect the other estimates. Using results in column 2, we calculate the changes in predicted probabilities for retirees at various ages facing a change in retirement income from one at the 25th percentile to the 75th percentile (with other characteristics listed in the note to Table 8). A 57 year old man decreases his probability to unretire by 0.0106 when facing the change in pension income (first figure in column 5). At the age of 60, the decrease is 0.0073 (second figure), and at 65 years of age, 0.0034 (column 4). The turning point, after which the effect from pension income on the probability to unretire becomes positive, occurs at the age of 74. Hence, for the age interval where unretirement most frequently occurs, retirement income is (weakly but) negatively related to the probability to unretire.³⁶ In light of our priors as stated in Section 6, we find that all our variables for which we had a clear prior (sex, age, means tested social welfare allowances, country of birth, education) have the expected effects on the likelihood to unretire. The variables used to discriminate between financial and social motivations behind unretirement goes somewhat in different directions: wealth (which arguably lower pure financial incentives to unretire) is correlated with small but positive unretirement probabilities which supports the social reasons hypothesis. Being married to a spouse that has retired decreases the probability of unretirement whereas being married to a spouse in the labour force increases the unretirement probability. This favours social reasons and joint decisions behind unretirement rather than financial reasons. Hence, pension income is the only variable that lends support for the financial reasons hypotheses, and the relation diminishes in age of the retiree. Overall, results tend to favour preference-based unretirement over financially driven unretirement.

³⁶Using the alternative definition of unretirement changes little, but the age after which pension income is positively associated with the probability of unretirement is calculated to 71 years, given the same baseline characteristics.

Table 8: Estimating determinants of unretirement, interacting pension and age.

	(1) Table 7	(2) Interact	(3) ME(1)	(4) ME(2)	(5) Age 57; 60; 70; 75
Female	-0.671 (0.022)	-0.635 (0.022)	-.0143	-.0135	
Log Pension	-0.149 (0.017)	-1.359 (0.150)	-.0032	-.0034	-.0106; -.0073; -.0011; .0002
Age	-0.066 (0.001)	-0.262 (0.025)	-.0193	-.0190	
Social allowance	-0.331 (0.117)	-0.329 (0.117)	-.0080	-.0080	
Housing allowance	-0.769 (0.035)	-0.717 (0.035)	-.0158	-.0147	
Married, spouse not in LF (or NA)	-0.222 (0.023)	-0.209 (0.023)	-.0058	-.0054	
Married, spouse in LF	0.404 (0.028)	0.425 (0.028)	.0142	.0147	
Education (HS)	0.420 (0.021)	0.401 (0.021)	.0148	.0138	
Swedish born	0.445 (0.036)	0.442 (0.036)	.0160	.0155	
Wealth	0.025 (0.002)	0.024 (0.002)	.0126	.0324	
PensionXAge		0.018 (0.002)			
$Pr(y \mathbf{x})$.0298	.0291	
Observations	695,125	695,125			
Persons:	87995	87995			
Log likelihood:	-67044	-66994			
Pseudo R2:	0.0782	0.0789			

Notes: Results in the form of logits from a logit regression with *Unretirement* as dependent variable. The regression includes time dummies (not shown). Standard errors in parentheses, clustered on individual level. All estimates in (1) and (2) are significant at least at one per cent. The baseline characteristics are man with mean pension level, aged 65, not on welfare, unmarried, low education, born abroad with wealth below the tax exemption level, year 2000. Marginal (discrete) effects in columns 3-5 are based, in turn, on changes from zero to one for indicator variables; an increase in pension from the 25th percentile to the 75th percentile; a change in age from 60 to 70; a change in wealth from below the exemption level to the median wealth among individuals with positive reported wealth. All listed marginal effects lie within a 95 per cent confidence interval except for the change in pensions for age 75.

8 Conclusions

The present paper adds to a small number of studies on the process of re-summing work after retirement.³⁷ It is, to our knowledge, the first study on non-U.S. data, as well as the first study using register data. Studying the extent of re-entry to the labour force in Sweden for already fully retired individuals aged 56 and above between 1994 and 2007, we find unretirement to take place, though not as frequently as previous studies for the U.S. suggest. Our data show that at most 14 per cent of the stock of fully retired persons go back to work at least once during their spell of retirement. They work, on average, for almost 3 years.

Concerning possible determinants of unretirement, logit estimations suggest that the likelihood to unretire is negatively related to the states of being: female; older among the retired; on welfare; born outside Sweden; having low education and, maybe, having no taxable wealth. Pension income is also negatively correlated with unretirement probabilities, though the effect diminishes in the age of the retiree. Furthermore, being married to a spouse that has retired decreases the probability of unretirement whereas being married to a spouse in the labour force increases the unretirement probability. In sum, we find support for an interpretation of unretirement being a life style decision - a social effect - rather than a decision driven by financial need. Once retired, re-entry to the labour market happens as a result of voluntary choice rather than by economic need.

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Appendix Tables

Table A1: Distribution of not retired, partially retired and fully retired individuals over 55 years of age, 1995-2007.

age	Not retired			Partially retired			Fully retired								
	1995	1998	2001	2004	2007	1995	1998	2001	2004	2007	1995	1998	2001	2004	2007
56-57	70.37	74.33	74.70	77.59	79.94	17.58	15.20	15.09	14.93	13.16	12.05	10.47	10.21	7.48	6.90
58-59	60.52	66.06	68.34	72.23	73.69	22.83	18.20	18.40	18.20	16.96	16.65	15.74	13.26	9.57	9.34
60	49.62	54.29	58.16	62.73	66.43	27.48	26.55	24.39	23.91	22.30	22.89	19.16	17.45	13.36	11.28
61	32.49	40.75	50.94	55.20	56.98	38.93	30.06	26.26	27.43	28.66	28.58	29.19	22.80	17.37	14.36
62	24.49	34.12	38.28	48.42	47.56	39.29	30.51	33.11	31.76	33.62	36.22	35.36	28.60	19.82	18.82
63	18.07	24.21	30.38	39.56	38.08	39.88	34.08	35.61	32.45	36.67	42.05	41.72	34.01	27.99	25.25
64	14.04	16.33	19.83	31.81	31.85	36.19	33.23	33.50	33.45	37.79	49.77	50.44	46.68	34.73	30.36
65	0.22	0.24	0.71	1.27	2.37	43.77	40.84	42.45	46.81	54.30	56.01	58.92	56.83	51.92	43.34
66	0.04	0.00	0.19	0.68	1.12	27.38	23.61	27.29	32.49	37.95	72.59	76.39	72.52	66.83	60.93
67	0.04	0.00	0.00	0.04	0.13	23.22	20.79	23.50	25.84	28.97	76.74	79.21	76.50	74.12	70.90
68-69	0.02	0.00	0.04	0.04	0.10	19.82	20.18	19.45	21.61	24.08	80.16	79.82	80.51	78.35	75.81
70-71	0.04	0.00	0.00	0.00	0.02	17.12	16.17	16.30	17.43	19.36	82.85	83.83	83.70	82.57	80.62
72-73	0.00	0.00	0.02	0.00	0.02	15.57	14.51	14.49	14.86	15.03	84.43	85.49	85.49	85.14	84.95
74-75	0.02	0.00	0.00	0.00	0.00	11.89	12.70	11.28	11.97	11.94	88.10	87.30	88.72	88.03	88.06
76-77	0.00	0.00	0.00	0.00	0.00	11.72	9.85	9.83	9.23	10.36	88.28	90.15	90.17	90.77	89.64
78-79	0.00	0.00	0.00	0.00	0.00	8.82	8.76	8.18	8.36	8.80	91.18	91.24	91.82	91.64	91.20
≥ 80	0.00	0.00	0.00	0.00	0.00	4.13	4.24	4.12	3.85	3.93	95.87	95.76	95.88	96.15	96.07
Total	14.39	17.19	20.85	23.22	23.02	18.61	16.53	16.76	17.54	19.36	67.00	66.27	62.40	59.25	57.62

Notes: Shares are presented as percentages. See text for further details. Source: Own calculations based on LINDA.

Table A2: Unretired persons employer's activity before retirement and during unretirement

	Last Before		When Unret	
	Freq.	Percent	Freq.	Percent
(1) Natural Resources	189	2.64	149	2.08
(2) Manufacturing, raw materials	318	4.44	195	2.72
(3) Publishing and printing	228	3.19	282	3.94
(4) Manufacturing, equipment	310	4.33	163	2.28
(5) Manufacturing, other	31	0.43	19	0.27
(6) Construction	211	2.95	167	2.33
(7) Sales	524	7.32	398	5.56
(8) Health-related activities	801	11.19	641	8.96
(9) Transportation	506	7.07	416	5.81
(10) Finance	294	4.11	239	3.34
(11) Real Estate and Business	1,079	15.08	1,464	20.46
(12) Education	1,340	18.73	1,396	19.51
(13) Public administration	387	5.41	283	3.95
(14) Other	938	13.11	1,344	18.78
Total	7,156	100.00	7,156	100.00

Notes: Sample used are persons aged over 55, 1993-2007, and ever unretiring (using the broadest definition). SNI codes are available for 7156 individuals out of 12196, i.e. 59 per cent of the number of persons in the sample that ever unretires.

Table A3: Transitions for unretired persons employer's activity before retirement and during unretirement

r	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	Total
(1)	51.32	1.06	0.53	0.53	0.00	0.53	3.70	5.82	0.53	2.12	10.58	8.47	3.17	11.64	100
(2)	1.89	46.23	0.63	2.52	0.63	1.57	3.46	6.29	1.26	1.57	18.87	6.60	2.52	5.97	100
(3)	0.88	0.44	77.63	0.00	0.00	0.00	1.32	1.75	0.00	0.88	5.26	4.39	0.44	7.02	100
(4)	0.00	2.26	1.61	39.03	0.32	0.32	4.84	4.52	2.58	0.65	17.10	13.87	1.94	10.97	100
(5)	0.00	3.23	0.00	0.00	41.94	6.45	3.23	12.90	0.00	0.00	6.45	3.23	3.23	19.35	100
(6)	0.95	2.37	0.47	2.37	0.00	54.98	1.42	2.84	4.27	2.37	11.37	6.64	0.95	9.00	100
(7)	1.53	0.95	1.53	0.95	0.38	0.57	46.95	4.58	2.48	2.29	14.50	9.54	2.29	11.45	100
(8)	1.00	0.50	2.50	0.37	0.00	0.62	3.12	46.44	2.00	0.87	9.99	18.35	2.62	11.61	100
(9)	0.99	0.79	1.38	0.20	0.00	1.78	2.96	2.37	63.24	0.79	11.86	4.15	1.98	7.51	100
(10)	1.36	1.02	1.02	0.34	0.00	2.04	3.40	3.74	1.36	57.48	10.88	7.14	1.02	9.18	100
(11)	0.19	0.46	1.39	0.93	0.00	0.46	1.85	2.97	1.48	1.30	75.07	7.51	1.30	5.10	100
(12)	0.45	0.37	2.31	0.22	0.07	0.52	1.72	6.34	0.67	0.22	8.81	63.96	1.64	12.69	100
(13)	1.29	1.03	0.78	0.52	0.00	1.29	2.84	5.17	2.58	1.55	12.66	13.70	42.12	14.47	100
(14)	0.43	0.21	0.96	0.32	0.00	0.21	0.85	2.77	0.64	0.64	7.25	6.50	1.49	77.72	100
Total	2.08	2.72	3.94	2.28	0.27	2.33	5.56	8.96	5.81	3.34	20.46	19.51	3.95	18.78	100

Notes: Sample used are persons aged over 55, 1993-2007, and ever unretiring (using the broadest definition). SNI codes are available for 7156 individuals out of 12196, i.e. 59 per cent of the number of persons in the sample that ever unretires. See Table A2 for codes.

Data Appendix

The data used in this paper comes from the Swedish LINDA database. Data are from the years 1994 to 2007. I only consider individuals over 55 years of age, i.e., persons that were at least 56 years old on December 31 any year and that have experienced at least one year of full retirement. Table 4 presents means and standard deviations for the sample of fully retired persons and persons leaving full retirement for work. The data are treated as follows:

- *Retirement status; Not Retired, Partially Retired, and Fully Retired:* A retired person is defined as retired if he during a year lifts any form of age-related pension. Any positive income in the variable *ppensspl*, which denotes any type of taxable pension income, puts the individual in the partially retired or fully retired group. He is defined as fully retired if pensions are not complemented with any other work-related income. I use the coding of the variable *barbink* where the codes 7 and 8 (and blank) denotes no income from work, and the rest denotes a positive income from own business (*barbink* = 3, 6) or labour (remaining codes). Any positive income from these codes places the individual in the not retired or partially retired group.
- *Unretirement.* The event of leaving FR to either PR or NR (see above).
- *Female.* 0 if man, 1 for woman (*bkon* in Linda).
- *Pension.* Previous year's log yearly retirement income (the sum of *ppensspl* and *ppenssfl* in Linda) in real 1980 Swedish kronor (deflated by CPI). One form of pension, early retirement pension (*förtidspension*), is more of a sickness benefit than a form of pension but is included in *ppensspl* (variable *pagsft*, as a part of the variable *pkussp*). *pagsft* is however only available from 1998 and onwards. Since the normal transition from early retirement benefit is to full retirement and since the probability to return to work must be considered much lower for this group, the inclusion of this group, if anything, will lower the incidence of unretirement.
- *Wealth80.* The inverse hyperbolic sine transformation of household wealth per Dec. 31 previous year (*fbesk* in Linda) in real 1980 Swedish kronor (see e.g., Burbridge et al. (1988) but results are practically identical if the transformation $\ln(1+x)$ is used). The tax exemption levels

have changed over the year, and $fbesk > 0$ iff wealth exceeds current exemption level, e.g., for a level of 800,000, wealth of 801,000 would be recorded as such, while wealth of 799,000 would be recorded as 0. We therefore use the *highest* exemption level over the sample period (so that those at least that wealthy enter in all years). In real terms (exemption level/CPI) this is SEK 550.000, from year 2002 (1500,000 in nominal terms).

- *Age.* bald in Linda.
- *Soc.* 1 if (lagged) non-negative social allowances ($ialdf > 0$ or $isocbid > 0$ in Linda).
- *Housing.* 1 if (lagged) non-negative housing allowances for elderly ($ibtp > 0$ in Linda, $ikbt$ until 1994).
- *Marital status.* Categorical variable: 0 (not married), 1 (married, spouse not in work force or n.a.), 2 (married, spouse in work force) $married = 1$ if $bciv$ equals 2, 7, 12 or 17. 0 otherwise.
- *Education.* 1 if at least secondary education (at least 3 in first position of $bsunniv$), 0 otherwise.
- *Born in Sweden.* 1 if born in Sweden, 0 otherwise.

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