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Keskusteluaiheita – Discussion papers

No. 787

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EARLY RETIREMENT AND USE OF TIME BY OLDER FINNS**

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ABSTRACT: This paper explains early retirement using Finnish time-use data, gathered by Statistics Finland during the years 1987 and 2000. The biggest gain drawn from time-use data is the capability to give information of individuals' non-monetary activities. Finnish early retirement years are, in many ways, associated with non-passivity. Those who are prone to active leisure and gain utility from it also have a higher probability to retire early. After verifying the importance of allocation of leisure time as an important determinant of retirement in the first stage estimations, we found interesting characteristics on leisure time by using the extension of Bordieu's division of human capital and social classes. The four main categories to build more specific time-use variables are economic capital, cultural capital, physical capital and time-intensive time use (social and passive). Active time use is also analysed separately for activities that are either typical of the educated (organised voluntary work) or uneducated (neighbourhood help). It was found that active time use consists of different activities for educated and uneducated older workers. We argue that when planning measures for longer stay in the working life it is important to take into account that (i) high-wage earners postpone retirement, (ii) the baby-boom generation has greater wealth and higher demand for early retirement schemes, (iii) men and women differ in their leisure time activities and in the determinants of early retirement. For example, sports and physical exercise is an important element, especially for women who continue to work, (iv) there is a need to raise the awareness of the vital value of voluntary work, and (v) social contacts do not explain early retirement.

Keywords: Early retirement, Time use research, Leisure

JEL-codes: J26, J14, J22

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TIIVISTELMÄ: Tutkimus tarkastelee varhaiseläkkeelle siirtymistä käyttäen Tilastokeskuksen keräämää ajankäyttöaineistoa vuosilta 1987 ja 2000. Ajankäyttöaineistolla on mahdollista tarkastella vapaa-ajan kysyntää. Tutkimuksen mukaan varhaiseläkeläiset käyttävät lisääntyneen vapaa-aikansa monilla tavoin aktiiviseen toimintaan. Voidaan väittää, että työntekijät, joilla on aktiivisia vapaa-ajan harrastuksia omaavat myös suuremman todennäköisyyden poistua työmarkkinoilta. Tutkimuksen mukaan niillä ihmisillä, joilla vapaa-ajan käyttö on aktiivista, on suurempi todennäköisyys poistua työelämästä. Tutkimus tarkastelee myös Bordieun luokkateorian pohjalta inhimillisen pääoman tekijöitä, jotka vaikuttavat työelämästä poistumiseen. Pääalueita ovat taloudellinen pääoma, kulttuuripääoma, fyysinen pääoma ja aika-intensiivinen ajankäyttö (kuten sosiaalinen pääoma). Aktiivisessa ajankäytössä on myös tarpeen erottaa koulutettujen aktiivinen vapaa-ajan käyttö (organisoitu vapaaehtoistyö merkittävää) vain peruskoulutuksen saaneiden ajan-käytöstä (ns. naapuriapu keskeinen tekijä ajankäytössä). Tutkimuksen perusteella toimissa, joilla pyritään vaikuttamaan ennenaikaiseen työelämästä poistumista, on otettava huomioon, että (i) korkeapalkkaiset poistuvat myöhemmin työelämästä, (ii) suuret ikäluokat ovat vauraampia kuin edellinen ikäryhmä, joka voi lisätä vapaa-ajan kysyntää ja työmarkkinoilta poistumista, (iii) vapaa-ajan aktiviteetit eroavat miehillä ja naisilla. Esimerkiksi etenkin naisilla ns. aktiivinen liikunta myöhentää työelämästä poistumista, (iv) vapaaehtoistyön merkitys on otettava huomioon varhaiseläkkeistä koituvien kustannusten arvioinnissa ja (v) työelämä ylläpitää sosiaalista kanssakäymistä ja siten sosiaalinen kanssakäyminen ei selitä työelämästä poistumista.

1. Introduction

In studies which examine the motivation for retirement, pecuniary incentives have mostly been focused upon. At the same time, researchers have been rather cautious putting their fingers on issues like the value of increasing leisure and elements of well-being. Most of the research dealing with retirement has parameters, which give room for the value of leisure activities, but evidence indicating changes in leisure value and its relation to other demographics is so far weak. In this paper the objective is to bring variables of individuals' preferences in leisure time allocation along with several monetary and demographic variables to explain early retirement. It is also in focus to find out which kind of demographic differences there are between individuals' time allocation and leisure preferences and how these differences affect early retirement decisions.

This study is based on time-use data gathered by Statistics Finland in 1979, 1988 and 2000. Together with income records and background characteristics like health status and education, one has a good base to examine the motivation factors behind early retirement. For this study, the data from 1988 and 2000¹ are analysed. The biggest gain drawn from time-use data sets is its capability to give information about individuals' non-monetary activities. Aged retirees' time allocation may favour activities like taking care of disabled or sick contemporaries or doing voluntary work (Huovinen 2001). OECD (2000b) examines patterns of work and leisure throughout people's courses of life. The study finds that people's older years are associated with greater passivity, even at the age of 55-59 when health factors should not yet be a major problem. The results are, however, only suggestive, since individuals of the same age with or without jobs are not directly compared. There are, hence, no separate analyses of aged persons' use of time by labour status or other important demographics. Here the number of demographic controllers is expanded substantially.

In economics the importance of time as a scarce resource in the economy has been approached theoretically since Becker and his theory of the allocation of time (1965), but the use of time allocation data to model economic behaviour has been rather exiguous until the recent past two decades.² Juster and Stafford (1991) brought the question of using time allocation in economics, including labour supply, to wider attention. Kooremann and Kapteyn (1987) estimate general time allocation using Becker's household production theory (1965) as background. They find, using the University of Michigan Survey, that time-use is crucially dependent on gender, age and the presence of young children. Carlin and Flood (1997) study the effect of young children on the labour supply of Swedish men. The presence of children has also been focused by Hallberg and Klevmarken (2000). Other uses of time-use data in economics have been dealing with the valuation of non-economic activities such as domestic or voluntary work or child care.

This study uses a simple binary probit model to explain aged workers' decision to leave the labor market. The probit estimation is done separately for women and men. This has proved to be a good procedure as women and men turn out to have different early retirement decision processes (see also Huovinen and Piekkola, 2002). The same

¹ Actually, these two surveys were done in April 1987-March 1988 and March 1999-March 2000.

² When time-use data has been used in elderly perspective the purpose has only been to describe the elderly time-use with simple statistical means (See, for example Niemi & Pääkkönen (1992), OECD 2000b).

proceeding has been done in several former early retirement studies³. One finds that men's retirement decision seems to be more positively dependent on the allocation of leisure time towards more active and money intensive activities than it is for women. We also extend Bordieu's division of human capital and social classes to build more specific time-use variables. The four leisure variables are build to reflect possession of economic capital, cultural capital, physical capital and time intensive time-use (social and passive). Active time-use is also analysed separately for activities that are either typical of the educated (organised voluntary work) or the uneducated (neighbourhood help). In many cases, active time-use consists of organised voluntary work for the educated and of neighbourhood help for the uneducated, although there are also differences in other forms of cultural, physical and economic capital.

The first and the second parts of this paper describe the theoretical and methodological background of the study. Chapter 3 presents the data and the sample used in the econometric work, which is carried out and analysed in the following chapter. The last chapter concludes and makes some suggestions for further study in this field.

2. Theoretical background

Theory of the allocation of time, presented by Gary S. Becker (1965), applies the economic approach to the allocation of time. It treats households as active producers of non-marketable commodities like different leisure activities. These commodities are produced combining market goods and services, the household members' own time, education, ability and other environmental variables. One of the possible applications of this theory is labour supply, which can be derived from changes in the time used on consumption.

It is assumed that the decision of the "bundle of goods" to be consumed lays the frame for time allocation between work, leisure and the other main activity groups. Consumption decisions are constrained by the time needed in the various consumption activities as well as by the consumers' money income. More time allocated for work means more income but at the same time less time for consumption.

The consumers' utility is

$$U = U(Z_1, \dots, Z_m) \equiv U(f_1, \dots, f_m) \equiv U(x_1, \dots, x_m; T_1, \dots, T_m) \quad (1)$$

where households' basic commodities $Z_i = f(x_i, T_i)$ enter directly the utility function. The utility function is maximised subject to separate constraints on the expenditure of market goods and time and to the production functions in equation (1). Let T = total time available, T_c = hours spent at consumption, T_w = hours spent at work, t_i = input of time per unit of Z_i and b_i = input of market good per unit of Z_i . The constraints are

³ Lumsdaine and Mitchell (1999) has a summary of recent retirement research

$$\begin{aligned}
\text{a) goods constraint } & \sum p_i x_i = I = V + T_w \bar{w} \\
\text{b) time constraint } & \sum T_i = T_c = T - T_w \\
\text{c) production functions } & T_i \equiv t_i Z_i \\
& x_i \equiv b_i Z_i
\end{aligned} \tag{2 a-c}$$

and can be written in single constraint

$$\sum \pi_i Z_i = S' \tag{3}$$

$$\begin{aligned}
\pi_i & \equiv p_i b_i + t_i \bar{w} \\
S' & \equiv V + T_w \bar{w}
\end{aligned} \tag{4}$$

where π_i = full price of a unit of good i . S' = full income, p_i = price of market good i , \bar{w} = earnings per unit of work, V = other income and I = total income. The tool for analysing the changes in working hours (T_w) are differences among commodities in the importance of foregone earnings. These foregone earnings depend on the time and money intensity of the commodities. The basic rule is that the more time (money) intensive goods are preferred, the more leisure time (wage) one needs to consume them. However, before being able to track down the comparative static responses to changes in the exogenous variables like wage one should be acquainted with consumers' preferences. The result of a wage raise depends on the normality of the goods and, particularly for less money intensive goods it is not straightforward to find out whether the substitution effect or the income effect is the dominating one. This study examines consumption preferences by checking whether a tendency to consume certain commodities significantly affects the early retirement decision. For aged individuals, early retirement is a means of the reduction of the labour supply, caused by different consumption patterns and preferences. This follows Hurd (1996), which suggested that in the presence of labour market rigidities the hours of work cannot be varied and the constraint will be to work more than it is desired and then not to work at all. Furthermore, it is assumed that leisure activities with a high involvement, or a high activity level, generate more utility than activities with a low involvement and are distinct (more significant) factors for explaining early retirement. In addition to the examination of leisure, the effects of changes in wage and other income drawn from the given theory are vetted.

3. The Data, Retirement Model and Time-use Variables

This study is based on time-use data. Information is gathered by asking people to keep a diary keeping track of their daily activities. Together with income records and background characteristics like health status and education, one has a good base to examine the motivation factors behind early retirement. Statistics Finland carried out three surveys in 1979, 1988 and 2000. For this study, the data from 2000 were analysed. 1988 data are used on a smaller scale to check the robustness of the results from the 2000 estimations.

The focus group of this study consists of 55-64-year-old Finnish workers and pensioners. The lower limit of 55 years is justified since many of the Finnish early retirement schemes come into operation at this age. When people turn 65 they enter the old age pension scheme regardless of their former labour market status. Our sample in 2000 consists of 1309⁴ (618 men and 691 women with one observation for workday and one for weekend if obtained) daily diary entries by respondents who belonged to the above mentioned age group⁵. Disability pensioners (94 in 2000) are dropped from the sample because their retirement decision is dependent on health reasons. Housewives are left out of the model as well. The respondents wrote their diaries during two randomly selected days, one weekday and one weekend day. The diary record was done without any pre-coded activity choices. The daily activities were described by the respondents in their own words and coded in 185 different activities by Statistics Finland.

The dependent variable in the probit model used in the study is the employment or non-employment status of the respondent. This variable is built using the labour register and background characteristics registered from the respondents in interviews done before the actual daily entries. The labour register provided detailed information of respondents' labour market status at the end of the survey year (1987 and 1999). A binary dependent variable was built to indicate whether the person was in working life or not. If the respondent had reported a different labour status in the interview, the self-reported status was used instead of the one taken from the labour register. This was done because the respondent's status might have had changed after the entry had been made in the diary. 67 respondents in the sample were unemployed, and in the rest of this study the unemployed and early pensioners are grouped together. This is consistent, as the aged unemployed persons are most probably to become *unemployment pensioners* when they turn 60 (Hakola & Uusitalo 2000, Huovinen & Piekkola 2001). In other words, they are in the unemployment pension pipeline. When the sample is cross-tabulated by labour market status (employed, unemployed, early retirement) and gender, the distributions are, broadly speaking, fairly even. The sample used in the estimations consisted of 287 employed and 252 non-employed respondents.

One purpose of this study is to use time-use variables to explain the early retirement decisions of the elderly. This task is difficult for many reasons. First of all, there are no follow-ups for the respondents. In other words, the time-use data set is not a panel where the development of individuals' time use could be observed between different periods. That fact prevents the tracking of respondents' real retirement age as well as the changes in individuals' time-use in the event of retirement. Given this constraint, it is not possible to build an option value variable of work (Stock & Wise 1990). The other main problem of this study is the possible endogeneity of the time-use variables in a retirement decision model. Many retirement modellers might argue that the allocation of leisure time to different leisure activities is the result of a retirement decision and not the other way around. The argument *defending* the use of time variables in the right hand side of the retirement model is that peoples' life styles do not change considerably even when retired, especially when only the leisure time allocation during weekends is focused upon. There is a tendency for people to continue their leisure time-use as they have done before (OECD 2000b)⁶. Therefore, it is assumed here that the time-shares of particular leisure activities will stay rather static

⁴ There might be some persons that continue working even after 65, but this group is only marginal.

⁵ In 1987 the data set included 922 respondents from 55 to 64 years of age and 1824 daily entries were recorded.

⁶ This tendency to spend the time as before has been called the continuity of life.

even if the total amount of leisure increases. In this case it is surely useful to examine which kind of lifestyle, measured by allocation of time to different activities, creates a tendency to retire early.

Keeping in mind the possible pitfalls described above, we made an attempt to identify factors from leisure variables that would explain a possible pattern within all these variables. In the first stage this identifying process was done using Becker's idea of time or money intensive commodities. Besides this, the activity and passivity level of leisure time, following the discussion about the concern about growing passivity, was used. Becker's theory suggests that if one prefers time incentive goods over more money intensive ones she or he will offer less labour and, among the aged, this lessening of the labour supply might take the form of early retirement. As discussed, it is assumed that leisure activities with a high involvement, or a high activity level, generate more utility than activities with a low involvement and are distinct (more significant) factors for explaining early retirement. To give an example, it is assumed that, on average, active leisure time-use like voluntary work, creative hobbies or exercise brings more utility to its consumer than passive activities like watching television⁷. Using these ideas, two different leisure variables, with a high level of activity and a high leisure time intensity were built. The leisure preferences are captured by counting the time-used for a certain activity group in relation to the total amount of leisure the individual possesses (see Appendix for a list of time allocation variables and their relative share from total leisure time). If the respondent allocates more leisure time to the activity group 'activities with a high activity level' than the median respondent, an active leisure dummy gets a value of one. A time intensiveness variable is built in a similar manner. A general grouping of the leisure variables listed in Appendix is presented in Table 1.

Table 1. High activity level and time intensive activities

High Activity Level- and Time Intensive Activities	
High Activity Level	High Time Intensity
Voluntary work	Visiting friends
Concerts, sport events	Visiting library
Exercise	Resting breaks
Travelling	Walking, jogging
Hunting, Fishing	

Voluntary work consists of voluntary work through organisations, neighbourhood help and participatory activities. Moreover, neighbourhood help can be divided into 10 different activities, like taking care of another household's children. In the second stage model we use more detailed categories of human capital taking Bordieu's (1984) theory of class habitus as the starting point. The categories depend on the set of common conditions in everyday life which is used dually with capital to define class

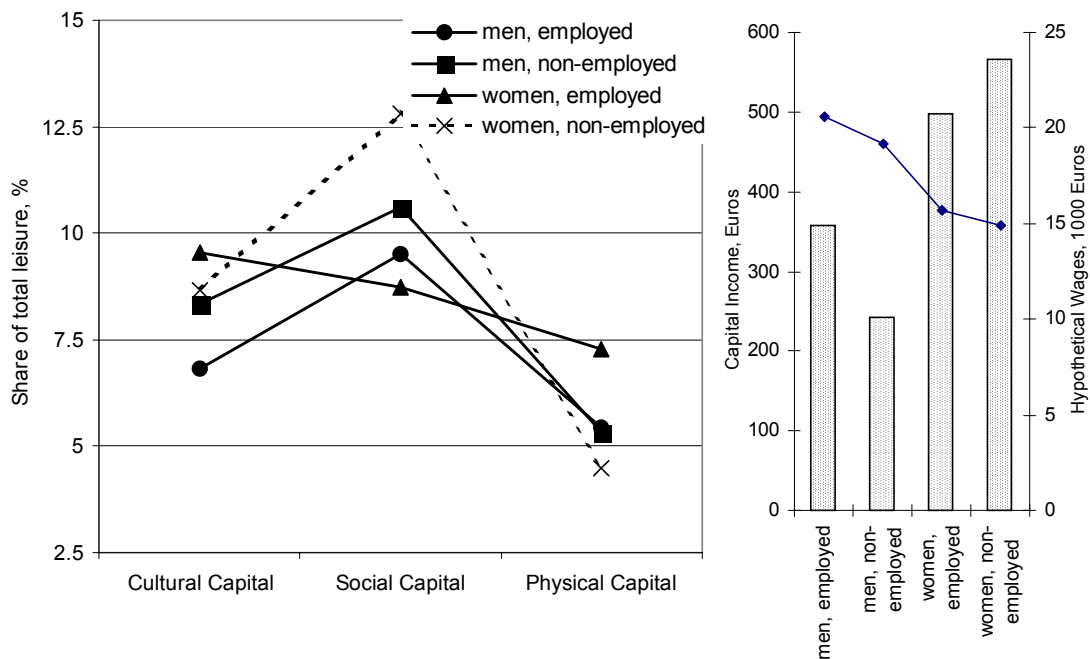
⁷ A more informal term for passive activities could be, for instance, 'boring' activities

structure in society. These show continual habits in life that may work as explanatory factors for retirement. Bordieu introduces a distinction between economic and cultural capital and cultural capital heavily depends on the class habitus. Agents are distributed over social space according to their gender and volume and structure of their capital. Bordieu (1984) takes lower class as homogeneous, leading to an idea of the absence of economic and cultural capital. Rupp (1997) amends Bordieu by reconceptualizing capital as a concept of investment, in which individuals devote differential time and energy to materialize their value orientation into culturally or economically valued goods. This includes participation in “low” art and lifestyles such as preferences with respect to the view of children’s prospects and / or physical exercise. Thus, the four main categories to build more specific time-use variables are economic capital, cultural capital, physical capital and time-intensive time-use (social and passive) (See again Appendix for a complete list of leisure time activities.)

Table 2. Leisure activities allocated following Bordieu

Leisure Activities Following Bordieu			
Economic Capital	Cultural Capital	Physical Capital	Social Capital: Time Intensive
Earned Income	Voluntary work in organisations	Sports, unorganised	Visiting friends
Unearned Income	Creative hobbies	Spots, organised	Passive Capital: Time Intensive
Earned and unearned income of other household members	Neighbour help		Resting

Figure 1. The Allocation of Leisure Time and Incomes among Employed and Non-Employed



Cultural capital includes high activity level time use such as voluntary work (including formal voluntary work and related travelling) and creative hobbies such as music and painting, that are more typical of the educated. Cultural capital includes also neighbourhood help. It is seen from Figure 1 above that the share of leisure time allocated to cultural capital does not exceedingly differ between employed (6 %) and unemployed (9 %) men. The third group of active time-use includes a number of other activities (e.g. theatre and movies and travelling not related to voluntary work). This residual active leisure dummy is dichotomised into two categories as in the previous estimations. (It includes many variables that are not clearly related to active time-use, and it is given lower weight in the interpretations.) Physical capital is separately assessed and divided into organized and non-organized sports. Time intensive use of leisure similarly includes restricted collection of activities and is divided into social activities such as visiting friends and passive time-use including rest and religion

As mentioned in the last chapter, the Finnish time-use data can be combined with income records held by the Finnish Ministry of Labour and for the entire household in 1999. The income variables used here include wages and income from capital and realty. As the income from paid work was only available for those currently in the labour force, predicted logarithmic wages were used using working experience, its second power, gender and education worked as explanatory variables. Under the prevailing tax rates for the years 1987 and 1999 calculations made by the Ministry of Finance were used to form hypothetical after-tax wages.⁸ Hypothetical wages shown as the solid line in figure 1 indicate lower incomes for women and non-employed, while the pillars in the graph show capital incomes to be higher for women, especially if non-employed.

In many previous studies health has been a very significant factor in retirement decisions. The background characteristics of Finnish time-use data give fairly good opportunities to analyse the way in which health affects labour market behaviour. The health variable indicates whether the respondent has been suffering from a handicap or a disease, which encumbers one's daily activities (self-reported). Other variables included in the model cover geographical region and age as well as ownership of the house one is living in.

4. Estimation results

The estimation results of the base model, using the first stage leisure variables for probability of non-employment, is presented in Table 4.3 (men) and 4.4 (women). In this first stage model, leisure variables are the dummy variables described above and are based on general categories of active and time-intensive use of leisure (see Appendix for description of variables used and mean values). Furthermore, there are demographic variables, which indicate the health status and other controlling background characteristics. The numbers given in the table are marginal effects of the variables at sample mean. Standard errors are corrected for cluster sampling, i.e. for

⁸ It was not possible to include the industrial sector in the estimated model, as this information was available only for the respondents still working. R^2 close to .30 was reached even with the very constrained set of variables.

the inner correlation among the members of the same household. In the estimated models, the time-use variables are built by using separately the weighted leisure time averages of week day and weekend day diaries. It can be seen that these two estimations do not differ from each other so much and it can be argued that the variables based on weekdays might not suffer from the endogeneity caused by higher total leisure time of non-employed.

The first four variables in the table are the ones indicating early retirement probabilities' dependency on economic variables. Wages, as well as capital income, lowers the probability to retire. It seems that early retirees come mostly from households with fairly low incomes, (see also Figure 1 shown earlier). For both men and women, the increase in the wage of one's spouse negatively affects the probability to retire, as seen in many other studies (see Perachhi and Welch, 1994, and Dahl et al., 1999). Jobs in high income positions normally include features that might make these jobs more attractive. Low wage jobs cause more physical strain and might be considered featureless. The negative effect of unearned income on early retirement is less easy to explain. High income earners are often also the ones who have high income from capital and realty (correlation is around 0.13) and therefore a lower propensity to retire. A similar outcome emerges for both men and women from the participation of the spouse in work (see Table 4.5-6 later).

However, the income from capital and realty of other household members increases the retirement probability. We consider the latter effect as an indication of the negative wealth effect of the exogenous income of the household. The capital income of other household members is perhaps the purest measure of exogenous increase in wealth, where the individual's wages and unearned income are highly correlated. The finding supports the theory according to which one expects wealth to increase individuals' consumption possibilities and to lower the need of earning wage in the labour market. Our data does not, hence, exclude the possibility that increasing wealth has contributed to the falling ages of retirement. But a wage rise might also be associated with the consumption of more money-intensive goods and therefore an increase in the labour supply.

The leisure time activity level seems to have different effect for men and women's retirement decision. As for women the activity level of leisure does not have high significance on retirement probability, men's retirement decision is positively related to leisure activities with high involvement. This finding is very interesting, indeed, and can be a consequence of many different factors. One explanation can be taken from the differences of voluntary work supply between non-/employed women and men. In Huovinen (2001) it was found that men increase their supply of voluntary work when they retire as women do the opposite. It has also been found in the same study, in line with US findings (Carlin 2001), that voluntary work of women is strongly related to high income and working women are the ones with highest voluntary work supply. This is the case in Finland as well and as women with high income-levels tend to stay longer in the labour market the effect of active leisure is different from men when explaining the withdrawal from workforce.

The model quite satisfactorily follows the theory of time allocation that has been presented. In this model, preferences towards money intensive bundles tend to increase the labour supply. However, the significance of the time intensity variable is rather low and the activity/passivity level of leisure seems to be a more important determinant of retirement than the money/time intensity of the leisure commodities. Finally, most of the controlling variables have no significance at all. For instance,

men's retirement decision is not dependent on health status when the disability pensioners are excluded from the analysis. Women's retirement is more significantly dependent on health status.

Tables 3-4 Stage 1 estimations for determinants of retirement

Table 3. Determinants of Retirement Probability for Men

Variable	Week 2000		Week 1988		Weekend 2000		Weekend 1988	
	dF/dx	z value	dF/dx	z value	dF/dx	z value	dF/dx	z value
Hypothetical Wages	-0.484	(2.2)	-0.499	(2.1)	-0.501	(2.3)	-0.720	(1.9)
Income from Capital and Realty	-0.021	(1.9)	-0.014	(1.5)	-0.018	(1.6)	-0.017	(1.0)
Wages of Other Household Members	-0.022	(3.6)	-0.020	(3.4)	-0.022	(3.6)	-0.017	(1.6)
Income from Capital and Realty of Other Household Members	0.013	(1.0)	0.026	(2.5)	0.015	(1.2)	0.029	(1.5)
Active Leisure Time Use	0.278	(4.1)	0.134	(2.0)	0.252	(3.8)	0.041	(0.5)
Time Intensive Leisure Time Use	-0.044	(0.6)	0.140	(2.1)	0.008	(0.1)	0.051	(0.6)
Bad health	-0.010	(0.1)	0.094	(1.2)	0.005	(0.0)	0.185	(1.1)
Home Ownership	-0.207	(1.7)	0.062	(0.7)	-0.198	(1.6)	0.077	(0.5)
Helsinki Metropolitan Area	0.058	(0.8)	-0.066	(1.0)	0.068	(1.0)	0.085	(0.7)
Low Education	0.106	(1.2)	-0.046	(0.6)	0.103	(1.1)	-0.150	(1.1)
Sample size	254		314		254		177	
Wald Test Chi(10)	51		63		53		17*	
Pseudo R ²	0.166		0.100		0.157		0.080	

Table 4. Determinants of Retirement Probability for Women

Variable	Week 2000		Week 1988		Weekend 2000		Weekend 1988	
	dF/dx	z value	dF/dx	z value	dF/dx	z value	dF/dx	z value
Hypothetical Wages	-0.616	(2.8)	-0.617	(2.5)	-0.564	(2.5)	-1.044	(2.3)
Income from Capital and Realty	-0.012	(1.2)	0.003	(0.4)	-0.014	(1.3)	0.006	(0.4)
Wages of Other Household Members	-0.028	(4.5)	-0.019	(3.0)	-0.028	(4.5)	-0.015	(1.4)
Income from Capital and Realty of Other Household Members	0.027	(2.4)	0.005	(0.5)	0.028	(2.5)	0.005	(0.3)
Active Leisure Time Use	0.088	(1.4)	0.087	(1.4)	0.002	(0.0)	0.145	(1.9)
Time Intensive Leisure Time Use	0.045	(0.7)	0.052	(0.8)	-0.082	(1.3)	0.120	(1.6)
Bad health	0.203	(1.8)	0.192	(2.3)	0.174	(1.5)	0.104	(0.6)
Home Ownership	-0.040	(0.4)	0.034	(0.4)	-0.035	(0.4)	-0.092	(0.7)
Helsinki Metropolitan Area	0.016	(0.3)	-0.119	(1.7)	0.002	(0.0)	-0.292	(2.8)
Low Education	0.004	(0.0)	-0.025	(0.3)	0.027	(0.3)	-0.145	(0.9)
Sample size	286		364		284		204	
Wald Test Chi(10)	48		27		44		40	
Pseudo R ²	0.115		0.115		0.107		0.164	

Prediction success of these models can be measured with an index of correct predictions, which in the base models gets a value of 64 (women) and 70 (men) per cent. The inclusion of controllers does not heavily increase the number of correct predictions (+2 for women and - 1 for men). The prediction indexes for the naïve models are 52 (women) and 55 (men) per cent.

In the next two tables, 5 and 6, models with the stage two leisure variables are presented, based on the categories given in Table 2:

Table 5. Estimates of The Determinants of Withdrawals from Workforce for Men

Dependent Variable	2000		1988		2000 Weekend		2000 Educated	
Variable	dF/dx	z-value	dF/dx	z-value	dF/dx	z-value	dF/dx	z-value
Age ²	0.001	(5.3)	0.001	(5.8)	0.000	(4.8)	0.003	(5.3)
Spouse Employed	-0.498	(4.1)	-0.090	(1.5)	-0.389	(3.8)		
Predicted Log Wages	-0.555	(2.7)	-0.271	(1.3)	-0.344	(2.0)	-2.351	(2.3)
Voluntary Organisation, Hobbies _{non-edu}	-3.238	(2.2)	-0.886	(0.9)	2.343	(1.3)		
Voluntary Organisation, Hobbies _{non-edu} ²	7.381	(2.1)	2.434	(0.9)	-10.091	(1.4)		
Voluntary Organisation, Hobbies _{edu}	2.993	(3.5)	-0.156	(0.1)	2.039	(2.0)	4.373	(2.4)
Voluntary Organisation, Hobbies _{edu} ²	-3.874	(2.4)	1.678	(0.6)	-1.706	(1.1)	0.000	(0.0)
Neighbour help _{non-edu}	3.823	(2.2)	1.909	(2.0)	0.823	(0.7)		
Neighbour help _{non-edu} ²	-9.082	(1.8)	-1.961	(1.1)	-0.579	(0.3)		
Neighbour Help _{edu}	-2.793	(1.7)	2.438	(0.7)	6.780	(2.1)	-10.230	(2.6)
Neighbour Help _{edu} ²	7.415	(2.0)	-11.908	(0.8)	-24.636	(1.9)	30.091	(2.8)
Organizational Sports	0.105	(0.3)	0.725	(1.7)	0.019	(0.1)	3.518	(2.7)
Non-Organizational Sports	0.695	(1.7)	0.440	(1.3)	-0.111	(0.3)	4.339	(1.8)
Other Active Time Use Dummy	0.128	(1.6)	0.110	(1.5)	0.033	(0.5)	-0.175	(0.7)
Social Time Intensive Activities	1.093	(1.1)	0.033	(0.1)	-0.347	(0.6)	12.800	(2.2)
Social Time Intensive Activities ²	-4.851	(1.6)	0.115	(0.1)	0.426	(0.4)	-46.924	(2.4)
Passive Time Intensive Activities	1.828	(1.7)	-0.035	(0.1)	0.355	(0.5)	28.234	(4.1)
Passive Time Intensive Activities ²	-5.386	(1.6)	-0.172	(0.2)	-1.390	(0.8)	-108.671	(4.4)
Sample size	250		313		254		75	
Wald Test Chi (d.f. 21, 16 in column 4)	93		112		83		56	
Pseudo R ²	0.35		0.24		0.32		0.74	

(i) Household clustering taken into account. Educated (edu) employees have vocational education (3yrs) or higher degree and 2 shows a quadratic term. Estimations include owner occupied house, Helsinki region and subjective health assessment dummies.

(ii) dF/dx is for discrete change of dummy variable from 0 to 1. z is the test of the underlying coefficient being 0.

Table 6. Estimates of The Determinants of Withdrawals from Workforce for Women

Dependent Variable	2000	1988	2000 Weekend	2000 Educated
Variable	dF/dx	dF/dx	dF/dx	dF/dx
	z-value	z-value	z-value	z-value
Age ²	0.001	0.001	0.001	0.001
Spouse Employed	-0.049	-0.126	-0.070	-0.375
Predicted Log Wages	-0.484	-0.275	-0.475	-1.312
Voluntary Organisation, Hobbies _{non-edu}	-0.984	-0.951	0.351	
Voluntary Organisation, Hobbies _{non-edu} ²	1.601	2.070	-1.425	
Voluntary Organisation, Hobbies _{edu}	1.031	8.410	0.924	0.497
Voluntary Organisation, Hobbies _{edu} ²	-1.373	-44.033	-1.944	-0.796
Neighbour Help _{non-edu}	2.002	0.665	-0.831	
Neighbour Help _{non-edu} ²	-4.163	-2.619	1.127	
Neighbour Help _{edu}	-5.452	-1.737	0.024	-7.428
Neighbour Help _{edu} ²	22.728	5.822	-0.980	32.027
Organizational Sports	-0.275	0.642	-0.244	-0.377
Non-Organizational Sports	-0.272	0.401	-0.444	-0.113
Other Active Time Use Dummy	0.219	0.097	0.043	0.214
Social Time Intensive Activities	0.782	0.183	-1.103	-1.440
Social Time Intensive Activities ²	-1.581	-0.741	1.893	3.520
Passive Time Intensive Activities	-2.113	0.965	-0.109	-4.449
Passive Time Intensive Activities ²	7.995	-1.793	0.750	15.751
Sample size	282	329	285	72
Wald Test Chi (d.f. 21, 16 in column 4)	90	87	89	46
Pseudo R ²	0.34	0.31	0.30	0.48

(i) Household clustering taken into account. Educated (edu) employees have vocational education (3yrs) or higher degree and 2 shows a quadratic term. Estimations include owner occupied house, Helsinki region and subjective health assessment dummies.

(ii) dF/dx is for discrete change of dummy variable from 0 to 1. z is the test of the underlying coefficient being 0.

Table 6. Estimates of The Determinants of Withdrawals from Workforce for Women

Dependent Variable	2000		1988		2000 Weekend		2000 Educated	
	dF/dx	z-value	dF/dx	z-value	dF/dx	z-value	dF/dx	z-value
Age ²	0.001	(6.5)	0.001	(7.0)	0.001	(6.5)	0.001	(5.1)
Spouse Employed	-0.049	(0.4)	-0.126	(1.4)	-0.070	(0.7)	-0.375	(1.8)
Predicted Log Wages	-0.484	(4.3)	-0.275	(4.4)	-0.475	(4.9)	-1.312	(2.1)
Voluntary Organisation, Hobbies _{non-edu}	-0.984	(0.6)	-0.951	(1.1)	0.351	(0.3)		
Voluntary Organisation, Hobbies _{non-edu} ²	1.601	(0.5)	2.070	(1.1)	-1.425	(0.7)		
Voluntary Organisation, Hobbies _{edu}	1.031	(0.7)	8.410	(2.1)	0.924	(0.9)	0.497	(0.3)
Voluntary Organisation, Hobbies _{edu} ²	-1.373	(0.7)	-44.033	(1.9)	-1.944	(1.3)	-0.796	(0.3)
Neighbour Help _{non-edu}	2.002	(2.2)	0.665	(0.6)	-0.831	(0.9)		
Neighbour Help _{non-edu} ²	-4.163	(2.2)	-2.619	(0.8)	1.127	(0.7)		
Neighbour Help _{edu}	-5.452	(2.3)	-1.737	(0.8)	0.024	(0.0)	-7.428	(2.0)
Neighbour Help _{edu} ²	22.728	(2.5)	5.822	(1.2)	-0.980	(0.4)	32.027	(2.1)
Organizational Sports	-0.275	(0.8)	0.642	(1.8)	-0.244	(0.9)	-0.377	(0.5)
Non-Organizational Sports	-0.272	(0.7)	0.401	(1.3)	-0.444	(1.1)	-0.113	(0.1)
Other Active Time Use Dummy	0.219	(2.7)	0.097	(1.4)	0.043	(0.5)	0.214	(1.2)
Social Time Intensive Activities	0.782	(1.1)	0.183	(0.3)	-1.103	(2.3)	-1.440	(0.6)
Social Time Intensive Activities ²	-1.581	(1.2)	-0.741	(0.6)	1.893	(2.3)	3.520	(0.6)
Passive Time Intensive Activities	-2.113	(1.7)	0.965	(1.2)	-0.109	(0.2)	-4.449	(1.1)
Passive Time Intensive Activities ²	7.995	(1.9)	-1.793	(0.8)	0.750	(0.6)	15.751	(1.0)
Sample size	282		329		285		72	
Wald Test Chi (d.f. 21, 16 in column 4)	90		87		89		46	
Pseudo R ²	0.34		0.31		0.30		0.48	

(i) Household clustering taken into account. Educated (edu) employees have vocational education (3yrs) or higher degree and 2 shows a quadratic term. Estimations include owner occupied house, Helsinki region and subjective health assessment dummies.

(ii) dF/dx is for discrete change of dummy variable from 0 to 1. z is the test of the underlying coefficient being 0.

Men's retirement decision is again positively related to the active use of leisure with a high involvement, but the type of activity is different for the educated and the uneducated with less than three year vocational education (two-thirds of the sample). It is also seen that the time use variables are highly non-linear and the second potencies may also reflect arbitrary large values of time use due to records only for one or two days. Voluntary work through organisations and creative hobbies is positively related to the withdrawals of the educated, while entirely opposite holds for the uneducated. The uneducated, on the other hand substantially increase the time devoted to neighbourhood help. Hence, for uneducated workers the vacant home activities (such as cooking, baking, cleaning and doing laundry aimed to help other households) are important. One reason for this can be that the uneducated are blue-collar workers that more easily replace (paid) manual work for various (unpaid) domestic activities.⁹ It is also seen that those men who are active in non-organisational sport (walking, jogging, cycling) tend to retire more easily (coefficient is though non-significant).

There are fewer significant factors for women in the withdrawal from the workforce. It can be noted that neighbourhood help also affects the probability of women to retire. In the year 2000 the remaining other important variables include age (+), the predicted wages (-), non-organisational sports (-) and owner-occupied house (-, not shown). An interesting finding is that both for women (educated) and men the spouse's participation in the labour market decreases withdrawals, for men by 50 per cent. Similar results are found in the US (Clark et al. 1980)). A second important finding is that for women non-organization sport has no or negative effect on the probability to retire. Precisely the opposite held for men.

Weekend information in the analysis of time intensive activities alone gives somewhat weaker results, but activities related to cultural capital remain important for men. Time allocation has less relation to men's or women's retirement decisions using information only on weekend data, but the signs of the coefficients remain largely the same. (In the first stage estimations the significance level of the time use variables is almost the same for week and weekend estimations). In addition, for women, time intensive use of time in social activities in weekend has a significant negative effect on withdrawal from the workforce.

Finally, it is seen that the earlier period of 1988 differs somewhat from 2000. The active time use is largely insignificant in 1988 differing from our first stage estimate that has a broader definition of voluntary work. Overall, all the active time-use factors are unimportant except non-organisational sport for women and social time intensive activities. It appears for the year 1988 that use of time in social activities has a significant negative effect on withdrawal from the workforce for both gender. Time allocated to social activities have decreased in 2000 as compared to 1988, which may explain the lower significance of the coefficients (see Statistics Finland, 2001). Otherwise, it appears that early retirement in the current period is much more consistently related to an individual's own preferences.

One can conclude that older men have greater pressures for replacing work with other activities after withdrawal from working life. This results in more active leisure time use. Women do not to the same extent re-allocate their leisure time after withdrawal from work. The leisure time use of women is characterised by continuity. Therefore, women do not substitute work for active leisure like men seem to do.

⁹ We refer here to domestic activities that are neighbour help, in other words activities that are aimed for another household's benefit.

5. Conclusions

It seems that even when a retirement decision creates a lot of slack leisure and some passivity, Finn's early retirement years are in many ways associated with non-passivity rather than passivity. This holds, especially when retirees in good health are considered. Activities with a high involvement like neighbourhood help and voluntary work are fairly popular for people who decide to leave their careers. Those who are prone to active leisure and gain utility from it also have a higher probability to retire early

The study does not entirely support the concern in OECD (2000b) about the increasing passivity among individuals who retire. Men, in particular, change their time allocation in favour of voluntary work or neighbourhood help. Overall, encouragement of voluntary work would be one way to utilize the non-used wealth of experience and talent that the growing number of retired people constitutes. It would also be important to have an estimate of the money value of neighbourhood help after withdrawal from the workforce. This is particularly relevant for the less educated, who are unlikely to be engaged in voluntary work and creative hobbies, which are more typical of the educated.

The main conclusions related to measures for a longer stay in working life are these:

1. *High-wage earners postpone retirement - also in the new flexible old-age pension system*

Our study shows that a higher wage level inhibits early retirement. The policy conclusions are, however, not clear. Part of the effect can also be explained by the positive association of high wages with the socio-economic position of the worker. High income earners simply have better working conditions. It is evident that the new flexible pension system may especially postpone the retirement of high-wage earners.

2. *The baby-boom generation has greater wealth and higher demand for early retirement schemes*

Our study is in line with the widely held view that an overall increase in average wealth in the past and future decades will increase early withdrawals. It is shown that increasing wealth has a positive effect on the retirement probability. This result holds for exogenous wealth such as the spouse's capital income. The baby-boom generation has substantially higher wealth than the preceding generation and the demand for early retirement will probably increase. The minimum retirement age has been set at 62 with the aim of flexible retirement until the age of 68. It is likely that the wealthy baby-boom generation will prefer the earlier retirement and will not postpone retirement to 68 years of age.

3. *Men and women differ in their leisure time activities and in the determinants of early retirement*

Men's and women's leisure time allocation varies, and therefore the determinants of retirement also differ. Women exhibit continuity of lifetime patterns independent of the participation to working life, and so early retirement is fairly unrelated to leisure time allocation. Sports and physical exercise is, however, an important element, especially for women who continue to work. It is important to find that sufficient physical exercise is

an important precondition for staying at work longer. Men, on the other hand, turn out to be physically more active after retirement.

There is, however, a greater similarity between educated men and women: in both groups voluntary work and active hobbies raise retirement probability. It has also been found that in Finland the participation of the spouse in the labour market inhibits both sexes' early retirement.

4. There is a need to raise the awareness of the vital value of voluntary work

Organizational voluntary work is prevalent, especially for educated workers. It is important to facilitate socially valuable voluntary work and creative leisure time activities also during active participation in work life. Overall, there is a need to raise the awareness of the value of voluntary work and to think of new ways to promote volunteering among all age groups.

5. Neighbourhood help activities may be a substitute for heavily taxed work, especially for the less educated

Workers with secondary education or vocational education of less than three years are active in neighbourhood help after early retirement. Much of this work is valuable and should be taken into account when one is calculating the cost of early retirement for the society. A lower marginal tax rate on labour even at the median level of income would raise the labour supply.

6. Social contacts do not explain early retirement

Social contacts are rarely the primary reason for withdrawal from work, although the share of leisure time allocated to social contacts increases after early retirement. It is evident that the maintenance of the social structure during work life is important for a longer stay at work. An example of this could be voluntary work already during working life. Work includes a lot of social contact, and retirees seemingly want to replace the social gap, resulting from retirement, with dedication to out-of-work relations after they have left their jobs.

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LEISURE TIME ACTIVITIES

	Average time use (minutes per day)	Std. Dev.	Active	Time intensive	Voluntary Organisations, Hobbies	Educated, Voluntary Organisations	Neighbourhood help	Educated, Neighbourhood Help	Organizational Sports	Non-Organizational Sports	Other Active Time Use Dummy	Social Time Intensive Activities	Passive Time Intensive Activities
Passive being (breaks for rests etc.)													
Unspecified	0.1	38.4	yes								yes		yes
Resting (exl. Sleeping)	16.2	797.3		yes									yes
Passive being indoors	7.8	504.0		yes									yes
Passive being outdoors	4.8	464.6											yes
Other	0.0	0.0											
EXERCISE, SPORTS AND OUTDOOR RECREATION													
Unspecified	0.1	47.3											
Exercise and sports													
Unspecified	0.6	143.0							yes				
Walking	18.8	775.9		yes					yes				
Jogging	0.6	122.7		yes					yes				
Cyckling	3.2	478.5		yes					yes				
Ball games	1.3	312.7		yes					yes				
Gymnastics	2.3	220.1	yes							yes			
Gym	0.3	77.0	yes							yes			
Swimming etc.	2.2	239.0	yes							yes			
Skiing, skating	1.8	290.4	yes							yes			
Other	1.4	283.6	yes							yes			
Outdoors recreation													
Unspecified	0.0	15.3	yes							yes			
Hunting, Fishing	5.7	824.0	yes							yes			
Picking berries and mushrooms	1.6	368.2	yes							yes			
Taking a dog for a walk	7.0	547.1	yes							yes			
Other	0.0	14.5	yes							yes			
Other activities related to Exercise and sports	2.3	281.3											
HOBBIES AND GAMES/PLAY													
Unspecified hobbies and games	0.1	43.6	yes								yes		
Arts													
Unspecified	0.0	0.0	yes								yes		
Visual	0.7	169.1	yes								yes		
Performing	2.0	418.0	yes								yes		
Literary	0.2	59.2	yes								yes		
Other	0.0	0.0	yes								yes		

LEISURE TIME ACTIVITIES	Stage 1		Stage 2										
	Average time use (minutes per day)	Std. Dev.	Active	Time intensive	Voluntary Organisations, Hobbies	Voluntary Organisations, Educated, help	Neighbourhood help	Educated, Neighbourhood Help	Organizational Sports	Non-Organizational Sports	Other Active Time Use Dummy	Social Time Intensive Activities	Passive Time Intensive Activities
Hobbies (excl. arts)													
Unspecified	0.1	74.7	yes								yes	yes	
Collecting	0.0	0.0	yes								yes		
ADP	0.6	191.8	yes								yes		
Searching for info with the pc	0.4	111.9	yes								yes		
Communicating with the pc.	0.2	41.6	yes								yes		
Other or unspecified ADP related activity	1.3	291.4	yes								yes		
Exchange of letters	1.0	208.9	yes								yes		
Other	0.8	191.3	yes								yes		
Game/play													
Unspecified	0.1	39.9	yes								yes		
Solitary	5.6	475.8	yes								yes		yes
Parlour game, indoors	2.0	367.3	yes								yes		
--- outdoors	0.2	66.4											
Computer games	0.8	137.7											
Game of chance	0.4	79.9											
Other	0.0	0.0											
MEDIA													
Unspecified	0.0	18.7											
Reading													
Unspecified	7.7	470.5											
Newspaper	24.2	625.2											
Magazine or periodicals	5.9	473.9											
Unspecified reading of paper	10.2	501.1											
Reading a book	15.6	810.6											
Other	0.6	107.2											
Tv and video													
TV	157.1	2350.1											
Video	2.5	335.7											
Radio or music													
Unspecified	0.4	108.3											
Radio	11.8	612.2											
Recordings	0.5	105.4											
Other	0.0	0.0											
LEISURE TIME STUDY													
Leisure time study	1.8	356.1											
TRAVEL													
Leisure time study	0.2	57.3	yes								yes		
Voluntary work	0.6	142.7											
Participatory activities	0.7	130.7											
Social activities	6.2	493.3	yes										yes
Culture and entertainment events	1.6	219.6											
Sports, exercise outdoors recreation	3.4	311.3	yes										
Hobbies	0.6	115.7	yes										
Traveling, tourism	12.2	1204.5	yes										
Car 'rides'	1.0	283.0											

LEISURE TIME ACTIVITIES

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