Pasi Huovinen – Hannu Piekkola

THE TIME IS RIGHT?

Early Retirements and
Use of Time by Older Finns

Cover: Mainos MayDay, Vantaa 2002

ABSTRACT: Population ageing has a growing influence on the labour market in Europe. Ageing and related issues have created a lot of interest and generated much effort to explain and cope with the ongoing development, i.e where. the early retirement behaviour of the older workforce is one of the main elements. This book consists of three studies examining the retirement behaviour of ageing Finns.

The first study was published in the Australian Journal of Labour Economics and contains an empirical analysis of gross job flows in Finland and of the factors that explain the extensive withdrawal of older workers from employment in Finland in the 1990s. Job flows are characterised in terms of employee age and education. The study shows that older workers had a considerably higher propensity to lose their jobs than Finnish employees had in general and disability pensions and unemployment pensions appear as substitutes that are used, depending on which one is least costly for the firm.

The second and third studies examine individuals' preferences in time allocation along with monetary variables to explain early retirement decisions. These two studies are based on research data concerning the use of Finnish time, gathered by Statistics Finland. Findings suggest that the active use of leisure with high involvement turns out to be an important determinant of early retirement, particularly for men. There is some support for concern of growing passivity among the elderly when one is analysing the diurnal time allocation. However, retirees use their leisure time more actively than their peers who are still in working life.

KEY WORDS: Early retirement, Job-flows, Time use research, Leisure

JEL-codes: J22, J26

TIIVISTELMÄ: Väestön ikääntymisen ja siitä seuraavan työikäisten henkilöiden osuuden laskun vaikutus eläkejärjestelmään ja eläkkeiden rahoitukseen on tämänhetkisen talouspoliittisen keskustelun avainkysymyksiä niin Suomessa kuin muissakin Euroopan maissa. Tämän kirjan tarkoituksena on täydentää aikaisempaa työmarkkinoita koskevaa tutkimusta hyödyntäen yhdistettyä työnantaja–työntekijä -aineistoa sekä ajankäyttötutkimusta. Teos

koostuu kolmesta erillisestä arikkelista, joissa pyritään selittämään varhais-
eläkkeelle siirtymistä sekä työnantajan että työntekijän näkökulmasta.

Kirjan ensimmäinen osa on julkaistu lehdessä Australian Journal of Labour
Economics ja se käsittelee siirtymiä työstä varhaiseläkkeelle. Työvoimavirtalas-
kelmat osoittavat ikääntyneiden työmarkkinoilta poistumisen jatkuneen voimak-
kaana koko tarkastelujakson (1988-1996) ajan, eikä pelkästään lamavuosien
massairtisanomisten aikana. Virta työttömyyteen sekä työttömyys- tai työkyvyt-
tömyyseläkkeelle on yleisintä matalasti koulutettujen työntekijöiden parissa.
Toisaalta myös koulutuksen korkea palkitseminen lisää työmarkkinoilta poistu-
mista. Tutkimuksen mukaan varhaiseläkejärjestelmien erilaisella kustannusvai-
kutuksella yrityksiin on ollut selvä vaikutus eläkemuodon valintaan.

Toinen ja kolmas osa käsittelevät varhaista eläkkeelle siirtymistä työntekijän
omista lähtökohdista käyttäen hyväksi Tilastokeskuksen ajankäyttöaineistoja.
Ikääntyneiden ajankäyttöä on viimeisenä kahtena vuosikymmenenä leimannut
vapaa-ajan lisääntyminen ja yllättäen varsinkin miehistä varhaiseläkkeelle siirty-
neet käyttävät vapaa-aikansa aktiivisiin harrastuksiin kuten naapuriapuun tai lii-
kuntaan. Vapaa-ajan käyttö osoittautuukin merkittäväksi tekijäksi selitettäessä työ-
markkinoilta poistumista. Varhaiseläkkeellä ollessa työhön aikaisemmin käy-
tettyä aikaa ei kokonaan käytetä aktiiviseen ajankäyttöön. Kuitenkin aktiivisen
vapaa-ajan osuus koko käytettävissä olevasta vapaa-ajasta kasvaa.

ASIASANAT: Varhaiseläkkeet, työvoimavirrat, ajankäyttötutkimus, vapaa-aika

Foreword

The ageing of the population is one of the biggest challenges facing present social policy makers in Finland. In the public debate, there is an increasing emphasis on how to fund future pension liabilities as the dependency ratio is worsening. It is clear that the demand for leisure is becoming a more important factor in the retirement decision of the newer generations, whose level of wealth is higher.

This study examines early retirement and its relation to the severe recession experienced in the beginning of the 1990s. In addition, it tries to track down individuals' preferences in leisure time allocation that could explain early retirements. The study gives detailed information on the determinants of withdrawals from the workforce and their relation to time allocation of the aged. This is important for determining the future measures to improve the labour market situation of the aged and to postpone early retirement from the current average age of 59 years. This research uses linked employer-employee data covering the years 1987-1996 and time use data 1979, 1988 and 2000 collected by Statistics Finland.

The study is part of the labour market research program at ETLA and is funded by the Ministry of Labour and the National Programme on Ageing Workers. The research also relates to a future EU funded project "Ageing, Health and Retirement in Europe", which is a joint effort of seven European research institutes belonging to the ENEPRI network. The research is done by M.Sc. Pasi Huovinen and Dr. Hannu Piekkola.

Helsinki, February 2002

Pentti Vartia

Author's preface

It can be claimed that early retirement and the well-being of the aged is rather seldom studied in Finland. During the recent two decades the complexity of withdrawals from the workforce has increased due to introduction early retirement schemes and rapid changes in technology and work relations. This paper uses job creation and destruction measures to analyse withdrawals from the workforce into unemployment, unemployment pension and disability pension by individuals less than 65 years of age, the legal retirement age. We hope to be able to illuminate, in some respects, the firm factors pushing individuals out of work. Major part of the analysis, however, deals with the factors related to individuals' preferences towards early retirement. The time allocation information is used to analyse the use of leisure time and the determinants of early retirement.

Pasi Huovinen   Hannu Piekkola

Contents

Foreword
Author's preface
Tiivistelmä

Table of Figures and Tables

Tiivistelmä

Ikääntyneiden ajankäyttö ja työmarkkinoilta poistuminen

Sosiaaliturvan rahoituksen keskeinen kysymys on ikääntyneiden siirtyminen ennenaikaisesti eläkkeelle. Ns. työttömyyseläkeputken ikärajaa on nostettu 53 vuodesta 55 vuoteen, mikä on näkynyt eläkkeelle siirtymisen myöhentymisenä. Ikääntyneiden työllisyysaste on kuitenkin edelleen hyvin alhainen. Työmarkkinoiden ulkopuolelle siirtyminen iän myötä tapahtuu myös hyvin jyrkästi: vielä 50-vuotiailla työttömyysaste on alhaisin kaikista ikäluokista. Suomessa ikääntymisestä työmarkkinoille aiheutuvat ongelmat kärjistyvät alhaisen eläkkeelle siirtymisiän johdosta. Keskimäärin Suomessa siirrytään eläkkeelle jo 59-vuotiaana ja tästä johtuen 60-64 -vuotiaista suomalaisista jo neljä viidesosaa on jonkin eläkkeen piirissä. Suuri eläkeläisten määrä selittyy suurelta osin suomalaisen eläkejärjestelmän houkuttelevuudella, mutta eläkkeelle siirtymisen takana on myös motivaatiotekijöitä, joita ei aiemmassa eläkkeelle siirtymistä tarkistelevassa tutkimuksessa ole juurikaan käsitelty. Varhaiseläkkeet tarjoavat korkeintaan keskinkertaisen toimeentulon. Tämä pätee myös verrattaessa varhaiseläkevaihtoehdon tuloja muihin EU-maihin. Syitä varhaiseläkkeelle siirtymiselle ei voida siten hakea korkeasta toimeentulosta.

Työvoimavirtalaskelmat osoittavat ikääntyneiden työmarkkinoilta poistumisen jatkuneen voimakkaana koko tarkastelujakson (1988-1996) ajan, eikä siis pelkästään lamavuosien massairtisanomisten aikana. Laskelmat osoittavat, että virta työttömyyteen sekä työttömyys- tai työkyvyttömyys eläkkeelle on yleisintä matalasti koulutettujen työntekijöiden parissa. Toisaalta myös koulutuksen korkea palkitseminen lisää työmarkkinoilta poistumista.

Varhaista eläkkeelle siirtymistä työntekijän omista lähtökohdista selvitetään tilastokeskuksen ajankäyttötutkimuksella. Ajankäyttöaineisto sisältää monipuolista informaatiota yksilöiden ei-rahallisesta toiminnasta, kuten vapaa-ajan harrastuksista. Tällaiset aktiviteetit ovat osa taloudellista toimintaa vaikkakin niiden mittaaminen rahassa on vaikeaa. Ajankäyttöaineiston vahvuus ikääntymisilmiötä tutkittaessa onkin sen luoma mahdollisuus tarkastella ikääntymisen sellaisia hyvinvointivaikutuksia, joita ei kyetä rekisteröimään kansallisessa kirjanpidossa. Ikääntyneiden järkevä oma toiminta, joka ilmenee aktiivisena ajankäyttönä, voi vähentää hyvinvointipanostusten tarvetta ikääntyneille. OECD:n (2000) työ- ja vapaa-ajan jakaantumista eri elinvaiheissa selvittävässä

tutkimuksessa havaittiin kuitenkin väestön myöhempien vuo-sien ajan-käytössä selvää passivoitumista. Passivoitumista nähtiin tapah-tuvan niinkin nuorten kuin 55-59 -vuotiaiden parissa, vaikka tämän ikäisten ajankäytön ei vielä juurikaan pitäisi olla alentuneen terveyden rajoitta-maa. Poliittisen päätöksenteon kannalta OECD:n laskelmat olivat kui-tenkin melko yleisluontoisia. Tutkimuksessa ei otettu huomioon vastaa-jien työmarkkinastatusta tai muita tärkeitä taustamuuttujia. Tässä kirjas-sa raportoitava ajankäyttöanalyysi pyrkii tarkastelemaan ajankäyttöä ja sen yhteyttä eläkkeelle siirtymiseen yhtälössä, jossa pyritään ottamaan huomioon monet demografiset tekijät, kuten koulutus ja terveys. Toi-saalta myös erilaisten tulomuotojen ja kotitalouden muiden jäsenten vaikutus otetaan huomioon.

Ikääntyneiden ajankäyttöä on viimeisenä kahtena vuosikymmenenä leimannut vapaa-ajan lisääntyminen. Tämä on ollut seurausta sekä miesten että naisten palkkatyöhön käytetyn ajan lyhenemisestä. Naisten vapaa-aikaa on lisännyt myös kotityöhön käytetyn ajan lyheneminen. Miehet tekevät nykyään kotitöitä enemmän kuin ennen. Palkkatyön vä-heneminen tapahtui ikääntyneiden parissa 1980-luvulla, jolloin pääosa nykyisistä varhaiseläkemuodoista otettiin käyttöön. 1990-luvun lama-vuosien massatyöttömyys pienensi keskimääräistä palkkatyöhön käytet-tyä aikaa, mutta varhaiseläkkeelle siirtymistä rajoittavat toimenpiteet ovat ilmeisesti hidastaneet tätä kehitystä. Ikääntyneiden miesten ja nais-ten ajankäyttö on samankaltaistunut. Naisten lisääntynyt työmarkki-noille osallistuminen on lisännyt työhön käytettävää aikaa suhteessa miesten työaikaan. Samasta syystä on myös naisten kotityön määrä las-kenut.

Yllättäen varsinkin miehistä varhaiseläkkeelle siirtyneet käyttävät va-paa-aikansa aktiivisiin harrastuksiin kuten naapuriapuun tai liikuntaan. Tämä tutkimus ei siten välttämättä tue OECD:n tutkimuksessaan saa-mia tuloksia, jotka osoittivat ajankäytön passivoituneen. Varsinkin ikääntyneet, joiden terveys ei rajoita heidän ajankäyttöään allokoivat suhteessa enemmän aktiivisiin ja vähemmän passiivisiin aktiviteetteihin eläkkeelle siirtyessään. Television katseluun käytetty aika lisääntyy, mut-ta sen suhteellinen osuus vapaa-ajasta ei juurikaan kasva. Vastaavasti eri-laisten harrastusten ja vapaahtoistyön osuus vapaa-ajasta lisääntyy huo-mattavasti. Tästä voidaan päätellä, että vapaa-ajan muodot, joita voi-daan kuvailla aktiivisiksi, sisältävät suuremman hyödyn kuin passiiviset, ja ovat suosittuja eläkkeelle siirtyvien keskuudessa. Aktiivisesta vapaa-ajan toiminnastaan suuremman hyödyn saavat omaavat siis suuremman todennäköisyyden poistua varhain työmarkkinoilta. Esimerkiksi osa-aikaeläkkeelle siirtyminen voi olla seurausta lisääntyneestä aktiivisen vapaa-ajan kysynnästä. Osa-aikaeläke ei ehkä auta jaksamaan työssä

vaan tyydyttää vapaa-ajan toiveita. Kuitenkin osa-aikaeläkettä "markki-noidaan" jaksamisella.

Huomattuamme poikkeavuudet vapaa-ajan käytössä tärkeiksi eläk-keelle siirtymistä selittäviksi tekijöiksi, jatkoimme analyysia jakamalla vapaa-ajan käytön Bordieun kehittelemää henkisen pääoman luokitte-lua noudattaen. Näin luotuja muuttujia voidaan kuvata taloudelliseksi, kulttuuriseksi, fyysiseksi ja sosiaaliseksi pääomaksi. Lisäksi aktiivisen ajankäytö havaittiin koostuvan eri toiminnoista riippuen vastaajan kou-lutuksesta. Matalammin koulutettujen parissa aktiivisessa vapaa-ajassa painottui naapuriapu, kun taas koulutetumpien parissa vapaaehtoistyö jonkin organisaation puitteissa oli alhaisesti koulutettuja yleisempää. Molemmissa tapauksissa aktiivinen vapaa-aika lisäsi eläkkeelle siirty-misen todennäköisyyttä.

Tutkimuksemme päätulokset sekä tuloksiin perustuvat johtopäätök-set ja suositukset ovat:

1. 1990-luvun alkupuoliskolla yrityskohtaisilla tekijöillä on suurempi vaikutus varhaisiin eläkkeelle siirtymisiin kuin nykyään. Suurten ikä-luokkien ikääntyessä henkilökohtaisilla tekijöillä on suurempi mer-kitys.

Noin puolet ikääntyneiden työpaikoista hävisi 1990-luvun alkupuolella. Työpaikkojen häviäminen oli voimakasta etenkin matalasti koulutettu-jen parissa. Aivan 1990-luvun viimeisinä vuosina työpaikkojen hävi-äminen tosin väheni. Työvoiman tarjontaan liittyvät tekijät korostuvat väestön ikääntyessä, ikääntyneiden koulutustason noustessa ja väestön hyväkuntoisuuden kasvaessa. Työvoiman tarjontaan liittyvistä tekijöistä etenkin vapaa-ajan arvostus kasvattaa merkitystään ikääntyneiden varal-lisuuden kasvaessa ja koulutuksen parantuessa. Oletukselle saadaan tu-kea ajankäyttöaineistosta, jossa vapaa-aika muuttujat kasvattavat mer-kitystään uudemmilla ajankäyttö aineistoilla.

2. Varhaiseläkejärjestelmien erilaisella kustannusvaikutuksella yrityk-siin on ollut selvä vaikutus eläkemuodon valintaan.

Työkyvyttömyyseläkettä on tarkasteltava osana koko varhaiseläkejärjes-telmää. Vuoteen 2000 saakka isoille työnantajille työttömyyseläke oli selvästi edullisempi kuin työkyvyttömyyseläke. Tästä syystä työkyvyttö-myyseläkeläisvirta on keskittynyt pieniin ja työttömyyseläkevirta suuriin yrityksiin. Samalla kokonaispoistuma varhaiseläkkeelle on riippumaton yrityksen koosta. Uudessa järjestelmässä työttömyyseläkeputki on suu-

rille yrityksille entistä kalliimpi, mikä vähentänee varhaiseläkkeelle siirtyvien määrää. Vastaisuudessakaan ei tulisi luoda uusia kustannusvaikutukseltaan erilaisia varhaiseläkejärjestelmiä

3. Korkeat palkkatulot pienentävät eläkkeelle siirtymisen todennäköisyyttä. Tämä saattaa heijastua eläkkeelle siirtymisen ajankohtaan tulevan joustavan vanhuuseläkkeen voimaantullessa.

Korkea palkka viivästyttää tutkimuksemme mukaan eläkkeelle siirtymisajankohtaa. On kuitenkin vaikea sanoa, millä tavalla tämä tulisi ottaa huomioon tulevaa eläkepolitiikkaa suunniteltaessa. Korkean palkan vaikutus eläkkeelle siirtymisen todennäköisyyten saattaa johtua välillisesti työolosuhteista, jotka paremmin palkattuissa työtehtävissä ovat mahdollisesti paremmat. Uusi joustava vanhuuseläke saattaa erityisesti suosia korkeapalkkaisten työssä pysymistä.

4. Suurten ikäluokkien korkeampi varallisuus johtanee varhaiseläkeläisten määrän kasvuun.

Tutkimus tukee yleistä käsitystä, jonka mukaan korkeampi keskimääräinen varallisuustaso vähentää työmarkkinoille osallistumista. Eksogeeninen varallisuuden, kuten tutkimuksessamme tarkasteltu puolison omaisuustulon nousu siis vähentää työmarkkinoilta poistumisen todennäköisyyttä. Tulevat sukupolvet, kuten suuret ikäluokat, tulevat poikkeamaan nykyisistä eläkeikäisistä korkeamman varallisuuden johdosta, joten varhaisen eläkkeelle siirtymisen voidaan tässä suhteessa olettaa yleistyvän. Yhtäläisesti voidaan olettaa, että korkeampi varallisuus johtaa valitsemaan tulevassa joustavassa vanhuuseläkejärjestelmässä aikaisemman poistumisen työelämästä (siirtyminen valinnan mukaan 62 - 68 -vuotiaana). Toisaalta eläkejärjestelmän säilymiseen liittyvä epävarmuus saattaa johtaa pidempään työmarkkinoilla pysymiseen. Mutta epävarmuus voi myös kannustaa kotitalouden yksityiseen säästämiseen ilman vaikutusta työvoiman tarjontaan.

5. Miesten ja naisten välillä on eroavaisuuksia vapaa-ajan käytössä ja sen vaikutuksessa varhaiseen eläkkeelle siirtymiseen.

Jo aiemmin mainittu vapaa-ajan käytön aktivoituminen on yleisempää miesten kuin naisten parissa eläkkeelle siirryttäessä. Naisten ajankäyttöä leimaa miehiä enemmän jatkuvuus – ns. continuity of life. Naiset eivät allokoi uudelleen vapaa-aikaansa eläkkeelle siirryttyään. Toisin sanoen, he eivät aloita uusia harrastuksia eivätkä lisää vanhoja suhteessa passii-

visempiin vapaa-ajan toimintoihin. Näyttäisi myös siltä, että ne naiset, jotka jo työelämässä harrastavat aktiivisesti mm. liikuntaa omaavat taipumuksen pysyä pidempään työelämässä. Miesten kohdalla aktiivisempi vapaa-ajan käyttö voisi johtua tarpeesta säilyttää asemansa yhteisönsä parissa – tämä heijastuu osallistumisen lisääntymisenä vapaaehtois- ja talkootöihin. Sukupuolten välillä koulutettujen vastaajien kohdalla vapaa-ajan käyttö oli tosin enemmän samankaltaista kuin ikääntyneillä yleensä.

6. Puolisoiden välillä eläkepäätökset riippuvat voimakkaasti toisistaan.

Varhaiseläkkeelle siirtymispäätöksessä puolison työmarkkina-asemalla on keskeinen merkitys. Perheessä naisten siirtyminen työmarkkinoiden ulkopuolelle on jouduttanut miesten päätöstä siirtyä eläkkeelle ja päinvastoin.

7. Vapaaehtoistyö on merkittävä hyvinvointia lisäävä tekijä yhteiskunnassamme

Ikääntyneet suomalaiset osallistuvat aktiivisesti vapaaehtoistyöhön erilaisten organisaatoiden kautta. Lisäksi mm. sairaan omaisen hoitaminen on yleistä ikääntyneiden parissa. Jos pitkä ja joustamaton työaika estää omaishoidon tai muuhun tärkeäksi koettuun ns. kolmannen sektorin toimintaan osallistumisen, saattaa tuloksena olla täydellinen poistuminen työmarkkinoilta. Ikääntyneille tulisikin järjestää mahdollisuus yhdistää työelämä ja vapaa-aika siten, että esimerkiksi lähiomaisten kuten vanhusten hoitaminen olisi palkkatyön ohessa mahdollista. Esimerkiksi Ruotsissa ikääntyneiden korkea työllisyysaste selittyy suurelta osalta osa-aikatyön suosiolla. Yleensäkin on tarpeellista tiedostaa sekä muodollisen että epäformaalin vapaaehtoistyön kuten naapuriavun arvo ja kehittää uusia tapoja edesauttaa vapaaehtoistyöhön osallistumista.

8. Sosiaalisilla suhteilla on suuri merkitys myös työelämässä eivätkä ne selitä työelämästä poistumista.

Sosiaalisen kanssakäymisen osuus vapaa-ajasta kasvaa eläkkeelle siirryttäessä. Eläkkeelle siirtymisen todennäköisyyteen tällä ei kuitenkaan ole merkittävää vaikutusta. Voidaankin päätellä, että vapaa-aikana lisääntynyt sosiaalisten kontaktien ylläpito johtuu siitä sosiaalisesta aukosta tai tyhjiöstä, jonka tutusta työyhteisöstä poistuminen aiheuttaa. Työelämä on monille erittäin tärkeä tai tärkein sosiaalisen elämän keskus, jota ilman henkilö saattaa tuntea itsensä eristyneeksi ympäristöstään. Eläk-

keelle siirryttäessä vapaa-ajan toiminnoissa painottuvatkin sellaiset toiminnot, joiden voidaan katsoa olevan sosiaalisia kontakteja ylläpitäviä. Sosiaalisia kontakteja työpaikalla lisäisivät edelleen eri vapaaehtoistyön muodot, millä voisi olla työelämästä poistumista ehkäisevä vaikutus.

1 Introduction

Population ageing has a growing importance on the labour economic research. The ageing of population is caused by decreasing birth rates, longer life expectancies and the ageing of baby boom generations. In Finland the population is ageing faster than in any other OECD country. Currently there are more than four persons of working age to one with an old age pension, but until the year 2035 this old-age dependency ratio will no longer be more than two to one. In Finland the problems caused by population ageing are emphasized because the older workers withdraw from the labour market relatively early. The effective retirement age in Finland is 59 and 80 per cent of the 60-64 age group are already drawing some kind of pension. The reason for the large number of early retirees is mostly the attractiveness of the Finnish pension system, but there are surely some factors like the increasing appreciation of leisure time that have not been focused upon by researchers into retirement. Most of the research dealing with retirement has parameters, which allow 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 book the objective is to gather variables of individuals' preferences in leisure time allocation along with several monetary and demographic variables to explain early retirement. We also focus on finding out which kind of demographic differences there are between individuals' time allocation and leisure preferences and how these differences affect early retirement decisions.

This book combines both supply and demand perspectives when explaining the high numbers of retirees in Finland. For the demand side examination we utilise a gross job flow(s) analysis to find out what the factors are that explain the extensive withdrawal of older workers from Finnish employment. The motivation for such a study arises from the particularly severe recession in Finland of the 1990s, in which many Finnish workers lost their jobs. Another motivation for the job flow analysis is the large and growing economic literature which points to the importance of relative demand shifts between unskilled and skilled workers during the 1990s (see Honkapohja and Koskela 1999).[1] [2] In

---

[1] The Finnish economy experienced a 14 per cent drop in GDP in the years 1991-1993. There were two main contributing factors (lying) behind the Finnish depression. First, there was the tight monetary policy, which was applied until the

Finland, as in other countries, there has been a growing concern with the early labour market exits of older workers (see for example, the Ministry of Social Affairs and Health, 1997). Böckerman and Piekkola (2001) point to strong signs of a persistent decline in the demand for employees with only basic education and for the most experienced employees (i.e. employees with 25 years of experience or more). The decline in demand for older workers in Finland has been seen as reflecting the fact that the demand for skills possessed by older workers has dropped, reflecting a broader technological upgrading by establishments. The deep Finnish depression also constitutes an excellent opportunity to analyse gross job flows during a period of extreme business cycle fluctuations.

In addition to the job flow analysis that uses the Finnish linked employee-employer data, we use time-use data to explain early retirement. The biggest gain drawn from time-use data sets is its capability to give information of individuals' non-monetary activities. Referring to Gruber and Wise (2001), the reaction of the developed world to population ageing has simply been to increase spending on the elderly. The time-use analysis does not include a direct analysis on how the time-use of the elderly is connected to government budgets or GNP shares spent on an ageing society. However, time-use research may give information on activities that do not affect national accounting but still have a direct impact on the well-being of society. Retirees' time allocation may favor activities like taking care of disabled or sick peers or doing voluntary work (Huovinen 2001). OECD (2000b) examines patterns of work and leisure during people's lives. The study finds that peoples' 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, and the analysis is done at a rather general level. There are no separate analyses of aged persons' use of time by labour status or other important demographics. Here, the amount of demographic controllers is expanded substantially.

This study extends the existing literature on European restructuring and early retirement, as previous studies have generally been conducted at the firm level or on the basis of census data. The linked longitudinal employer-employee data used in this study allow us to analyse both the personal factors and the firm-specific characteristics that affect early

shift to the floating exchange rate regime in September 1992. Second, Finland was hit hard by external shocks, including the drop in trade with Russia.

[2] Atkinson (2000) provides a summary of the literature on the demand shifts for skilled and unskilled labour.

retirement decisions. The study examines the causes of the decline in older worker employment in Finland, disaggregating gross job and worker flows by industry and by employees' education and age in the Finnish economy over the period from 1988 to 1996. Furthermore, the use of data concerning elderly leisure time allocation in a retirement probability model combines elements of both economic and sociological research. This approach creates a novel tool to understand the complicated nature of retirement behaviour better.

We show that withdrawal of older workers from the labour market has been persistent throughout the period, and not explained only by high job destruction in the recession years. Another finding of some importance is that those workers who move from employment into unemployment, unemployment and disability pensions are the ones with a shorter educational history. High compensations for education also increase withdrawals. There is a persistent decline in the employment position of the least-skilled in the workforce, although job destruction is also a potential threat to educated employees with high incomes. Approximately 50 per cent of the jobs held by people aged 55-59 in Finland vanished in the first half of the 1990s. This is because the withdrawal rate from employment was more than 16 per cent both in 1992 and 1993 for individuals aged 55-64. The aforementioned withdrawals appeared especially in the construction and manufacturing sectors. The persistence of the job destruction of older workers shows that the phenomenon was not only an outcome of the deep recession in 1991-1993 but continued throughout the decade.

The main feature in the time-use of the Finnish elderly during the last three decades has been the increase in leisure time resulting from the decrease in time for paid work for men and both paid and unpaid work for women. Men do more domestic work than before. The largest decrease in time for paid work happened during the 1980s when most of the early retirement schemes were introduced in the Finnish labour market. The mass unemployment of aged workers during the 1990s continued to decrease the amount of working hours supplied, but the aggravation of criteria to enter the early retirement schemes seems to have slowed the decrease to some extent. The use of time by men and women has also converged. The rise in women's labor market participation has increased their supply of paid work in relation to men's. As a consequence, the amount of domestic work done by women has decreased. The leisure time that the Finnish elderly have spent is used fairly actively. Concern about growing passivity is possibly the case when the diurnal time allocation is focused upon but leisure time spent by early retirees is characterised by an increasing share of leisure

time allocated to active use, especially for men. The study does not, hence, necessarily support the concern in OECD (2000b) about the increasing passivity of individuals after retirement. Men, especially, change their time allocation in favour of voluntary work or helping their neighbours when they retire.

It seems that even when a retirement decision creates a lot of slack leisure and some passivity, Finnish early retirement years are, in many ways, associated with non-passivity. This holds especially when the retirees with good health are considered. (Around one third (half) of pensioners of the ages of 55-59 (60-64) retire because of other reasons than lowered working ability.) Activities with high involvement like domestic and voluntary work are fairly popular for people who decide to leave their careers. We can conclude that those who are prone to active leisure and gain utility from it also have a higher probability to retire early. The demand for part-time retirement is to great extent explained by the demand for active leisure or time intensive activities. It is, however, unclear whether part-time retirement scemes have improved the quality of working life of the individual in the firm. This is an important issue for future study since part-time retirement is often supported especially because of the induced improvement in the working life conditions. 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. If the uneducated respondents' background shows more neighbourhood help than the median respondent he seems to have a higher motivation to retire early. For the educated the same holds when one is analysing organised voluntary work.

The main findings and related policy recommendations based on our study are as follows:

1. In early retirement at the beginning of '90s the labour demand factors were important but not necessarily any more for the ageing baby-boom generation.

Approximately 50 per cent of the jobs held by people aged 55-59 in Finland vanished in the first half of the 1990s. Job destruction was particularly severe for the uneducated. The structural and persistent high job destruction for the older workforce has decreased in late 1990's. For baby-boom generation the labour supply factors have more importance when explaining decisions to withdraw. The reason for this is their higher education level and improving health conditions. Valuation of leisure will raise its importance because of babyboomers' higher wealth. All this is supported by the empirical study showing increasing importance of the valuation of leisure time when explaining withdrawal from employment.

2. The cost differences of early retirement schemes to the firm have affected the choice between early retirement and disability pension.

The total withdrawal from employment does not depend on firm size nor on the firm-size differences in social security payments. However, at a disaggregated level, disability pensions and unemployment pensions appear as substitutes that are used depending on which one is least costly for the firm. We find that large firms channel their older workers to unemployment pensions or to the so-called unemployment pension tunnel rather than to a disability pension. Small firms do the opposite. The pension reform done in 2000 narrowed the cost difference between disability and unemployment pensions and the higher cost of early retirement through unemployment will most likely inhibit early retirment from large firms. Overall, one should keep in mind the effects of an unharmonised cost loads for firms when setting the future pension schemes.

3. 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. In addition, wages increase with age and the wage level more often exceeds the productivity level than for prime age workers. It is evident that the new flexible pension system may especially postpone the retirement of high-wage earners.

4. 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 age cohort 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. The uncertainty related to the future pension policy as the population ages has, though, an offsetting negative wealth effect.

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

Men's and women's leisure time allocation differ, and therefore the determinants of retirement also differ. Women exhibit continuity of lifetime patterns, and so early retirement is fairly unrelated to leisure time allocation. Sports and physical exercise is 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 hoppies 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.

6. 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.

7. 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 that enters the wage tax base and that is also desirable.

8. 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.

This book is divided into three chapters, which are written on the basis of a project: Aged people's use of time and early exit from the labour market (Ikääntyneiden ajankäyttö ja poistuminen työmarkkinoilta). The project was financed by the Ministry of Labour. The first article, published in the Australian Journal of Labour Economics, was part of the aforementioned project as well as the Helsinki School of Economics and Business Administration's and Statistics Finland's joint project: 'Labour Demand and Wage Formation in SMEs and Clusters' financed by the Academy of Finland. The first and third chapter was written by Pasi Huovinen and Hannu Piekkola and the second by Pasi Huovinen.

8

References

Atkinson, A.B. (2000). 'The Changing Distribution of Income: Evidence and Explanations', *German Economic Review*, 1, 3-18.

Bourdieu (1984). *Distinction*. Cambridge: Harward University Press.

Böckerman P. and Piekkola, H. (2001), 'On Whom Falls the Burden of Restructuring? – Evidence from Finland', in Holm A. and Jensen T.B. (eds.) Nordic Labour Market Research on Register Data. Nordic Council of Ministers, 71-117 Copenhagen.

Gruber, Jonathan and David A. Wise (2001). *'An international perspective on policies for an ageing society'* NBER Working Paper Series 8103, Cambridge

Honkapohja, S. and Koskela, E. (1999). 'The Economic Crisis of the 1990s in Finland', *Economic Policy*, 29, October, 400-436.

Huovinen Pasi (2001). *'The value of voluntary work and third sector's role in an ageing society.'* (forthcoming)

OECD (2000). "*Reforms for an Ageing Society*". Social issues 2000, Paris

Työministeriö ja Sosiaali ja terveysministeriö (2000) (Ministry of Labour and Ministry of Social Affairs and Health), Kansallisen ikäohjelman seurantaraporti (Implementation Report of National Programme on Ageing Workers). Sosiaali- ja terveysministeriön julkaisuja 2000:15 (Ministry of Social Affairs and Health Research reports No 15). Oy Edita Ab, Helsinki

2   Withdrawal from Employment of Older Finnish Workers*

Abstract

This paper contains an empirical analysis of gross job flows in Finland and of the factors that explain the extensive withdrawal of older workers from employment in the 1990s in Finland. Job flows are characterised in terms of employee age and education. The outflow of workers from employment occurs mainly to unemployment, unemployment pensions and disability pensions. The study shows that older workers had a considerably higher propensity to lose their jobs than Finnish employees did in general. Unemployment pensioners and disability pensioners also tend to have shorter educational histories than Finnish workers in general. It is shown that the burden of the firms' social security payments increases the likelihood of withdrawal from employment. The total withdrawal from employment does not depend on firm size nor on the firm-size differences in social security payments. However, at a disaggregated level, disability pensions and unemployment pensions appear as substitutes that are used depending on which one is least costly for the firm. We find that large firms channel their older workers to unemployment pensions or to the so-called unemployment pension tunnel rather than to a disability pension. Small firms do the opposite. Finally, there is persistence in high levels of job destruction, especially in manufacturing, that may relate to skill-biased technical change.

2.1   Introduction

This paper utilises a gross job flows analysis to examine the factors that explain the extensive withdrawal of older workers from employment in Finland. The motivation for such a study arises from the particularly severe recession of the 1990s in Finland in which many Finnish workers lost their jobs. Another motivation for the paper is the large and growing economic literature which points to the importance of relative demand shifts between unskilled and skilled workers during the 1990s (see, Honkapohja and Koskela, 1999).[3] [4] In Finland, as in other count-

---

[3]   The Finnish economy experienced a 14 per cent drop in GDP in the years 1991-1993. There were two main contributing factors lying behind the Finnish depression. First, tight monetary policy, which applied until the shift to the floating exchan-

ries, there has been a growing concern with the early labour market exits of older workers (see, for example, Ministry of Social Affairs and Health, 2000). Böckerman and Piekkola (2001) point to strong signs of persistent decline in the demand for employees with only basic education and for the most experienced employees (i.e. employees with 25 years of experience or more). The decline in demand for older workers in Finland has been seen as reflecting the fact that the demand for skills possessed by older workers has dropped reflecting a broader technological upgrading by establishments. The deep Finnish depression also constitutes an excellent opportunity to analyse gross job flows during a period of extreme business cycle fluctuations.

This study extends the existing literature on European restructuring and early retirement, as previous studies have generally been conducted at the firm level or on the basis of census data. The linked longitudinal employer-employee data used in this study allows us to analyse both the personal factors and the firm-specific characteristics that affect early retirement decisions. The study examines the causes of the decline in older worker employment in Finland disaggregating gross job and worker flows by industry and by employees' education and age in the Finnish economy over the period 1988 to 1996.

The particular hypothesis that concerns us in this paper is that the loss of employment among older workers in Finland during this period was strongly influenced by the prevailing social security arrangements. Accordingly, worker flows in this study are examined between employment on the one hand, and the receipt of unemployment benefit, disability pension and unemployment pension, on the other hand. It is also proposed that during the great depression of the 1990s, early pension schemes before the legal age of retirement (65 years) provided a soft channel for companies to let their older employees go and to concurrently cut costs and reorganise the workplace.[5] The schemes include the unemployment pension tunnel for the unemployed aged 53 years or more. These unemployed persons are entitled to an extension of earnings-related unemployment benefits until they turn 60 and enter the unemployment pension. By letting go of their workers, firms reduce the employer contributions they must make to pension funds under the Finnish social security system. Finally, technological change has

---

ge rate regime in September 1992. Second, Finland was hit hard by external shocks, including the drop in trade with Russia. (see Pohjola,1998)

[4] Atkinson (2000) provides a summary of the literature on the demand shifts for skilled and unskilled labour.

[5] Hytti (1998) provides a review of the existing findings on the factors affecting early retirement in Finland.

further driven the impulse towards the laying off of older workers as they are less likely to hold the relevant skills.

Additionally, we consider the hypothesis, put forward by some commentators, that large employers might have 'favoured' the unemployment pension or the unemployment pension tunnel rather than the disability pension as a preferred displacement channel (Romppanen, 2000). The reason is that, during the period in question, large employers financed the disability pension until the worker entered the old-age pension scheme. However, large employers contribute only partially to the financing of the unemployment pension that the unemployed receive between the age of 60 and 65. Another factor to consider in relation to age-related gross flows is that employers may favour younger workers over older workers, especially in industry sectors where production technologies develop quickly. The reason for this is that younger workers may be more adaptable to a changed skill environment (see also Hytti, 1998, p.103 and Ahituv and Zeira, 2000). The underlying gross job and worker flows of market economies are an essential part of the ongoing process of restructuring, where production factors are allocated away from contracting activities and into newly expanding ones (see, for example, Cabarello and Hammour, 2000). It is possible that older workers experienced only the destructive part of this 'creative destruction' and were left outside of its job-creating element.

The structure of the paper is as follows. Section 2 of the paper details relevant parts of the Finnish social security system. Section 3 provides an empirical analysis of gross job flows (ie. job creation and destruction) in the context of the great depression of the early 1990s in Finland. Section 4 explains how job destruction varies with personal and firm characteristics, the latter including firm size and social security payments. The final section concludes the study.

2.2   The Finnish Public Pension System

There are three income support payments in the Finnish public pension system relevant to the consideration of older worker flows. These are i) unemployment benefits (leading often to the unemployment pension tunnel), ii) the unemployment pension for those over 60 years of age and iii) the disability pension.

The unemployment benefit is paid on a fixed rate basis financed by the Finnish government, or, in the case of workers covered by an unemployment benefit fund, is an earnings-related benefit for the first 500 days of unemployment (Pyy-Martikainen, 2000, pp. 37-39). The

unemployment benefit fund is most often, but not necessarily, administrated by unions. Employees provide contributions to the unemployment benefit fund. These contributions are usually higher in industries with high unemployment but do not vary according to firm size. A special feature of the Finnish social security system is that those unemployed who turn 57 years of age during a period of unemployment and were 55 years and one month (or older) when entering unemployment, are entitled to an extension of unemployment benefits until they turn 60 and start to draw an unemployment pension.[6] They do not have to fulfil the renewal limit to have an extension of unemployment benefits after 500 days of unemployment (as the younger unemployed workers do). This feature is the so-called 'unemployment pension tunnel'. Before 1997, 'the tunnel' was open to individuals aged over 53 years and one month. Prior to 1990, the age limit for the unemployment pension was 56 years (Hakola, 1999, p. 25). The employer contributes to the financing of the unemployment pension from the time the employee reaches the age of 60.

The second relevant income support payment (or the second step taken in the unemployment pension tunnel) is the unemployment pension after 60 years of age. The unemployment pension is preceded by unemployment benefits.

The third relevant type of income support payment is the disability pension. An individual who is suffering from reduced working ability because of an illness, a handicap or an injury is entitled to a disability pension. Reduced working ability is the most common cause of early retirement in Finland. Almost one fifth of Finnish 55-59 year-olds received disability pensions in 1998 (OECD, 2000, pp. 86). There is also a special type of disability pension paid to between 58 and 64 with a long working career whose working capacity has been significantly reduced. This is called an individual early retirement pension. Before 1995, the age limit was 55 – 64 years. In our data set, individual early retirees are included in the category 'disability pensioners'.

The future period's pension accumulation is usually tied to the wage of the most recent job. This, in fact, might cause a disincentive to accept a new job with a lower wage than the one before the unemployment/disability period and can act as a further constraint to job creation (Hakola, 2000, p. 24).

---

[4]   It is important to note here that the unemployment pension tunnel is entered only by those receiving earnings-related unemployment benefits

The Finnish government, in the main, finances pensions. Employers, however, partially fund the unemployment and disability pensions, with contribution levels dependent on firm size. As evident in figure 1, the larger the firm, the higher the firm contribution. The specific form of the early retirement channel followed by workers, whether in terms of unemployment pensions or disability pensions has a bearing on a firm's cost structure. The employer (depending on firm size), contributes to the funding of the disability pension until the employee reaches the age of 65. Hence, firms will have a direct interest in influencing the channel adopted.

Figure 1   Employers excess of early retirement payments
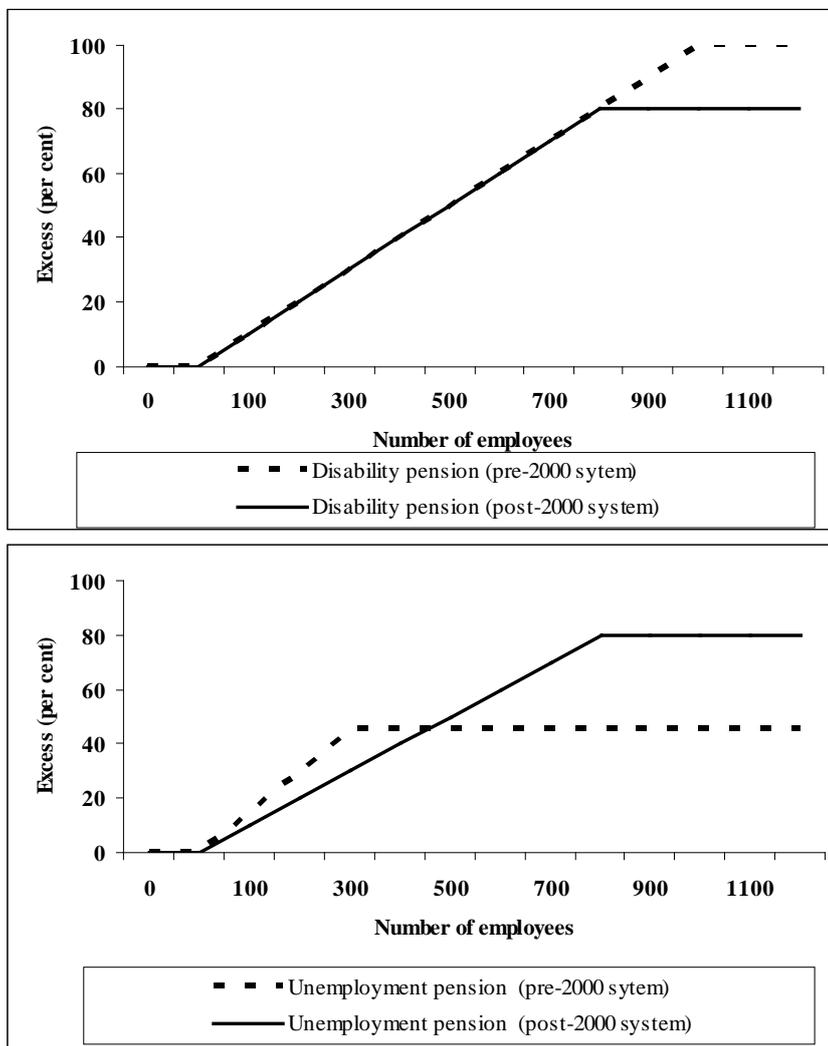
As is clear from figure 1, there is an incentive for firms to use, where possible, the retirement channel which is least costly. Indeed, one of the key findings of the paper is to show that this kind of selective channelling of workers is of some importance. Since the beginning of 2000, the employer's excess of the early pension payments has been harmonised across disability and unemployment pensions in each firm-size category (see figure 1) (Työeläke, 1999)

The unemployment pension and the disability pension are considered 'fully effective'. This means that the time between the pension-qualifying event and the official retirement age, the so-called post-contingency period, is also an accrual time for the old-age pension, which starts at the age of 65 in Finland. In the retirement pension tunnel, the accrual period also includes the unemployment benefit period before the age of 60. The division of pension recipients and unemployed by type of benefits is shown in table A.1 in the Appendix. The importance of early retirement is underlined by the fact that those receiving disability or unemployment pensions represented about 41 per cent of the 60-64 age group in 1998. [7]

2.3   The Model and Description of Job Flows

In this section, we present the relevant job flow calculations and show how job destruction in Finland differed between older workers and other age groups. This study utilises the Finnish *Employment Statistics* data over the period from 1988 to 1996. *Employment Statistics* is a large data base that combines various registers kept by Statistics Finland and other authorities. *Employment Statistics* provides information on the employment status of individuals in the second week of December for the entire population. In our data set, there are 23,861,856 person-year observations over the period from 1988 to 1997 relating to individuals who, for at least one year in the relevant period, worked in the private sector. After eliminating employees with an inconsistent plant code in some years or missing values on variables, some 21,534,266 observations remained. We also dropped the year 1997 due to the lack of plant codes. The final sample is 19,618,318 observations.

The job creation (JC) and job destruction rate (JD) are calculated as follows:

---

[7]   55 per cent of the individual early retirees are included in the disability pensioners group.

$$JC_t = \mid \sum\nolimits_i (H_{it} - S_{it})^+ \mid / ((\sum\nolimits_i E_{it} + \sum\nolimits_i E_{it-1}) / 2); \qquad (1)$$

$$JD_t = \mid \sum\nolimits_i (H_{it} - S_{it})^- \mid / ((\sum\nolimits_i E_{it} + \sum\nolimits_i E_{it-1}) / 2), \qquad (2)$$

Job creation is defined as the absolute value of the sum of positive hirings, less separations in flows in and out of employment, divided by the average number of employees. The superscript '+' refers to positive changes. Job destruction is defined as the absolute value of the sum of negative hirings less separations. The definitions of job creation and destruction utilised mean that the withdrawal rate (*WIR*) is simply the difference of the rates of job creation and job destruction:

$$WIR_t = JC_t - JD_t = HR_t - SR_t, \qquad (3)$$

where hirings HR_t and separation rates SR_t use the same denominators as the job creation and destruction rates. The sum of the job creation and destruction rates is called the gross job reallocation rate (*JR*):

$$JR_t = JC_t + JD_t. \qquad (4)$$

The excess worker reallocation rate (*EWR*), also referred to as churning, equals worker reallocation (the sum of hirings and separation rates) less the job reallocation rate:

$$EWR_t = 0.5 \,(HR_t + SR_t - JR_t). \qquad (5)$$

These definitions mean that the excess worker reallocation rate ties worker flows and job flows together and, therefore, completes the picture of the underlying dynamics of labour adjustment at the establishment level in the Finnish labour market. This is a particularly useful estimate in unemployment flows, since it measures the extent to which the unemployed are replaced by other unemployed people, keeping total employment the same. One reason for the 'recycling' of the unemployed is the expiration of unemployment benefits after 500 days.

Following the method of Baldwin, Dupuy and Penner (1992), we consider the birth and death of plants as a mere transfer of the plant when persons employed either at the old plant at date t-1, or the new plant at date t, amount to more than 60 per cent of all persons working

in these plants at dates t-1 and t. Using this correction for eliminating
unreal deaths and births of firms (i.e. the firms are considered to be the
same although firm code differs), the job reallocation rate JR_t decreases
only by 0.5 per cent points or less.

Underlying job creation and destruction and worker flows measures
for the Finnish economy are estimated for various education and age
group categories and for the main private-sector industries of the
economy. The education code was reduced to four groups: (i) only ba-
sic education, (ii) vocational certificates, (iii) lower university and non-
university degrees, and (iv) higher university degrees. The age code in
the calculations is focused on the older age labour force. The first
group specified includes all workers 49 years or younger. The re-
maining age groups are divided into five-year sequences; (ii) 50-54 (iii)
55-59 (iv) 60-64 and (v) 65+.

Withdrawal from Employment

The economic crisis of the early 1990s in Finland had a dramatic effect
on the employment of older workers. At least 50 per cent of the jobs
held by people aged 55-59 vanished in the first half of the 1990s. This
was caused by a withdrawal rate of nearly 25 per cent both in 1992 and
1993 for individuals aged 55-64 (see figure 2). For individuals aged

**Figure 2   Withdrawal from Employment in Finland 1989-
               1996**
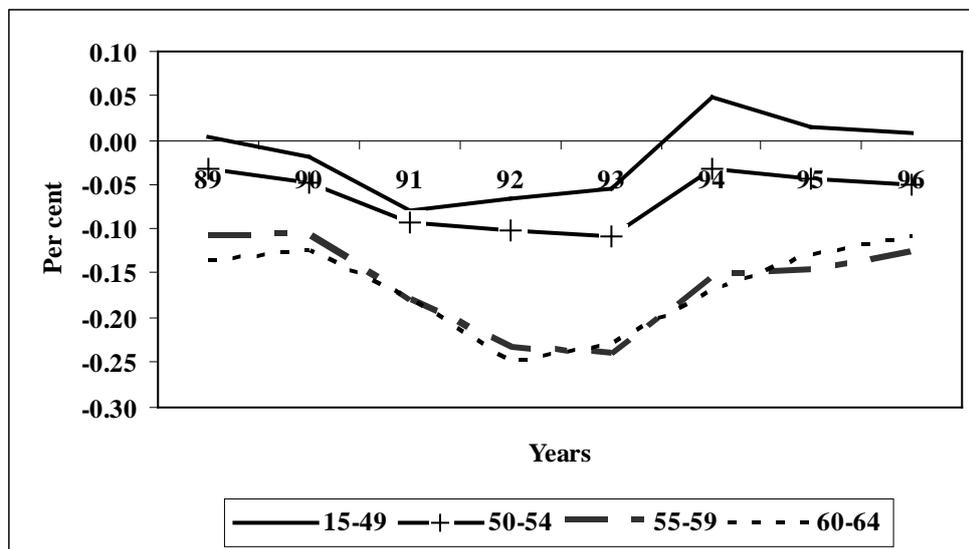
16-49, the withdrawal rate did not rise above 10 per cent. For the younger age group, the main cause for the increase in unemployment was the lengthening of the duration of unemployment. Further analysis reveals that the treatment of older workers differs in relation to the industry sector being examined. Separations were concentrated on older employees in manufacturing and trade. While the manufacturing sector's aggregate job destruction rate was below 11 per cent, workers aged 55-59 encountered job destruction rates of between 15 to 25 per cent during the depression. In the construction industry, on the other hand, mass layoffs were experienced but these layoffs were evenly distributed by age category.

After 1994, the number of young unemployed persons obtaining employment exceeded the number of young workers who were laid off. At the same time, job creation rates for the older age groups remained relatively low. At the beginning of the recovery (1994), a slight improvement in job creation was experienced for older workers, but unlike the younger age groups, the net withdrawal rate for the older unemployed remained negative. In the trade sector, job creation was minimal. Most new jobs were created in the construction and business service sectors.[8] Some new jobs were also created for the final two age groups (60-64 and 65+ years old), especially in the business services sector.

Job creation and destruction figures also show that the probability of retiring with a *disability pension* increases significantly with age. For the age range 15-49, the number of disability pensioners is low, but when an employee reaches the age of 50 or more, the withdrawal into disability pension becomes substantial. Disability pensions are most common in the construction sector. The second largest source of disability pensioners is the manufacturing sector. These sectors include more jobs where the physical stress is great. Controlling for firm characteristics in the econometric analysis, we also find that business services contribute to disability pensions. Since the deepest recession point (1993), exits from every sector of labour market have begun to decline.

The share of *unemployment pensioners* was quite low in the age range 60-64 at the start of the depression as the withdrawal rate was only around one or two per cent. The number of unemployment pensioners started to increase one or two years later after the heavy increase in unemployment in 1991 (as can be seen in figure 3). This is because the

---

[8]   Additional tables of job creation by industry are contained in Huovinen and Piekkola (2001).

number of unemployment pensioners rises with an increase in the du-
ration of unemployment. It is also worth noting that the construction
sector's figures do not seriously differ from other sectors' job destruc-
tion rates in unemployment pension flows as they do with unemplo-
yment flows.

Figure 3   **Job Destruction Leading to Unemployment Pen-
                     sions in Age Group 60-64 by Industry**
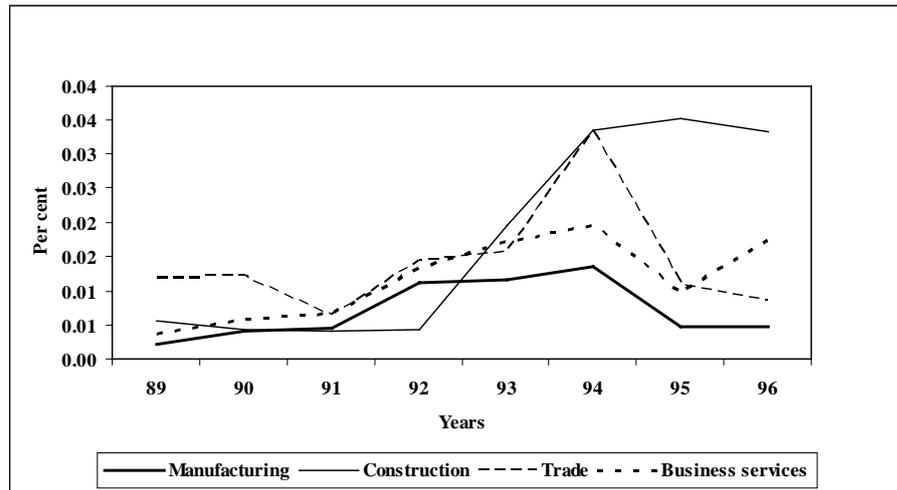
It is evident that trends in the number of unemployment pensioners
and disability pension recipients do not precisely follow economic cy-
cles. In particular, there seems to have been no substantial improve-
ment in employment flows since the recession. This also relates to the
permanently negative employment creation throughout the period for
the aged workforce, which did not drastically deteriorate in the recessi-
on. Furthermore, the impact of the recession years on disability and
unemployment pension figures may be delayed and become more evi-
dent outside the time span of this study.

Withdrawals and the Level of Education

The results of this study are in line with Böckerman and Piekkola
(2001), where education was found to be the most significant factor
explaining job flows in Finnish establishments. In 1998, Finland had
the sixth highest unemployment rate for people with upper secondary
and post-secondary non-tertiary education (13 per cent), but the
unemployment rate for the highly educated (8 per cent) was close to

the average found in OECD countries.[9] Education was also found to be related to job flows between employment and early retirements. Hakola's (2000) study supports these findings as well. In 1991, the job destruction rates for less educated people jumped to a level which was 3 to 4 times higher than in 1990 and stayed there until 1994. The position of university graduates in the labour market was much more favourable.

The poorly educated predominate as the main group drawing disability benefits, regardless of which industry sector is considered. The reason for this is that their jobs are more often related to physical strain than those held by the better educated. It is also the case that burnouts are more common among the lowly educated (Kalimo and Toppinen, 1997). It was mentioned previously that the flow to disability pensions increases as the workers' age increases. In Finland, older age groups tend to have a lower education level than younger age groups. This could partly explain the large share of low educated persons in disability pensioners. Nevertheless, in the Ministry of Social Affairs and Health's Implementation Report (2000, p. 76) it is evident that higher education lowers the disability pension flows even for a particular age group, especially in the age range 55-57. [10] Job creation for disability pensioners is almost non-existent (see, however, the different result for very small and large firms in the next section). When it occurs, the return flow from a disability pension back to working life most often involves poorly educated persons.

Education also has a strong influence on *unemployment pension* flows. This was most evident in the trade and service sectors although in all four sectors, individuals with the lowest level of education were the ones most likely to enter an unemployment pension scheme.

2.4   Withdrawal and Firm Characteristics

In this section, data on employees is matched to a sample of employers (referred to as *Financial Statistics*) held by Statistics Finland.[11] The idea is to examine what the firm characteristics are, including the quality of

---

[9] The high unemployment rate countries for upper secondary and post-secondary education were Greece, Italy, Poland, Spain and Finland in decreasing order.

[10] The present report (2000) is only available in Finnish. The 1999 report is at http://www.vn.fi/stm/english/publicat/publications_fset.htm

[11] Kyyrä (1999) and Korkeamäki and Kyyrä (2000) provide a documentation of the available data.

personnel and social security payments that describe firms where withdrawal takes place. The original sample of *Financial Statistics* consists of 6,092 firms. After linking firm data to the employee-based data of *Employee Statistics*, 5,220 firms remain. Hence, around 10 per cent of firms are lost in the linking process. To get population estimates we use sample weights. The data cover 3,099,342 observations and 791,437 persons.

Our empirical formulation follows Abowd, Kramarz and Margolis (1999) to estimate the person fixed effects in wage formation. The estimation equation for a withdrawal rate in firm j is:

$$WR_j = b_1 x\beta_j + b_2\alpha_j + b_3 u\eta_j + b_4\kappa_j + \varepsilon_{jt}, \tag{6}$$

where $x\beta_j$ is the average predicted effect of work experience and time dummies, α_j is the average of unobserved individual effects, $u\eta_j$ is the average of the education/sex effect, κ_j measures the firm-level factors: skilled share of labour, quasi rent, borrowing ratio and market share, and ε_{jt} is a statistical error. The average of the unobserved individual effects, α_j, and the average of the education effect, $u\eta_j$, are from the following wage equations for individual i in period t

$$\ln(w_{ijt}) = \theta_i + \psi_j + \beta x_{it} + e_{ijt}, \tag{7}$$

$$\theta_i = \alpha_i + u\eta_i + \varepsilon_i. \tag{8}$$

The logarithmic wage is explained by time-varying person characteristics: experience and time dummies βx_{it} (contains time dummies, a dummy indicating whether person i has switched jobs and experience up to the fourth power), the individual fixed effect θ_i, the firm-specific payment (left unexamined here) ψ_j, and a statistical error term e_{ijt}. The estimation proceeds by firstly estimating (7) where the explanatory variables includes time varying factors βx_{it} and interactions of person average and firm characteristics (interactions of average experience, seniority, firm size (average number of workers) and industry dummies). The model is estimated in deviations from the individual means, to purge the person fixed effects. The person average of the estimated er-

ror e_{ijt} (the difference between observed and predicted wages) is the person fixed effect θ_i. The estimation of (8) is used to divide the person fixed effect into the education/sex effect η_i for eight education groups u and to unobserved effect α_i using the variance of e_{ijt} for each individual i as the weight. Hence, compensations for unobserved human capital α_i, consists of high wages of the individual throughout his/her work career not explained by experience, sex, education and interactions to firm factors. This is an important measure of human capital since not all human capital relates to the individual's attained educational level.

Using financial statements of firms, the study includes two measures of firm performance, net profits and total factor productivity, and the borrowing ratio that measures expenditures on interest-bearing debts (divided by cash-flow and market share, which is real sales relative to sales at the two-digit industry level (NACE95)). The mean values of variables used are shown as table A.1 in the Appendix.

Withdrawal into Unemployment or Pensions

The results derived from the regressions are illustrated in tables 1 to 3. Job creation is calculated for firms that, on average, employed more unemployed than shed labour into unemployment. The majority of firms, two-thirds, shed more labour into unemployment than recruited from the unemployment pool. (Job destruction figures cover these firms.) Firms are divided analogously in table 3 into two categories. Only 10 per cent of firms recruit disability pensioners more than create them. It is also clear that only a few employees enter the labour force again once they come under the unemployment pension scheme. Table 2 shows employment change (job creation out of unemployment pension less job destruction into unemployment pension), rather than job creation and destruction, figures for the 242 firms.

The figures in table 1 include all flows into and out of employment, including unemployment benefits (recall that persons under unemployment pension tunnel first receive unemployment benefits and become pensioners no sooner than at the age of 60), unemployment pensions and disability pensions.

Table 1. Estimates of Job Flows Between Employment and Non-Employment

Dependent Variable	Job Creation		Job Creation age 55-59		Job Destruction		Job Destruction age 55-59		Excess Worker Reallocation		Excess Worker Reallocation age 55-59	
Variable	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Average Predicted Effect of x Variables (xb)	-0.002	(0.1)	0.018	(0.3)	-0.009	(0.7)	-0.044	(0.8)	-0.014	**(4.4)**	-0.002	(0.4)
Average Unobserved Human Capital Effect (α)	-0.040	**(4.4)**	-0.046	(1.6)	-0.044	**(6.1)**	-0.104	**(3.7)**	-0.015	**(8.6)**	-0.010	**(3.5)**
Average Education Effect (uη)	0.047	**(2.2)**	0.093	(1.4)	0.041	**(2.5)**	0.036	(0.6)	0.010	**(2.6)**	0.001	(0.2)
High Educated/Employees	-0.086	**(6.2)**	-0.084	**(2.0)**	-0.071	**(6.3)**	-0.182	**(4.3)**	-0.020	**(7.6)**	-0.002	(0.4)
Log(Capital/L)	-0.003	**(2.4)**	0.000	(0.1)	-0.003	**(3.4)**	-0.003	(0.7)	-0.001	**(3.8)**	-0.001	**(1.7)**
Borrowing ratio	-0.006	(1.3)	0.013	(0.9)	0.014	**(5.0)**	0.023	**(2.2)**	0.001	(0.9)	0.003	**(2.4)**
Market Share	0.000	(1.2)	0.001	(0.9)	-0.001	**(1.9)**	-0.001	(1.4)	0.000	**(2.5)**	0.000	(0.7)
Average employees < 7	0.005	(0.5)	-0.019	(0.6)	0.032	**(3.7)**	-0.033	(0.8)	-0.007	**(3.6)**	0.003	(0.9)
Average employees 7-19	0.001	(0.1)	0.018	(0.6)	0.009	(1.2)	0.027	(0.9)	-0.003	**(1.7)**	-0.001	(0.2)
Average employees 50-99	-0.025	**(1.7)**	0.004	(0.1)	0.011	(1.2)	0.071	**(2.3)**	-0.002	(1.0)	-0.004	(1.1)
Average employees 100-499	-0.021	(1.5)	0.000	(0.0)	0.019	**(2.7)**	0.034	(1.4)	-0.001	(0.4)	0.002	(0.6)
Average employees > 500	-0.022	(1.5)	-0.013	(0.3)	0.006	(0.9)	-0.002	(0.1)	-0.002	(1.2)	0.001	(0.3)
Consumer goods	-0.013	(1.3)	0.022	(0.9)	0.014	**(2.8)**	0.049	**(2.8)**	0.000	(0.2)	0.000	(0.1)
Pulp and paper, chemical	-0.006	(0.9)	-0.004	(0.2)	-0.001	(0.3)	-0.025	(1.5)	0.001	(0.9)	0.003	(1.5)
Non-metallic mineral products	0.013	(1.4)	0.018	(0.8)	0.040	**(6.0)**	0.053	**(2.3)**	0.002	(1.2)	0.003	(1.2)
IT manufacturing and services	-0.003	(0.4)	-0.005	(0.2)	0.002	(0.4)	-0.012	(0.5)	-0.003	**(2.0)**	0.001	(0.5)
Energy and Water	-0.030	(1.6)	-0.019	(0.4)	-0.023	**(2.6)**	-0.095	**(3.1)**	-0.007	**(2.8)**	0.002	(0.5)
Construction	0.105	**(12.9)**	0.107	**(4.5)**	0.093	**(19.0)**	0.101	**(5.8)**	0.028	**(21.8)**	0.017	**(8.8)**
Trade, Hotels, Restaurants	-0.023	**(3.5)**	0.002	(0.1)	-0.011	**(2.5)**	-0.032	**(1.9)**	-0.003	**(2.8)**	-0.001	(0.8)
Non-business services	-0.007	(0.7)	-0.036	(1.2)	-0.015	**(1.9)**	-0.081	**(2.9)**	0.014	**(7.5)**	0.004	(1.4)
Social security	-0.084	(0.7)	0.305	(1.0)	0.262	**(3.6)**	0.531	**(2.0)**	0.000	(0.1)	0.012	(0.4)
Social security, Employees < 7	0.163	(1.2)	0.030	(0.1)	-0.360	**(3.5)**	0.786	**(1.7)**	0.000	(0.0)	-0.086	**-(1.9)**
Social security, Employees 7-19	0.100	(0.8)	-0.331	(1.0)	-0.085	(0.9)	-0.532	(1.4)	0.000	(0.0)	-0.028	-(0.9)
Social security, Employees 50-99	0.365	**(2.0)**	-0.398	(0.9)	-0.074	(0.7)	-0.551	(1.4)	0.000	(0.0)	0.072	**(1.7)**
Social security, Employees 100-499	0.191	(1.1)	0.015	(0.0)	-0.230	**(2.7)**	-0.366	(1.2)	0.000	(0.0)	0.009	(0.3)
Social security, Employees > 500	0.241	(1.2)	0.022	(0.0)	-0.127	(1.3)	0.176	(0.5)	0.000	(0.0)	0.014	(0.4)
Sample size	1485		938		3759		3184		5245		4123	
Coefficient Degrees of Freedom	26		26		26		26		26		26	
Root Mean Squared Error	0.9349		2.1252		1.0582		3.5350		0.3203		0.4271	
R^2	0.2754		0.0590		0.2461		0.0828		0.2420		0.0461	

All estimations are ordinary least squares using sample times firm employment weights. Metals and machinery is the reference industry (excluding IT industry).

Column 2 of table 1 shows job creation and column 4 shows job destruction between employment and non-employment for the 55-59 age group. A substantial share of the non-employed group consists of unemployed persons entering the unemployment pension tunnel, leading to an unemployment pension at the age of 60.

The model includes a variable indicating average social security payments per sales. The table indicates that higher social security payments unambiguously increase job destruction. For older workers (fourth column) the effect is twice as high as it is for all workers (third column). The doubling of social security payments per sales (less than one-tenth standard deviation from the average 6 per cent from table A.1 in the Appendix) increases job destruction of the aged by 3 per centage points. This is quite substantial given the average job destruction rate of 8 per cent.

Next, consider variables capturing the skill intensity of the firms. These also include the average of the compensations for unobserved human capital effect, i.e. high wages of the individual throughout his/her work career not explained by experience, sex, education and interactions to firm factors. It is seen that job creation and destruction both decrease with compensations on unobserved human capital, the share of the educated workforce and capital intensity. Skill-intensive firms neither employ those out of work nor contribute to job destruction. Given the initial log wage regression, the effects of unobserved human capital should be interpreted relative to the expected wage. An increase in unobserved human capital by 30 per centage points (one-tenth standard deviation increase) decreases job destruction by 3 per centage points. It is seen from the fifth column that skill-intensity also decreases excess worker mobility. This implies that it is less common to replace an unemployed person with another unemployed person.

We can see from the firm-size dummies in table 1 that vast differences do not exist in firms of different size in job creation nor destruction for young or aged persons (compare columns 1 and 2 or 3 and 4), when looking at the total flow from employment. The fifth column shows only that excess worker reallocation is significantly lower in small firms.

Job destruction for all age groups only slightly decreases with firm size. On the other hand, a comparison of job destruction rates for those aged 55-59 and for all age groups reveals that job destruction in disability benefits strongly decreases with firm size. Similarly, the use of the unemployment pension tunnel increases according to firm size (not shown). The generous use of individual early retirement for the elderly in small firms matches the use of the unemployment pension system in large firms.

There exists a range of other factors related to the firm size effect in flows to pensions. Social security per sales weakly interacts with the firm-size dummies both for total flows and for flows of aged individuals. For older workers, high social security payments are most damageing in very small firms (social security payments per sales are on average 20 per cent higher in smallest firms), but other firm-size groups do not show any obvious pattern. One reason for all this is that in large firms wage expenses form a lower share of total sales. Therefore, social security payments per sales are not higher, (see table A.2 in the Appendix).

From columns 3 and 4 it is seen that liquidity constraints and a high borrowing ratio raise job destruction rates. Liquidity problems also create some excess worker reallocation. Finally, we can see that firms, which create high job destruction for older workers into unemployment and pensions, are located in certain industries: consumer goods, non-metallic mineral products and construction. Overall, manufacturing, excluding the part belonging to IT sector (using OECD definitions), separate out as having high job destruction. In construction, job creation is also significant. Not only the job reallocation (sum of job creation and destruction) but also excess worker reallocation is exceptionally high.

Unemployment Pension Flow and Disability Benefits

Table 2 shows withdrawal into unemployment pension, and table 3 shows job creation and destruction leading to disability pension.

It can be seen from tables 2 and 3 that the model explains around 30 per cent of flows into the unemployment pension and the disability pension. We can see that the share of social security payments from total sales increases withdrawal into unemployment pension (table 2) and has no effect on job destruction leading to disability pension, except in small firms (table 3). Hence, the negative overall effect on withdrawal from work relates to unemployment pensions, and not to withdrawal into disability pensions. We can also see that workers from firms with a high share of educated workers are less prone to receive disability pensions, but otherwise the skill intensity of the firm is not important. The compensations for experience (average predicted effect of x variables) turn out, instead, to be a significant factor but have an opposite effect on young and older workers. Prime age workers in firms with steeper wage profile experience greater job destruction into disability, while the opposite holds for older workers.

Table 2.Estimates of Withdrawal into Unemployment Pension

Dependent Variable / Variable	Net Change of Employment age 55-59 Coefficient	t-value	Net Change of Employment age 60-64 Coefficient	t-value	Excess Worker Reallocation Coefficient	t-value	Excess Worker Reallocation age 60-64 Coefficient	t-value
Average Predicted Effect of x Variables (xb)	-0.009	(1.2)	0.053	(0.5)	-0.003	(0.6)	-0.091	**(1.7)**
Average Unobserved Human Capital (α)	0.002	(0.8)	0.079	**(1.8)**	-0.007	**(3.4)**	0.014	(0.6)
Average Education Effect (uη)	-0.018	**(2.5)**	-0.253	**(2.5)**	0.001	(0.1)	-0.044	(0.8)
High Educated/Employees	0.014	**(2.2)**	0.389	**(4.2)**	0.007	(1.6)	0.061	(1.2)
Log(Capital/L)	0.000	(0.5)	0.002	(0.3)	0.000	(0.9)	-0.001	(0.3)
Borrowing ratio	0.001	(1.0)	0.000	(0.0)	0.000	(0.5)	-0.001	(0.1)
Market Share	0.000	(0.6)	0.000	(0.8)	0.000	(0.1)	0.000	(0.2)
Average employees < 7	0.003	(0.9)	-0.189	**(3.3)**	0.024	**(10.8)**	-0.011	(0.4)
Average employees 7-19	0.002	(0.4)	-0.150	**(2.5)**	-0.002	(0.7)	-0.046	(1.4)
Average employees 50-99	0.003	(1.0)	0.073	**(1.9)**	-0.001	(0.4)	-0.034	**(1.7)**
Average employees 100-499	0.004	**(2.1)**	0.104	**(3.5)**	-0.001	(0.8)	-0.024	(1.5)
Average employees > 500	0.004	**(2.0)**	0.097	**(3.4)**	-0.002	(1.3)	-0.041	**(2.8)**
Consumer goods	-0.002	(1.2)	-0.002	(0.1)	0.001	(1.3)	-0.006	(0.6)
Pulp and paper, chtyical	-0.001	(0.6)	-0.008	(0.5)	0.001	(0.9)	-0.001	(0.1)
Non-metallic mineral products	0.000	(0.1)	0.025	(1.0)	0.000	(0.1)	0.002	(0.1)
IT manufacturing and services	-0.003	(1.3)	-0.199	**(4.5)**	-0.004	**(2.1)**	-0.006	(0.3)
Energy and Water	0.000	(0.1)	0.029	(0.5)	0.000	(0.1)	0.001	(0.1)
Construction	-0.002	(0.9)	0.001	(0.0)	0.001	(0.8)	-0.009	(0.7)
Trade, Hotels, Restaurants	-0.003	**(2.0)**	-0.008	(0.4)	0.001	(1.1)	-0.001	(0.1)
Non-business services	-0.004	**(1.8)**	-0.007	(0.2)	0.002	(1.0)	-0.011	(0.6)
Social security	-0.028	**(2.3)**	-0.011	-(0.1)	-0.005	-(0.6)	0.016	(0.2)
Sample size	242		173		242		229	
Coefficient Degrees of Freedom	21		21		21		21	
Root Mean Squared Error	0.1193		2.5744		0.0822		0.8754	
R^2	0.1288		0.3068		0.5097		0.1250	

All estimations are ordinary least squares using sample times firm tyployment weights. Metals and machinery is the reference industry (excluding IT industry).

Firm-size effects are clear. Large firms stand out as ones where unemployment pensioners are more likely to emerge (see also table A.2). This is most likely a result of the employer's non-harmonised excess of pension costs shown earlier in figure 1. On the other hand, job destruction in disability pensions is around 2 per centage points higher in small firms (fewer than 7 employees). This is double the average destruction rate of 2 per cent (see table A.2 in the Appendix). The fact that disability pensioners largely emerge from small firms is well founded, since the burden in disability pension payments for the small firms is lower than for the large firms. Firm-size difference appears to be lower for older workers. One reason for this is that disability cost payments extend only to the age of 64, i.e. the cost difference between small and large firms decreases the older the disabled person is.

We can conclude that a typical person receiving disability benefit has been working in a small firm that has i) relatively high social security payments relative to sales and ii) a relatively high proportion of older workers. This firm is located in either the consumer goods producing industry, in the energy and water industry or in construction.

Table 3. Estimates of Withdrawal into Disability Pension

Dependent Variable	Job Creation		Job Creation age 55-59		Job Destruction		Job Destruction age 55-59		Excess Worker Reallocation		Excess Worker Reallocation age 55-59	
Variable	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Average Predicted Effect of x Variables (xb)	-0.012	(0.7)	0.231	(1.0)	0.023	**(11.0)**	-0.176	**(4.5)**	0.001	(0.7)	-0.009	**(1.9)**
Average Unobserved Human Capital Effect (α)	-0.015	(1.6)	-0.023	(0.2)	-0.002	**(2.1)**	0.011	(0.5)	-0.003	**(4.9)**	-0.003	(1.3)
Average Education Effect (uη)	0.013	(0.5)	-0.552	**(1.8)**	0.000	(0.1)	0.067	(1.6)	0.000	(0.3)	-0.006	(1.2)
High Educated/Employees	-0.036	**(2.5)**	-0.021	(0.1)	-0.007	**(4.1)**	-0.100	**(3.3)**	0.000	(0.5)	0.002	(0.4)
Log(Capital/L)	0.003	**(2.0)**	0.016	(0.9)	0.000	(0.6)	0.000	(0.1)	0.000	**(2.0)**	0.000	(0.7)
Borrowing ratio	-0.004	(1.1)	-0.070	(1.5)	-0.001	(1.4)	-0.005	(0.7)	0.000	**(1.8)**	0.002	**(2.5)**
Market Share	0.000	(0.2)	-0.010	(0.7)	0.000	**(2.5)**	0.000	(0.5)	0.000	(0.8)	0.000	(0.3)
Average employees < 7	0.033	**(3.4)**	-0.048	(0.4)	0.018	**(10.2)**	0.012	(0.3)	0.003	**(3.5)**	0.003	(0.7)
Average employees 7-19	0.005	(0.4)	-0.009	(0.1)	0.008	**(7.4)**	0.095	**(5.0)**	0.001	**(2.1)**	0.007	**(3.1)**
Average employees 50-99	-0.005	(0.5)	-0.031	(0.3)	-0.001	(1.1)	0.001	(0.0)	0.000	(0.2)	0.001	(0.3)
Average employees 100-499	0.002	(0.2)	0.026	(0.2)	-0.002	**(1.8)**	-0.026	(1.5)	0.000	(0.2)	0.000	(0.2)
Average employees > 500	-0.039	**(2.7)**	-0.345	**(2.2)**	-0.001	(1.3)	-0.027	(1.5)	0.000	(0.4)	0.000	(0.1)
Consumer goods	-0.003	(0.3)	-0.081	(0.7)	0.002	**(3.3)**	0.025	**(2.1)**	0.000	(0.0)	-0.001	(0.5)
Pulp and paper, chkyical	-0.002	(0.3)	-0.012	(0.2)	0.000	(0.9)	0.006	(0.6)	0.001	**(2.4)**	0.003	**(2.6)**
Non-metallic mineral products	-0.006	(0.6)	-0.081	(0.6)	0.001	(1.4)	0.011	(0.8)	0.000	(0.9)	0.001	(0.5)
IT manufacturing and services	0.007	(1.0)	0.227	**(2.6)**	0.001	(1.3)	-0.001	(0.1)	0.000	(0.7)	0.001	(0.4)
Energy and Water	0.006	(0.2)	0.261	(1.0)	0.003	**(2.6)**	-0.013	(0.6)	0.001	(1.2)	0.004	(1.5)
Construction	0.020	**(2.8)**	0.018	(0.2)	0.005	**(8.3)**	0.023	**(1.9)**	0.000	(1.0)	-0.001	(1.0)
Trade, Hotels, Restaurants	0.008	(1.3)	-0.005	(0.1)	0.001	**(2.4)**	0.001	(0.1)	0.000	(0.2)	-0.001	(0.8)
Non-business services	-0.002	(0.1)	-0.151	(1.2)	0.002	**(2.1)**	-0.001	(0.1)	0.001	**(2.6)**	0.000	(0.2)
Social security	0.046	(0.5)	-0.482	(0.5)	0.008	(0.8)	0.125	(0.7)	0.002	(0.4)	0.015	(0.6)
Social security, Employees < 7	0.025	(0.2)	3.546	**(2.5)**	0.057	**(2.7)**	0.538	(1.3)	-0.021	**(2.0)**	-0.022	(0.5)
Social security, Employees 7-19	0.074	(0.6)	0.379	(0.2)	-0.006	(0.5)	-0.176	(0.9)	-0.002	-(0.3)	-0.020	(0.8)
Social security, Employees 50-99	0.050	(0.4)	0.092	(0.1)	0.006	(0.4)	-0.184	(0.7)	0.001	(0.1)	-0.009	(0.3)
Social security, Employees 100-499	-0.203	(1.0)	-0.868	(0.4)	0.005	(0.5)	-0.035	(0.2)	0.001	(0.1)	-0.008	(0.3)
Social security, Employees > 500	0.868	**(3.3)**	9.903	**(2.9)**	-0.004	(0.3)	-0.207	(0.9)	-0.004	-(0.5)	-0.003	(0.1)
Sample size	184		138		3091		2912		3276		3051	
Coefficient Degrees of Freedom	26		26		26		26		26		26	
Root Mean Squared Error	0.2911		2.9109		0.1329		2.3693		0.0750		0.3016	
R^2	0.4009		0.3037		0.2943		0.0601		0.0320		0.0178	

All estimations are ordinary least squares using sample times firm employmentweights. Metals and machinery is the reference industry (excluding IT industry).

Job destruction to disability pension flows usually lead ultimately to employees permanently leaving the workforce. There is, however, some evidence of microfirms (those with fewer than seven employees) and the largest firms recruiting those with disability benefits. The recruitment by large firms may reflect the fact that the burden of disability benefits is relatively high compared with unemployment pensions.

From column 4, it is noted that the estimated model explains a relatively low share of disability pensions of those aged 55-59, compared with the disability pensions in all age groups. One reason for this can be that the group disability pensioners aged 55-59 includes individual early pensioners who have less strict health criteria to enter the early retirement than disability pensioners but have the same pension code in our data. Disability pensioners below age 55 are more definitely concentrated in industries where the real risks of disability are greatest: construction, energy and water. Individual early pensioners also differ from disability pensioners in their backgrounds and behaviour (Huovinen 2001) and therefore might cause bias in our estimations.

Firm Performance and Early Exit

Table 4 shows how job flows and firm characteristics affect firm performance. We find some evidence that withdrawal out of employment is related to firm performance. From column 1 in table 4, job destruction out of work is associated with an improvement of total factor productivity. However, columns 2 and 3 in table 4 include a capital intensity term and show that withdrawal is unrelated to value added per labour or to profitability. This suggests that the positive total factor productivity effect of withdrawals may have been related to a simultaneous and more intense use of capital. Withdrawals without capital restructuring, as such, have no strong effect on firm performance.

2.5   Conclusions

The key conclusion from this study is that older workers had a considerably higher propensity to lose their jobs than Finnish employees did in general. We show that withdrawal of older workers from work has been persistent throughout the period, and not explained only by high job destruction in the recession years. A second finding of some importance is that those workers who move from employment into unemployment and disability benefits and pension are the ones with a shorter educational history. High compensations on education also inc-

Table 4. Total Factor Productivity, Valued Added and Net Profits Per Capita As a Function of Compensation Policies

Dependent Variable:	log(TFP) Level		Log of Valued Added/L/100		Log of Net Profits/L/100	
Variable	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	-0.527	**(4.6)**	-16.708	**(12.6)**	-13.143	**(4.4)**
Job Destruction, All Withdrawals	0.073	**(1.8)**	-0.708	**(5.5)**	-0.506	(1.2)
Job Destruction, All Withdrawals age 55-59	0.033	(0.2)	0.129	**(2.8)**	-0.143	(1.0)
Job Destruction, Unemployment Pension age 60-64	-0.823	(1.0)	0.089	(0.5)	-0.234	(0.5)
Job Destruction, Disability Pension	-0.050	(0.9)	-0.340	(0.4)	-1.403	(0.6)
Job Destruction, Disability Pension age 55-59	0.637	**(7.7)**	-0.121	**(1.8)**	-0.064	(0.3)
Average Predicted Effect of x Variables (xβ)	0.958	**(22.0)**	0.672	**(7.2)**	0.220	(0.9)
Average Unobserved Human Capital (α)	0.831	**(7.7)**	1.035	**(20.7)**	0.947	**(7.7)**
Average Education Effect (uη)	0.075	(1.1)	1.007	**(8.1)**	1.028	**(3.7)**
High Educated/Employees	-0.085	**(4.7)**	0.100	(1.3)	0.673	**(3.7)**
Log(Capital/L)			0.107	**(14.7)**	0.184	**(10.1)**
Borrowing ratio	0.010	**(4.2)**	-0.054	**(2.6)**	-0.964	**(11.5)**
Market Share	-0.002	(0.1)	0.015	**(5.8)**	0.010	**(1.7)**
Average employees < 7	0.057	(1.5)	0.081	(1.5)	0.049	(0.4)
Average employees 7-19	0.027	(0.6)	-0.744	**(19.1)**	0.046	(0.4)
Average employees 50-99	-0.474	**(11.8)**	0.030	(0.6)	0.095	(0.7)
Average employees 100-499	-0.067	(0.9)	-0.402	**(8.6)**	-0.334	**(2.8)**
Average employees > 500	-18.531	**(50.4)**	0.015	(0.2)	0.014	(0.1)
Social security	0.794	(1.4)	-16.927	**(40.3)**	-10.506	**(9.1)**
Social security, Employees < 7	-0.368	(0.8)	-0.098	(0.1)	5.235	**(3.1)**
Social security, Employees 7-19	-0.448	(0.8)	11.682	**(25.7)**	0.043	(0.0)
Social security, Employees 50-99	7.580	**(15.4)**	-0.579	(0.9)	-1.582	(0.9)
Social security, Employees 100-499	-0.174	(0.2)	6.833	**(11.9)**	5.837	**(3.9)**
Social security, Employees > 500	-0.410	**(4.9)**	-1.189	(0.9)	4.421	(1.4)
Sample size	4952		5220		3373	
Coefficient Degrees of Freedom	55		56		31	
Root Mean Squared Error	0.5109		0.5975		1.2805	
R^2	0.6631		0.7054		0.2192	

The dummies in TFP and Value Added estimations include 35 industry dummies and in profitability estimations are the same as in earlier figures. Metals and machinery is the reference industry (excluding IT industry). Estimations use general least squares.

rease withdrawals. There is a persistent decline in the employment position of the least-skilled in the workforce, although job destruction is also a potential threat to educated employees with high incomes. Approximately 50 per cent of the jobs held by people aged 55-59 vanished in the first half of the 1990s in Finland. This is because the withdrawal rate from employment was more than 16 per cent both in 1992 and 1993 for individuals aged 55-64. The aforementioned withdrawals appeared especially in the construction and manufacturing sectors. The persistence of the job destruction of older workers shows that the phenomenon was not only an outcome of the deep recession in 1991-1993 but has continued throughout the decade.

The study reveals that high social security payments increase job destruction. The effect is two times higher for older workers and explains more unemployment (15 per cent of those aged 55-59 in 1996, 9 per cent in 1998) than disability pensions (20 per cent of those aged 55-59 in 1998). The share of social security payments per sales stays relatively the same, irrespective of firm size. This may explain why social security payments have equal effects on withdrawal rates in small and large firms.

The *total flow* into unemployment and pension systems does not depend on firm size, even for the aged. Instead, as shown, we find that withdrawal is closely related to firm size on a disaggregated level (broken down by pension type). These firm-size differences cannot be explained by the personal characteristics of workers. The explanation is that the employer's 'excess' of the pension costs, or the part of the pension payments which are not deductible for the employer, depend on firm size (see figure 1, Työeläke, 1999).[12]

It is shown that 'job destruction' leading to the receipt of an unemployment pension is concentrated in large firms. This retirement channel is more costly for large firms as compared with small firms, but it is relatively less costly than a disability pension scheme. The large firm effect also relates to the attractiveness of the 'unemployment pension tunnel' for both employers and employees. Since firms start to contribute to unemployment pension payments only when the unemployed enter the unemployment pension scheme at the age of 60, the unemployment pension tunnel might be favoured instead of a disability pension.

Small firms use disability pensions as an important way to adjust the number of personnel.[13] The reason for this is the low funding share of the disability pension. It is shown that withdrawal from employment also depends on a number of other firm characteristics. Skill-intensity of the firm, such as a higher share of educated employees, lowers withdrawals. In firms where prime-age workers have deeper wage profile, i.e. higher compensations from experience, prime-age workers withdraw more frequently into disability pensions, while the opposite occurs for older workers.

---

[12] Since the beginning of the year 2000, the employer's excess of the early pension payments has been partly harmonised (as shown in figure 1).

[13] Our variable indicating flows to disability pensions includes individual early retirements.

It is shown that withdrawal from employment of older workers has a positive effect on the firm's total factor productivity. It seems, however, that in firms where this happens are going through some form of capital restructuring. The profit and value added per labour effects are ambiguous after controlling for capital intensity.

Appendix:

Table A.1. The shares of pensioners and unemployed and the division of pensioners by type of pension 1998

	Age 55-59	Age 60-64	Age 65+	
	Per cent of population (in the age group)			
Employed	50.8	19.4	2.0	
Unemployed	9.3	1.3	0.0	
Receiving a pension	24.1	78.3	98.0	
Total	84.2	99.0	100.0	
Pensions	Per cent of pensioners (in the age group)			Percent of all pensioners
Old age	6.8	16.3	91.8	63.6
Early old age	0.2	6.9	5.3	4.7
Disability	71.9	30.1	0.0	19.8
Individual early retirement	6.8	16.9	0.0	3.6
Unemployment pension	0.0	21.7	0.0	4.0
Part-time pension	6.7	2.5	0.0	0.9
Special pension for farmers	7.7	5.6	2.9	3.4
Total	100.0	100.0	100.0	100.0

Source: OECD, 2000.

Table A.2 Summary Statistics: Mean, Standard Deviation

Variable	Mean	Standard Deviation	Mean Small Firms	Standard Deviation Small Firms	Mean Large Firms	ST Large Firms
Firm Size	412	12472	9	64.8	923	24154
Real Wages	106274	438139	100668	469973.5	109887	578695
Excess Separations	0.10	1.07	0.09	1.12	0.10	1.40
Separation Rate	0.17	1.49	0.16	1.55	0.18	1.91
Hirings Rate	0.33	3.99	0.28	2.91	0.40	6.61
Job Destruction All Unemployed	0.08	1.20	0.09	0.97	0.07	1.71
Job Destruction 55-59 Unemployed	0.23	3.66	0.23	4.55	0.23	3.83
Net Change of Employment Unemployment pension	-0.0001	0.02	-0.0001	0.02	-0.0001	0.01
Net Change of Employment Unemployment Pension 60-64	-0.0018	0.53	-0.0042	0.90	-0.0008	0.16
Job Destruction All Disability Benefit	0.012	0.17	0.023	0.237	0.009	3.01
Job Destruction 55-59 Disability Benefit	0.096	2.46	0.181	4.168	0.076	2.69
Experience	21	63	20	71.2	21	75
Average Predicted Effect of x Variables ($x\beta$)	0.76	2.70	0.70	3.32	0.79	2.87
Average Unobserved Human Capital Effect (α)	0.13	2.79	0.08	3.34	0.16	3.01
Average Education Effect ($u\eta$)	10.68	1.86	10.69	1.82	10.68	2.69
Average Firm Intercept (ϕ)	-0.06	6.93	-0.07	7.83	-0.06	1.78
Skilled Workers/Employees	0.15	2.64	0.16	2.90	0.16	3.44
Log(Capital/L)	6.71	21.19	6.08	19.07	7.25	28.56
Market Share	2.73	103.42	0.14	29.44	5.93	208.89
Borrowing ratio	0.29	6.76	0.27	5.75	0.30	10.40
Social Security Payments/Sales	0.06	0.75	0.07	0.91	0.06	0.90
Return on Equity	0.29	49.03	0.41	78.40	0.23	11.35
Profits/Employees/100	0.28	61.26	0.31	42.51	0.32	124.64

References

Abowd, J. M., Kramarz, F. and Margolis, D. N. (1999), 'High Wage Workers and High Wage Firms', *Econometrica,* 67, 251-333.

Abowd, J. M., Kramarz, F. (2000), 'Inter-industry and Firm-size Wage Differentials in the United States', a paper presented at the first EALE/SOLE World Conference Milan, Italy.

Ahituv, A. and Zeira, J. (2000), 'Technical Progress and Early Retirement', *Centre for Economic Policy Research*, London. UK. Discussion Paper No. 261.

Atkinson, A.B. (2000). 'The Changing Distribution of Income: Evidence and Explanations', *German Economic Review*, 1, 3-18.

Baldwin J., Dupuy, R. and Penner, W. (1992). 'Development of Longitudinal Panel Data from the Business register: the Canadian experience', *Statistical Journal of the United Nations Economic Commission for Europe,* 9, 289-303.

Böckerman P. and Piekkola, H. (2001), 'On Whom Falls the Burden of Restructuring? – Evidence from Finland', in Holm A. and Jensen T.B. (eds.) Nordic Labour Market Research on Register Data. Nordic Council of Ministers, 71-115 Copenhagen. (forthcoming).

Cabarello, R. J. and Hammour, M. L. (2000). 'Creative Destruction and Development: Institutions, crises and restructuring*, National Bureau of Economic Research*, Working Papers No. 7849.

Davis, S.J., Haltiwanger, J. and Schuh, S. (1996), *Job Creation and Destruction*, The MIT Press, Cambridge, Massachusetts. US.

De Long, J.B. (1990), 'Liquidation Cycles: Old-fashioned Real Business Cycle Theory and the Great Depression', *National Bureau of Economic Research*, Working Papers No. 3546.

Hakola, T. (1999), 'Race for Retirement', *Government Institute for Economic Research,* Research Reports, 60, Helsinki.

Hakola, T. (2000), 'Varhaiseen eläkkeelle siirtymiseen vaikuttavat tekijät', *Sosiaali- ja terveysministeriön julkaisuja, Vol* 11.

Harrigan, J. (1997), 'Technology, Factor Supplies, and International Specialisation', *American Economic Review*, 87, 475-494.

Honkapohja, S. and Koskela, E. (1999), 'The Economic Crisis of the 1990s in Finland', *Economic Policy*, 29, October, 400-436.

Huovinen P. (2001), 'Time Allocation of Ageing Finns – Review of Finnish Time-use Data from 1979 to 2000' The Research Institute of The Finnish Economy (ETLA), Discussion Papers, Taloustieto. Helsinki. (forthcoming).

Huovinen P. and H. Piekkola, H. (2001), 'Unemployment and Early Retirements of the Aged Workers in Finland in 1986-1996' in Kalela J., Kiander J., Kivikuru U., Loikkanen H.A. (eds) Down From the Heavens, up from the Ashes. The Finnish Economic Crisis of the 1990s in the Light of Economic and Social Research. Government Institute for Economic Research Publications No. 27:6 Academy of Finland., Helsinki (forthcoming).

Hytti, H. (1998), 'Varhainen eläkkeelle siirtyminen – Suomen malli', *Kansaneläkelaitos*, Sosiaali- ja terveysturvan tutkimuksia 32. *(Social Insurance Institution Research Reports No 32, Helsinki.)*.

Kalimo, R. & Toppinen, S. (1997), "Työuupumus Suomen työikäisellä väestöllä (Burn-outs Among Finnish Working Age Population)". Työterveyslaitos (*Finnish Institute of Occupational Health*), Helsinki.

OECD (2000), *Economic Survey of Finland*, OECD, Paris,.

Piekkola, H. (2001), *Human Capital and Wage Formation*, The Research Institute of The Finnish Economy (ETLA), Series B-177, Taloustieto. Helsinki.

Pyy-Martikainen, M. (2000), "Työhön vai eläkkeelle? Ikääntyvien työttömien valinnat työmarkkinoilla (To Work or Retire? The Labour Market Choices of Ageing Unemployed)', Government Institute for Economic Research, VATT -Research Reports, 66. J-Paino Oy, Helsinki.

Romppanen, A. (2000), 'Ikääntymisen vaikutuksista työmarkkinoilla (The Effects of Ageing in Labour Market)', Sosiaali- ja terveysministeriön julkaisuja,12. (Ministry of Social Affairs and Health Research reports No 12).Oy Edita Ab, Helsinki.

Työeläke (1999), Eläketurvakeskuksen julkaisu, 4. Vuosikerta 36 (Periodical of the Central Pension Security Institute No 4 Volume 36). Helsinki.

Työministeriö ja Sosiaali ja terveysministeriö (2000) (Ministry of Labour and Ministry of Social Affairs and Health), Kansallisen ikäohjelman seurantaraporti (Implementation Report of National Programme on Ageing Workers). Sosiaali- ja terveysministeriön julkaisuja 2000:15 (Ministry of Social Affairs and Health Research reports No 15). Oy Edita Ab, Helsinki

3 Time Allocation of Ageing Finns 1979-2000

In this chapter the time-use of ageing Finns is studied, using the time-use research data sets collected and held by Statistics Finland during 1979, 1988 and 2000[14]. The time-use data is collected with large scale surveys where the respondents are asked to hold a time diary registering their daily activities from two randomly selected days, one weekday and one weekend day[15]. Time-use data has high quality information of paid and unpaid working time, basic needs like sleeping and eating plus leisure time activities as well as social events. The time-use data set utilised in this study is partly linked with the labour register held by the Ministry of Labour and a fair amount of background information concerning, for example, health and education is collected from the respondents in interviews preceding the days in the diary.

The purpose of this study is to discover how the time allocation varies between generations and how the early retirees use the time released from work after retirement. In addition, the use of time by the ageing population is examined in relation to different demographic classifications – e.g. by gender and marital or labour market status. According to OECD (2000) the allocation of time during days of retirement is similar to days off work before retirement. Thus, according to the proposed continuity of life argument, the retirees would not start new activities, with which they would fill their days when retired. This kind of continuity creates passivity among the ageing cohorts. However, it is worthwhile verifying whether the passivity takes place in Finland. It might also be the case that the early retirees allocate their leisure to voluntary work or the kind of activities that would increase the wellbeing of society and passivity takes place only among certain subgroups of the aged population.

This chapter can be considered as a base for Chapter 3, where an effort is made to build a more specific model to explain the motivation factors behind retirement. For this purpose, special attention is paid to the leisure time allocation. Certain patterns of leisure time-use are searched for to find activities which could be seen as raisers of the value of increased leisure time during retirement.

---

[14] Actually, the last two surveys were done in April 1987-March 1988 and March 1999-March 2000.

[15] In 1979 and 1987 the two days can both be weekdays or weekend days.

Time-use data

The total number of days recorded in diaries collected in the three time-use surveys (1979, 1988, 2000) were 12045, 15298 and 10561. Respectively, the number of ageing respondents, in other words diarists with an age of between 55 and 64, were 1508[16], 1848 and 1309. (The distribution of the 2000 sample of ageing diarists by their labour market status is presented in Table 3.1). From every diarist, two randomly selected days recorded in diary were registered. In 2000 these diary days consisted of one weekday and one weekend day, as in the former studies the two days were not constrained in such manner. Furthermore, the sampling method of the 2000 survey differs from the earlier two surveys. For the 2000 survey all the members of the household were picked to the sample (cluster sampling). Moreover, the 1979 survey differs from the later two in the sense that the diaries were collected only between September and November. Therefore, when reading the text one should keep in mind that when comparisons from the three surveys are made, the 1988 and 2000 calculations are made using only diaries collected between the above mentioned autumn months. When the 1988 and 2000 calculations appear without the 1979 figures, the diaries from the whole year are used. The observations are weighted with a season/demographic multiplier provided by Statistics Finland. The use of the weights prevents any particular time of year, like the summer holidays, to be understated or overstated in the calculations.

The last two decades have meant quite a considerable change in the working environment in Finland. The main drivers for this change have been the shortening of working hours, the generalisation of irregular employment relationships and the introduction of several early retirement schemes. One of the biggest single sources of change for aged workers was the economic crisis in Finland experienced in the first half of the 1990s. Like it was found in the first chapter of this book, the recession years' mass unemployment hit hardest the workers with old age and low education (see also Huovinen & Piekkola 2001, Piekkola & Böckerman 2000). This naturally affects the average time use allocation.

---

[16] However, the number of 65s and older in the 1979 sample was very small and, therefore, some figures in the rest of this paper do not have numbers from this age group.

Table 3.1   **Sample from the survey 2000 – age group 55-64**

Status	Frequency	Per cent	Cumulative freq.	Cumulative %
Employed	586	44.77	586	44.77
Unemployed	133	10.16	719	54.93
Student	4	0.31	723	55.23
Disability pensioners and the sick	216	16.5	939	71.73
Other pensioners	330	25.21	1269	96.94
Housewives	28	2.14	1297	99.08
Unknown	12	0.92	1309	100

3.1   Allocation of Time for Four Main Categories by Age, 1979-2000

In the following, calculations of the four basic time-use categories are presented. These four categories are work[17], domestic work, leisure and basic needs like sleeping and eating. The time allocation to the activities mentioned during the three last decades is presented in Figure 3.1. It can be seen from the figure that working time, especially paid work, has gradually dropped among the other than in the 45-54 age group. In Niemi and Pääkkönen (2001) it was mentioned that in 1988 the average time allocated for work increased. This, however, has been the case only among a particular age group, 45-54. When, in 1979, the average working time[18] for the 15-64 -olds was 4 hours and 30 minutes, it had dropped to 4 hours and 20 minutes until 2000. The biggest decrease in the labour supply happens between 45-54 and 55-64 age groups according to all the three surveys. The average drop between these age groups was about 2 and 10 hours in 1988 and 2000, 1 hour 55 minutes in 1979.

For the ageing cohorts 55-64 the drop in working time was most significant between 1979 and 1988. This was most likely caused by the introduction of early retirement channels during that time. The mass

---

[17] Time devoted for studying is included in paid work.
[18] All the 365 days of the year are included to this average.

Figure 3.1   Time allocation of Finns over 15 years of age, September-November 1979, 1988, 2000

Paid Work

Domestic Work

Leisure

Sleeping and Eating

- ● 1979   ◆ 1988   ▲ 2000
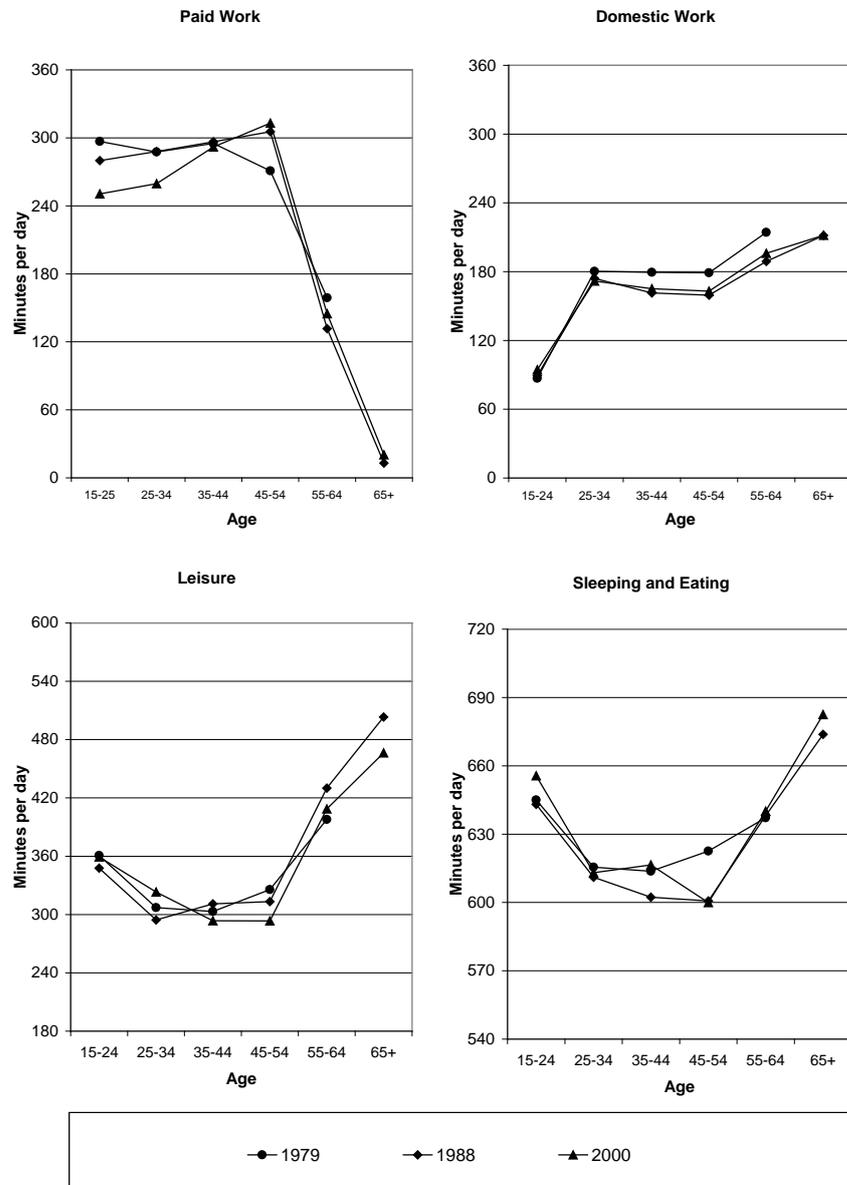
unemployment of aged (and other) workers during the 1990s continued to decrease the number of working hours supplied, but the aggravation of criteria to enter the early retirement schemes has seemingly slowed the decrease or even turned the development upwards. Overall,

Figure 3.2   Changes in yearly time allocation from 1988 to 2000

Men

Women
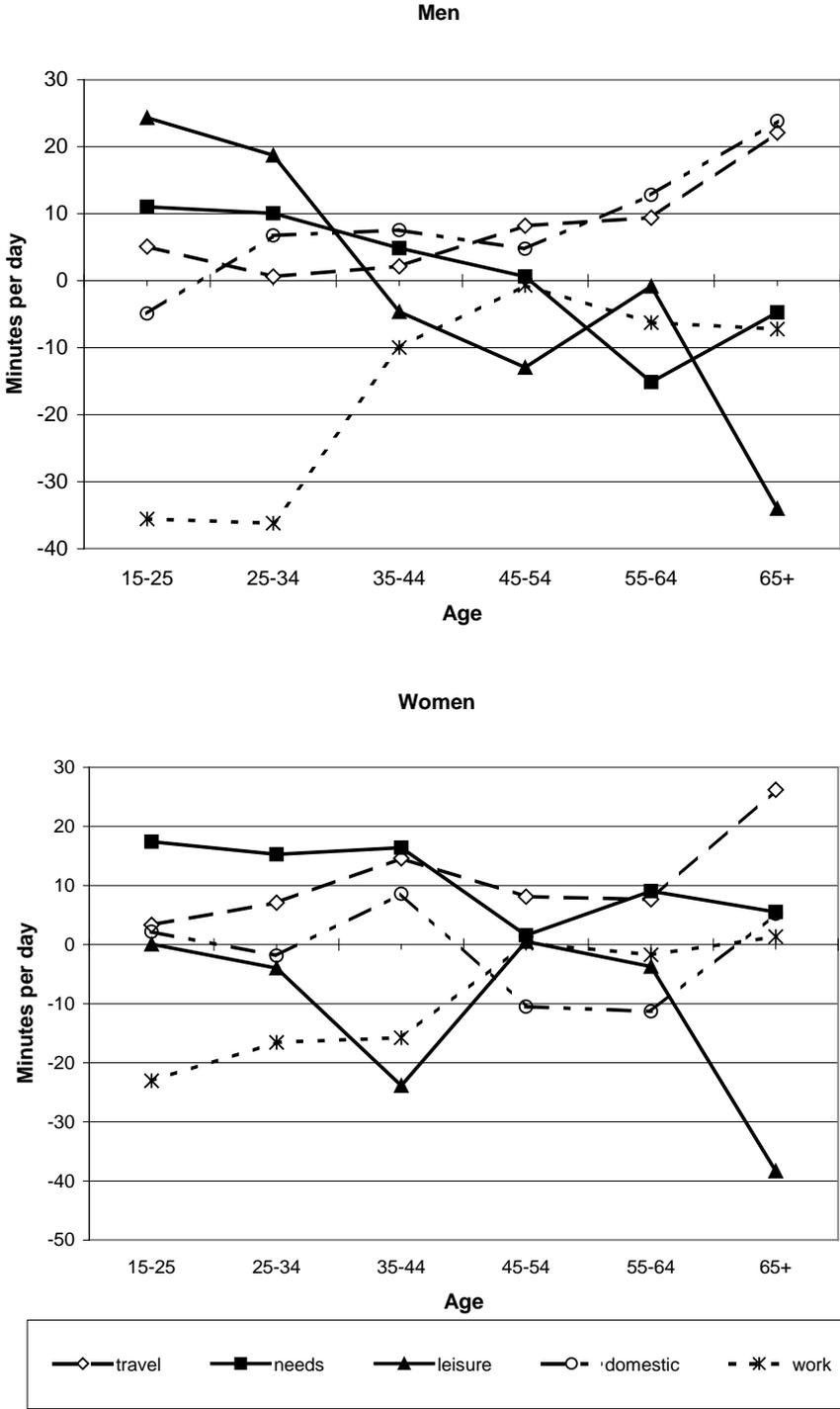
in 2000 the youngest generations were the ones doing less work than before. The working time of the oldest age group included in the analysis, having exclusively old-age pensioners, has remained close to zero for the last 14 years.

The time released from work has been allocated to leisure time (see Figure 3.1 below). Nevertheless, this holds only when we look at leisure time changes between age groups. In this sense, the leisure figure is like a mirror image of curves featuring time for paid work. The time allocated to sleeping and eating also reflects the changes in working time, but undoubtedly basic needs are more exogenous of paid work than leisure time. The change in leisure time over the three surveys is rather static, but some decrease in leisure time can be spotted for the 35-54 age group. Neither does the time for basic needs have a trend as clear as paid and domestic work does, but it seems that the younger age groups spend more time on sleeping than before.

The reason for the ambiguity in the time allocation figures is largely caused by differences in male and female allocation. Naturally, there have also been differences in the employment level through the years. To control these problems, the time-use in following figure is examined by gender, and when the aged are analysed alone in later chapters, the sample will be disaggregated further with labour market status.

It also seems that the lack of corresponding increases in other activities when time from working has decreased is caused by the fact that time needed for travelling and commuting has increased considerably during the last 21 years (see Figure 3.2 below). In this study the time for commuting etc. was not distributed for the basic categories, but is presented as a separate time-use category in Figure 3.2, which gives the changes of *yearly* time-use between 1988 and 2000.

Time for paid and domestic work by gender

There are big gender differences in the time allocation in every age group. Figure 3.3 has separate numbers of paid work for men and women. It can be seen that a large part of the drop in paid work at the national level is caused by the decrease in young men's working time. The average decrease in paid work by women varies from 20 minutes (for younger women) to zero (older) during the period between 1988 and 2000. For men the decrease is from 40 to 5 minutes, respectively. Women's growing participation in the labour market has kept their working time more static during the period of examination. In the

same time, men, especially those aged 15-35, have worked less. The biggest drop for ageing men and women's working time happened during the 1980s rather than in the 1990s (not shown here).

Figure 3.3   Time for paid and domestic work by gender – years 1988 and 2000
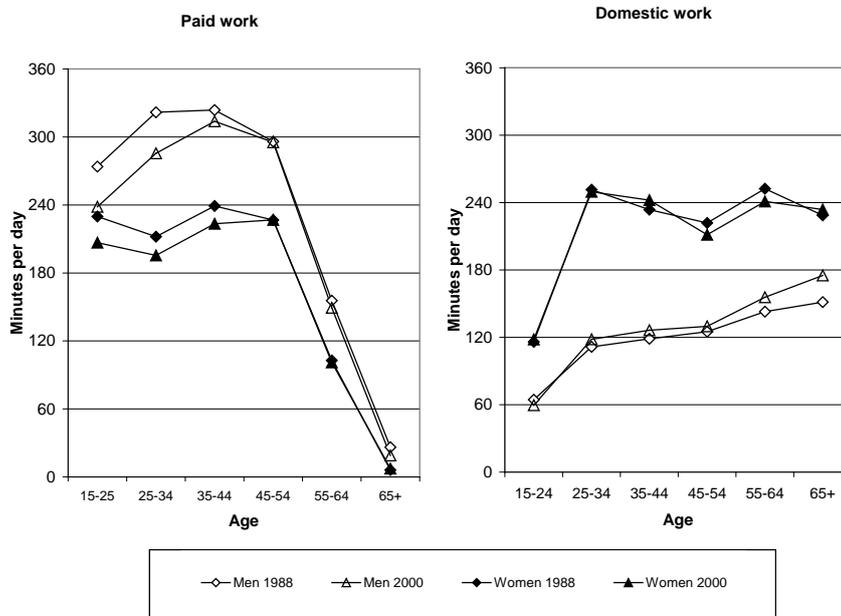
The time for studying is included in the paid work.

The development in working time of younger cohorts has some interesting features from 1979 to the present day. The amount of time for studying drops during the 1980s in the cost of increase in paid work. After the end of the 1980s the trend turns and studying time increases again, whereas the labour supply decreases. The trend in time for studying and working as a total is downward sloping. Furthermore, it can be seen that the amount of paid work done by the aged (Figure 3.4) is about the same as the time devoted for studying by the age 15-24 group. The development in the working hours of the younger Finns can be explained quite well by the development in the young men and women's employment rate, which during 1988 was better than it was in 1979 or 2000.

The time devoted to domestic tasks has surprisingly increased from 1988 and the amount of domestic work seems to correlate positively with age (Figure 2.1). However, from Figure 3.3 one sees that the de-

Figure 3.4   The allocation of time between work and study from 1979 to 2000 by the 15-24 age group
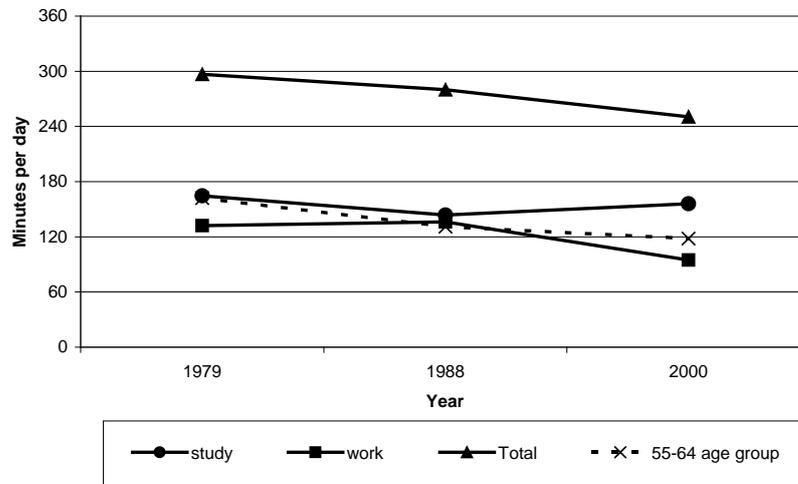
Figure 3.5   Allocation of time to domestic tasks
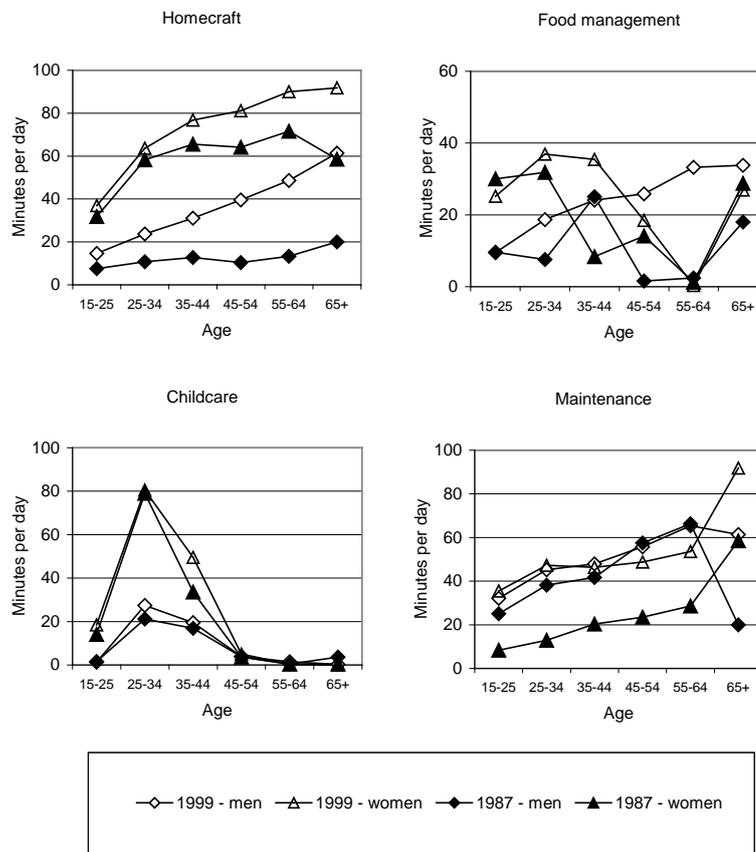
velopment in the amount of domestic work from 1988 to 2000 is divergent for men and women. Only aged men do more domestic work than their younger fellow men. The slight jump in the amount of domestic work between the third and second last age groups has also lengthened. Women spend less time in domestic work in 2000 than they did in 1988. Among women, the age dependency is not purely positive. In the year 2000 women in the 25-34 age group did more domestic work than the aged women. This is because younger women allocate a large amount of time to childcare, around 1¼ hours per day on average. As men's allocation of time to paid work has decreased, they have correspondingly spent more time on domestic tasks, although this is not in the same scope as the amount of time released from paid work. Of the domestic tasks, men have heavily increased their participation in traditional household tasks like cooking, cleaning and washing the dishes and laundry. Women have been able to reduce their time spent on these activities but, on the other hand, they do more maintenance tasks, which used to be men's area in earlier decades.

Overall, the question as to why domestic tasks take more time nowadays than before is interesting. Present households are better equipped than before. Microwave ovens and other household appliances make household work more productive but still the amount of time spent working in kitchen etc. remains unaffected. One would also expect that the urbanisation experienced in the last decades would have decreased the need for domestic tasks as people move to apartment houses and have smaller households in general. However, it seems that re-allocation of paid work to domestic work together with a possible change of attitudes towards do-it-yourself has cancelled out the urbanisation and household technology upgrade effect.

Leisure and basic needs

As was noted earlier, the time released from work is allocated mainly to leisure when people age. But when looking at leisure time inside particular age groups, one sees that leisure time has decreased among the middle aged and over 65-year-olds. On the other hand, leisure time has increased among those of 34 years or younger. Age groups where the employment level is high supply more work to the labour market and have less leisure time. On average, those who are employed are also working longer in 2000 than they used to do in 1988. (Not shown in the figure; figures for the working population can be delivered upon request) The development of the last decade has shown that a decreasing number of employed people support a rapidly increasing amount of

unemployed and retired people. It is expected that this development will escalate when the baby boomers reach pensionable age. The biggest drop in women's leisure time has happened in the 35-44 age group. The most probable reason for this is that this age group's time for childcare has grown considerably. Apparently, the fact that women nowadays give birth at a later age than women in 1979 and 1988 has its effects on women's time-use. Overall, women have less leisure than men do because their total working time, the sum of domestic and paid work, is higher than it is for men. Additionally, women's longer night sleep shortens their leisure time further.

Figure 3.6   Time for leisure and basic needs – years 1988 and 2000
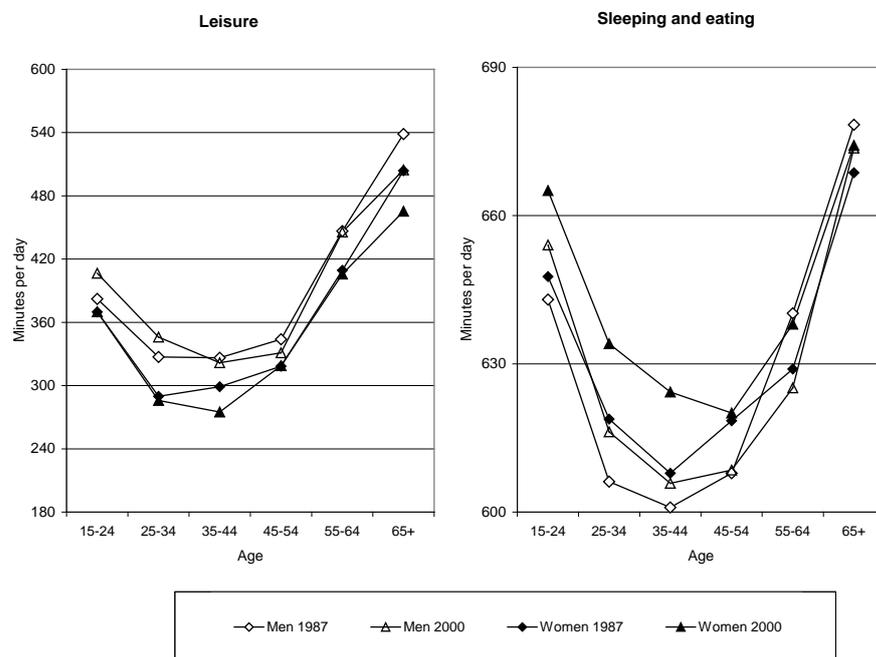
Sleeping time has not changed considerably on average during the last three decades (Figure 3.6). However, there are some diverging changes among the two genders. Women, who traditionally spend more time in sleeping, sleep more nowadays than before. Only the 45-54 age group makes an exception. In this age group both men and women have the same sleeping time. Older men (between age 55-64) have decreased the time allocated for sleeping. This is not in line with the earlier made assumption that the labour market exit should increase the amount of sleeping time. From the end of 70's men's participation

rate has decreased, and following this one might be expecting that old-
er men would sleep more than they used to. However, a contrary hap-
pens. It seems that the improvement of Finnish men's health status is
dictating the sleeping time rather than labour status.

The calculations for this chapter excluded the travel time related for
each activity. This was done because it is many times difficult to indi-
cate to what activity group the travel time is used. Furthermore, travel
in all its forms was seen as an interesting activity group in itself and
seen as a possible source of change in people's lives during the last
decades. Urbanisation and women's growing participation have surely
had their effects on travel times, and the increasing density of cars has
created more traffic jams, as has been stated in many instances. Ac-
cording to the Ministry of Transport and Communications[19] the num-
ber of cars increased, especially among low income and older aged
households. This can also be noted from Figure 3.2 where the differ-
ence in travel time is largest among the older age groups. Overall, a
larger amount of daily time is spent on travel in every age group and
both genders. It is worrying to notice that a widening share of people's
valuable time resource is used sitting in a car or other means of
transport. Traffic has normally only a harmful effect on society's well-
being. In addition to environmental problems, traffic consumes time
that could be used for more productive activities.

3.2   Time Allocation for Four Main Categories – Ageing Population in 2000

The time allocated to basic categories by the ageing population is illus-
trated in Figure 3.7. The use of time is dissaggregated by employment
status and gender. Disability pensioners are treated as an individual
group, as presumably their use of time is constrained by poor health
more than in other groups. In 2000 a person in the 55-64 age group al-
located 9% of his 24 hours time asset to work-related activities. For
those who are still in working life, work related activities take more
than twice that much (20%) but for the non-employed the share of
work is naturally close to zero[20]. On average, the 55-64 age group's la-

---

[19] http://www.mintc.fi/www/sivut/dokumentit/julkaisu/julkaisusarja/1999/
ju200899293fin.htm)

[20] This is, of course, as expected, since for other than old age and disability pensioners
it is not even legal to work if pension benefits are drawn.

Figure 3.7   **Allocation of time for main categories, age group 55-64 by labour status, 2000**
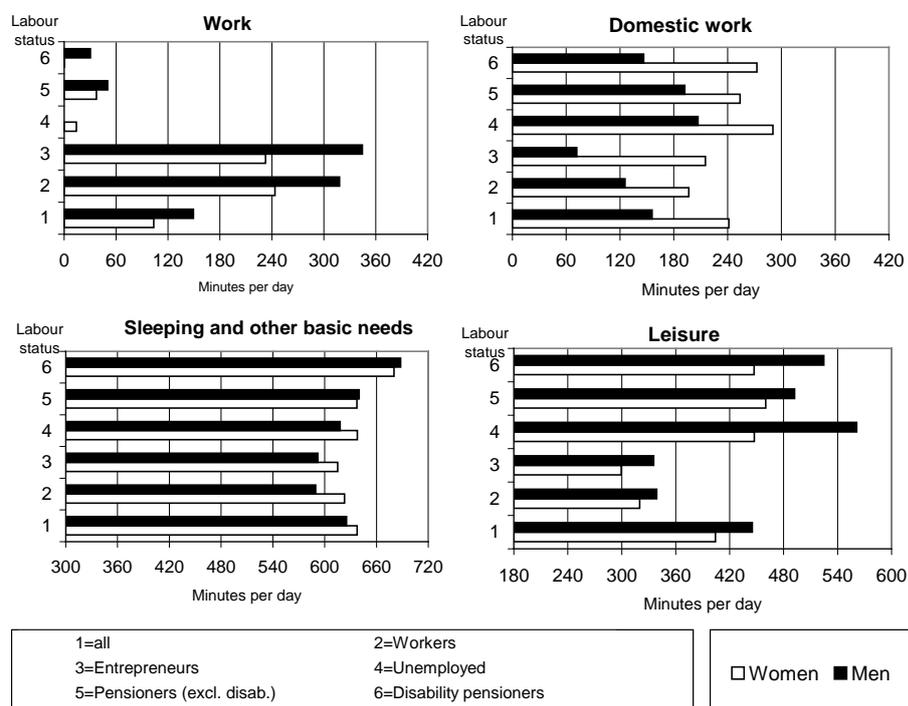
bour supply is rather low. Men's daily time for working is 2 1/2 hours and women's is less than 2 hours. This is naturally a result of the low participation rates of ageing men and women. As was noted in the introductory chapter, the participation rate of this age group is below 50 per cent and the effective retirement age is under 60 years. In the sample, only 38 per cent of the diarists belonging to the analysed age group announced they were working full or part-time. When outside the workforce, Finns contribute only a marginal number of minutes to the total Finnish working hours.

The share of domestic work increases when the individual is ouside the workforce. It can be seen that, even among the retired, there is evident gender difference in the amount of domestic work, even though men increase domestic work relatively more than women do when they retire. When one looks at disability pensioners, it is interesting to notice that disabled women (men) do more (less) domestic work than other retirees.

The time allocated to leisure among the aged increases by 50% after retirement. The time allocated for basic needs also increases when the amount of work decreases. This is true especially for men and the disabled. Disability pensioners use close to 12 hours for these activities. 55-64-year-old women spend more time on basic needs than men when they are still in working life. However, there is convergence between men's and women's sleeping time when they are outside the labour force[21].

Use of time by the elderly is to some extent dependent on marital status. Aged, married men work one hour more than the unmarried group does. The unmarried replace the shorter working time with leisure and domestic work. Unmarried women have considerably more leisure time (the difference is about 1 1/3 hours) than their married contemporaries do. Aged married women allocate 40 minutes more time to domestic work and 30 minutes to paid work[22]. Married men do fewer domestic tasks than unmarried ones so it can be said that couples divide the domestic tasks unevenly. The main reason why the unmarried group has more leisure is most probably that the share of the employed is larger in the married group. However, the difference in the amount of domestic work between unmarried and married women cannot only be explained by the labour status. Apparently, the female spouses' traditional role as a responsible housekeeper is still prominent among the older Finns.

Table 3.2 **Time allocation by gender and marital status, age group 55-64 from the period 2000**

	All			Unmarried			Married		
	men	women	all	men	women	all	men	women	all
needs*	625	638	632	628	636	633	624	638	631
work*	149	103	126	104	81	91	162	113	138
leisure*	445	404	424	468	463	465	439	379	410
domestic*	156	241	200	176	214	198	150	253	200
travel*	64	53	59	64	46	53	65	57	61
Total	1440	1440	1440	1440	1440	1440	1440	1440	1440

3.3   Leisure time – Ageing Population in 2000

It is clear that the leisure time possessed by the elderly increases considerably in the event of retirement. The aim of this section is to find

---

[21] There is also convergence when one is looking only at weekend use of time. During weekends there are neither very significant gender nor working status differrences.

[22] 10 minutes goes to other activities than the four main ones.

out how the extra leisure is allocated to different leisure activities and activity groups. In the first half of this section the leisure time is dis-aggregated by gender as well as the labour market variable. The labour market variable has fewer categories than in the previous section. Full-time workers and entrepreneurs are combined in one group (full-time workers) as well as the unemployed and people other than disability pensioners. The combining is done because, in dividing the leisure time into activity subgroups, the time slots have a lot of zero reported time and, therefore, a couple of outliers might bias the calculations consid-

Figure 3.8 **Leisure time allocation to 6 categories, age group 55-64 from year 2000 by labour status and gender**
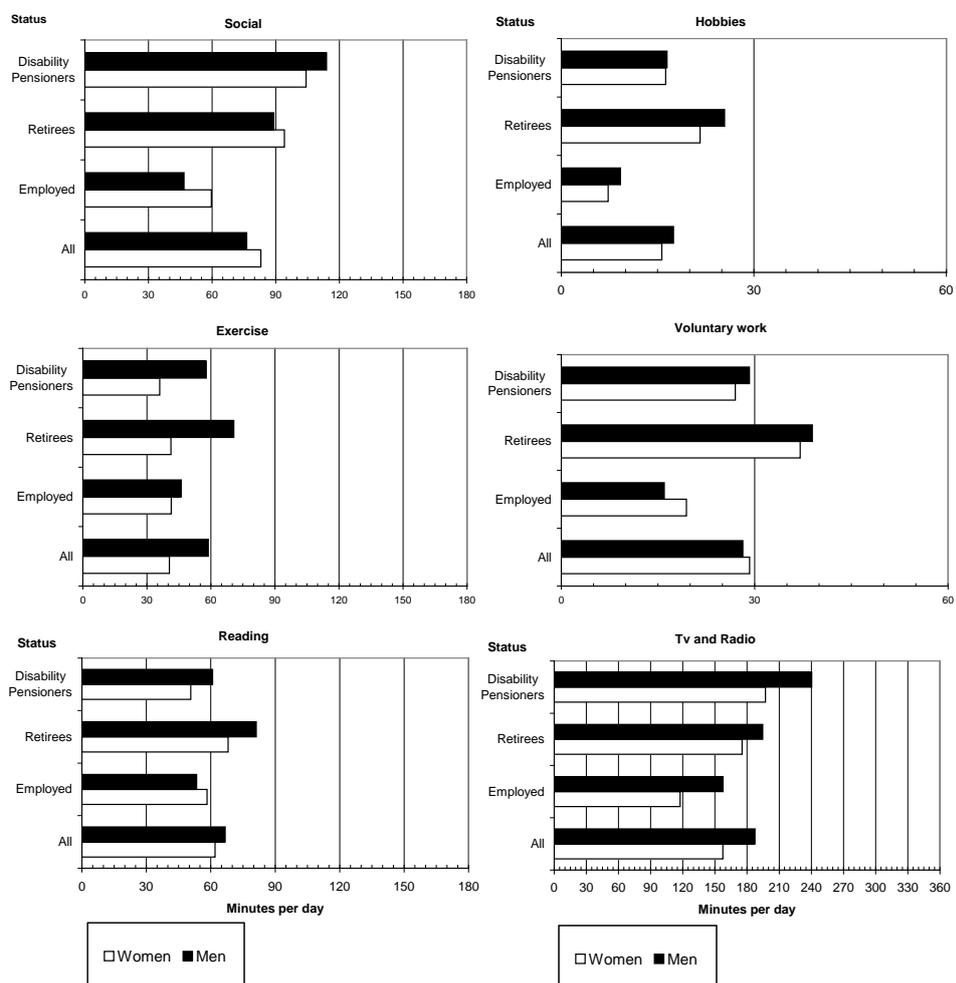
erably[23]. In the second half some special features of different pension schemes are analysed by disaggregating further the elderly diarists with an exact retirement status variable taken from the labour register. This variable divides the observations into seven different pension schemes. Because of the reasons mentioned these calculations are not disaggregated by gender.

The 55-64 age group has approximately seven hours of leisure time per day and the average increase in the amount of time for leisure activities between workers and retirees is about 2 hours 30 minutes per day (from 5 1/3 hrs to 8 hrs per day). Men have more leisure than women among both workers and retirees as they spend less time on domestic work and sleeping than women do. The largest share of leisure time is allocated to different media (printed media, television and radio). A total of 3½ hours is spent watching TV, listening to the radio and reading newspapers and books. The time spent watching television has increased gradually from 1 1/2 hours in 1979 to 2 hours 40 minutes in 2000. The time left over from different media goes to social events, physical exercise and hobbies. The increase in time for TV follows the national trend also found by Niemi and Pääkkönen (2001). Nowadays television already takes more than one third of Finn's total leisure time. Among the aged the share of television watching is close to 40 per cent. However, the time-share of television out of the total leisure does not increase in the event of retirement. On the contrary, it seems that full-time workers like to sit beside the TV more than the retirees (excluding the disability pensioners) do. Almost all the other leisure activity groups increase after retirement, in both absolute and relative terms. The second largest activity group, social events, increases sharply when moved from workers to the non-employed. Social activities, including events like conversation with family members, visiting friends or talking on the phone, increase from 45 minutes to 1 1/2 hours and their time share of the total leisure time moves from 16 to 20 per cent. Work includes a lot of social contact, and retirees apparently want to replace this social gap with commitment to social intercourse ouside work.

---

[23] For example, the activity group 'hobbies' has a lot of zero values and a considerable number of computer games by only a couple of diarists changes the average time for hobbies among the unemployed men (sample size 55) by more than 10 per cent.

Table 3.3 Time shares of different leisure activities from total leisure time[24]

	All			Employed			Retirees			Disability pensioners		
	men	women	all	men	women	all	men	women	all	men	women	all
Active leisure	22%	20%	21%	20%	22%	21%	25%	20%	22%	19%	16%	18%
Reading	15%	15%	15%	16%	18%	17%	16%	15%	15%	12%	11%	11%
Television	39%	36%	38%	44%	35%	40%	35%	35%	35%	42%	40%	41%
Radio	3%	3%	3%	3%	2%	2%	3%	3%	3%	4%	5%	4%
Voluntary work	6%	7%	7%	5%	6%	5%	8%	8%	8%	6%	6%	6%
Social	17%	21%	19%	14%	19%	16%	17%	21%	19%	22%	23%	22%
Exercise	13%	10%	12%	14%	13%	13%	14%	9%	11%	11%	8%	10%
Hobbies	4%	4%	4%	3%	2%	3%	5%	5%	5%	3%	4%	3%
Media	57%	54%	56%	62%	56%	59%	54%	53%	53%	57%	55%	57%
Trips	2%	4%	3%	3%	4%	3%	2%	4%	3%	1%	4%	2%
6 main activities	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 3.4 Effect of education in the leisure activity shares

	social	*Exercise*	*Hobbies*	*Media*	*Voluntary*
employed	++	-/+	+	-/+	+
Non-employed	---	--	+++	-/+	+++

---

[24] The effect of higher education in the leisure shares is presented in Table 4.

There are again sharp differences in the use of time between men and women. Considering that women have less leisure time than men do, they allocate more time to reading and social life. Retired men have considerably more time for exercise than employed men or retired/employed women. Although a large part of exercise consists of physically easy activities like walks (men 41%, women 50%), it can be concluded that 55-65-year-olds have a fairly high interest in physical exercise and this is not yet considerably constrained by deteriorating health. Nonetheless, for retired women low wealth could be the factor that encumbers them from starting new modes of exercise.

Voluntary work is one of the clearest 'winners' of leisure activities when one looks at both absolute and relative differences of the use of time between workers and retirees. The retirees do more than twice the amount of neighbourhood help and organised voluntary work, which are the two main forms of volunteering, than the ones still in working life. As women are normally considered the main contributors of volunteer work, the situation changes when one looks at the retirees' voluntary work supply. Among retired Finns, men are the leading providers of voluntary work. Still, on average, women's supply is larger in the whole of the age groups and in the national level. Compared with other generations, the aged are clearly the most devoted volunteers in Finland.

In many instances it is put forward that there is growing passivity among the ageing population. This concern is well stated when one discusses about the decreasing participation of older workers. When workers retire, active time, including work, domestic tasks and some other activities, drops by half. A little more optimistic way to measure passivity is to look at the share of active and passive *leisure* activities in the total leisure time when one is comparing the employed and non-employed population. From Figure 3.9 one sees that the retirees' leisure is used more actively than among those who are still working. This difference is clear, especially among men. It seems that for men it is important to replace the working time with activities that could be seen as useful or value-creating. Retired women allocate their increased leisure time in a similar fashion to the ones still in working life or they increase the share of passive activities. The same phenomenon is also predominant when one counts only weekend use of time. It is not clear whether retired men are ones that have used their leisure time more actively already before retirement. In this case, one could conclude that there is continuity in the use of leisure time and that people that use their leisure actively are the ones who decide to retire with a higher probability. Another possibility is that men somehow feel idle unless they start some new ways to fill their days of retirement. Whether there

Figure 3.9 **Time shares of active and passive activities from total leisure 55-64 age group from the period 2000 by labour status and gender**

Active leisure

Status

Share of leisure time

Passive leisure

Status

Share of leisure time

☐ Women   ■ Men

*The division of leisure activities into active and passive ones is presented in Figure 4.1
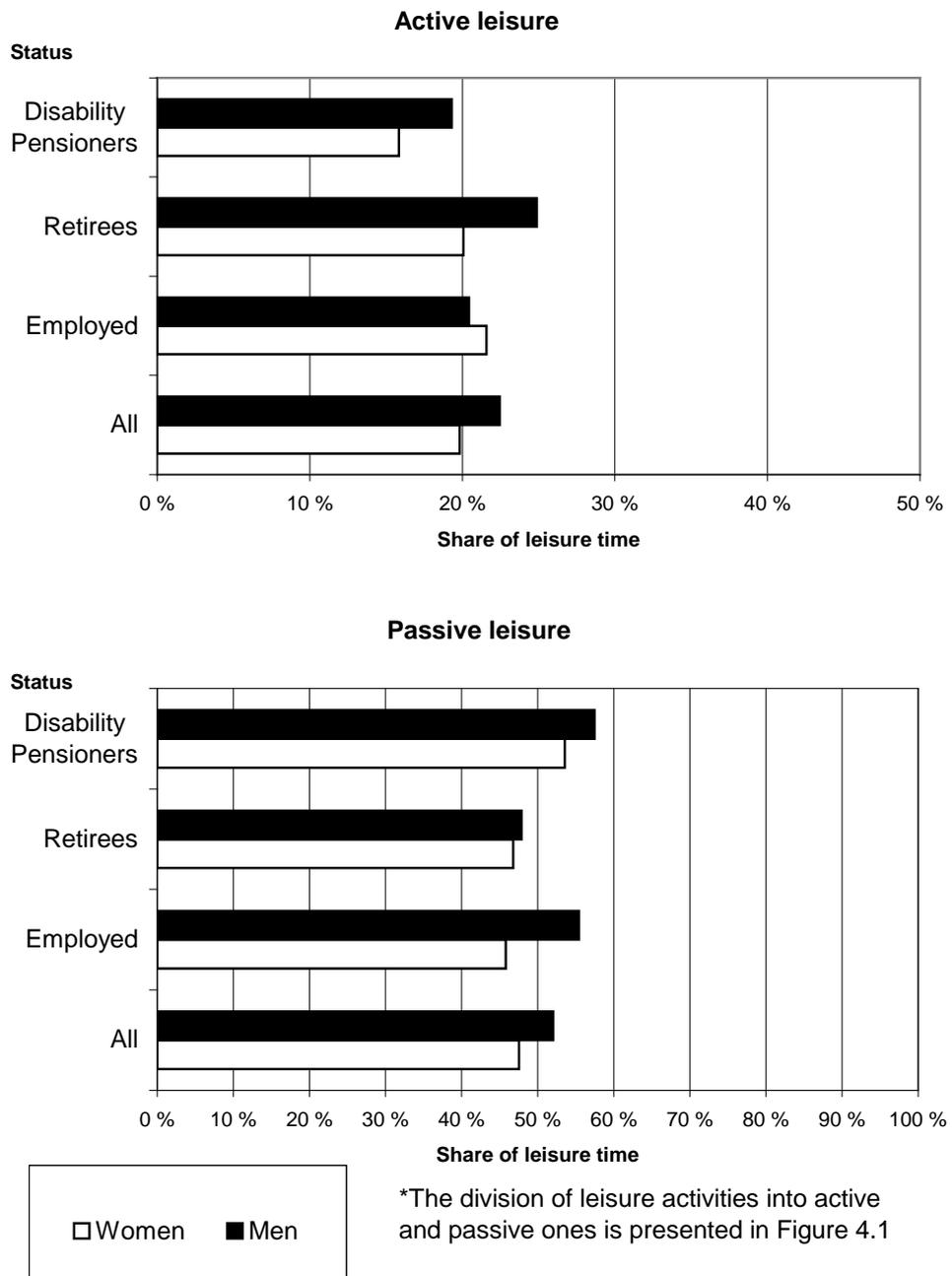
is continuity in leisure time allocation or not, it seems that men, especially, have higher appreciation of their leisure time if it is used in activities with high involvement. Fast et al. (2001) see this kind of engagement in life as the main factor of 'successful ageing' and find the same kind of patterns in women's and men's use of time as in this study. These issues, as well as questions concerning voluntary work supply, will be discussed further in the next chapter. [25]

Leisure allocation by exact retirement status

This section analyses the use of time by the elderly and its dependency on the particular exit channel from the labour force. Pension schemes have different entering criteria, and for instance, the condition of disability pensioners' health has its effects on the use of time. The next two figures (3.10-11) present the use of time when the elderly sample is divided by the exact retirement status at the end of 2000 taken from the labour register[26]. In the first table the use of time for personal needs, paid and domestic work and leisure are presented. The latter has the leisure activities. The numbers, especially the ones concerning leisure activity subgroups, should be observed with some caution. As the disaggregation of the elderly sample is rather detailed, the sizes of different labour status subgroups are rather small.

Table 3.5   **Days in the diary in the 55-64 age group by retirement status**

Unemployment pen.	112	Farmers' pension	68
old age pension	132	part-time pension	32
individ. early retirement	66	family pension	67
Disability pension	190		

Disability pensioners' time-use seems, to some extent, to be constrained by their physical or psychological infirmity. They sleep more than the others; they do less exercise and voluntary work. Disability pensioners use 11 hours 32 minutes of their daily activities for personal

---

[25] See also Huovinen 2002.

[26] The numbers for part-time pensioners have not a very high confidence level as the number of observations in this group is only 32.

Figure 3.10-11 Allocation of time by exact retirement status, 2000

needs whereas workers allocate only 10 hours for the same purpose. For instance, disability pensioners sleep 35 minutes longer than the employed do. Also, individual early retirees seem to need more time for sleeping than the aged on average. Other pensioners do not differ from the employed in their time allocation to personal needs as heavily as the disability pensioners do. These retirees and the unemployed tend to allocate more time for leisure time like social activities to replace the time released from work.

Retired farmers diverge rather strongly from the other pensioner groups in their time allocation. They are still rather actively involved in the farm's duties, registering considerable amounts of time spent on domestic work and working for the family estate. However, it seems that the latter work is mainly done without pay, as the wage earnings of farm pensioners are marginal. Actually, more than half of the diarists drawing a farmer's pension report that they works for their family farm or firm without pay. Aged farmers' active engagement in the farm's tasks leads to a clear reduction in leisure time when compared with other pensioners.

Unemployment pensioners have the largest amount of leisure time. Disability and unemployment pensioners do not spenduch time o domestic work. But as unemployment pensioners' time is not constrained by bad health like disability pensioners', they do not need so much time for rest and other basic needs and can therefore use the spare time for leisure. The unemployment pensioners differ from themployed mainly by doing less domestic work and having more leisure. Family pensioners have less leisure, as they are used to doing a lot of domestic work. Old age pensioners allocate their time very much like 'an average pensioner'. They differ from other pensioners to some extentin their use of leisure time.

3.4   Conclusions

The main feature in the use of time of the Finnish elderly during the last three decades has been the increase in leisure time resulting from the decrease in time for paid work for men and both paid and unpaid work for women. Men do more domestic work than before. The largest decrease of time for paid work happened during the 1980s when most of the early retirement schemes were introduced in the Finnish labour market. The mass unemployment of aged workers during the 1990s continued to decrease the number of working hours supplied, but the aggravation of criteria to enter the early retirement schemes

seems to have slowed the decrease to some extent. There has also been convergence in time-use by the two genders. The rise in women's labour market participation has increased their supply of paid work in relation to men's. As a consequence, the amount of domestic work done by women has decreased. The leisure time of the Finnish elderly is used fairly actively. Concern about growing passivity is perhaps the case when the diurnal time allocation is focused upon but use of leisure time by the early retirees is characterised by an increasing level of activity, especially for men.

References

Fast, Janet E., Donna Dosman, Norah C. Keating (2001), Are Canadians Age-ing Successfully? Findings from the 1998 Statistics Canada Time-use Survey. Presentation at the 2001 Conference of the International Association of Time-use Research Oslo, Norway

Huovinen Pasi (2002), The value of voluntary work and third sector's role in an ageing society (mimeo)

Huovinen Pasi and Hannu Piekkola (2001), *'Withdrawal from Employment of Older Finnish Workers',* Australian Journal of Labour Economics Vol. 4, No. 4, December 2000-01, p. 340-359.

Niemi, Iiris, Hannu Pääkkönen (1989), Ajankäytön muutokset 1980-luvulla. Tilastokeskuksen tutkimuksia 153. Tilastokeskus, Helsinki

Niemi, Iiris, Hannu Pääkkönen (1992), Vuotuinen Ajankäyttö Tilastokeskuksen tutkimuksia 183. Tilastokeskus, Helsinki

Niemi, Iiris, Hannu Pääkkönen (2001), Ajankäytön muutokset 1990-luvulla. Tilastokeskuksen tutkimuksia. Kulttuuri ja viestintä 2001:6. Tilastokes-kus, Helsinki

Statistics Finland. Time-use Surveys 1979,1987-1988, 1999-2000. Helsinki Finland

Table.   **Time-use of 55-64 year old Finns. Year 2000**

Status	All			Workers			Entrepreneurs		
sex	men	women	all*	men	women	all	men	women	all
respondents	616	669	1285	191	192	383	60	60	120
needs*	625	638	632	590	623	606	592	615	604
work*	149	103	126	318	243	282	345	233	284
leisure*	445	404	424	339	320	330	336	299	316
domestic*	156	241	200	126	197	160	72	215	149
voluntary	28	29	29	16	20	18	17	17	17
social	76	83	80	44	64	53	60	47	53
exercise	59	41	49	48	43	46	37	35	36
hobbies	17	16	17	9	6	7	10	13	11
media	254	219	236	215	175	196	194	179	186
travel*	64	53	59	68	57	63	96	78	86
*5 main activities	1440	1440	1440	1440	1440	1440	1440	1440	1440

Status	Unemployed			Retirees			Disability Pensioners		
sex	men	women	all	men	women	all	men	women	all
respondents	206	257	463	104	96	200	55	64	119
needs*	618	638	627	640	637	638	688	680	684
work*	0	14	7	50	37	43	30	0	16
leisure*	561	447	507	492	460	474	525	447	488
domestic*	207	291	247	192	254	227	146	273	207
voluntary	25	28	27	45	40	42	29	27	28
social	93	78	86	87	98	94	114	104	109
exercise	69	37	54	72	42	55	58	36	47
hobbies	47	21	34	17	22	20	16	16	16
media	309	271	291	262	236	247	301	248	276
travel*	54	50	52	65	52	57	51	39	45
*5 main activities	1440	1440	1440	1440	1440	1440	1440	1440	1440

Table. **Time-use of 15-64 year old Finns, Year 2000, Working Population**

employment	15-25			25-34			35-44		
sex	men	women	all	men	women	all	men	women	all
needs	631	650	641	616	634	624	602	616	609
work	333	271	302	316	256	289	352	261	307
domestic	68	104	87	120	200	155	118	221	169
leisure	324	327	326	313	273	295	296	266	281
voluntary	6	11	9	9	9	9	13	13	13
social	83	89	86	75	77	76	63	70	66
exercise	28	29	29	33	29	31	34	32	33
hobbies	30	25	27	22	13	18	15	8	11
media	150	161	156	159	133	147	157	127	142
travel	84	87	85	76	78	77	72	76	74
*5 main activities	1440	1440	1440	1440	1440	1440	1440	1440	1440

employment	45-54			55-64			65+		
sex	men	women	all	men	women	all	men	women	all
needs	596	614	605	594	621	608	624	649	634
work	337	266	301	319	234	276	236	270	249
domestic	120	193	157	118	206	163	130	253	176
leisure	309	301	305	338	318	328	378	240	326
voluntary	15	17	16	15	19	17	45	2	29
social	63	69	66	50	61	56	85	32	65
exercise	39	35	37	46	40	43	22	20	21
hobbies	12	11	11	9	7	8	3	1	2
media	170	158	164	208	178	193	224	186	210
travel	78	66	71	71	60	66	71	27	55
*5 main activities	1440	1440	1440	1440	1440	1440	1440	1440	1440

4   Individual Determinants of Retirement

Abstract

This paper explains early retirement using Finnish time-use data, gathered during the years 1988 and 2000. The biggest gain drawn from time-use data is the capability to give information of individuals' non-monetary activities. Time-use research may give information on activities that do not affect national accounting but still have a direct impact on the well-being of society.

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 the 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 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 are important elements, especially for women who continue to work), (iv) there is a need to raise the awareness of the vital value of voluntary work, (v) social contacts do not explain early retirement.

4.1   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 that are not easily presented in monetary terms. 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 va-

riables 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 described in the previous chapter. 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 1988 and 2000[27] are analysed. The biggest gain drawn from time-use data sets is its capability to give information about individuals' non-monetary activities. The weakest aspect of time-use data, when the retirement decision is focused upon, is that although the data are gathered three times in 1979, 1988 and 2000 it is not a panel data set. The observations cannot be linked periodically because the samples from three consecutive surveys consist of different respondents. Given this constraint, it is not possible to build an option value variable of work (Stock & Wise 1990) as has been done in many former early retirement studies, also in Finland (Hakola 1999).

With reference to Gruber and Wise (2001), the reaction of the developed world to population ageing has been to simply increase spending on the elderly. This paper does not include a direct analysis on how the time-use of the elderly is connected to government budgets or GNP shares spent on an ageing society. However, time-use research may give information on activities that do not affect national accounting but still have a direct impact on the well-being of society. Aged retirees' time allocation may favour activities like taking care of disabled or sick contemporaries or doing voluntary work (Huovinen 2001a). OECD (2000b) examines patterns of work and leisure troug-hout people's of lives. 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.

---

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

Apart from the OECD review, the literature analysing the use of time by the elderly and early retirements in same entity is almost non-existent.[28] Nevertheless, labor economists have used time-use data in some other purposes. 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. 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. The same proceeding has been done in several former early retirement studies[29]. 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. 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 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.

---

[28] 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).

[29] Lumsdaine and Mitchell (1999) has a summary of recent retirement research.

Perachhi and Welch (1994) find in the US data that men who are married have a higher probability of early retirement. The opposite holds for women, so that married women have a lower probability of early retirement. We find that both for women and men a spouse working part-time or full-time lower the probability to retire by half. Wage earned by any household member generally lowers the probability of retirement, as seen in many other studies (see Perachhi and Welch (1994)).

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.

4.2   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

$$U = U(Z_i, ...Z_m) \equiv U(f_1, ...f_m) \equiv U(x_1, ...x_m; T_1, ...T_m)$$
$$(1)$$

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). The constraints are

a) goods constraint $\sum p_i x_i = I = V + T_w \overline{w}$

b) time constraint $\sum T_i = T_c = T - T_w$ (2 a-c)

c) production functions $T_i \equiv t_i Z_i$

$$x_i \equiv b_i Z_i$$

and can be written in single constraint

$$\sum \pi Z_i = S'$$ (3)

$$\pi_i \equiv p_i b_i + t_i \overline{w}$$

$$S' \equiv V + T\overline{w}$$ (4)

The explanations of variables:

p_i = price of market good i T = total time available

b_i = input of market good per unit of Z_i T_c = hours spent at work

t_i = input of time per unit of Z_i T_w = hours spent at work

$\overline{w}$ = earnings per unit of work π_i = full price of a unit of

V = other income S' = full income

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 preferences of the consumers as well as the normality of the goods. Furthermore, 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. These commodities are leisure activities that are described more thoroughly in the next chapter. In addition to the examination of leisure, the effects of changes in wage and other income drawn from the given theory are vetted.

4.3   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 1309[30] (618 men and 691 women) daily diary entries recorder by respondents who belonged to the above mentioned age group[31]. Disability pensioners (94 in 2000) are dropped from the sample because their retirement decision is most probably dependent on health reasons alone. Housewives are left out of the model as well. From these respondents, activities carried out during two randomly selected days were registered in diaries. 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 dai-

---

[30]   There might be some persons that continue working even after 65, but this group is only marginal

[31]   In 1988 the data set included 922 respondents from 55 to 64 years of age and 1824 daily entries were recorded.

ly entries. The labour register provided detailed information of respondents' labour market status at the end of the year 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 2001, Huovinen & Piekkola 2001). In other words, they are in the unemployment pension pipeline as described in the section that presented the institutional setting for this study. 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, as already mentioned in the introductory part, 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. 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)[32]. Therefore, it is assumed here that the time-shares of particular leisure activities will stay rather static 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.

---

[32] This tendency to spend the time as before has been called the continuity of life.

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 identi-fying process was done using Becker's idea of time or money intensive commodities. Besides this, the activity and passivity level of leisure ti-me, following the discussion about the concern about growing passivi-ty, 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. In addition to the theory, it is assumed that leisure activities with a high involvement, or a high activity level, gene-rate more utility than activities with a low involvement. Thus, if person uses his or her leisure actively it is seen that she or he has an incentive to retire in the form of the higher value of leisure time. To give an example, it is assumed that, on average, active leisure time-use like exercise brings more utility to its consumer than passive activities like watching television[33]. Using these ideas, two different leisure variables, high leisure time intensity and a high level of activity were built. The leisure preferences are captured by counting the time-used for a certain activity group in relation to the total amount of leisu-

Table 4.1   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, sports events	Visiting a library
Exercise	Breaks for rest
Travelling	Walking, jogging
Hunting, Fishing	

---

[33] A more informal term for passive activities could be, for instance, 'boring' activities.

re the individual possesses. 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 rough grouping of the leisure variables is presented in Table 4.1. It should be noted here that each activity in this grouping can be divided much further. For instance, 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[34].

In the second stage model we use categories of human capital. These categories loosely follow Bordieu (1984). His theory of class habitus depends on the set of common conditions in everyday life which is used dually with capital to define class structure in society. Bordieu also 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 (owing to lack of sufficient data), 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 inviduals 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 physical exercise.

Table 4.2   Leisure activities allocated following Bordieu

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

---

[34] The leisure activities are presented with more detail in the appendix of this book.

We categorize capital depending on the varying intensity of time and money. 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 the uneducated (neighbourhood help). What is important in the analysis however, is the change in the patterns of the allocation of time when one is withdrawing from work.

As mentioned in the last chapter, the Finnish time-use data can be combined with income records held by the Finnish Ministry of Labour. The income variables used here include logarithmic earned income like wages, and unearned income that is the sum of income from capital and realty. As the income from paid work was only available for those currently in the labour force, the wages for the whole sample were imputed with simple logarithmic regression, where working experience, its second power, gender and education worked as explanatory variables. Calculations made by the Ministry of Finance were used to form the prevailing tax rates for the year 1999. It was not possible to include the industrial sector in the estimated model, as this information was available only for the respondents still working. However, R^2 close to .30 was reached even with the very constrained set of variables. The logarithms of both unearned income and spouse's earned and unearned incomes are formed from the labour register as well.

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.

In the 2000 data the respondents were picked by the use of households as sample units. This kind of cluster sampling causes bias as there is an inner correlation among the members of the same household. This inner correlation could be taken into account and was proved to be rather marginal.

4.4   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. 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. During the data analysing and estimation it became evident that the elderly as one group includes important subgroups that have unique features (Huovinen 2001b). Therefore, the model estimation is done separately for both men and women. Further disaggregation might have been fruitful, but that would have led to sample sizes that were too small. In the estimated models, the time-use variables are build 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 arqued that the variables based on weekdays might not suffer from endogeneity.

The first four variables in the table are the ones indicating early retirement probabilities' dependency on economic variables. Earned income, as well as unearned income, lowers the probability to retire. It seems that early retirees come mostly from households with fairly low incomes. This finding does not support the theory according to which one expects that unearned income to increase individuals' consumption possibilities and to lower the need of earning a wage in the labour market. For both men and women, the increase in the wage of one's spouse negatively affects the probability to retire. 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. It might be that high income earners are also the ones who have high unearned income 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 4.5-4.6 later).

However, the unearned income 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 unearned 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 unearned income to increase individuals' consumption possibilities and to lower the need of earning wage in the labour market. Our data does not,

hence, exclude the possiblity 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 (2001a) 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

Tables 4.3-4.4 Stage 1 estimations for determinants of retirement

Determinants of Retirement Probability for Men

Variable	Week 2000 dF/dx	Week 2000 z value	Week 1987 dF/dx	Week 1987 z value	Weekend 2000 dF/dx	Weekend 2000 z value	Weekend 1987 dF/dx	Weekend 1987 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	

Determinants of Retirement Probability for Women

Variable	Week 2000 dF/dx	Week 2000 z value	Week 1987 dF/dx	Week 1987 z value	Weekend 2000 dF/dx	Weekend 2000 z value	Weekend 1987 dF/dx	Weekend 1987 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	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	

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. The controlling variables do not seem to help the model give more powerful explanations and most of them 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. The cluster sampling, without being taken it into account in the estimation process, results in higher z values for the estimated variables.

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, 4.5 and 4.6, models with the stage two leisure variables are presented based on the categories given in Table 4.2. This divides active leisure time into three categories: economic capital, cultural capital, physical capital and time-intensive allocation of time: voluntary work, neighbourhood help and other active time-use. Cultural capital includes voluntary work (including strictly voluntary work and related travelling) and creative hobbies such as music and painting, more typical of the educated. Cultural capital also includes neighbourhood help. 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.) Time intensive use of leisure similarly includes the restricted collection of activities and is divided into social activites such as visiting friends and passive time-use including rest and religion.

Table 4.5 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$_{non\text{-}edu}$	-3.238	**(2.2)**	-0.886	(0.9)	2.343	(1.3)		
Voluntary Organisation, Hobbies$_{non\text{-}edu}^2$	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 $_{non\text{-}edu}$	3.823	**(2.2)**	1.909	**(2.0)**	0.823	(0.7)		
Neighbour help $_{non\text{-}edu}^2$	-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, Helsinkin region and subjective health assesment 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 4.6 Estimates of The Determinants of Withdrawals from Workforce for Women

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	**(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, Helsinkin region and subjective health assesment 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 relations are often non-linear given the opposite signs of the squared terms. (The variables in second potency 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. It is also seen that those men who are active in non-organisational sport (walking, jogging, cycling) tend to retire more easily (coefficient is non-significant). This is equally true for the educated. For older workers, organised sports play instead a minor role in the retirement decision.

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.

It is likely that weekend information in the analysis of time intensive activities is substantially better, since the time available for leisure does not substantially differ among the retired and employed. It is, however, seen that time intensive activities have weaker relation to men's or women's retirement decisions using weekend data. It only appears for the year 1988 that, for women, time intensive use of time in social activities has a significant negative effect on withdrawal from the workforce. It can still be concluded that the valuation of time intensive leisure time does not appear as a significant factor in the retirement decision, as was found in the first stage. If anything, social time spent with friends etc. even decreases with retirement.

Finally, it is seen that the earlier period of 1988 differs substantially from the current period. Economic condition such as better employment opportunities in the metropolitan region yielded a 15 per cent lower withdrawal probability for men in 1988. All the active time-use factors are unimportant except neighber help for uneducated men and work in voluntary organisations and active hobbies for educated women. This differs in our first stage estimate that has a broader definition of active time use. 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 either in more active leisure time use or to higher job search intensity. Women maintain their leisure time activities much more steadily after withdrawal from work. The behaviour of women is characterised by the continuity of lifetime patterns.

4.5   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 domestic and voluntary work are fairly popular for people who decide to leave their careers. If the assumption of the continuity of life holds, we can conclude that respondents that seem to gain more utility of their leisure in the form of more active leisure have a higher probability to retire early. After verifying the importance of active 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. It was found that active time-use clearly consists of different activities for the educated and the uneducated. Furthermore, these activities have a contrary effect on retirement probability. If uneducated respondents' background shows more neighbourhood help than the median respondent he or she seems to have a higher motivation to retire early. For the educated the same holds when one is analysing organised voluntary work.

High wages decrease the probability of leaving the labour market. High wages also mean higher pensions, so the work itself might include some features that increase the probability to stay. High paid jobs

are intellectually more challenging and do not include as much physical strain as the low paid jobs do. Income from capital has a negative effect on early retirement probability. This is a little surprising as non-wage income increases independence of the labour market. But in this case the explanation is most probably that those with high earnings are also those with higher capital income. However, a spouse's unearned income works in the opposite direction. We interpret this to show the pure income effect of income that is not directly related to the direct value created by economic capital to the person. Overall, the negative effects of income on the probability to retire might also be caused by the role of men as being mainly responsible for the household income. They are reluctant to leave their jobs as it is part of their way of life and economic capital to continue working as long as they can. However, if they leave the labour market, they substitute work for active leisure time-use. The study does not entirely support the concern in OECD (2000b) about the increasing passivity of individuals after retirement. Men, in particular, change their time allocation in favour of voluntary work or neighbourhood help. 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. In addition, wages increase with age and the wage level more often exceeds the productivity level than for prime age workers. 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 age cohort 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. The uncertainty related to the future pension policy as the population ages has, though, an offsetting negative wealth effect.

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 differ, and therefore the determinants of retirement also differ. Women exhibit continuity of lifetime patterns, and so early retirement is fairly unrelated to leisure time allocation. Sports and physical exercise is 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 hoppies 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 that enters the wage tax base and that is also desirable.

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.

References

Becker, Gary S. (1965), *'A Theory of the Allocation of Time'* Economic Journal 75 (September 1965). 493-517. Also in: Becker, Gary S 'The Economic Approach to Human Behavior', University of Chicago Press, 1976.

Bourdieu (1984). *Distinction.* Cambridge: Harward University Press.

Carlin, Paul S. 2001. *'Evidence on the Volunteer Labor Supply of Married Women'* Southern Economic Journal 2001, 67(4), 801-824

Carlin, Paul S. and Lennart Flood (1997*). 'Do children affect the labor supply of Swedish men? Time diary vs. survey data'* Labour Economics 4 (1997) 167-183

Gruber, Jonathan and David A. Wise (2001). *'An international perspective on policies for an ageing society'* NBER Working Paper Series 8103, Cambridge

Hakola, Tuulia (1999). *'Race for Retirement'*, Government Institute for Economic Research, Research Reports, 60.

Hakola, Tuulia (2000). '*Varhaiseen eläkkeelle siirtymiseen vaikuttavat tekijät'*, Sosiaali- ja terveysministeriön julkaisuja. 11.

Hakola, Tuulia and Roope Uusitalo (2001). *'Lets make adeal. The impacts of social security provisions and firm liabilities on the early retirement decisions in an implicit contract model'* Government Institute for Economic Research (unpublished paper)

Hallberg, Daniel and Anders N. Klevmarken (2001*). 'Time for children? – A Study of parents' time allocation'* Paper presented at the IZA conference: The Economics of Child Care (November 15th - 16th, 1999, Bonn), and at the Annual meeting of The European Society for Population Economics, Bonn, June 2000.

Huovinen Pasi (2001a). *'The value of voluntary work and third sector's role in an ageing society.'* (mimeo)

Huovinen Pasi (2001b). *'Time allocation of ageing Finns – Review of Finnish time-use data from 1979 to 2000'* (forthcoming)

Huovinen Pasi and Hannu Piekkola (2001) *'Withdrawal from Employment of Older Finnish Workers',* Australian Journal of Labour Economics Vol. 4, No. 4, December 2000-01, p. 340-359.

Hurd, Michael D. (1996) *'The Effect of Labor Market Rigidities on the Labor Force Behavior of Older Workers'* In: David A. Wise (ed.) Advances in the Economics of Aging, pp. 11-58, The University of Chicago Press, 1996

Juster, Thomas F. and Frank P. Stafford 1991. *'The Allocation of Time: Empirical Findings, Behavioral Models, and Problems of Measurement'* Journal of Economic Literature June 1991, Volume XXIX no. 2. 471-522

Kooremann, Peter and Arie Kapteyn (1987) 'A Disaggregated Analysis of the Allocation of Time within the Household' Jourbal of Political Economy, 1987, vol. 95, no. 21. 223-249

Lumsdaine, Robin L. and Olivia S. Mitchell, (1999). *"New Developments in the Economic Analysis of Retirement"*. In Orley Ashenfelter and David Card, editors. Handbook of Labor Economics. Amsterdam, Holland: 3261-3308.

Maddala, G. S. 1983 *'Limited-dependent and Qualitative Variables in Econometrics'* Econometric Society Monographs no. 3

OECD (2000a). *'How will ageing affect Finland?'* OECD Economic Surveys Finland, Paris.

OECD (2000b). *"Reforms for an Ageing Society"*. Social issues 2000, Paris.

Peracchi, Franco and Finis Welch (1994), *'Trends in Labor Force Transitions of Older Men and Women'*. Journal of Labor Economics, vol 12, no. 12. 210-242

Pyy-Martikainen, M. (2000), *'Työhön vai eläkkeelle? Ikääntyvien työttömien valinnat työmarkkinoilla'*, Government Institute for Economic Research, Research Reports, 66.

Statistics Finland (2000). Time-use Research 1999-2000, Helsinki

Rubb Jan C.C. (1997), *'Rethinking Cultural and Economic Capital'* in Hall J.R: (ed.) Reworking Class. London: Cornell University Press. 221-241.

Stock, James H. and David A. Wise (1990). *"Pensions, the Option Value of Work and Retirement."* Econometrica, Vol 58, No. 5 (September, 1990), 1151-1180

Työministeriö ja Sosiaali- ja terveysministeriö (2000), 'Kansallisen Ikäohjelman seurantaraportti', *Sosiaali- ja terveysministeriön julkaisuja,* 15.

APPENDIX: Table: List of time use variables included in the leisure time analysis

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
VOLUNTARY WORK AND PARTICIPATORY ACTIVITIES													
Unspesified	0.0	0.0	yes										
Formal voluntary work													
Unspesified	0.1	70.1	yes								yes		
Organizational activities	2.8	566.2	yes		yes	yes							
Voluntary work through an organisation	1.2	563.8	yes		yes	yes							
Other	0.0	0.0	yes		yes	yes							
Neighbourhood help (NH) (Informal voluntary work)													
Unspesified	0.3	112.9	yes				yes	yes					
Food management as NH	1.0	187.1	yes				yes	yes					
Maintenance as NH	3.7	662.6	yes				yes	yes					
Cloth maintenance as NH	0.4	110.0	yes				yes	yes					
Gardening and pet-care as NH	1.2	297.9	yes				yes	yes					
Building and repair as NH	2.7	570.6	yes				yes	yes					
Shopping and errands	0.8	178.3	yes				yes	yes					
Child-care as NH	8.0	857.5	yes				yes	yes					
Helping in paid work as NH	1.5	598.1	yes				yes	yes					
Other	2.8	537.9	yes				yes	yes					
Participatory activities													
Unspesified	0.0	0.0	yes								yes		
Meetings	1.0	266.1	yes		yes	yes							
Religious activities	2.6	312.1	yes		yes	yes							yes
Other	0.1	18.6	yes										
SOCIAL ACTIVITIES													
Unspesified	0.2	101.3	yes								yes	yes	
Converasations within the family	3.6	294.1		yes								yes	
Quests at home	11.2	742.7		yes								yes	
Visits	16.8	974.3										yes	
Parties	1.1	324.7											
Conversations in cafés or restaurants	1.8	328.1											
Other	3.5	341.2											
CULTURE OR ENTERTAINMENT EVENTS, PASTIME													
Cinema	0.3	148.2											yes
Theater, concerts	1.1	232.5	yes								yes		
Exhibitions, museum	0.4	134.6	yes		yes	yes					yes		
Library	1.2	233.5	yes	yes	yes	yes					yes		yes
Sports events	0.5	197.4	yes		yes	yes							
Other	1.2	239.4	yes		yes	yes							

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		
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									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													
Unspesified	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	Average time use (minutes per day)	Std. Dev.	Stage 1		Stage 2								
			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
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													
Unspesified	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											yes?
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 wotk	0.6	142.7			yes	yes							
Participatory activities	0.7	130.7			yes	yes							
Social activities	6.2	493.3	yes	yes								yes	
Culture and entertainment events	1.6	219.6											
Sports, exercise outdoors recreation	3.4	311.3	yes							yes			
Hobbies	0.6	115.7	yes									yes	
Traveling, tourism	12.2	1204.5	yes									yes	
Car 'rides'	1.0	283.0											

STAFF OF THE INSTITUTE

Pentti Vartia, Managing Director

FORECASTING UNIT
Olavi Rantala, Research Director
Pasi Sorjonen, Head of Forecasting Group
Research workers: Birgitta Berg-Andersson, Anthony de Carvalho, Hannu Kaseva, Juha Kinnunen, Reijo Mankinen, Paavo Suni

RESEARCH PROJECTS
Research Directors: Kari Alho, Rita Asplund, Jukka Lassila, Pekka Ylä-Anttila
Head of Unit: Markku Kotilainen, Terttu Luukkonen, Hannu Piekkola, Tarmo Valkonen
Research workers: Aki Halme, Pasi Huovinen, Tomi Hussi, Ville Kaitila, Antti Kauhanen, Seija Lainela, Reijo Marjanen, Mikko Mäkinen, Panu Pelkonen, Carolina Sierimo, Markku Stenborg, Pekka Sulamaa
Sinikka Littu, Research Secretary

ADMINISTRATION
Markku Lammi, Director of Finance and Communications; Kari Sihtola, Assistant Director

Office
Inkeri Happonen, Office Manager; Ann-Christine Ekebohm-Korhonen, Secretary of the Managing Director; Hannele Immonen, Switchboard; Tuula Ratapalo, Word Processing; Arja Räihä, Sales; Pirjo Saariokari, Clerk

Information Services
Kaija Hyvönen-Rajecki, Information Specialist; Eija Kauppi, Systems Design; Kimmo Aaltonen, Graphs; Kirsti Jalaistus, Statistics

Information Technology Group
Heikki Vajanne, Head of Group; Jarkko Aitti, System Administrator; Petteri Larjos, System Designer

ASSOCIATE RESEARCH FELLOWS
Aija Leiponen, Associate Professor, Cornell University, Ithaca, NY, United States
Mika Widgrén, Professor, Turku School of Economics, Turku, Finland

The following persons have worked recently at ETLA: Inkeri Hirvensalo, Juha Honkatukia, Heli Koski, Stefan Lee, Heikki A. Loikkanen, Mika Maliranta, Rolf Maury, Sami Napari, Sinimaaria Ranki, Tauno Ranta and Esa Viitamo.

The subsidiaries working in conjunction with ETLA are:

Etlatieto Oy, Lönnrotinkatu 4 B, 00120 Helsinki, tel. 09-609 901
Managing Director Pekka Ylä-Anttila, Research Directors Hannu Hernesniemi and Petri Rouvinen, Research Chef: Ari Hyytinen, Project Economists Jyrki Ali-Yrkkö, Raine Hermans, Laura Paija and Mika Pajarinen, Research Assistant Melina Laakso.

Taloustieto Oy, Lönnrotinkatu 4 B, 00120 Helsinki, tel. 09-609 909
Managing Director Markku Lammi, Publishing Director Laila Riekkinen and Editor Ensio Tikkanen.

Tähän tulee takakannen teksti