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51

Virve Ollikainen

Gender Differences in Unemployment in Finland

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ABSTRACT

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This thesis reports four empirical studies analysing gender differences in unemployment in Finland. The studies are preceded by an introductory chapter providing a brief look at the theoretical background of these studies, outlining the content and presenting the main results of the thesis. The main purpose of this thesis is to shed light on gender related differences in unemployment, particularly in labour market transitions of the unemployed, in the duration of unemployment and in the success of active labour market programmes.

The first study documents the magnitude and evolution of worker flows in the Finnish labour market and investigates the dynamic properties of worker flows and stocks for transitions to and from unemployment. The results indicate that an adverse shock triggers an increase in unemployment and that the effects of the shock differ by gender.

The second study analyses gender differences in the probabilities of transiting from unemployment into employment, studying and economic inactivity. The results of the multinomial logit model indicate that female labour market outcomes are more responsive to family-related background characteristics. Education is found to be particularly important in promoting the labour market position of women.

The third study presents evidence on the determinants of unemployment duration for men and women in Finland using hazard models. The results indicate considerable negative duration dependence regarding exits from unemployment, with a benefit exhaustion related upturn after two years of unemployment. This upturn is not directed towards employment though. The longer periods of unemployment generally observed for men are explained by women's eagerness to participate in active labour market programmes.

The final study evaluates the long run effects of Finnish active labour market programmes and gender differences therein. The findings of propensity score matching indicate that not only is there distinct variation in the success of different programmes; there is also significant variation by gender in the outcomes of the programmes.

Keywords: unemployment, gender differences, labour market transitions, unemployment duration, active labour market programmes

Author's address

Virve Ollikainen
Government Institute for Economic Research (VATT)
P.O.Box 1279, 00101 HELSINKI
virve.ollikainen@vatt.fi

Supervisor

Professor Jaakko Pehkonen
University of Jyväskylä
School of Business and Economics
Jyväskylä, Finland

Reviewers

Professor Tor Eriksson
Aarhus School of Business
Department of Economics
Aarhus, Denmark

Professor P.N. (Raja) Junankar
University of Western Sydney
School of Economics and Finance
Sydney, Australia

Opponent

Docent Seija Ilmakunnas
Finnish Centre for Pensions
Helsinki, Finland

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Helsinki, March 2006

Virve Ollikainen

CONTENTS

CHAPTER 1

INTRODUCTION

1 Background of the thesis

The basic microeconomic approach to unemployment is the search theoretical framework (see e.g. Mortensen, 1970; Lancaster, 1990; Pissarides, 1990), where the individual's probability of regaining employment is influenced by the probability of receiving a job offer and the probability of accepting that offer. Search theory predicts that by lowering the reservation wage or increasing the search intensity an unemployed person is more likely to find employment, and that the probability of employment peaks at the point of benefit expiry. (Burdett, 1979; Mortensen, 1977). Theoretical attempts to incorporate frictions into search models bring about the matching approach, which relates job creation to the number of unemployed, the number of vacancies and the intensities with which workers search and firms recruit, thus capturing the frictions that prevent an instantaneous encounter of workers and jobs[1]. However, as such this conventional framework of job search has but little to contribute to the analysis of gender differences in unemployment.

Economic theory has offered a number of explanations for the origin and persistence of gender differences in the labour market, although no consensus on their relative merits has emerged[2]. Most famous of these is the discrimination theory put forward by Becker (1971[3]) suggesting that no actual or perceived differences in the productive ability of individuals are required if there is a discriminatory party in the labour market[4]. Other prior frameworks include e.g. the human capital theory (see e.g. Becker, 1993; Mincer & Polacheck, 1974), institutional and labour market segmentation theories (see e.g.

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1 For a survey of the matching approach applications in the context of labour markets see Petrongolo & Pissarides (2001).

2 Gender theories have been most widely discussed in the economics literature wrt. wage differentials. For an overview of these theories, see e.g. Anker (1998), Jacobsen (1998) and Blau & Ferber (1986).

3 Original edition dates back to 1957.

4 For an overview of discrimination in the labour market see e.g. Cain (1986).

Doeringer & Piore, 1971; Bergmann, 1974)[5]. Nevertheless, none of these theories can fully explain the observed gender differences in the labour market. In addition, since discrimination by definition is not efficient, theories based on discrimination are not likely to persist in the long run in a competitive market[6].

A fairly recent and more comprehensive theoretical contribution to explaining gender differences has been made by Rosén (1997), who develops an alternative model of discrimination, in which discrimination is shown to be a stable equilibrium in a model with no existing prejudices. In accordance with Becker (1971), employers are assumed to be discriminating – not due to a taste for discrimination, but due to imperfect information at the hiring stage. Discrimination works through the discriminated group getting fewer job offers and, as opposed to Becker, starting salaries are the same for all workers.

Rosén explains discrimination in a standard equilibrium search-matching framework under the novel assumption that in a hiring situation a worker has private information about his or her own productivity in a given job. All workers are assumed to have the same distribution of abilities over all jobs in the economy, but they are not equally able in every job. Therefore, workers are expected to have different comparative advantages in different jobs and, most importantly, private information about idiosyncratic match quality. We argue this assumption to be empirically plausible. It seems evident that relative match quality is not the same for all workers in all jobs. Despite having similar background and similar education, applicants will have different personalities and preferences affecting their productivity in a given job. These are the sort of factors that a person's curriculum vitae says little about and, thus, this information is unavailable to the employer at the hiring stage.

The key to Rosén's model is the insight that workers will accept worse matches when their probability of being selected for a job decreases. When a group of workers finds it difficult to get a job, they respond by lowering their reservation wages. If we assume productivity and wages to be positively correlated, then the average productivity of this group is reduced, which in turn makes firms more reluctant to hire them. Thus, if some firm discriminates against this group, it is rational for every firm to do so.

Now, why would we claim, that women have a lower probability of being selected? A general prediction of gender discrimination theories is that women's occupational choices are more restricted than men's. Manning (2003) shows that women's job mobility is more constrained by domestic responsibilities, resulting in women confining their job search to a more distinct

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5 Sociologists claim that occupational segregation is the outcome of socialization. The behavioural norms taught by parents to their children from very early on lead children to think that some tasks are more male and others more female, thus inducing them to make stereotypical choices later on in life. Consequently, the choice between becoming a nurse or a fireman is not necessarily as autonomous as we would like to claim, as children tend to make choices that are typical to their gender and, hence, more socially acceptable. Gottfredson (1996) finds that if forced to compromise in their choice of occupation, the young are more likely to select an uninspiring occupation so long as it is socially acceptable to their gender.

6 E.g. Arrow (1973) and Cain (1986) argue that free entry or segregation would eliminate discrimination in Becker's framework.

geographical area and to a narrower range of hours, and thus restricting the range of possible jobs. Also, according to Manning, there may be gender differences in the reasons for job mobility, women's job moves being less motivated by money than men's.

There are several studies indicating that women in general, and most certainly in particular occupations face a lower probability of getting an interview and/or the job than their male counterparts (see e.g. Behrenz, 2001; Weichselbaumer, 2004; Mixon & Treviño, 2005). Promotion-wise, Granqvist & Persson (2002) find that both within and between firms women's chances of getting a better job are about half those of men. According to Rosén (1997), when the probability of getting the job falls, the reservation quality of the match will also fall. Attractive jobs with high average productivity will have more applicants and, therefore, the discriminated group will constitute a higher proportion in the jobs with low average productivity. Less efficient matches manifest themselves as poorer productivity resulting e.g. in lower wages and a higher proportion of bad jobs for the discriminated group.

On the basis of asymmetric information and match-specific differences in productivities, discrimination in Rosén's model arises in a non-co-operative equilibrium even if everyone knows that the two groups are inherently equal. Rosén proves that there are two types of hiring equilibria; neutral and completely discriminating, and that only the completely discriminating equilibria is stable. This makes discrimination not only a possible case, but a strong prediction of the model. Further, when relaxing some of the assumptions of the model and allowing firms to test workers using an unbiased (but not perfect) test, there are now two ways in which a class of workers can be discriminated against – first, in getting an interview and, second, in getting the job. Rosén's model predicts that discriminated groups will have to perform better on the interview in order to be chosen. Thus, the model implies that when a woman competes of a job with a man she will have to have better visible qualifications (i.e. to score higher both according to diplomas and the interview) in order to be employed.

Rosén assumes starting salaries to be the same for both groups of workers. Thus, firms are not able to adjust the starting wages of different groups to the point of indifference between hiring from the groups, which is consistent with the anti-discrimination legislation in most western countries, also in Finland, as well as with the centralized wage bargaining system in effect[7]. Due to poorer matching differential wages are, however, an outcome of the model, but not a factor in the recruitment process. Hence, this thesis will exclude wages from the analysis of gender differences in unemployment[8].

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7 The Finnish wage bargaining is based on centralized wage contracts covering effectively the entire private sector and leaving only limited scope for local bargaining.

8 Gender wage differentials have been covered extensively for the case of Finland e.g. in Korkeamäki & Kyyrä, 2003; Luukkonen, 2003 and Korkeamäki, Kyyrä & Luukkonen, 2004.

Rosén's model is a more comprehensive theory than the previous discrimination theories, both explaining gender differences in the labour market and involving a stable equilibrium[9]. Furthermore, Rosén's theory implies that affirmative action in one sector serves to reduce discrimination in other sectors and can, therefore, lead to a more efficient non-discriminatory labour market equilibrium at which better matches are achieved. The model is consistent with differential wages and unemployment rates, as well as discriminated groups being less well matched and being allocated to less attractive jobs.

The purpose of this thesis is to shed light on gender-related differences in the Finnish labour market, particularly in unemployment. In this respect, Finland offers an interesting case since, first, the Finnish labour market is highly segregated, and second, the macroeconomic turbulence experienced by the country has emphasized the apparent gender based differences both with regard to employment as well as unemployment. The issue of unemployment is addressed with consideration to labour market flows, transitions out of unemployment, unemployment duration and the success of active labour market programmes. All these approaches can be tied to Rosén's model. Out of the predictions of Rosén's model lower wages, higher part-time employment and higher proportion of women in bad jobs are empirically observed in Finland (Savola, 2000). Longer unemployment periods and consistently higher unemployment for women are the only predictions we do not find support for. Nevertheless, this is not attributable to better employment prospects of women, but due to the flexibility of the female labour force. Women are much more likely to take up alternative options, such as active labour market programmes, education or childcare in their ways out of unemployment than men.

2 Women in the labour market in Finland

To approach the issue of gender differences in the labour market in Finland, we must first understand the practices and structures characterising the Finnish labour market. In this introductory paragraph we give a brief review on the background and factors related to women's labour force participation, such as education, day care services and segregation. We also discuss the recent pattern of unemployment in Finland as well as the compensation system and the active labour market programmes available for the unemployed. As discussed above, the theoretical framework of this study assumes starting salaries to be the same for both groups of workers, and hence wages will not be discussed any further in this introductory survey[8].

[9] For a discussion of Rosén's discrimination model see e.g. Gustafsson (1997)

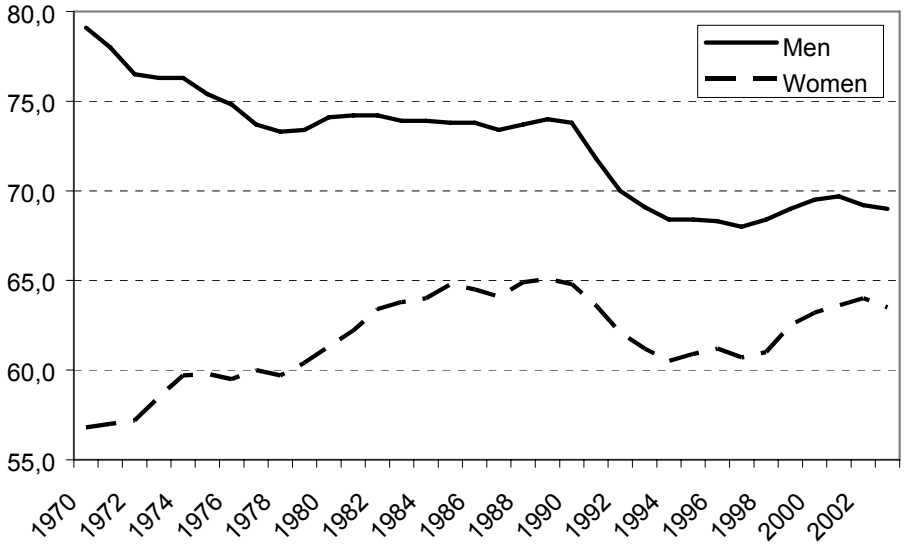

FIGURE 1 Labour force participation rate 1970-2003 by gender, individuals 15-74 years of age. Source: Statistics Finland.

During 1970-1990 female participation in the labour force rose by nearly 10 percentage points (see Figure 1[10]). Male participation has declined steadily throughout the same period. During the recession at the beginning of 1990s labour force participation of both women and men went down by some 5 percentage points. In a situation where finding employment seemed unlikely, individuals dropped out of the labour force voluntarily. Along with the boom at the end of 1990s most of these individuals, women in particular, returned back into the labour force. Due to these fluctuations in participation the post-recession unemployment rate has declined more slowly than the steady growth of employment suggests (Keinänen, 1998).

The increase in female participation was largely due to the expansion of the public sector, particularly the social and healthcare services, over the period (see Figure 2). The number of women employed in the public sector grew from under 300 000 in 1976 to 450 000 in 2001, while the number of men remained fairly steady. On the credit side the expansion of the public sector created numerous labour market opportunities for women. The drawback is that it strengthened and even induced occupational segregation, which is most distinctive in Finland. Elsewhere, for example in southern Europe, women with less education tend to stay at home doing tasks that in the Nordic countries have been organized by the public sector, dominated by women.

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10 The rate of female participation in the labour force in Finland is very high, 73 per cent compared to the European average of some 60 per cent in 2001 (OECD, 2002). The participation rate in Figure 1 differs from the OECD figure, because Statistics Finland's definition of the working age population constitutes individuals between 15-74 years of age, while the OECD definition only includes individuals between 15-64 years of age.

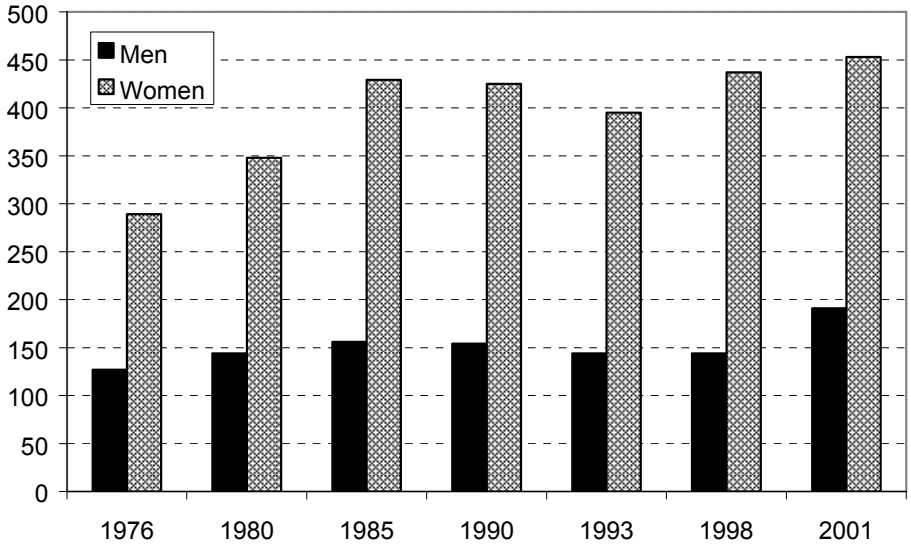

FIGURE 2 Individuals employed by the public sector (1 000 persons). Source: Statistics Finland.

Over the years affirmative action has been taken to reinforce female labour force participation. Public investments e.g. in maternity leave, day care and education have considerably improved women's prospects of combining a career with family life. The parental leave system in Finland enables the parents of young children to stay at home to take care of their child. Several parallel family leave schemes are available to suit the varying needs of families. After maternity leave either the mother or the father can take full time child care leave until the child is 3 years old.

Children's day care is well organized as the community is obliged to provide day care for all children below school age, if required, regardless of the parents' employment status[11]. Day care is organised by communal or private day care centres and private family day care. The costs of day care to a family are relatively low and assessed according to family income as well as the number of children in the family. For low income families day care services are free. Consequently, 42 per cent of all children under school age were in communal day care in 2001. Additionally, free national school catering in Finland provides the mothers of school aged children more leeway in the labour market than in some other European countries, where children are expected to be provided lunch at home.

The amount of unpaid housework put in by women is, as can be expected, higher than that done by men. According to Statistics Finland men spend on average 2 hours per day on housework, while for women the corresponding figure is 3,5 hours (Niemi, 2002). This gap, however, is narrowed if we take into account the time spent on paid employment, since men on average put in more

11 The subjective right to day care for all children under school age was enacted in 1996 (Vaajakallio, 1999).

hours at their workplace. When both paid and unpaid work is accounted for, women and men spend analogous amounts of time working on an average day.

Female labour force participation has also increased due to women's constantly improving educational level. Over the last few decades women's average level of education has constantly increased, and currently the proportion of women with at least an intermediate level degree is already higher than that of men (Lehto, 1999). In 1997 some 58 per cent of all university level graduates and 57 per cent of polytechnic graduates were women (Statistics Finland, 1998). Despite women's encouragingly active participation in education, the fields they choose still tend to be exceedingly traditional.

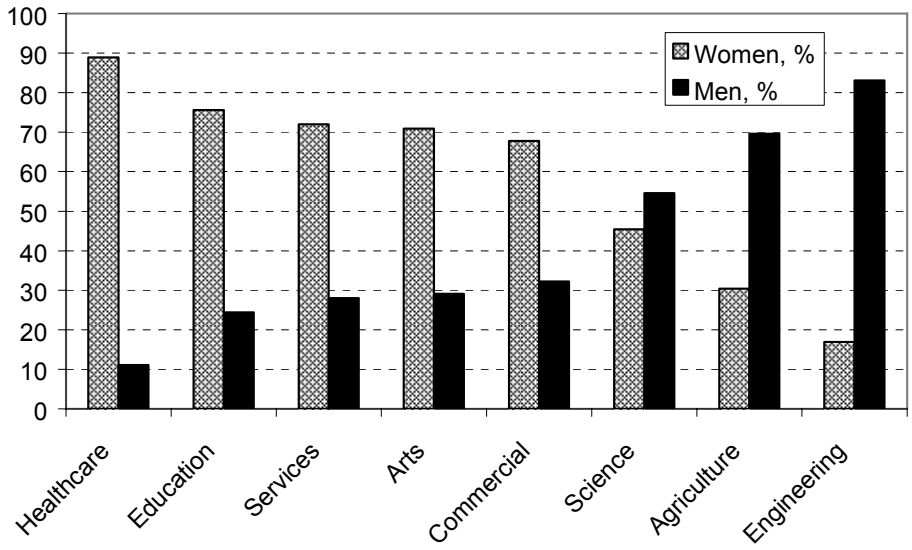

FIGURE 3 Graduates by branch of industry, 2002. Source: Statistics Finland.

In the international context Finland is often viewed as a progressive country endorsing equal opportunities. In practice, however, the labour market in Finland is highly segregated, women being over-represented in the public sector as well as being in lower positions in the hierarchy than men. Figure 3 illustrates how women are highly over-represented in healthcare, education and services while men clearly dominate agriculture and engineering. According to Dijkstra (1997) Finland along with the other Nordic countries is among the most occupationally segregated countries in Europe. As Figure 4 indicates Finland may very well be the most occupationally segregated one.

In addition to high participation rates, women in Finland on average tend to work full-time much more often than women in other Nordic countries or in the European Union (see Figure 5). In other Nordic countries women's participation in the labour force is even higher than in Finland, but due to low part-time employment women in Finland put in more hours than their Nordic counterparts, see Table 1 (OECD, 2004).

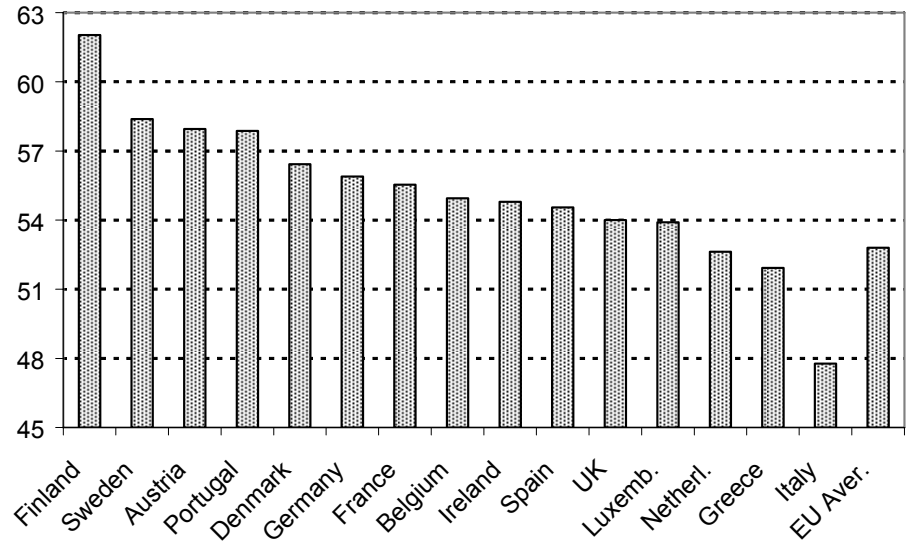

FIGURE 4 Index of dissimilarity[12] for all occupations excluding agriculture, 2000. Source: Emerek et. al. (2003).

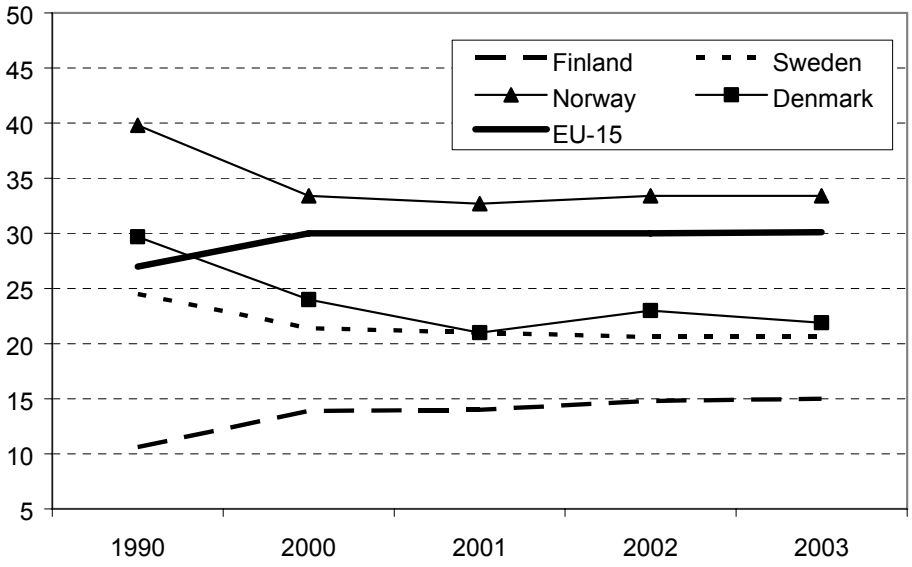

FIGURE 5 Incidence of part-time employment as proportion of employment in the Nordic countries and EU-15. Source: OECD, 2004.

12 The index of dissimilarity measures the sum of the absolute difference in women's and men's distribution over occupations. The ID-index equals 0 in case of complete equality (where women's employment is distributed similarly to men's across occupations) and 1 in the case of complete dissimilarity (where women and men are in totally different occupational groups). See e.g. Blackburn et. al. (1993).

TABLE 1 Labour force participation rate and incidence of part time employment for women in the Nordic countries and EU-15 in 2003. Source: OECD, 2004.

	Finland	**Sweden**	**Norway**	**Denmark**	**EU-15**
Labour force participation	72,1	76,9	75,9	74,8	61,3
Incidence of part time employment	15	20,6	33,4	21,9	30,1

Following a prosperous period of rapid economic growth and an almost full employment Finland experienced an exceptionally deep recession in the 1990s. Most Western European countries went through the same, although the crisis was most severe in Finland[13]. From 1990 to 1993 the Finnish GDP shrank by nearly 12 per cent, while the unemployment rate rose abruptly from 3,2 per cent in 1990 to 16,8 per cent in 1994 (OECD, 2004). Figure 6 presents the standardized unemployment rates in Finland, Sweden and EU-15. In 1990 (and throughout the 80s) the unemployment rates both in Finland and Sweden were well below the European average. During 1990s there was a substantial increase in unemployment in both countries. However, in Finland this development was much more rapid than in Sweden. Throughout the crises the Swedish unemployment rate stayed below the EU average, while in Finland the unemployment rate exploded in early 1990s and has remained higher than the EU average ever since.

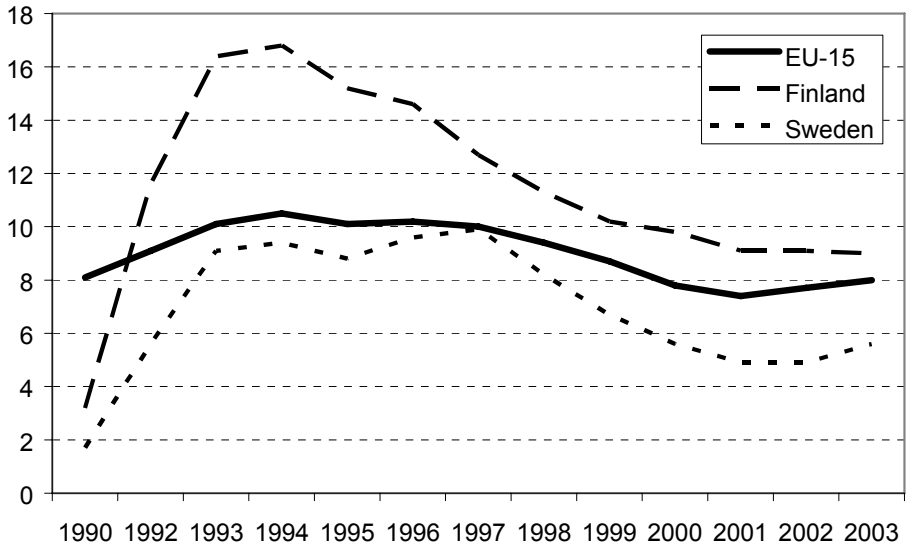

FIGURE 6 Unemployment rates (%) in Finland, Sweden and EU-15. Source: OECD, 2004.

13 The time period under analysis in this thesis may be viewed as somewhat problematic due to it's extreme volatility. However, data-wise it was also the most recent period available at the time the research was conducted and was thus included.

Some change has also occurred in the gender pattern of Finnish unemployment, as in 1996 female unemployment surpassed that of males for the first time since 1974 and remained higher until 2002 (see Figure 7). The average length of a period of unemployment grew rapidly from under 20 weeks at the beginning of 1990s to over 50 weeks at the beginning of 2000s. On the aggregate level we see clear differences both in unemployment rates (Figure 7) and in unemployment durations (Figure 8) between women and men. On average the periods of unemployment tend to be longer for men than for women, and this difference expanded into the early 2000s.

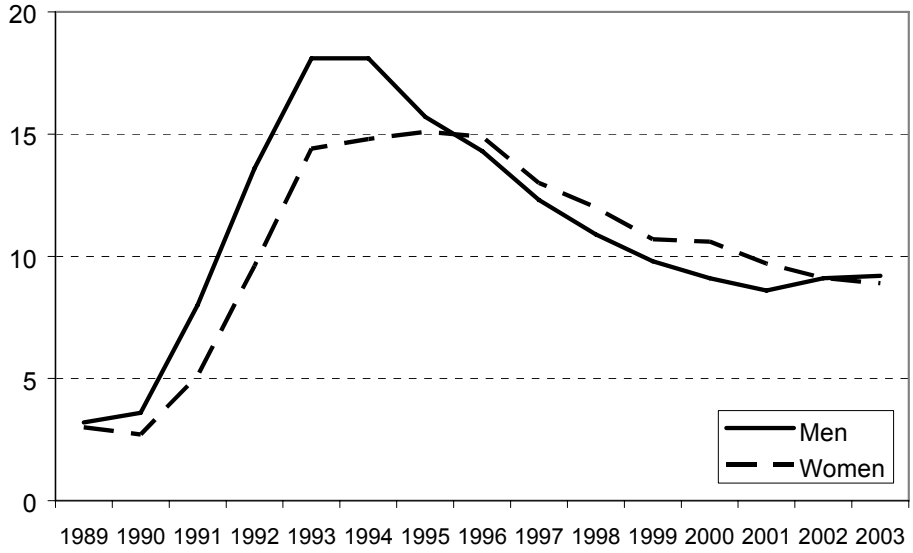

FIGURE 7 Unemployment rates by gender during 1989-2003 (%).
Source: Statistics Finland.

The Finnish compensation system for the unemployed distinguishes between three different types of benefits: the basic unemployment allowance, earnings-related unemployment insurance (UI) benefit, and labour market support. Earnings-related UI benefit is received by workers who have been working and contributing insurance payments to an unemployment fund for at least 10 months during the two years prior to unemployment[14]. Those fulfilling the time-at-work condition of having worked at least 10 months, but not belonging to an unemployment fund are eligible only for the basic allowance (115 euro per week in 2003).

The replacement rate for earnings-related UI benefit declines with the level of former earnings, the gross and net replacement rates for a worker with median earnings being 55 and 64 per cent, respectively (Koskela and Uusitalo, 2003). In principle the compensation system is gender neutral, but due to the lower average earnings of women, the net replacement rate tends to be slightly higher for them. Given eligibility, the maximum duration of earnings-related UI benefit and basic unemployment allowance is two years for all unemployed.

14 The unemployment funds are closely related to labour unions. The fund membership is voluntary, and workers can join the fund without joining the union.

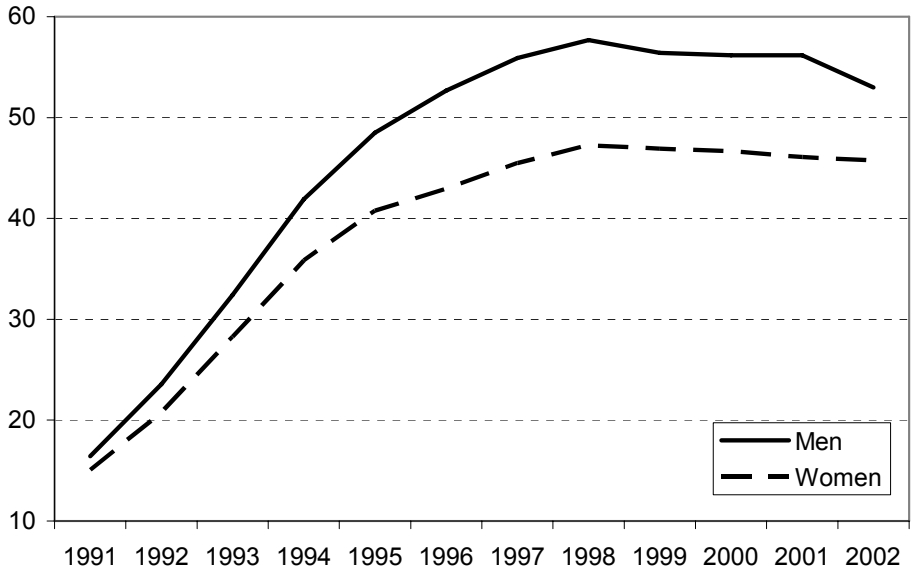

FIGURE 8 Average duration of unemployment for the unemployed jobseekers at the employment service 1991–2002 (weeks). Source: Ministry of Labour.

Workers not meeting the time-at-work condition or having exhausted the two year entitlement period can claim for labour market support, which is viewed as a minimum income for the long-term unemployed and those entering the labour market. The maximum benefit level for labour market support equals the basic unemployment allowance, but it is means-tested against household income and, therefore, not necessarily received by all applicants.

All these benefits are conditional on registering as a full time unemployed jobseeker and a waiting period is applied to those who have resigned by choice (90 days) as well as those who refuse a job offer or a labour market programme without a valid reason (60 days). Neither are any of these benefits paid to students or entrepreneurs. In addition, uneducated young people, aged below 25, are obliged to actively apply for education in order to be eligible for labour market support.

In response to the unemployment crisis, Finnish government increased spending on active labour market programmes (ALMPs) in order to improve the chances of the unemployed to return to regular employment. At the risk of losing benefits, an unemployed person is obliged to participate in an active programme if such is offered to him/her. In 1997 the proportion of participants in active programmes peaked at nearly 4,5 per cent of the labour force, a volume which exceeds the open unemployment rate of the late 1980s. According to OECD figures, in 1997 active and passive employment measures took up some 4,6 per cent of Finnish GDP, 1,5 and 3,1 per cent respectively.

Unlike the case in many other countries, the active labour market policy in Finland has a strong emphasis towards selective employment measures. Figure 9 shows that the number of participants in selective employment measures more than doubled in the early 1990s. Since the increase in labour market trainees remained quite modest, the relative importance of selective

employment measures peaked in 1994. During that year 2.7 per cent of the labour force was placed in selective employment measures.

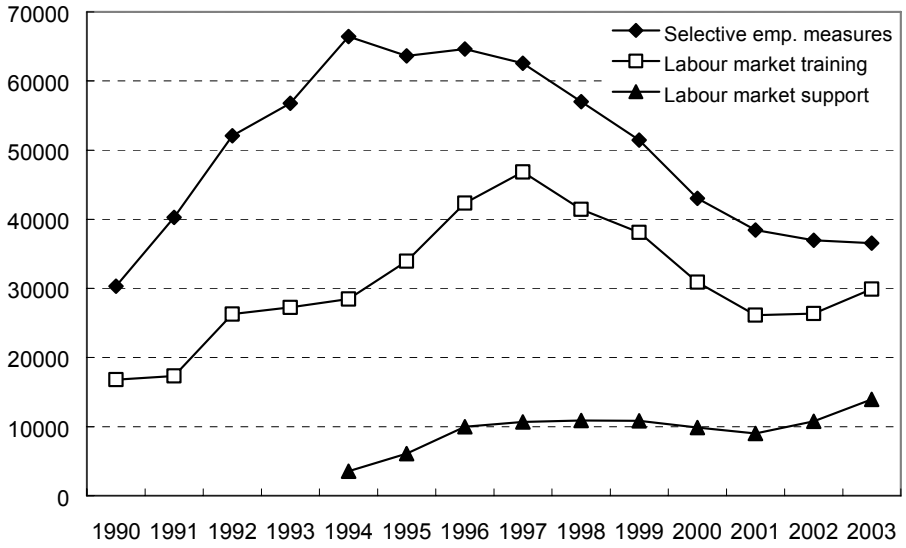

FIGURE 9 The number of participants in different programmes.

Means-tested labour market support was introduced as a novel part of the Finnish compensation system in 1994. It was targeted at the unemployed who had not fulfilled the time-at-work condition before becoming unemployed. While receiving labour market support unemployed persons may participate in measures, such as practical training or coaching for working life. By the year 2003 the number of participants in these measures climbed up to 15 000. Figure 9 implies that this increase has partially been compensated by a reduction in selective employment measures.

Selective employment measures consist of a standard employment subsidy paid to an employer varies among sectors, covering all wage costs in central government and equalling the unemployment allowance in local government and in the private sector. During the placement period a participant receives the prevailing market wage set in collective agreements. Job placements in central and local government are typically on fixed-term bases, offering an unemployed individual a temporary job for 6 months. This falls short of fulfilling the 10 months' time-at-work condition that is the prerequisite for receiving earnings-related unemployment benefits. In contrast, job placements in the private sector require a job contract between a participant and an employer that is expected to continue after completion of the job placement.

Labour market training consists of two parts. The average duration of a vocational training period mainly offered to individuals over 20 years of age is slightly less than five months. Preparatory training differs from vocational training in two respects. It is of shorter duration and is aimed at offering basic skills required in the labour market. Participation in a labour market training programme is free for the participants. During participation they receive a sum

equalling their unemployment compensation together with a daily allowance for maintenance and possibly for accommodation.

Placement on labour market support offers an opportunity for an unemployed person under the age of 25 to participate in practical training and for an unemployed person over 25 years of age to participate in coaching for work life. Labour market support is paid to a participant even if he/she is not entitled to unemployment benefits. Participants in these programmes do not have any formal job contract with an employer during the participation period, which may last for a maximum of 18 months. Since there is no formal job contract, this period does not add to the time-at-work condition.

The aims and target groups differ across different programmes. Young persons are among the target groups in selective employment measures, placements on labour market support and preparatory labour market training. Long-term unemployment is tackled with selective employment measures and with combined employment subsidy when the period of unemployment exceeds 500 days. As to the goals of these measures, labour market training is given structurally oriented goals that aim at preventing labour shortages and facilitating economic growth. More individually oriented goals of labour market training consist of stabilising the unemployed persons' work career and preventing the threat of unemployment. Selective employment measures and placements on labour market support share these individual level goals; additional targets consist of improving individuals' employment possibilities and preventing displacement from the labour market.

Gender specific information of programme participants is scarcely available, but Employment service statistics from 1997 indicate that there are a good deal more female than male participants (Ministry of Labour, 1997). The activation rate is considerably higher for unemployed women than men, 35 vs. 26 per cent, respectively. Women constitute the majority of participants in subsidised employment in the public sector, in part-time work and via job alternation programmes as well as in programmes such as practical training. Men, on the other hand, constitute the majority in labour market training and subsidised employment in the private sector.

3 Outline of the study and main results

This thesis consists of four empirical studies, which focus on gender differences in unemployment in Finland, namely:

[I] Labour market flows by gender in Finland

[II] Gender differences in transitions from unemployment: micro evidence from Finland

[III] The determinants of unemployment duration by gender in Finland

[IV] Differential effects of active labour market programmes in the early stages of young people's unemployment

The present study seeks to answer the following questions:

- Are there gender-related differences in labour market flows over time and if so, do they follow the business cycle?
- Can we observe gender differences in the factors affecting the labour market transitions of unemployed men and women in Finland?
- Do the patterns of unemployment duration differ between men and women and what background factors affect the duration of male and female unemployment?
- How successful are the active labour market programmes practised in Finland, and are there gender related differences in their effects?

These questions are addressed by various macro- and microeconometric methods, utilising both macro and micro level data in the process. The primary individual-level data set used in the analysis (Chapters 3, 4 and 5) is an approximately 10 per cent random sample drawn from the Finnish longitudinal census. Statistics Finland has expanded the census data by collecting information on these individuals from various registers including e.g. tax registers, pension and benefit registers, student registers and, most importantly, the register of unemployed job seekers maintained by the labour administration.

Chapter 2 documents, first, the magnitude and evolution of worker flows in the Finnish labour market observing at the same time the potential gender differences therein. By means of these flow data we examine how the labour market turbulence of the 1990s has affected unemployment flows in Finland. Secondly, we characterise the dynamic properties of worker flows and stocks by estimating a model for the transitions to and from unemployment using a business cycle indicator as the key explanatory variable, and then use the estimated equations to simulate the response of the labour market to an adverse

aggregate shock. Our approach departs from the existing literature (e.g. Holmlund & Vejsiu, 2001) not only by addressing Finnish data, but also by raising the issue of gender differences in unemployment flows, which has not been done in previous studies. We observe gender differences in Finnish unemployment flows principally in the rapidity and intensity of the responses to the shock. These differences most likely stem from the high degree of segregation characterising the Finnish labour market.

Chapter 3 analyses gender differences in the probabilities of transiting from unemployment into employment, studying and economic inactivity. These three different destinations are examined, since it seems obvious that a person transiting into employment might differ from a person transiting into e.g. economic inactivity. The empirical analysis is based on a 1996 representative sample of 9603 unemployed people, and is carried out using the multinomial logit model. For simplicity, in this paper we chose to focus on the transition probabilities, therefore utilising this modelling framework. The results indicate that female labour market outcomes are more responsive to family-related background characteristics, while previous unemployment is observed to be particularly scarring on the labour market position of men. According to the results education improves the labour market position of women significantly. Naturally, there is strong positive correlation between education and the probability of employment for both men and women, but for women this effect is considerably large.

Chapter 4 presents evidence on the determinants of the duration of unemployment for men and women in Finland, using a nationally representative data set from 1997 onwards. We investigate the duration of unemployment spells ending in employment, participation in active labour market programmes and economic inactivity. In order to estimate the hazard rates for exits we apply the piecewise constant hazard model both in the single and competing risks framework. Further, we use the split population model, which takes into account the fact that some fraction of the sample will never exit unemployment. The results indicate considerable negative duration dependence regarding exits from unemployment, with a benefit exhaustion related upturn after two years of unemployment. This upturn is not directed towards employment, but rather towards active labour market programmes and economic inactivity. The longer periods of unemployment of men are explained by women's eagerness to participate in active labour market programmes. Young children and foreign citizenship hinder exits from unemployment for women, while education appears as a highly positive factor in endorsing exits, particularly among women. The propensity to exit unemployment is greatest in rural areas, but mostly explained by exits to active labour market programmes.

Chapter 5 evaluates the long-run effects of Finnish active labour market programmes in youth labour markets and gender differences therein. The effectiveness of programmes is measured by a number of outcomes including employment, unemployment, programme participation, education, economic

inactivity and annual earnings. A non-parametric propensity score matching approach adapted for the case of multiple programmes is applied to estimate the average programme effects. Our results point out distinct variation in the success of programmes, and indicate that job placements and labour market training are successful not only in promoting employment but also in increasing the earnings of participants. In addition, despite the gender neutral nature of the policy itself men seem to benefit from participation more than women. The largest of all programmes, youth practical training, is not found to have any impacts on young persons' labour market careers.

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CHAPTER 2

LABOUR MARKET FLOWS BY GENDER IN FINLAND

Virve Ollikainen*

ABSTRACT.** This paper presents an aggregate flow portrait of the Finnish labour market by gender. First, we document the magnitude and evolution of worker flows, also observing the gender differences within the flows. Second, we characterise the cyclical and dynamic properties of the flows and the implied dynamics of the stocks. We estimate models for the transitions to and from unemployment using a business cycle indicator as the key explanatory variable and simulate the responses to an adverse macroeconomic shock. The results indicate that an adverse shock triggers an increase in unemployment and the effects of the shock differ by gender. These differences are concluded to stem from the extensive segregation in Finland.

Keywords: labour market flows, unemployment, gender differences

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* This paper has been written jointly with Jukka Lahtonen (PhD candidate, University of Jyväskylä). Virve Ollikainen is the first author of this paper and responsible for Sections 1, 2 and 4 and Jukka Lahtonen is primarily in charge of Section 3.

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1 Introduction

It is often assumed that high unemployment is associated with economic inactivity or stagnant labour markets, or both. The study of labour market flows in an era of high, persistent unemployment reveals, however, that despite a relatively stable unemployment rate, the labour market flows show considerable activity. In fact, a general finding in the recent literature is that gross outflows from unemployment increase in a downturn and decrease in an upturn. This result is somewhat controversial and challenges the theories of conventional macroeconomics.

Finland offers an interesting case with respect to this issue, as the country experienced an exceptionally deep recession in the 1990s. As a result of this economic slump the unemployment rate shot up from a mere 4 per cent to peak at nearly 17 per cent in 1994. There has also been some change in the gender pattern of Finnish unemployment: in 1996 female unemployment surpassed that of males for the first time since 1974 and remained higher until 2002; see Figure 1.

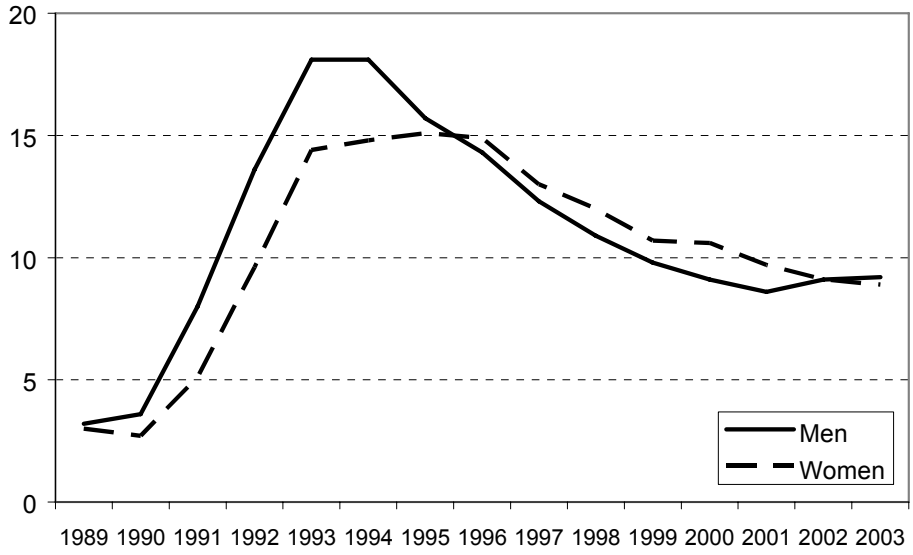

FIGURE 1 Unemployment rates by gender during 1989-2003 (%).

Some interdependence between gender-specific unemployment rates and flows from unemployment to employment can be seen. The male flow into employment is continuously higher than the female flow, and was particularly high during 1992-1994; see Figure 2. This seems reasonable enough given the sharp rise in the male unemployment rate from 1990 onwards. Female unemployment escalated at the same time, but not to quite the same extent as male unemployment. However, the flow into employment among women catches up with the male inflow only at the very end of the observation period. Women have not succeeded in becoming employed, and therefore the female unemployment rate has remained higher.

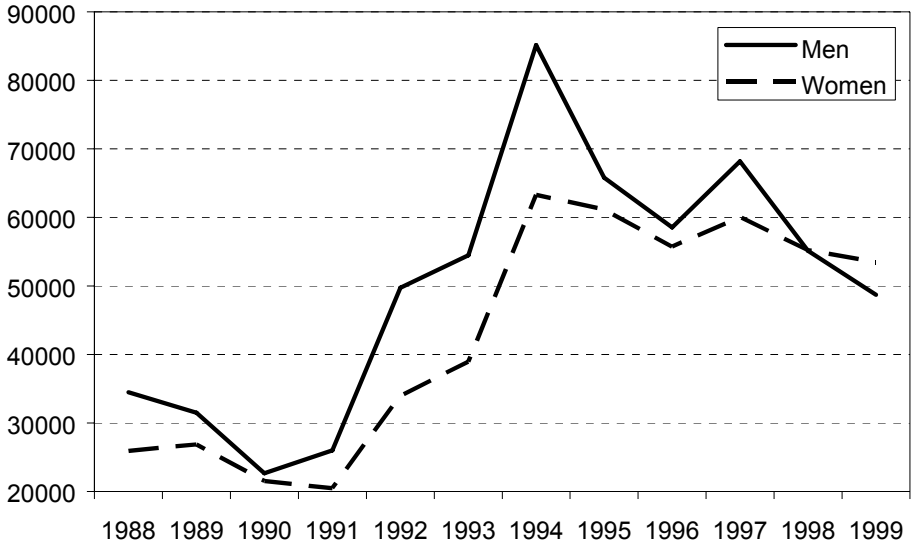

FIGURE 2 Flows of individuals from unemployment to employment for males and females (persons/year).

The accelerated ageing of the population has lead the European Union to set high employment rate targets, which are unlikely to be achieved solely by the re-employment of the openly unemployed, but require movement from inactivity to employment as well. Since there is only limited potential in raising the employment rate among prime aged men, women remain the dominant source of educated, non-employed, prime-aged workers and thus, mobilizing the female labour force takes on additional importance. (Rubery et al, 2001)

New interest in analysing labour markets from the flow perspective has recently been shown owing to the availability of new data and the improvement of econometrical models. Some of the recent empirical literature includes papers by Blanchard & Diamond (1990), Burda & Wyplosz (1994), Shimer (2005) and a Finnish contribution by Ilmakunnas & Maliranta (2000). Earlier contributions to the study of labour flows have been made e.g. in Clark & Summers (1979), Nickell (1982), Junankar & Price (1984) and Abowd & Zellner (1985).

In this paper, we first document the magnitude and evolution of worker flows in the Finnish labour market at the same time observing the potential gender differences within them. No such documentation of these particular data has been done previously. By means of these flow data we can also observe how the labour market turbulence of the 1990s has affected unemployment flows in Finland. A description of the flows is thus of interest in itself.

Secondly, we characterise the dynamic properties of the flows and the stocks. First we estimate a model for the transitions to and from unemployment using a business cycle indicator as the key explanatory variable. Then we use the estimated equations to simulate the labour market responses of an adverse aggregate shock. The empirical analysis here is a Finnish reproduction of the

Swedish labour market analysis done in Holmlund and Vejsiu (2001). The Swedish data are clearly better than the data at our disposal and for this reason our study is somewhat more concise than the Swedish one. However, we raise the issue of gender differences in unemployment flows, which was not addressed in the study by Holmlund and Vejsiu.

Gender differences are observed in the unemployment flows principally in the rapidity and intensity of the responses to the shock. These differences are concluded to stem from the extensive segregation that characterises the Finnish labour market. Thus affirmative action, e.g. appropriately focused labour market training leading to better matching and diminished segregation can potentially increase the efficiency of the economy.

2 Stocks and flows: an overview

There are certain well-known problems with flow data that are discussed extensively in Abowd & Zellner (1985) and Blanchard & Diamond (1990). A general problem with survey-based flow data is that the sample size decreases during the interview process, thus causing problems with estimations. Other problems are missing data caused by an increased nonresponse rate, and misclassification due to errors in individuals reporting their labour market state. These problems mainly concern survey-based data, and are thus eliminated here, since the data at hand are register-based.

The flow data used here have been compiled by Statistics Finland (Myrskylä & Ylöstalo, 1997). The bases for these data are the annual Finnish employment statistics from the period 1987-1999. The flow data are compiled by comparing the sequential annual data individually, thereby obtaining knowledge of the changes occurring in each individual's activities.

Although these are the best flow data available as such, this is a register-based data set and therefore contains somewhat limited information. This data set observes only the labour market transitions occurring between consecutive years, using the concept of main activity during the calendar year. Unfortunately, this means that we have no information on transitions within the year, nor do we have any information on job-to-job transitions. Thus, our data are likely to underestimate the flows, since no short-term transitions are observed. Most foreign studies use survey-based data with monthly (e.g. Abowd & Zellner, 1985) or quarterly (e.g. Holmlund & Vejsiu, 2001) observations. Thus, these studies obtain information over shorter intervals and on more frequent transitions, but at the same time are subject to all the above-mentioned problems typical of survey-based data.

We are able to compare our flow data to another register-based data set provided by the Ministry of labour.[15] These data are based on the registers of

[15] "Finnish unemployed job seekers at the Employment service by duration of unemployment and sex", monthly data from 1991/Jan. – 2002/Apr.

the Finnish Employment Service and provide monthly information on the number of unemployed people and the length of their periods of unemployment. From this data set we can calculate the inflow to unemployment. By reference to these data our annual flow data appear to capture on average some 40 per cent of the total inflow during the observation period. Although this percentage is rather low, the annual flow data are able to depict the turning points and the basic trend of the inflow to unemployment, even if the level itself is low compared to more frequently observed data. Moreover, the flow data from Statistics Finland contain information on transitions to and from several labour market states, a feature which cannot be observed with the other data set. Although limited, our data are also in some ways pioneering in Finland and will therefore be used in this study.

Our notation for the stocks is as follows: We use E for employment, U for unemployment and O for out of the labour force (nonparticipation)[16]. We denote population by POP and labour force by L[17]. Unemployment and nonparticipation have occasionally been aggregated into nonemployment: N=U+O. The flows are denoted by XY for flows from state X to state Y. The flow from employment E to unemployment U is thus denoted by EU.

Below we present a flow portrait of the gross labour market flows and the changes in stocks in Finland during 1987-2000. Following the example of Holmlund & Vejsiu (2001), verified by the Finnish conclusions in Kiander & Vartia (1998), we refer to the period 1989-1990 as the boom, 1991-1992 as the downturn, 1993-1996 as the slump and the period from 1997 on as the recovery. For the stock description we use basic time series data from Statistics Finland. These series consist of observations on the entire Finnish population instead of just a sample of that population, as is usual with survey-based flow data.

2.1 Stocks

The participation rate of both women and men fell approximately 5 per cent at the beginning of the 1990s. This means that some 120 000 people withdrew temporarily from the labour market. From the end of 1990s the participation rate has been rising again and is currently, at 2003, some 70 per cent for men and 64 per cent for women. From 1990 to 1994 unemployment rose from some 3 per cent to 17 per cent of the labour force, whereas the nonemployment rate rose from 21 per cent to 34 per cent for men and from 29 to 38 per cent for women (Figure 3). There was also a distinct shift upwards in the level of unemployment as well as in non-employment caused by the economic recession.

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16 "Nonparticipation" includes all who are not employed or registered as unemployed. This includes e.g. students, pensioners and draftees. The largest group here is formed by pensioners, a fairly static group comprising some 60 per cent of all nonparticipants.

17 By population we mean the working age population, i.e. population aged 15-74 years.

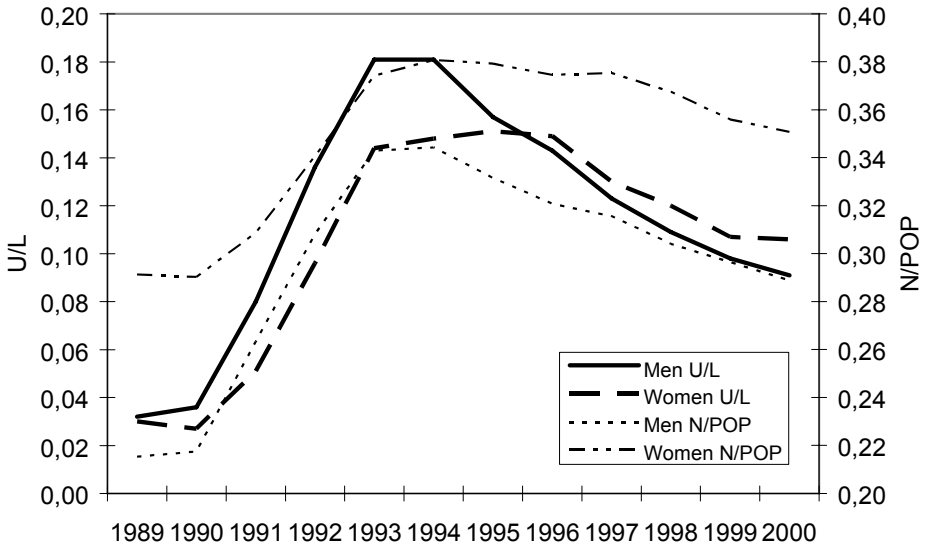

FIGURE 3 Unemployment and nonemployment 1989-2000.

During the downturn at the beginning of 1990s the employment rate fell rapidly while simultaneously the nonparticipation rate rose (Figure 4). These effects were particularly drastic where women are concerned. The nonparticipation rate of women rose to almost 40 per cent of the population while the employment-to-population ratio was, at its lowest, some 56 per cent for men and 52 per cent for women.

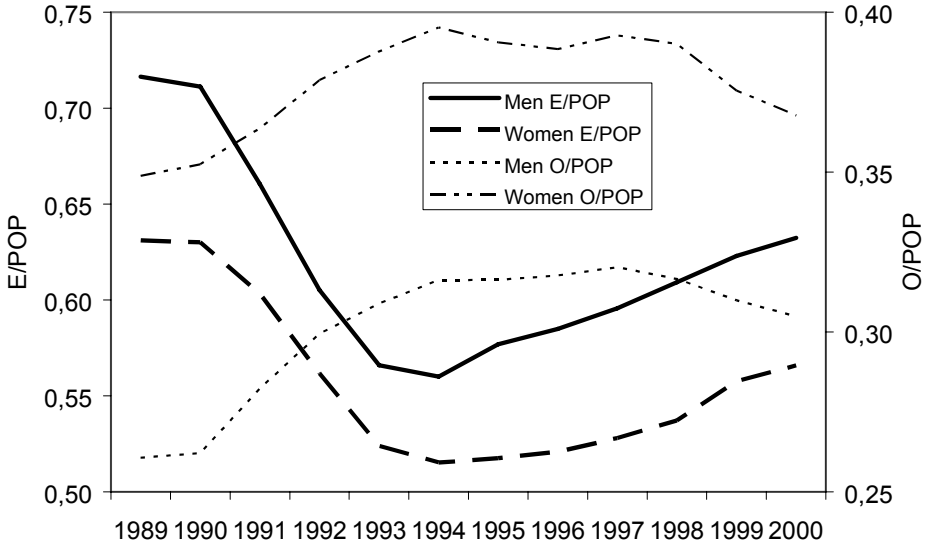

FIGURE 4 Employment and nonparticipation 1989-2000.

During the slump there was a substantial fall in permanent employment and a concomitant rise in temporary employment (Figure 5). Temporary employment (i.e. the number of workers employed on fixed-term contracts) rose by roughly 200 000 people in the 1990s, peaking at some 340 000 at 1997. Since then

temporary employment has slightly decreased, although the fall is mainly due to the improved labour market position of men. After the slump the percentage of temporarily employed men has reduced steadily, but the percentage of female temporary employment has declined very little (Figure 6). In particular, the number of women in temporary employment has remained roughly the same (Kauhanen, 2000).

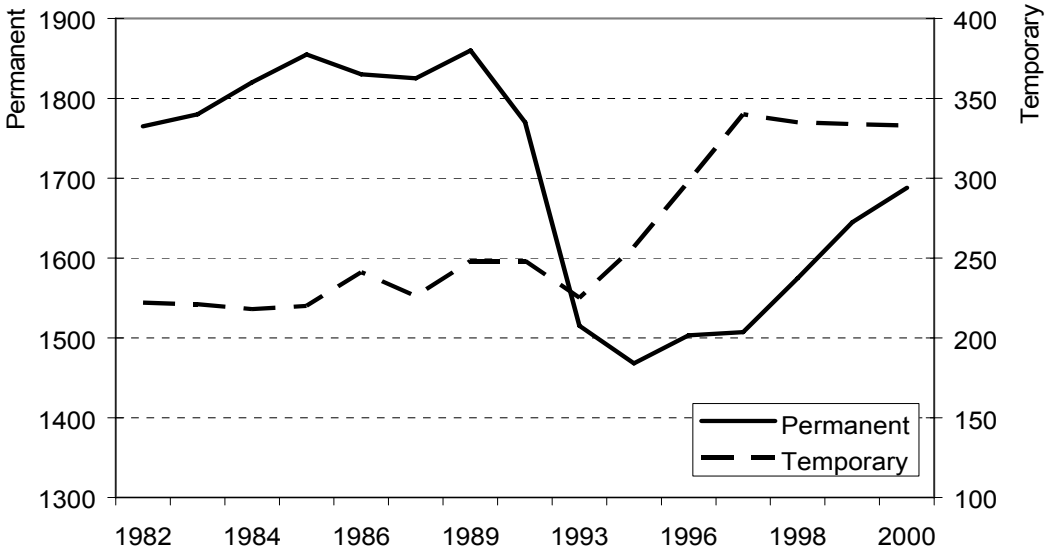

FIGURE 5 Permanent and temporary employment (1000 persons) 1982-2000 (Kauhanen, 2002).

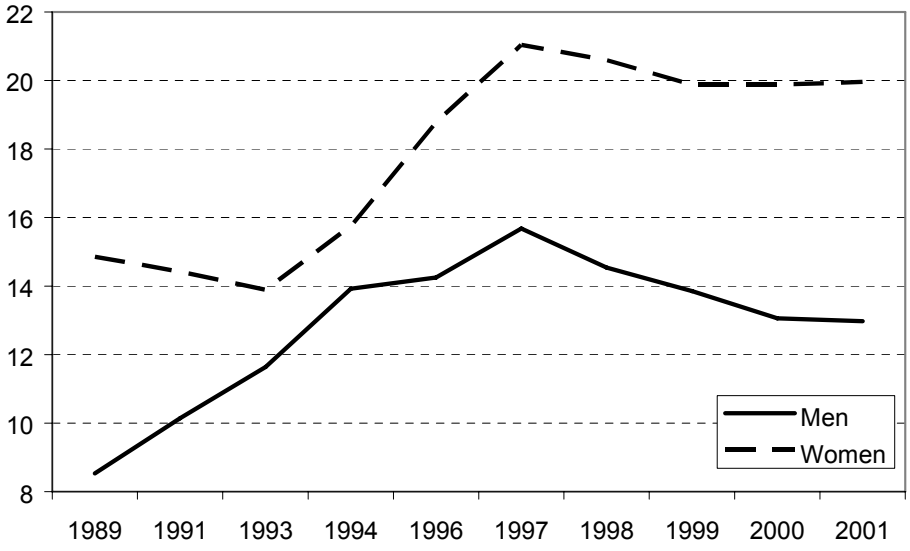

FIGURE 6 Temporary employment (%), male and female (Statistics Finland).

2.2 Flows

We now present the flows, although we can only do this on an annual basis. The flows are shown simply as the number of people transiting from one state to the other. Normalization of the flows on population would only have little or no effect on the flows, and therefore we choose to present them as such. As discussed earlier, our data are likely to underestimate the flows, since no short-term transitions are observed, but only the transitions in individuals' main employment status between consecutive years.

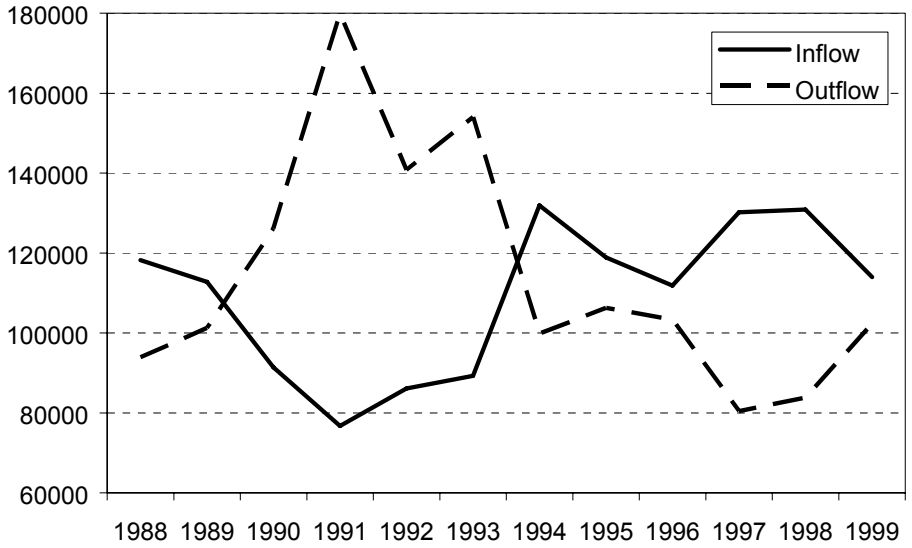

FIGURE 7 Flows to and from employment, men.

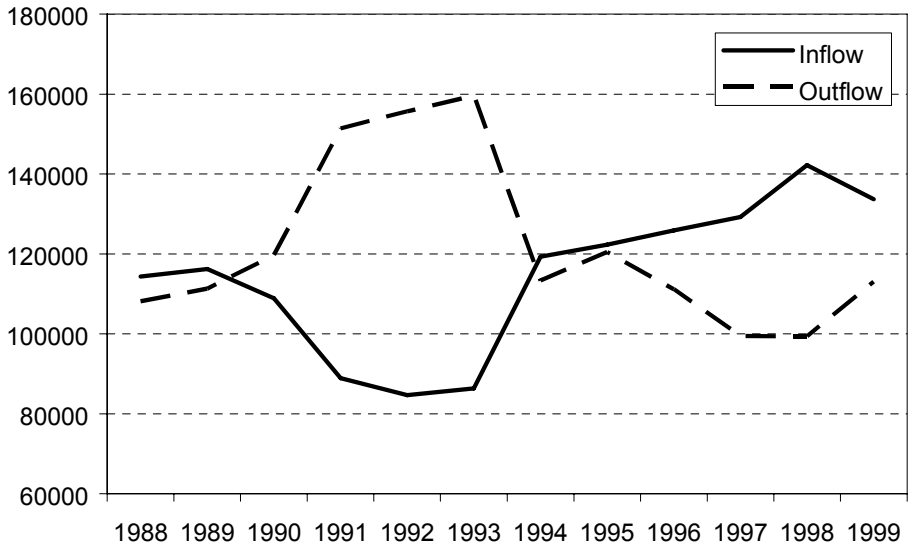

FIGURE 8 Flows to and from employment, women.

Figures 7 and 8 present inflows to and outflows from employment for both men and women. Outflow from employment rises particularly sharply for men and

reaches a peak in 1991. For women the rise is less dramatic and the peak is reached in 1993. Shortly after the downturn the inflow rises and exceeds the outflow for both sexes. It seems that the recession has had little permanent impact on the employment flows. After the slump the inflows and outflows return more or less to their initial level, particularly for men, although for women the inflow to employment persists at a slightly higher level. Overall, the flows seem to follow a level trend with a deviation caused by the business cycle.

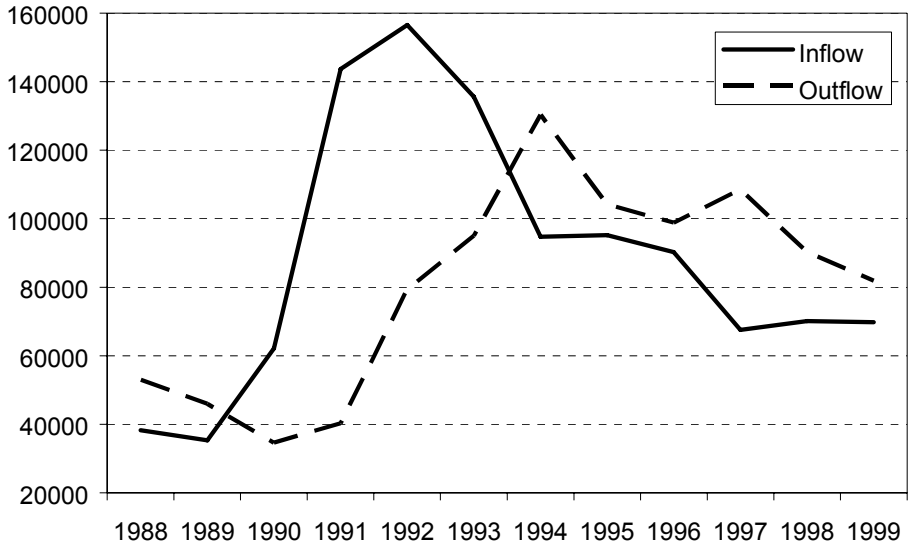

FIGURE 9 Flows to and from unemployment, men.

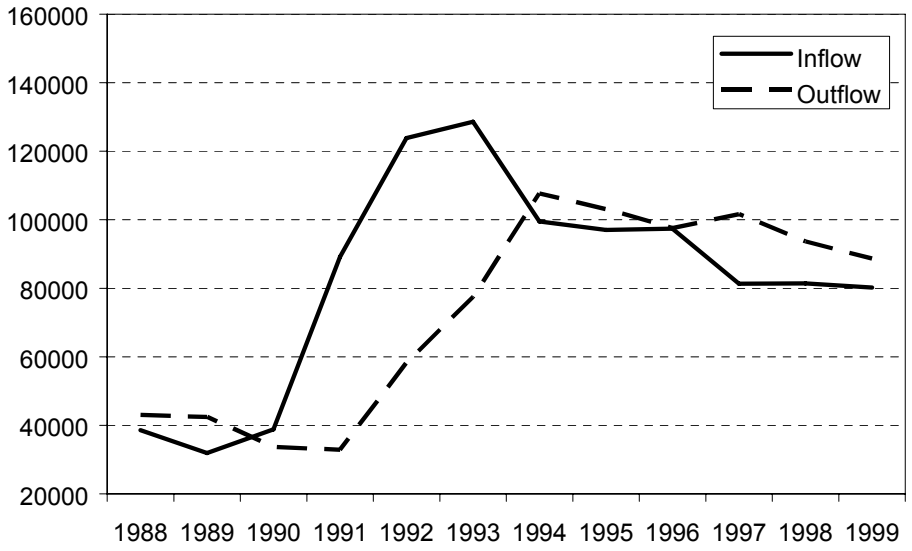

FIGURE 10 Flows to and from unemployment, women.

The gender-specific unemployment flows are presented in figures 9 and 10. A clear pattern emerges as the increase in the inflow to unemployment is followed shortly by a corresponding rise in the outflow from unemployment. The rise in the male inflow is striking and abrupt, peaking in 1992, whereas the female

inflow peaks in 1993 and at a much lower level. This development is a clear product of the rapid weakening of the Finnish industry and construction sectors, both male-dominated, at the beginning of the downturn. The female-dominated sectors demonstrate effects of the downturn at a slightly later stage.

The trend in the unemployment flows in Finland undergoes a shift during the observation period. The male and female unemployment flows each end up at a higher level by some 40 000 people. This indicates that as a result of the recession labour market mobility and turnover within the unemployed has increased in Finland. Interestingly enough, the turnover within the employed was affected only temporarily during the recession and does not show any increase in the long run.

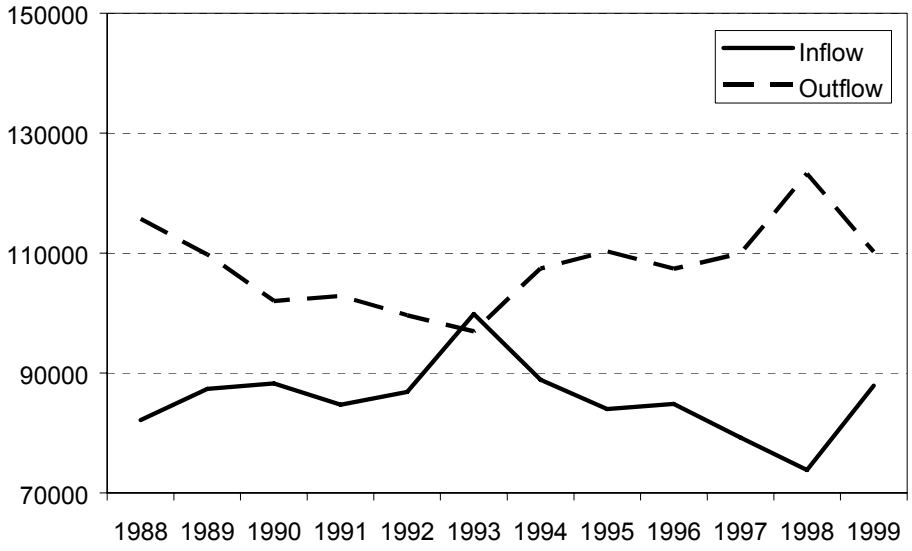

FIGURE 11 Flows to and from nonparticipation, men.

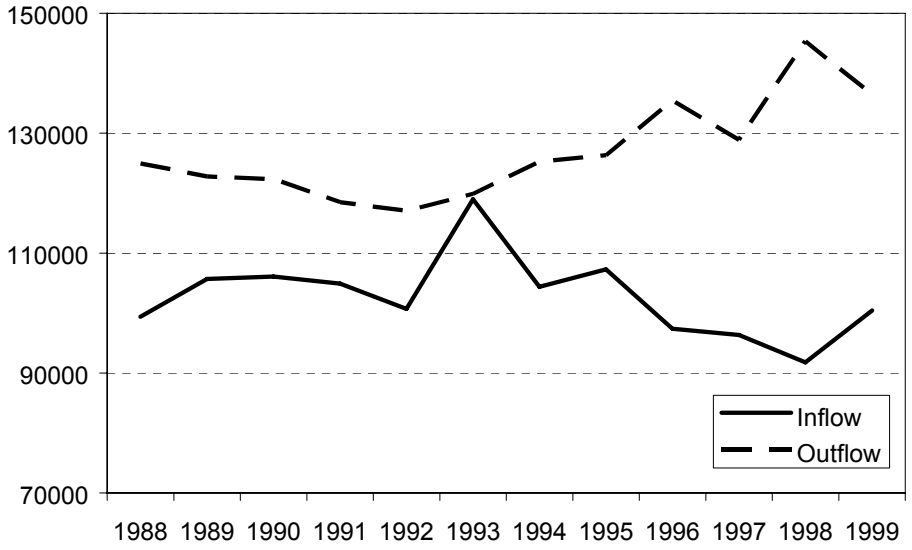

FIGURE 12 Flows to and from nonparticipation, women.

The flows to and from nonparticipation by gender presented in figures 11 and 12 are nearly identical for men and women. Only the level of the nonparticipation flows differs and is higher for women by some 20 000 persons, most likely due to family related factors. Both men and women experienced a similar peak in the inflow to nonparticipation during the slump in 1993. The increase in the inflow to and decrease in the outflow from nonparticipation resulted in a rise of some 50 000 nonparticipants (Statistics Finland, 1996). This eased off the unemployment situation in Finland during the slump, but it also prolonged the recovery period from the era of massive unemployment, as nonparticipants were then gradually returning to the labour market.

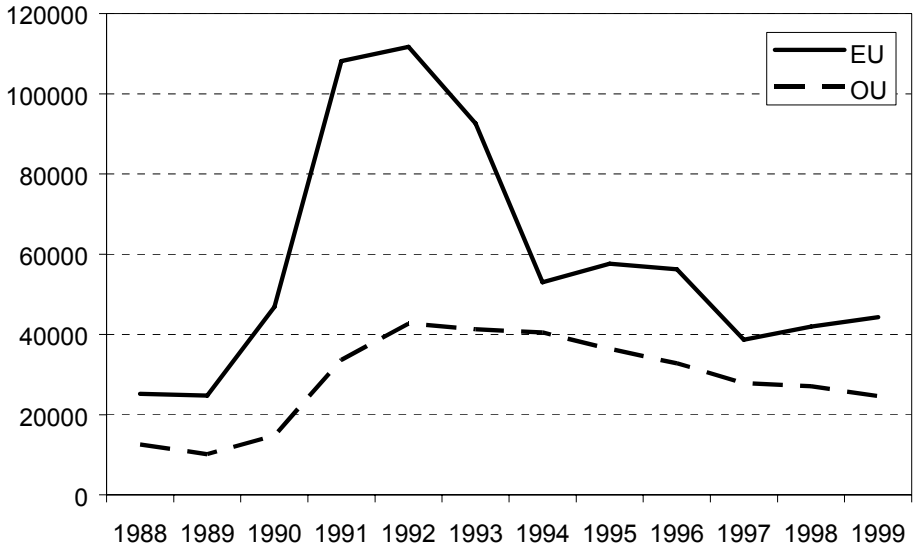

FIGURE 13 Inflow to unemployment by origin, men.

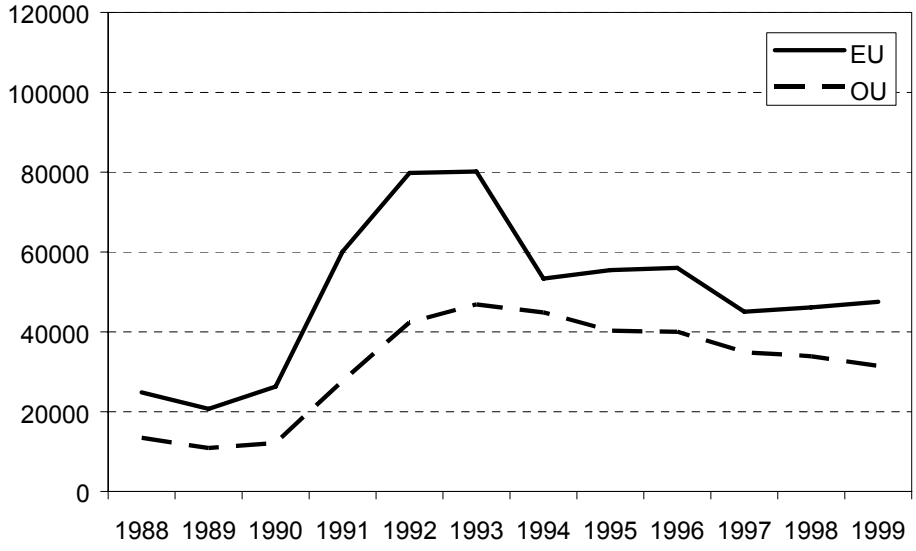

FIGURE 14 Inflow to unemployment by origin, women.

In figures 13 and 14 we provide more detailed information of the inflows to unemployment. Overall, it seems that the inflows from employment and non-participation follow the same trend, apart from the downturn, with only slight difference in levels. However, during the downturn there is a substantial increase in the inflow from employment, particularly among men. This reflects the massive and abrupt effects of the recession on the male-dominated industrial sector.

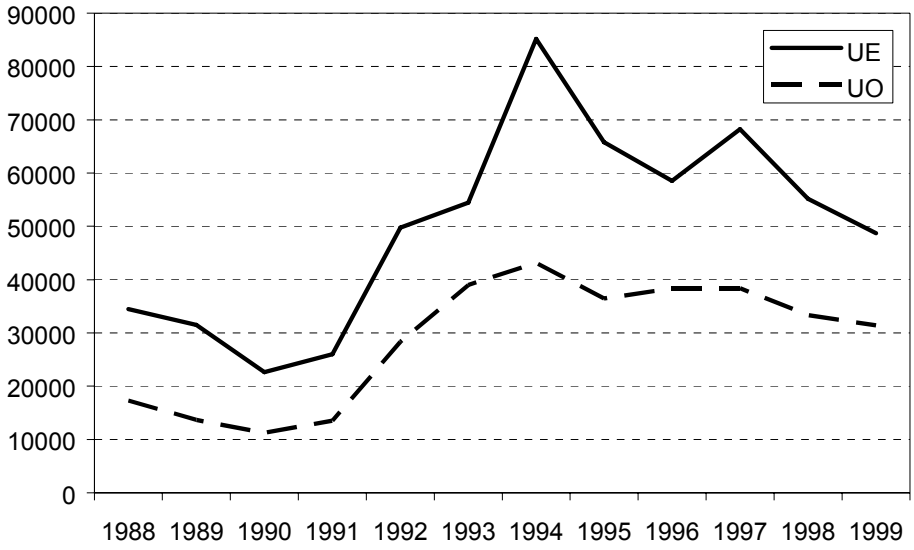

FIGURE 15 Outflow from unemployment by destination, men.

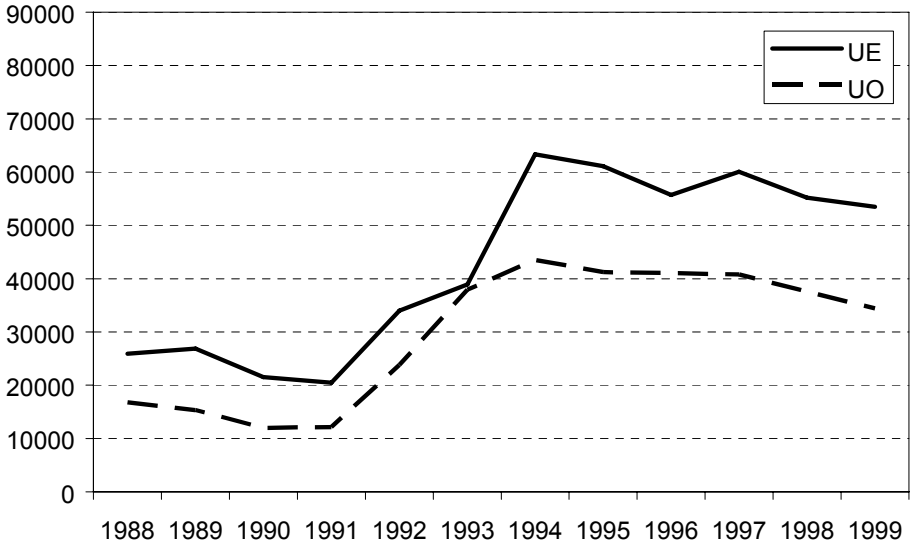

FIGURE 16 Outflow from unemployment by destination, women.

The outflows from unemployment are presented in figures 15 and 16. The rise in the inflow to unemployment illustrated in the previous figures is soon followed by an increase in the outflow from unemployment. The outflow from unemployment to nonparticipation increased during the slump and has since

remained at a fairly high level. The outflow to employment increased even more dramatically. Three times as many women were hired during the slump in 1994 as compared to the boom in 1990. Nearly four times as many men were hired in 1994 than in 1990 or 1991.

2.3 Origin and destination

Tables 1, 2, 3 and 4 summarize the gender-specific labour market flows for the whole period (1987-1999) and three sub-periods (87-90, 90-95, 95-99) across the three labour market states that we have information on. The outflow rate from nonparticipation is strikingly low. In general it seems that nonparticipation is nearly as stable a state as employment. The low stability of employment is somewhat unexpected as such, but mainly results from the fact that we cannot identify permanent employment from temporary employment. Nevertheless, the stability of nonparticipation seems striking here.

TABLE 1 Gender-specific outflows by origin and destination states (transition rates).

Origin state	Destination state			Outflow rate
	E	**U**	**O**	
E	0,892 (0,882)	0,054 (0,048)	0,050 (0,068)	0,104 (0,116)
U	0,265 (0,294)	0,576 (0,499)	0,152 (0,203)	0,417 (0,497)
O	0,083 (0,074)	0,041 (0,033)	0,844 (0,866)	0,124 (0,107)

Notes: Plain figures represent men and figures in parentheses represent women.

The partition into sub periods shows very clearly the increasing permanence of unemployment after 1990. The fact that this high permanent level of unemployment continues so evidently to exist even after 1995 is noteworthy. There is hardly any change in the stability of the unemployment state for men and it even shows a rise for women in the years after the slump. To date, the outflow rate from unemployment has permanently declined from 0,6 (0,7) in the 1980s to some 0,4 (0,5) in the 1990s. The female flow into non-participation is higher than the male flow in every state.

TABLE 2 Gender-specific outflows by origin and destination states 1987-1990.

Origin state	Destination state			Outflow rate
	E	**U**	**O**	
E	0,912 (0,900)	0,027 (0,021)	0,058 (0,076)	0,085 (0,097)
U	0,413 (0,433)	0,378 (0,306)	0,196 (0,257)	0,609 (0,690)
O	0,120 (0,097)	0,020 (0,014)	0,826 (0,862)	0,140 (0,111)

TABLE 3 Gender-specific outflows by origin and destination states 1990-1995.

Origin state	Destination state			Outflow rate
	E	**U**	**O**	
E	0,864 (0,862)	0,081 (0,065)	0,052 (0,071)	0,133 (0,136)
U	0,250 (0,277)	0,601 (0,518)	0,142 (0,202)	0,392 (0,479)
O	0,062 (0,059)	0,056 (0,043)	0,850 (0,872)	0,118 (0,102)

TABLE 4 Gender-specific outflows by origin and destination states 1995-1999.

Origin state	Destination state			Outflow rate
	E	**U**	**O**	
E	0,911 (0,892)	0,044 (0,050)	0,042 (0,056)	0,086 (0,106)
U	0,249 (0,281)	0,591 (0,522)	0,153 (0,193)	0,402 (0,474)
O	0,084 (0,077)	0,038 (0,036)	0,848 (0,862)	0,122 (0,113)

3 Empirical results

In the descriptive part of the paper we found the main differences in the labour market flows between men and women to reside in the flows into and out of unemployment. Our purpose here is to examine these differences more closely. We estimate parsimonious models for the transition rates using a measure of the GDP gap, YDEV, as the key explanatory variable explaining the cyclicality in unemployment flows.

The relationship between real growth and changes in the unemployment rate is known as Okun's law. Okun's law posits a steady relationship between growth in real GDP above the trend rate and decline in the unemployment rate, and vice versa. Here, we are simply generalising this theory to cover unemployment flows in addition to unemployment rate.

3.1 Actual and potential output

The key concept here is the formulation of a variable that will capture variations in economic activity. This is accomplished by calculating the deviations between actual GDP and trend GDP. Trend GDP is formulated by regressing the quarterly values of log GDP on a linear time trend and three seasonal dummies. There are several alternatives to the formation of the trend GDP, of which one has been selected here[18]. Of the others, the Hodrick-Prescott filter was tried out, but excluded, since the trend itself seemed to follow the real GDP closely, the difference between them remaining rather small. The estimated growth in the trend GDP over the estimation period is 0,8 per cent per quarter or 2,4 per cent per year.[19] The key business cycle variable is then taken as the log difference between actual GDP and trend GDP and is denoted YDEV. Thus a rise in YDEV represents a cyclical upturn.

Figure 17 presents YDEV together with the gender-specific employment-to-population rates from 1987-2001[20]. The decline in YDEV is nearly 25 per cent and the decline in E/POP is some 17 per cent for men and 12 per cent for women. The fall in employment follows the fall in output roughly with a lag of two quarters.

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18 Different alternatives to estimating the potential output and the output gap have been studied extensively e.g. in Canova (1998) and Cerra & Saxena (2000)

19 The estimated equation is lnY = 9.56970 + 0.00828 * TIME + 0.02911 * Q2 + 0.006722 * Q3 + 0.08659 * Q4, where Q2, Q3, Q4 are seasonal dummies. Adjusted R-squared is 0.980 and the t-value on the trend is 50.8. The period chosen for the estimation of the trend is 1975.1 - 1990.1. The equation is used to predict trend GDP values for the period 1987.2 - 2001.4.

20 Notes: Ydev is smoothed by a three-quarter moving average and E/POP is seasonally adjusted.

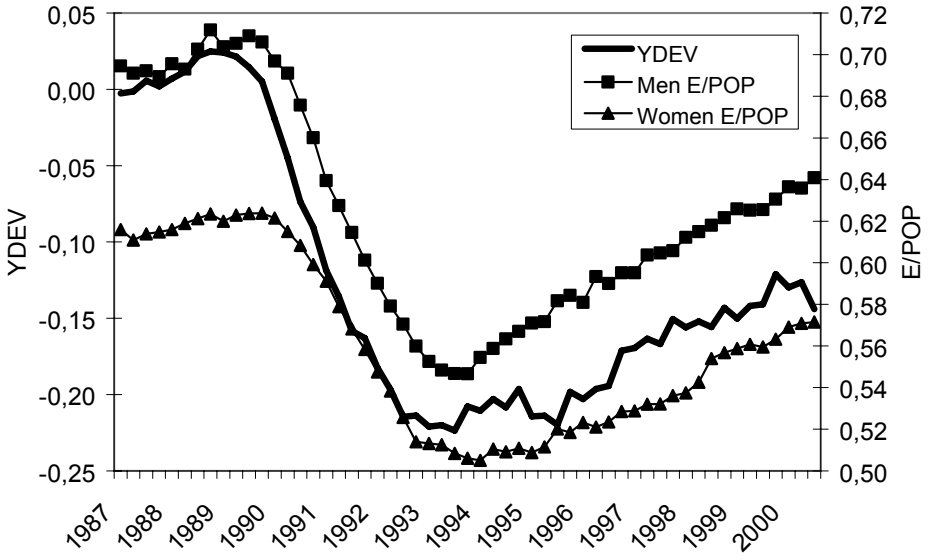

FIGURE 17 Output and employment.

3.2 Estimation of transition rate models

For the estimations we use a monthly data set on Finnish unemployment periods and their durations gathered by the Ministry of Labour. The source of the data is the Employment Service Statistics unemployment register, which contains information on the number of unemployment spells of different durations in progress at the end of each month. This data set only allows us to observe the in- and outflows from unemployment, but no other flows or labour market states. Thus we cannot identify the origin and destination states of the unemployment flows. We aim to compute quarterly data on the in- and outflows to unemployment following the method used in Eriksson & Pehkonen (1998).

To construct the inflow to unemployment we use the number of people with ongoing spells of unemployment in the duration interval of 1 to 12 weeks by the end of the quarter. This implies that we are disregarding individuals who both entered and left unemployment during this interval. Thus we expect our calculated inflow to underestimate the true inflow. However, we obtain a more accurate estimate of the inflows, than we would have obtained using the annual flow data presented in section 2. The outflow is computed as the difference between the inflow and the change in the stock of unemployment.

Table 5 reports the results. The estimations consist of transition rate equations for the inflows and outflows. We always include a constant and three seasonal dummies. The other explanatory variables are lagged YDEV, the change in YDEV, a lagged dependent variable and a time trend. All these variables were first included, but the insignificant ones were later dropped. However, in the male outflow rate model both YDEV variables were retained. Since the coefficients of both YDEV variables in this model are almost identical we conclude that for men YDEV actually works more simultaneously with the

outflow rate, i.e. the effects of YDEV are observed in the outflow rate with a smaller lag. This implies that the male outflow rate adjusts to the shock faster than the female outflow rate.

TABLE 5 Estimated transition rate equations.

	Inflow rate	Inflow rate, Men	Inflow rate, Women	Outflow rate	Outflow rate, Men	Outflow rate, Women
Constant	-2,12 (4,57)	-3,35 (56,00)	-1,84 (6,35)	-0,40 (5,19)	-0,47 (4,62)	-0,34 (5,22)
$YDEV_{t-1}$	-1,53 (2,85)	-2,94 (11,67)	-1,32 (3,87)	0,59 (1,51)	0,87 (1,66)	0,84 (2,09)
$\Delta YDEV_t$					0,83 (1,28)	
Lagged dep. var.	0,39 (6,01)		0,49 (6,04)	0,56 (5,11)	0,50 (3,61)	0,52 (5,09)
Trend	0,37 (15,98)	-0,01 (14,95)		0,002 (5,19)	0,002 (2,37)	0,003 (5,13)
R^2	0,94	0,95	0,94	0,94	0,93	0,95
SE	0,05	0,05	0,05	0,04	0,04	0,04
DW	2,36	2,09	2,10	2,02	2,18	2,14
LM (2)	0,02	0,05	0,12	0,28	0,07	0,63

Notes: LM (2) is the P-value for serial correlation according to the Breusch-Godfrey Lagrange multiplier test (two lags).

The inflow rates are strongly countercyclical[21] for all groups, and in particular for men. In several studies it has been observed, that a recessionary shock results in massive job destruction thereby increasing the inflow into unemployment (Ilmakunnas & Maliranta, 2000; Blanchard & Diamond, 1990). The male inflow seems to respond faster to a shock, since the lagged dependent variable is statistically insignificant. In the short run, i.e. within the quarter, male inflow rate responds to a change in YDEV nearly twice as fast as the female inflow rate. In Finland women are mainly employed by the public sector where job destruction rate in the short run is not as substantial as in the private sector. This can partially explain why the female inflow rate adjusts to the shock with a delay, which is indicated by the significance of the lagged dependent variable, although the delay until public sector job destruction could be expected to be somewhat longer than a quarter.

[21] By countercyclicality we mean that the variable in question correlates negatively with YDEV.

The outflow rate appears to be slightly procyclical[22] for all groups. However, what is rather problematic here, is that we cannot identify the end-states of these transitions. In e.g. Holmlund & Vejsiu (2001) it has been observed that the flow rate from unemployment to employment is procyclical, but the flow rate from unemployment to non-participation is countercyclical. From our results we can calculate that a one percentage point rise in output relative to trend would increase the outflow rate by 0,5 per cent in the short run and 1,3 per cent in the long run.

Although the outflow rate here is procyclical, we will observe later with the simulations that the outflow itself is countercyclical. The countercyclicality of both in- and outflows has also been observed in e.g. Burda & Wyplosz (1994) in different European countries, namely Germany, France, United Kingdom and Spain. The same observation appears also in a Canadian study by Jones (1993). According to Burges (1994), using British data, the inflow is countercyclical, but the outflow is acyclical.

3.3 Simulations

In order to supplement our analysis and yield information on how the unemployment flows react to a recessionary shock we conduct simulations of the evolution of male and female unemployment, using the estimates reported in the Appendix. We are unable to simulate the inflow as a rate, since this would require the simulations to calculate the number of the employed. With our model, owing to limitations of the data, we are only able to simulate the number of the unemployed. We give the model the initial value of unemployment at the start of the period, the lag of the unemployment outflow, the GDP series for the entire period and then allow it to run on its own.

Figures 18 and 19 illustrate how our models perform in simulating unemployment. The models depict the evolution of unemployment well. In particular, the female unemployment is predicted with high accuracy. The mean absolute percentage prediction errors between the simulated and actual values are 7,3 for male and 3,54 for female unemployment.

We then conduct some experiments on our model. We impose a four-year negative shock and compare the results to the reference case without a recession. The simulated shock consists of a gradual, symmetrical downward V-turn in YDEV that lasts for four years (16 quarters), the trough occurring at the point where GDP is 3 per cent below trend. In the reference case the GDP remains at its potential level, i.e. YDEV=0.

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22 By procyclicality we mean that the variable in question correlates positively with YDEV.

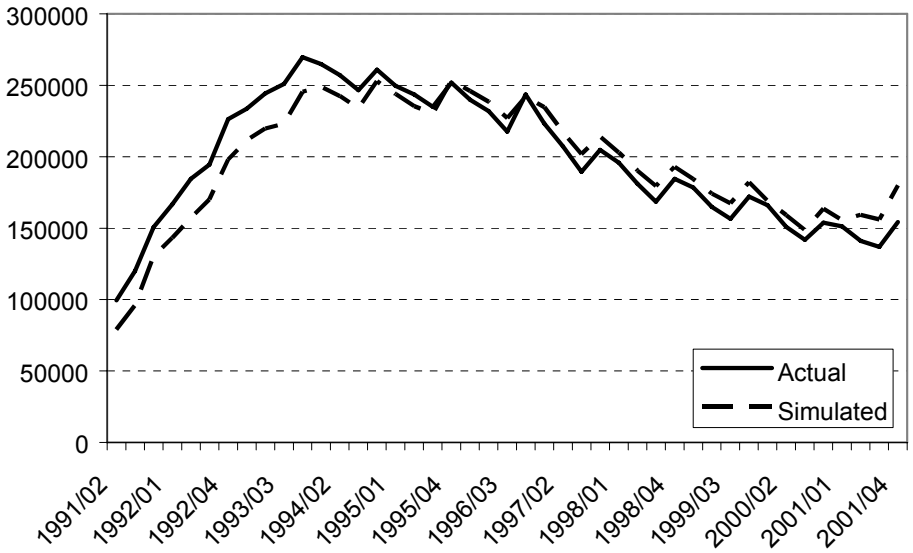

FIGURE 18 Unemployment, male, actual and simulated.

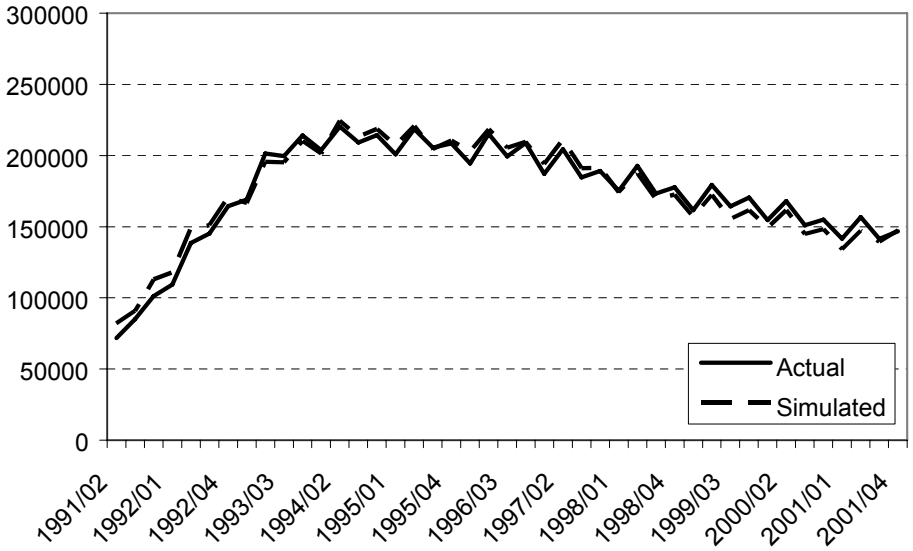

FIGURE 19 Unemployment, female, actual and simulated.

Figure 20 shows the evolution of male and female unemployment, when a recessionary shock is imposed. The unemployment curves in the figure depict the relative difference from the level of unemployment in the reference case, i.e. the relative difference from the unemployment generated by the potential GDP. The simulation detects a marked difference in the evolution of male and female unemployment. The imposed negative shock is translated more rapidly and heavily into male than female unemployment. Towards the end of the recession period both male and female unemployment persist at a higher level for some 5-6 quarters after GDP returns to its potential level. At the end of the recession

period the somewhat late adjustment in female unemployment, lagging slightly behind the male unemployment, can also be observed.

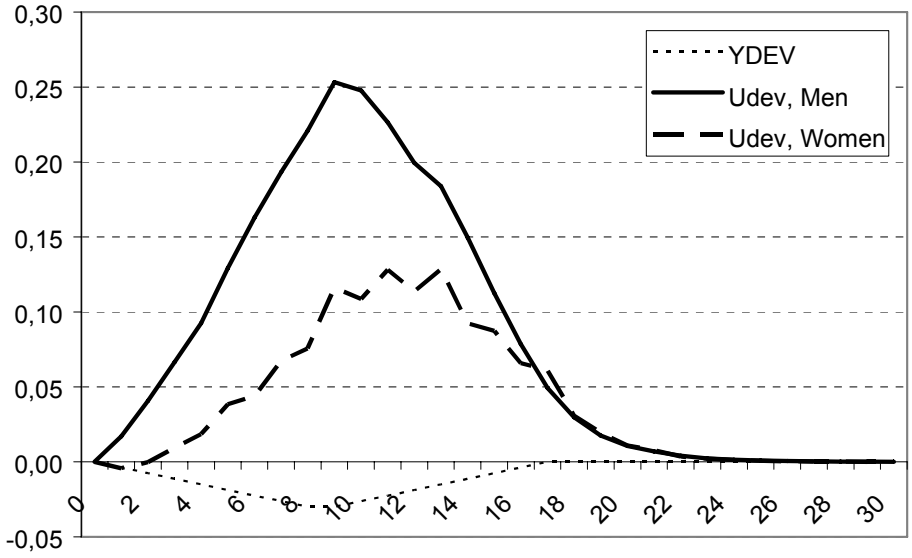

FIGURE 20 Output and unemployment in a recession.

Figures 21 and 22 illustrate the cyclical movements in unemployment flows. In general, the unemployment inflow reacts first and the outflow lags a few quarters behind. The rise in the inflow to unemployment is followed, with a lag of some two quarters, by a rise in the outflow from unemployment. It seems that after the trough the outflow lags behind slightly more, and follows the decline of the inflow by some three quarters. Yet again the adjustment of female unemployment slightly lags behind that of male unemployment.

The simulation results confirm the countercyclicality of both unemployment flows, a result which has also been observed in other countries[23]. Thus a recession results in an increase both in unemployment inflow and outflow. We might see this result as an indication of an underlying matching function: when the number of unemployed searchers increases, more matches are formed[24]. The matching function has been proposed by labour economists to explain the process by which workers and jobs meet and match[25].

23 See e.g. Holmlund & Vejsiu (2001), Blanchard & Diamond (1990).
24 See e.g. Schager (1987) and Edin & Holmlund (1991).
25 See Petrongolo & Pissarides (2001) for an extensive discussion on the matching function.

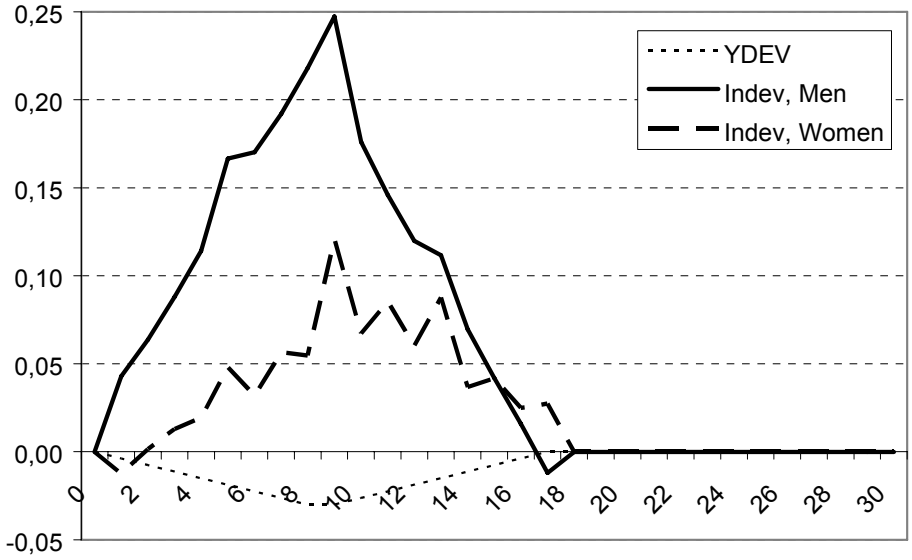

FIGURE 21 The effect of a recession on unemployment inflows.

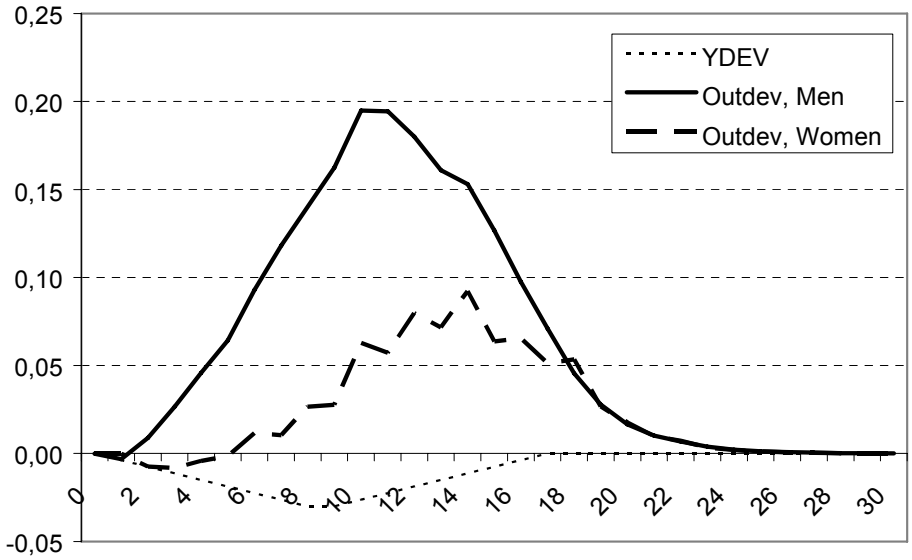

FIGURE 22 The effect of a recession on unemployment outflows.

4 Conclusions

The objective of this paper was to present an aggregate portrait of Finnish labour market flows by gender during a period of extreme macroeconomic turbulence. First, we documented the magnitude and evolution of these flows. Second, we characterised the dynamic properties of the unemployment flows and stocks and simulated the labour market responses of an aggregate shock.

In general, we found considerable labour market activity, measured by transitions, even during the unusually deep recession of the 1990s. Three or four times as many people transited from unemployment to employment during the slump in 1994 as compared to the boom in 1990. We observed an upward shift in the level of the unemployment flows. A similar shift was not observed for the employment and nonparticipation flows. The most distinct gender differences were observed in the unemployment and nonparticipation flows. As expected, the results from the simulations confirmed the countercyclical nature of both the unemployment inflows and outflows. Both the male outflow and inflow rates adjusted to the shock faster than female outflow and inflow rates. In the short run, i.e. within the quarter, the male inflow rate responded to a change in YDEV nearly twice as fast as the female inflow rate.

The observed gender differences in the unemployment flows most likely stem from the gender segregation characterising the Finnish labour market. The extent of labour market segregation in Finland has been acknowledged even by the Council of the European Union, which recommended Finland take action to improve the balance in representation between men and women across both occupations and sectors. The obvious solution is the implementation of pro-active policies targeted at diminishing segregation, but unfortunately such policies are somewhat difficult to formulate.

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APPENDIX

TABLE A1 Estimated transition equations: inflows.

	Inflow	Inflow, Men	Inflow, Women
Constant	5,12 (8,63)	2,37 (4,34)	2,75 (7,97)
$YDEV_t$	-30,67 (10,00)	-19,59 (6,94)	-11,07 (6,21)
$\Delta YDEV_t$	12,47 (1,51)	-7,63 (1,00)	20,10 (4,17)
R^2	0,85	0,69	0,84
SE	0,69	0,63	0,38
DW	1,41	0,92	1,35

Notes: Seasonal dummies are included. The estimation method is ordinary least squares. Estimation period is 1991:2 – 2001:4.

TABLE A2 Estimated transition rate equations: outflowrates.

	Outflowrate	Outflowrate, Men	Outflowrate, Women
Constant	-0,40 (5,19)	-0,47 (4,62)	-0,34 (5,22)
$YDEV_{t-1}$	0,59 (1,51)	0,87 (1,66)	0,84 (2,09)
$\Delta YDEV_t$		0,83 (1,28)	
Lagged dep. var.	0,56 (5,11)	0,50 (3,61)	0,52 (5,09)
Time	0,002 (5,19)	0,002 (2,37)	0,03 (5,13)
R^2	0,94	0,93	0,95
SE	0,03	0,04	0,04
DW	2,02	2,18	2,14

Notes: Seasonal dummies are included. The transition rates are in natural logarithms. The estimation method is ordinary least squares. Estimation period is 1991:3 – 2001:4.

CHAPTER 3

GENDER DIFFERENCES IN TRANSITIONS FROM UNEMPLOYMENT: MICRO EVIDENCE FROM FINLAND

Virve Ollikainen

ABSTRACT[*]. This paper examines gender differences in labour market transitions in Finland. The empirical analysis carried out using multinomial logit model is based on a 1996 sample of unemployed people. The results indicate that women's labour market outcomes are more responsive to family-related background characteristics, while previous unemployment is observed to be particularly scarring on the labour market position of men. According to the results education improves women's labour market position significantly. Education is found to be particularly important in promoting the labour market position of women.

Keywords: labour market transitions, gender differences

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1 Introduction

There is a growing public interest on the differences in the labour market behaviour and treatment of women and men. Continuous and rapid change in the society has lead to changes in the gender roles. Women are participating more and more actively in the labour market, but still the sex segregation and wage differentials remain extensive. Unemployment has become a major problem in many European countries and on the basis of statistics there appears to be some clear differences in male and female unemployment (European Commission, 2001).

Finland offers an interesting case of these differences. An interesting development has appeared in current Finnish unemployment. The unemployment rate of men has fallen steadily since the recession at the end of 1990s, but women's unemployment has persisted at rather a high level; see Figure 1. Traditionally, unemployment has been lower for women than for men in Finland. In 1996 women's unemployment surpassed that of men's for the first time since 1974 and, until present day, has remained higher; see Figure 1.

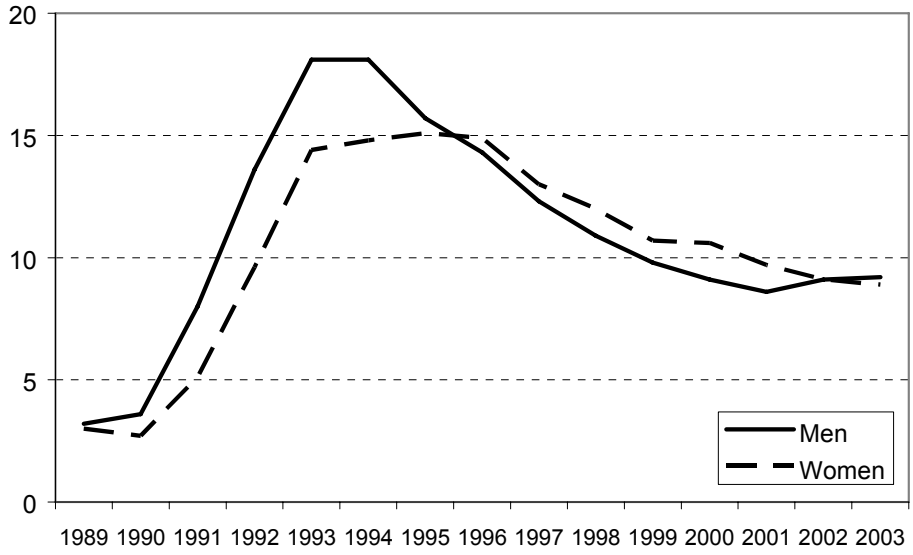

FIGURE 1 Unemployment rates by gender in 1989-2003 (%)

Some interdependence between gender-specific unemployment rates and flows from unemployment to employment can be seen. The male flow into employment is continuously higher than female, and was particularly high during 1992-1994; see Figure 2[26]. This seems reasonable enough given the sharp rise in the unemployment rate of men starting from 1990. Women's unemployment escalated at the same time, but not to quite the same extent as that of men. The flow into employment among women did not rise to the same level as that among men until at the very end of the observation period. Women

[26] For further details on labour market flows, see Myrskylä and Ylöstalo 1997.

have not succeeded in becoming employed to the same extent as men, and therefore women's unemployment rate has remained at a higher level.

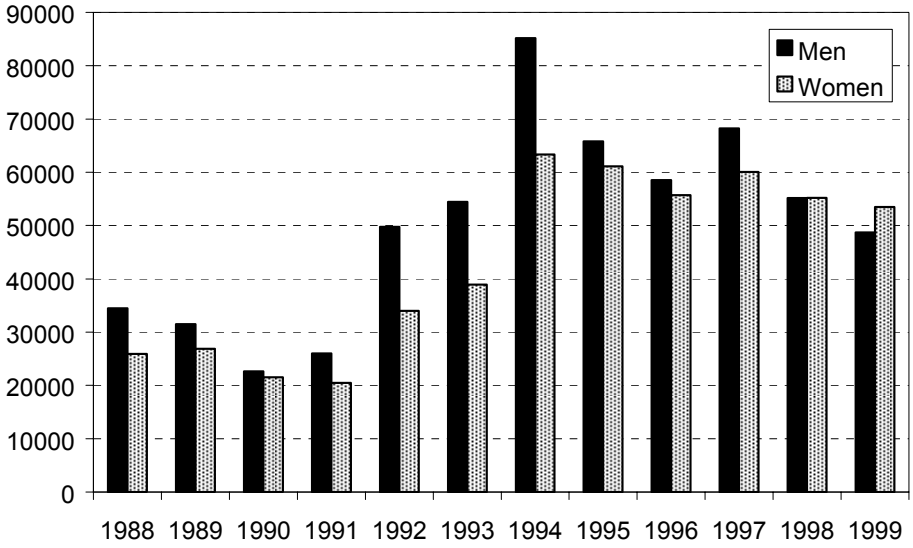

FIGURE 2 Flows of individuals from unemployment to employment for men and women.

There are numerous microeconomic studies investigating transitions into work from unemployment, particularly focusing on the transitions of young workers. However, very few microeconomic analyses considering gender differences in labour market transitions have been performed. Most papers studying exit rates from unemployment overlook the issue of gender behaviour. Both Card & Sullivan (1988) and Meyer (1990) completely disregard the gender issue, by using exclusively male data on their studies of labour market transitions in the United States. Also, Arulampalam & Stewart (1995) study the conditional probability of leaving unemployment in Britain using only male data. The present study aims to extend the previous literature by introducing the gender aspect, where labour market transitions are concerned.

Earlier research has shown that the position of women in the labour market is inferior to that of men (Böheim & Taylor, 2000; Gonzalo & Saarela, 2000; Nilsen, Risa & Torstensen, 2000; Thoursie, 1998). Family-related variables have differing impacts on male and female probabilities of becoming employed. It has been observed that family status and having children weaken in particular women's prospects in the labour market. For men's employment family related variables are either insignificant (Nilsen et al.) or improving factors (Thoursie).

Also, some interdependence has emerged between husbands' and wives' labour supply choices. Although this may in part be attributed to assortative mating, having a working spouse has been found to promote employment substantially (Böheim & Taylor, 2000; Dex et al., 1995; Meghir et al., 1989). Further, according to Duguet & Simonnet (2004) the wife's decision to participate in the labour market significantly increases the probability of

husband's participation, whereas the wife's participation decision does not appear to be dependent on the husband's participation.

The aim of the present study is to analyse gender differences in the probabilities of transiting from unemployment into employment, studying and non-participation. These three different destinations for the transitions are examined, since it seems obvious that a person transiting into employment might differ from a person transiting into e.g. non-participation. The empirical analysis is carried out using the multinomial logit model. For simplicity, in this paper we chose to focus on the transition probabilities, therefore utilising this modelling framework. The duration of the unemployment period leading to the transitions will be better taken into account in Chapter 4 of this thesis. The results confirm the existence of gender differences in labour market transitions. Women are more responsive to family-related background characteristics while previous unemployment has a more scarring effect on the position of men in the labour market. Education is found to be particularly important in promoting the labour market position of women.

2 Data and variables

This paper is based on data from Statistics Finland. This comprehensive data set consists of 350 000 Finns aged 12-75 and contains information from several official registers[27]. The information comprises some individual demographic and socio-economic characteristics, details of unemployment and involvement in active labour market programmes. Altogether, over 200 variables are available.

The objective of this paper is to study the first transition out of unemployment of newly unemployed individuals, i.e. transitions from unemployment into employment, education and non-participation. The base year of the data is 1996, and hence the information from that year has fewest gaps. Thus, individuals who became newly unemployed during the first quarter of the year 1996 were chosen for the sample. This relatively short observation period ensures that all observed transitions are comparable and, as far as possible, unaffected by business cycle fluctuations. Those who retired, were performing military service or were registered as students were excluded from the sample. Consequently, only factually unemployed persons remain in the sample, which contains 9603 individuals.

The existence of occupational segregation in the Finnish labour market is beyond dispute (Savola, 2000). Due to the limitations of the data occupational segregation will not be addressed in this study. Although it would be an interesting and relevant issue, due to the size of the sample and the vast

27 The data is a 10 per cent random sample of 350 000 people taken from the entire Finnish population.

segregation in the Finnish labour market, occupational variables had to be excluded[28].

The end state labour market position of the individuals in the study is defined by their actions during the last month of 1996. In addition to the exit rates from unemployment to employment, it is also important to view the differences between women and men in other transitions from unemployment. In particular, women's transitions into non-participation are expected to be influenced by e.g. child care. Thus the dependent variable indicates whether the individual is unemployed, employed, studying[29] or not participating in the labour force at the end of 1996.

The independent variables consist of personal variables, such as marital status, the existence of young children in the household, education, income and age. All of these variables are implied by Pencavel (1986) and by Killingsworth & Heckman (1986) to affect the labour supply of both women and men. In particular marriage and having young children are expected to create gender differences by increasing men's and decreasing women's labour supply (Pencavel 1986; Killingsworth & Heckman, 1986).

Some labour market related variables such as experience, unemployment history and unemployment rates are also included. The use of these variables is motivated by Hamermesh (1986) and by other empirical studies, e.g. Nilsen et al. (2000) and Hämäläinen (1998). Occupational variables were tried out, but later excluded, due to data limitations and because the women and men in the sample were highly segregated job-wise. Personal income was also tried out, but excluded, because the variable clearly correlated with most of the variables in the model. The estimations are carried out separately for men and women, because it is predicted that some variables may have differing impacts for the two genders. The breakdown of the data and all the independent variables with their mean values are described in Tables A1 to A5 in the Appendix.

3 Empirical model

The probability of labour market transitions is estimated using the multinomial logit model[30]. The model will indicate which factors affect the probability of being observed in different end states at the end of 1996, conditional on becoming unemployed during the first quarter of 1996. The probabilities for the individual choices are

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28 In the current sample we have several single-sex dominated sectors, e.g. healthcare and construction, where we might have 500 men and 5 women, or vice versa, in a group. This does not yield very reliable or interpretable results. The exclusion of the occupational variables leaves the coefficients of the other explanatory variables relatively unaffected.

29 All full time students older than 16 are defined "studying", unless they are still in comprehensive school. Full time studies are defined as any studies leading to a degree.

30 For discussion of the multinomial logit model see Greene (2000).

$$P(\text{choice j}) = \frac{e^{\beta_j' x_i}}{1 + \sum_{k=1}^{J} e^{\beta_k' x_i}} \quad , j = 0,...,J.$$

The coefficients in this model are difficult to interpret as such. Therefore the marginal effects, the partial derivatives of the transition probabilities, are calculated as

$$\frac{\partial P_{ij}}{\partial x_i} = P_{ij}[\beta_j - \sum_{k=1}^{J} P_{ik}\beta_k].$$

The use of the multinomial logit model requires that the Independence of Irrelevant Alternatives condition holds. This condition has been tested by the method developed in Hausman and McFadden (1984)[31]. According to the test the IIA condition holds. In order to confirm the validity of the model framework, also the Ben-Akiva & Lerman (1985) segmentation test has been performed. The result of this test confirms that there is gender-wise segmentation in the labour market that should be accounted for by estimating separate models for men and women (see Tables A6 to A8 in the Appendix for the test statistics).

4 Results

The estimated coefficients of the labour market transitions for both men and women are presented in Tables A6 to A8 in the Appendix[32]. However, it is difficult to interpret these parameters by themselves. The majority of the interpretations are based on marginal effects, the partial derivatives of the transition probabilities, which are reported in Tables 1, 2 and 3. According to the results most of the coefficients are statistically significant. Some of the results have also been illustrated by calculating and reporting the probabilities of different transitions.

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31 The omitted category was non-participation. Both the unrestricted and restricted models were estimated for the test. For further details, see Hausman and McFadden 1984.

32 The softwares used are Limdep and Stata. All the results referred to but not shown here are available from the author on request.

TABLE 1 Marginal effects of the multinomial logit model for the whole sample.

	UNEMPLOYED		EMPLOYED		STUDYING		NON-PART.	
INDIVIDUAL CHARACTERIST.	Marg. eff.	s.e.	Marg. eff.	s.e.	Marg. eff.	s.e.	Marg. eff.	s.e.
Female	-0,51	(0,023)	-4,00***	(0,014)	1,59**	(0,007)	2,93***	(0,005)
Age 15-24	-39,23***	(0,078)	16,27***	(0,056)	22,90***	(0,068)	0,05	(0,016)
Age 25-39	-27,99***	(0,095)	22,21***	(0,058)	5,32***	(0,018)	0,46	(0,017)
Age 40-54	-19,92**	(0,098)	15,24***	(0,053)	4,55**	(0,018)	0,14	(0,010)
Married	-4,94	(0,042)	8,61***	(0,029)	-0,69	(0,013)	-2,98***	(0,008)
Cohabiting	0,44	(0,043)	5,62*	(0,029)	-3,37***	(0,010)	-2,69***	(0,007)
Age of youngest child 0 years	-25,93***	(0,025)	-10,62***	(0,024)	-3,51**	(0,014)	40,06***	(0,034)
Age of youngest child 1-3 years	7,60*	(0,045)	-9,94***	(0,018)	0,80	(0,013)	1,54*	(0,008)
Age of youngest child 4-7 years	1,97	(0,045)	-3,35	(0,025)	0,68	(0,015)	0,69	(0,008)
Post-comprehensive education	-4,28	(0,026)	4,68***	(0,014)	1,55**	(0,007)	-1,96***	(0,005)
Higher education	-13,71***	(0,039)	13,48***	(0,033)	2,19*	(0,012)	-1,96**	(0,008)
Home owner	0,69	(0,028)	1,41	(0,017)	-0,85	(0,008)	-1,25**	(0,005)
Disability	11,28*	(0,060)	-12,17***	(0,022)	-0,13	(0,015)	1,02	(0,010)
LABOUR MARKET VARIABLES								
Residential unemployment rate	0,62**	(0,003)	-0,61***	(0,002)	-0,01	(0,001)	0,00	(0,001)
Residential area urban	1,20	(0,029)	-3,78**	(0,018)	2,91***	(0,008)	-0,32	(0,006)
Residential area population centre	-0,50	(0,036)	-1,07	(0,022)	1,62*	(0,009)	-0,05	(0,007)
Partial professional skills	3,49	(0,031)	3,72**	(0,019)	-6,93***	(0,010)	-0,28	(0,007)
Complete professional skills	1,11	(0,033)	3,59*	(0,019)	-3,89***	(0,009)	-0,81	(0,006)
Unemployed 1995	12,75***	(0,028)	-13,35***	(0,013)	-1,14	(0,007)	1,74***	(0,006)
ALMP participation 1995	12,06***	(0,031)	-10,44***	(0,014)	-0,31	(0,008)	-1,31***	(0,005)
INCOME VARIABLES								
No unemployment benefits	-30,45***	(0,025)	23,74***	(0,043)	0,95	(0,011)	5,76***	(0,012)
Wealth [10^6 FIM]	-11,57	(0,168)	14,92	(0,107)	-3,41	(0,056)	0,06	(0,036)
Liabilities [10^6 FIM]	-13,74	(0,164)	30,45***	(0,115)	-13,95**	(0,061)	-2,76	(0,034)
SPOUSE'S CHARACTERISTICS								
Spouse employed	-5,58	(0,036)	6,59***	(0,024)	-2,44**	(0,011)	1,43*	(0,008)
Spouse has post-comp. education	-2,32	(0,034)	1,96	(0,021)	0,79	(0,011)	-0,43	(0,006)
Spouse has higher education	-3,23	(0,053)	0,73	(0,030)	3,65	(0,023)	-1,15	(0,008)
Spouse's income [10^6 FIM]	24,16	(0,287)	-35,99**	(0,179)	0,21	(0,089)	11,62**	(0,045)
Spouse's wealth [10^6 FIM]	4,32	(0,149)	-0,97	(0,101)	-3,83	(0,053)	0,48	(0,024)
Spouse's liabilities [10^6 FIM]	4,91	(0,096)	-6,47	(0,065)	0,73	(0,030)	0,83	(0,013)

TABLE 2 Marginal effects of the multinomial logit model for women in the sample.

	UNEMPLOYED		EMPLOYED		STUDYING		NON-PART.	
INDIVIDUAL CHARACTERIST.	Marg. eff.	s.e.	Marg. eff.	s.e.	Marg. eff.	s.e.	Marg. eff.	s.e.
Age 15-24	-34,03***	(0,101)	14,08**	(0,068)	20,36**	(0,079)	-0,40	(0,022)
Age 25-39	-22,19*	(0,122)	17,57***	(0,062)	5,72**	(0,025)	-1,10	(0,023)
Age 40-54	-16,85	(0,131)	12,93**	(0,056)	4,31*	(0,023)	-0,39	(0,015)
Married	1,39	(0,061)	0,81	(0,034)	-1,36	(0,018)	-0,84	(0,012)
Cohabiting	5,83	(0,067)	-1,43	(0,032)	-3,48**	(0,015)	-0,91	(0,011)
Age of youngest child 0 years	-48,32***	(0,018)	-17,31***	(0,037)	-2,46	(0,028)	68,08***	(0,041)
Age of youngest child 1-3 years	12,06*	(0,063)	-14,12***	(0,021)	-0,40	(0,016)	2,46**	(0,012)
Age of youngest child 4-7 years	2,25	(0,059)	-3,82	(0,029)	0,38	(0,018)	1,19	(0,011)
Post-comprehensive education	-7,18*	(0,042)	7,89***	(0,018)	1,04	(0,011)	-1,76**	(0,008)
Higher education	-17,79***	(0,055)	19,98***	(0,046)	-0,37	(0,015)	-1,82	(0,012)
Home owner	0,99	(0,041)	2,13	(0,021)	-1,84	(0,011)	-1,28	(0,008)
Disability	11,61	(0,083)	-11,06***	(0,028)	-2,66	(0,018)	2,12	(0,015)
LABOUR MARKET VARIABLES								
Residential unemployment rate	0,44	(0,004)	-0,59***	(0,002)	0,07	(0,001)	0,08	(0,001)
Residential area urban	-0,31	(0,043)	0,17	(0,023)	1,16	(0,012)	-1,02	(0,008)
Residential area population centre	-1,40	(0,055)	0,81	(0,027)	0,90	(0,014)	-0,31	(0,011)
Partial professional skills	3,48	(0,043)	2,05	(0,025)	-5,08***	(0,014)	-0,46	(0,009)
Complete professional skills	4,15	(0,047)	0,47	(0,023)	-4,30***	(0,013)	-0,32	(0,009)
Unemployed 1995	12,09***	(0,041)	-11,45***	(0,018)	-2,29**	(0,010)	1,66**	(0,008)
ALMP participation 1995	10,14**	(0,043)	-9,01***	(0,018)	0,84	(0,011)	-1,97***	(0,007)
INCOME VARIABLES								
No unemployment benefits	-28,50***	(0,040)	25,69***	(0,064)	-1,81	(0,015)	4,63***	(0,016)
Wealth [10^6 FIM]	5,45	(0,263)	-7,44	(0,150)	-5,77	(0,087)	7,77	(0,049)
Liabilities [10^6 FIM]	-28,86	(0,270)	34,73**	(0,149)	-6,75	(0,088)	0,88	(0,046)
SPOUSE'S CHARACTERISTICS								
Spouse employed	-6,66	(0,053)	8,34***	(0,030)	-2,20	(0,015)	0,53	(0,011)
Spouse has post-comp. education	-1,95	(0,047)	2,36	(0,026)	0,31	(0,015)	-0,72	(0,009)
Spouse has higher education	-1,54	(0,072)	-1,36	(0,035)	3,89	(0,030)	-0,99	(0,012)
Spouse's income [10^6 FIM]	14,56	(0,331)	-24,90	(0,187)	1,76	(0,108)	8,57	(0,059)
Spouse's wealth [10^6 FIM]	-2,77	(0,167)	4,49	(0,102)	-3,13	(0,062)	1,40	(0,027)
Spouse's liabilities [10^6 FIM]	0,63	(0,089)	-1,30	(0,050)	0,31	(0,029)	0,36	(0,018)

TABLE 3 Marginal effects of the multinomial logit model for men in the sample.

	UNEMPLOYED		EMPLOYED		STUDYING		NON-PART.	
INDIVIDUAL CHARACTERIST.	**Marg. eff.**	**s.e.**	**Marg. eff.**	**s.e.**	**Marg. eff.**	**s.e.**	**Marg. eff.**	**s.e.**
Age 15-24	-42,11***	(0,141)	18,05	(0,113)	25,25*	(0,143)	-1,20	(0,022)
Age 25-39	-32,37*	(0,182)	26,69*	(0,149)	4,84	(0,030)	0,84	(0,020)
Age 40-54	-22,77	(0,186)	17,14	(0,130)	4,79	(0,033)	0,84	(0,015)
Married	-11,41*	(0,065)	13,71**	(0,056)	-0,58	(0,021)	-1,71*	(0,010)
Cohabiting	-3,48	(0,064)	8,56	(0,054)	-3,62**	(0,015)	-1,46	(0,009)
Age of youngest child 0 years	3,41	(0,099)	-0,43	(0,064)	-3,92*	(0,023)	0,94	(0,018)
Age of youngest child 1-3 years	0,19	(0,067)	-2,32	(0,040)	1,95	(0,024)	0,18	(0,012)
Age of youngest child 4-7 years	1,83	(0,075)	-2,80	(0,046)	-0,41	(0,025)	1,38	(0,016)
Post-comprehensive education	-1,88	(0,035)	2,43	(0,021)	1,66*	(0,009)	-2,21***	(0,006)
Higher education	-9,17	(0,060)	7,04	(0,049)	5,21**	(0,023)	-3,08***	(0,008)
Home owner	-0,05	(0,042)	0,73	(0,028)	0,34	(0,013)	-1,02	(0,007)
Disability	9,04	(0,087)	-12,29***	(0,036)	3,26	(0,028)	-0,01	(0,012)
LABOUR MARKET VARIABLES								
Residential unemployment rate	0,81**	(0,004)	-0,60**	(0,002)	-0,11	(0,001)	-0,11*	(0,001)
Residential area urban	2,16	(0,041)	-6,70**	(0,029)	4,09***	(0,011)	0,45	(0,007)
Residential area popul. centre	-0,03	(0,051)	-1,95	(0,036)	1,98	(0,012)	0,00	(0,007)
Partial professional skills	3,85	(0,047)	4,97*	(0,029)	-8,75***	(0,014)	-0,06	(0,009)
Complete professional skills	-1,37	(0,048)	5,67*	(0,031)	-2,87**	(0,014)	-1,43*	(0,008)
Unemployed 1995	13,74***	(0,039)	-15,10***	(0,021)	-0,11	(0,010)	1,47**	(0,007)
ALMP participation 1995	15,18***	(0,049)	-13,36***	(0,022)	-1,46	(0,011)	-0,35	(0,007)
INCOME VARIABLES								
No unemployment benefits	-32,11***	(0,034)	21,80***	(0,063)	3,19*	(0,016)	7,12***	(0,018)
Wealth [10^6 FIM]	-18,76	(0,230)	24,73	(0,161)	-2,14	(0,074)	-3,83	(0,048)
Liabilities [10^6 FIM]	-3,50	(0,218)	21,99	(0,183)	-17,58**	(0,086)	-0,91	(0,044)
SPOUSE'S CHARACTERISTICS								
Spouse employed	-3,64	(0,060)	7,68*	(0,046)	-3,17**	(0,016)	-0,86	(0,010)
Spouse has post-comp. education	-3,18	(0,052)	0,13	(0,037)	1,76	(0,019)	1,30	(0,012)
Spouse has higher education	-4,99	(0,083)	2,33	(0,057)	2,86	(0,038)	-0,20	(0,017)
Spouse's income [10^6 FIM]	12,06	(0,691)	-35,78	(0,476)	16,96	(0,217)	6,77	(0,126)
Spouse's wealth [10^6 FIM]	31,61	(0,359)	-16,16	(0,268)	-9,72	(0,125)	-5,73	(0,075)
Spouse's liabilities [10^6 FIM]	32,90	(0,337)	-28,11	(0,253)	-7,20	(0,115)	2,41	(0,055)

4.1 Descriptive statistics

Means of the variables for the whole sample and summary statistics by labour market status are presented separately for men and women in Tables A3 to A5 in the Appendix. The prevalence of marriage and the existence of young children are consistently lower for men than for women. The figures indicate that the group of unemployed people is somewhat dominated by single men and married women. A clear trend regarding marriage is also the fact that a woman's spouse is much more frequently employed than a man's spouse. Regardless of the end state, women are more likely to have a history of participating in active labour market programmes. This suggests that unemployed women are more active in their search efforts than men. Comparing different end states, men finding employment have somewhat more work experience than women. Marriage and the presence of young children explain a considerable amount of the non-participation of women. The summary statistics also show, as can be expected, that the unemployment rate of the residential area is highest for those remaining in unemployment, although the differences are small.

4.2 Determinants of exit rates

Individual characteristics. In the joint estimation the variable 'female' is significant (See Appendix 3), but the marginal effects of this variable are fairly modest. This suggests that, for the most part, the gender differences are already captured by the other explanatory variables included.

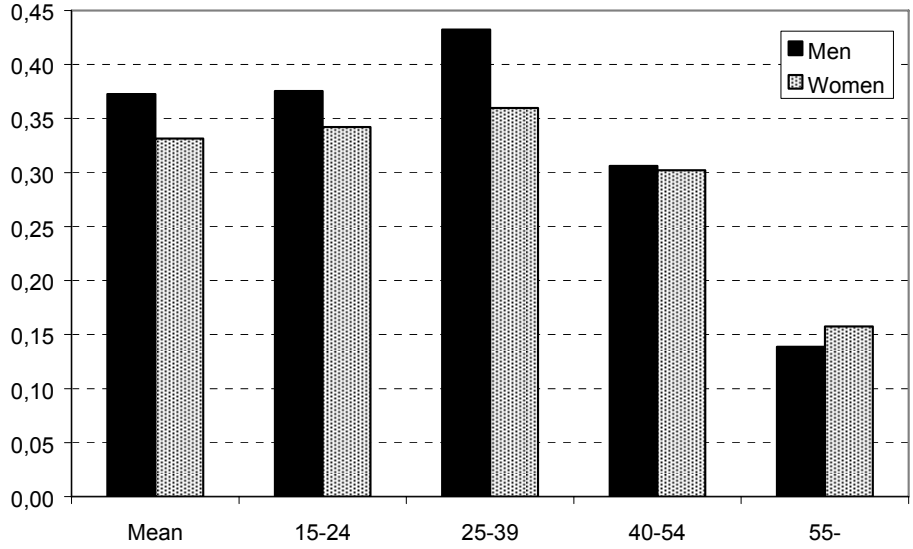

FIGURE 3 Probability of becoming employed for men and women by age.

Age emerges as a rather significant variable in explaining the differences in labour market transitions. It should be noted, though, that age may correlate with other significant factors, like education, skill or income. According to the

results young people have a clear advantage in becoming re-employed after unemployment (Figure 3). In the younger age groups men have a significantly better chance of becoming employed than women. Men aged 25 to 39 have a better probability of up to seven percentage points of becoming employed. In the older age-group women and men are more equal and in the oldest age-group women even have a better chance of becoming employed than their male counterparts.

Marriage seems to have a significant positive effect on the labour market position of men, while for women the effects of marriage are insignificant. For men marriage and cohabitation increase the probability of becoming employed. For cohabiting women on the other hand, the probability of becoming employed is slightly lower, even if insignificant, than for single women. Married and single women have approximately the same probability of becoming employed.

The presence of young children has no significant effect on the position of men in the labour market. However, children are crucial in relation to the labour market position of women. Owing to the Finnish social security system, it is impossible for a mother to be both on maternity leave and unemployed[33]. Therefore the probability of staying unemployed is crucially lower for mothers of infants, as are the probabilities of employment and studying, while the probability for non-participation is high. When the child is slightly older, the mother has a significantly lower probability of becoming employed and a correspondingly higher probability of staying unemployed than a woman without children.

Education appears to be particularly important in promoting the labour market position of women (Figure 4). Educated women find employment with a considerably higher probability than their uneducated counterparts. With only comprehensive education women have a much lower probability of becoming employed than men, whereas with higher education women have an even better probability of employment than similar men. Dougherty's (2005) findings of higher returns to schooling for women than for men support our results, as he finds that schooling reduces the male-female gap attributable to factors such as discrimination, tastes and circumstances. Of course the possibility of selection bias should not be forgotten here. For men education seems to play a more important role in preventing displacement, as educated men are less likely to transit out of the labour force. Individuals, especially men with high initial education, tend to transit to further schooling. An educated person may not want long-term unemployment on his record, but in preference seeks for further education.

Home ownership has no significant impact on labour market status. Disability has an expected and significant scarring effect on the probability of

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33 The registry system in Finland is such that an employed person taking maternity leave is registered as employed, since she is entitled to return to her former duties at work. However, an unemployed person taking maternity leave is registered as being out of the labour force. When on the full time child care leave and individual is considered to be out of the labour force.

becoming employed. The probability of remaining unemployed is correspondingly high. The effects of disability on studying and non-participation are insignificant.

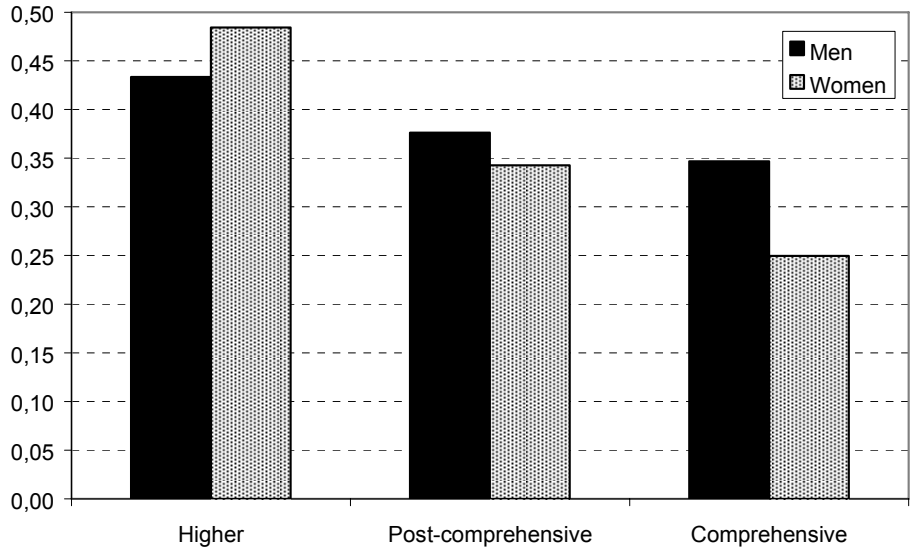

FIGURE 4 Probability of becoming employed for men and women by education.

Labour market variables. The unemployment rate of the unemployed individual's residential area has a statistically significant but rather small effect on the probability of employment. Whether the residential area is urban or rural does not have any particular effect on the labour market position of women. For men an urban residential area weakens the probability of employment by nearly seven percentage points. It also slightly increases the probability of studying.

Professional skills have only a slight effect on labour market transitions. Skills clearly reduce the probability of further education and non-participation for both men and women. For men professional skills improve the probability of becoming employed. For women however, it seems that enhanced professional skills may even increase the probability of remaining unemployed. It is possible that good professional skills make an individual more selective about her employment.

History of unemployment and participation in active labour market programmes are associated with a substantially higher probability of staying unemployed and a lower probability of becoming employed for both men and women (Figure 5). The scarring effect of previous unemployment is particularly clear in the case of men. This result has also been found in Böheim & Taylor (2000). Participation in active labour market programmes is damaging to the labour market position of both men and women. However, the participants in these programmes are to a large extent long-term unemployed. This is a factor

which obviously shows up in the results. It should not therefore be concluded that the programmes themselves induce unemployment[34].

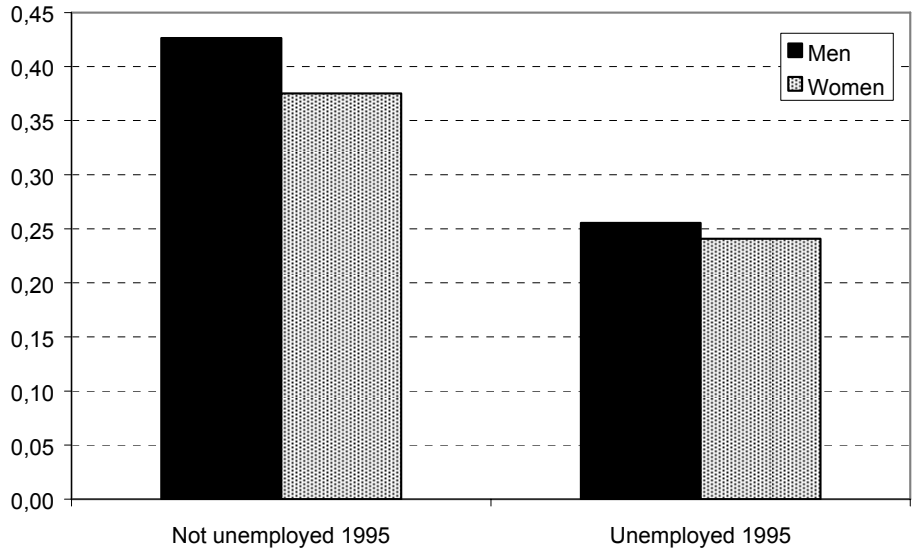

FIGURE 5 Probability of becoming employed for men and women by previous unemployment.

Income variables. Not being in receipt of unemployment benefits promotes the probability of employment substantially for both men and women. The likelihood of remaining unemployed is profoundly diminished, while the likelihood of non-participation is increased. Although this result is somewhat striking, it is in accordance with the previous findings (in Finland see e.g. Pääkkönen; 1990 and Lilja; 1992). It should be noted, though, that this variable includes all the individuals with such short unemployment periods that they weren't eligible for benefits. Wealth improves the probability of becoming employed for men but has no significant effect on the labour market position of women[35]. A high level of liabilities significantly increases both male and female probabilities of becoming employed and decreases the probability of staying unemployed[36]. This effect is particularly strong for women.

Spouse's characteristics. A spouse's employment is linked to a higher probability of employment and overall to closer attachment to the labour market for both men and women. This is consistent with previous findings of the correlation between spouses' unemployment, see e.g. Dex et al. (1995). Furthermore, assortative mating may be at work here[37]. After controlling for

34 For further analysis of the impact of ALMP on employment, see e.g. Hämäläinen 1998.

35 It should be noted that the unit of wealth and other income variables cited is 1 million marks.

36 All income variables, including wealth and liabilities, come from the tax administration registers. Therefore, we assume the information to be relatively reliable and, as far as possible, independent between spouses, since Finland exercises separate assessment of the spouses in taxation.

37 On Assortative mating see e.g. Mare (1991).

spouse's employment status, his/her education has no significant effect on the position of the wife/husband in the labour market. A husbands' increasing income decreases the probability of employment for the wife, although the effect does not appear to be significant. For the husbands, both the wealth and liabilities of their wives increase the probability of staying unemployed and decrease the probability of becoming employed[38].

4.3 Representative labour market transition probabilities

In order to achieve a general view of the estimation results, three representative types have been created. The labour market transition probabilities are presented for the average person, a person with a strong position in the labour market and a person whose position in the labour market is poor[39]. These types are purely theoretical and only meant as illustrative examples to better depict the gender differences in the labour market positions of otherwise similar men and women.

The probability of becoming employed is higher for men than women in all three labour market positions (Figure 6). The significance of this conclusion is verified by the marginal effects in Table 1, which indicate that even after controlling for all other factors in our model gender still has a significant effect on the probability of employment. In all cases men have up to six percentage points higher probability of becoming employed. For women whose labour market position is poor the probability of becoming employed is negligible. The differences between the three types are extensive, considering that the probability of becoming employed is 65-70 percentage points higher for both men and women with a strong than a poor labour market position.

On average the probability of returning to education is higher by a few percentage points for women than for men (Figure 7). While the probability of studying remains constant for men with an average and strong labour market position, for women there is some difference. Women on average and particularly in a poor labour market position have a much higher incentive to seek further education than their male counterparts. Individuals with high

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38 Within the limits of the data it was not possible to analyse the effects of spousal unemployment benefits. See Cullen and Gruber (2000) for such an analysis.

39 i) The labour market transition probabilities for the average man and woman are calculated by setting all the variables in the model to their mean values. ii) A man or a woman with a strong labour market position is 25-39 years old, married with no children, a home owner, has higher education and is not disabled. He/she has complete professional skills and has not been unemployed or participated in ALMP during the preceding two years. The residential area is urban, with an unemployment rate that falls below the sample mean by standard deviation. His/her spouse is working and has higher education. The income variables are set to their mean values. The unemployment benefits variable is set to zero. iii) A man or a woman with a poor labour market position is 25-39 years old, married with one child aged 4-7, has only comprehensive education, is not a home owner and is not disabled. He/she has no professional skills, and has been unemployed in 1995 and participated in ALMP in 1995 and 1996. The residential area is urban, with unemployment rate that exceeds the sample mean by standard deviation. His/her spouse is not working and has only comprehensive education. The income variables are set to their mean values. The unemployment benefits variable is set to zero.

initial education are also prone to returning for further studies, which might seem unexpected, but the same finding also emerged in Nilsen, Risa & Torstensen (2000). It appears that educated people do not wish to stay unemployed for a lengthy period, but in preference seek for other activities, such as furthering their education.

FIGURE 6 Probability (%) of becoming employed for men and women by labour market position.

FIGURE 7 Probability (%) of education for men and women by labour market position.

The probability of non-participation is clearly associated with labour market position, particularly for men (Figure 8). It seems logical that unemployed men who have a poor position in the labour market are the most likely to leave the labour force. In contrast, unemployed women are more likely to leave the labour force in average rather than in poor labour market position. Statistics show that particularly during economic downturns women in Finland are more likely to exit the labour market. It is possible that women seek to make the most of their unemployment by having children during a time when they are already excluded from working life. If already having a family, it may be easier on the woman to retire home to take care of the children when employment seems unlikely.

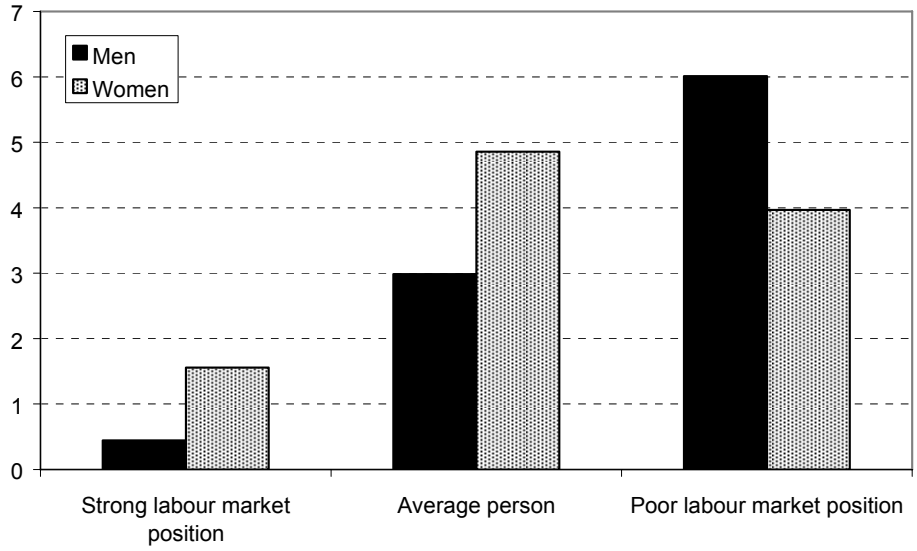

FIGURE 8 Probability (%) of non-participation for men and women by labour market position.

As expected, the probability of staying unemployed is slightly greater for women than for men (Figure 9). After almost a year of entering unemployment women are more likely to remain unemployed in both the strong and poor labour market position. Women in a strong labour market position have 5 percentage points higher probability of remaining unemployed than their male counterparts. On average women and men have the same probability of remaining unemployed. Women, however, have a lower probability of becoming employed. Instead they transit more towards studying and non-participation.

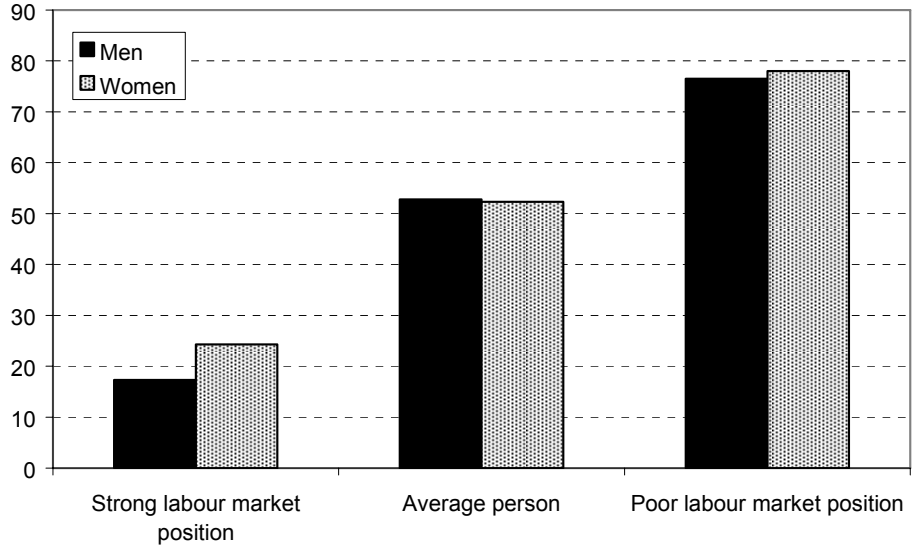

FIGURE 9 Probability (%) of staying unemployed for men and women by labour market position.

5 Summary and conclusions

The objective of this paper was to investigate the factors affecting the labour market transitions of unemployed women and men in Finland. The estimations were carried out separately for men and women, as gender differences were of particular interest. The data consisted of 9603 people who became unemployed at the beginning of 1996. The probability of their subsequent labour market transition was estimated using multinomial logit model.

In general, the results of the estimations were as expected. In line with earlier studies (see e.g. Nilsen, Risa & Torstensen, 2000; Böheim & Taylor, 2000), the labour market position of women was found to be somewhat inferior to that of men, at least with regard to regaining employment. Women's labour market outcomes were also observed to be more responsive to family related background characteristics. Whether this has more to do with choice than chance, remains to be answered. Nevertheless, the family is mainly a negative factor for female, but an insignificant or positive factor for male position in the labour market. This suggests that the existence of a family motivates men to seek employment and women to stay at home, either as non-participants or unemployed.

According to this study unemployment history has a negative effect on the position of women in the labour market. However, unemployment history and participation in active labour market programmes are particularly scarring to men. It seems that men with previous unemployment are penalised more than women in the same position, because women are expected to have a lower attachment to the labour market. This was also the finding made in Gonzalo &

Saarela (2000) and Böheim & Taylor (2000). Even a single previous spell of unemployment can considerably reduce an individual's probability of re-employment. Therefore policies aimed at reducing the incidence of short-term unemployment would also have long run effects.

We find education to be particularly important in promoting the labour market position of women. Dougherty's (2005) findings of higher returns to schooling for women than for men support our results. Naturally, there is a strong positive correlation between education and the probability of employment for both men and women, but for women this effect is considerably large. An educated woman has an even better probability of employment than her male counterpart. Nevertheless, unemployed people with higher education may not be representative of all highly educated people. Those with an optimum probability of employment have already been selected out of the sample. Also, no policy recommendations can be derived from this result, for it is obvious that the amount of education acquired demonstrates the ability of that individual. Able and productive people evidently seek higher education, without the need for any external incentives.

A clear limitation of this study is limiting the data to one transition only. Thus a problem that is inherently dynamic has been treated here in a fairly static way. This is partly due to the method chosen. Since changes in the unemployment rate can basically be disintegrated into changes in the flows into and out of unemployment and changes in the average duration of unemployment, the determinants of unemployment duration would be essential in understanding the problem more extensively. Neither do we have any knowledge of possible multiple transitions occurring during the observation period. In future studies these limitations can be eliminated by e.g. using the hazard rate method, which allows us to observe the gender differences in the duration of unemployment.

This study provides answers to only a few of the questions concerning gender differences in labour market transitions. Many others regarding the position of women in the labour market remain unanswered. However, the existence of gender differences in the labour market is beyond dispute. This study clearly points out the importance of studying the labour market behaviour of women and men separately. Without doing this, there is a risk of confounding effects leading to false conclusions. Some potentially fruitful lines for future research might be opened up by considering the dynamic aspects of gender differences in labour market transitions.

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APPENDIX

TABLE A1 Definitions of the variables.

VARIABLE	DEFINITION
Dependent variable	
Labour market position at the end of 1996	1 if a person is employed, 2 if student, 3 if non-participating, 0 if unemployed. ALMP participants categorised as unemployed
Independent variables	
Female	1 if a person is female, 0 if male
Age in 1996	Dummy-variables designating the age of a person at the end of 1996: 15-24, 25-39, 40-54, 55 upwards (ref.)
Marital status	Dummy-variables designating whether a person is married, cohabiting or single (ref.)
Children	Dummy-variables designating the age of a person's youngest child at the end of 1996: 0 years, 1-3 years or 4-7 years
Education	Dummy-variables designating whether a person has comprehensive (ref.), post-comprehensive or higher education
Home ownership	1 if a person is a home owner, otherwise 0
Disability	1 if a person is disabled, otherwise 0
Residential unemployment rate	The unemployment rate of the person's residential area in 1996
Residential area	Dummy-variables designating whether a person's residential area is urban, population centre or rural (ref.)
Professional skills	Dummy-variables designating whether a person has complete or partial professional skills or no professional skills (ref.)
Unemployment history	1 if a person was unemployed in 1995, otherwise 0
ALMP participation	1 if a has person participated in active labour market programmes in 1995/1996, otherwise 0
Income variables	No unemployment benefits –dummy is 1 if a person has been unemployed in 1996, but has received no unemployment benefits. A person's wealth and liabilities /1 000 000 FIM
Spousal employment	1 if a person's spouse has been employed at least 6 months in 1996, otherwise 0
Spousal education	Dummy-variables designating whether a person's spouse has comprehensive (ref.), post-comprehensive or higher education
Spousal income	Spouse's income, wealth and liabilities /1 000 000 FIM

TABLE A2 Description of the data; breakdown of the dependent variable

	UNEMPLOYED	EMPLOYED	STUDYING	NON-PARTIC.	TOTAL
Men	2465	1812	489	165	4931
Women	2387	1470	483	332	4672
Total	4852	3282	972	497	9603

TABLE A3 Means of the variables for the whole sample, women and men.

	ALL	WOMEN	MEN
	Mean	Mean	Mean
INDIVIDUAL CHARACTERISTICS			
Female	0.49	1.00	0.00
Age 15-24	0.21	0.19	0.22
Age 25-39	0.43	0.46	0.41
Age 40-54	0.32	0.31	0.33
Age 55-	0.05	0.05	0.05
Married	0.40	0.45	0.34
Cohabiting	0.19	0.20	0.18
Single	0.41	0.35	0.47
Age of youngest child 0y.	0.05	0.05	0.04
Age of youngest child 1-3y.	0.11	0.14	0.08
Age of youngest child 4-7y.	0.08	0.11	0.06
Comprehensive education	0.30	0.28	0.32
Post-comprehensive education	0.59	0.59	0.59
Higher education	0.11	0.13	0.09
Home owner	0.46	0.51	0.42
Disability	0.06	0.07	0.05
LABOUR MARKET VARIABLES			
Residential unemployment rate	20.08	20.10	20.06
Residential area urban	0.60	0.62	0.58
Residential area population centre	0.17	0.16	0.18
Residential area rural	0.23	0.22	0.25
Partial professional skills	0.21	0.23	0.18
Complete professional skills	0.50	0.47	0.53
Unemployed 1995	0.30	0.31	0.29
ALMP participation 1995	0.24	0.29	0.19
INCOME VARIABLES			
No unemployment benefits	0.08	0.09	0.08
Wealth [10^6 FIM]	0.03	0.03	0.04
Liabilities [10^6 FIM]	0.03	0.03	0.04
SPOUSAL CHARACTERISTICS			
Spouse employed	0.38	0.46	0.31
Spouse has comprehensive education	0.59	0.56	0.62
Spouse has post-comp. education	0.33	0.36	0.31
Spouse has higher education	0.08	0.09	0.07
Spouse's income [10^6 FIM]	0.06	0.08	0.04
Spouse's wealth [10^6 FIM]	0.03	0.04	0.02
Spouse's liabilities [10^6 FIM]	0.04	0.06	0.02

TABLE A4 Summary statistics by end status, **women.**

	Unemployment Mean	**Employment** Mean	**Studying** Mean	**Non-particip.** Mean
INDIVIDUAL CHARACTERISTICS				
Age 15-24	0.13	0.18	0.46	0.22
Age 25-39	0.43	0.51	0.35	0.60
Age 40-54	0.37	0.29	0.18	0.16
Age 55-	0.07	0.02	0.01	0.03
Married	0.47	0.47	0.29	0.51
Cohabiting	0.19	0.21	0.18	0.24
Single	0.34	0.33	0.53	0.25
Age of youngest child 0y.	0.00	0.04	0.04	0.49
Age of youngest child 1-3y.	0.15	0.13	0.12	0.11
Age of youngest child 4-7y.	0.11	0.11	0.08	0.06
Comprehensive education	0.34	0.20	0.25	0.29
Post-comprehensive education	0.58	0.61	0.66	0.56
Higher education	0.08	0.20	0.10	0.15
Home owner	0.57	0.58	0.48	0.51
Disability	0.10	0.04	0.04	0.07
LABOUR MARKET VARIABLES				
Residential unemployment rate	20.44	19.47	20.11	20.35
Residential area urban	0.61	0.64	0.67	0.58
Residential area population centre	0.16	0.15	0.15	0.18
Residential area rural	0.23	0.21	0.18	0.24
Partial professional skills	0.22	0.25	0.20	0.25
Complete professional skills	0.53	0.46	0.28	0.40
Unemployed 1995	0.39	0.19	0.25	0.29
ALMP participation 1995	0.35	0.19	0.34	0.22
INCOME VARIABLES				
No unemployment benefits	0.03	0.17	0.08	0.14
Wealth [10^6 FIM]	0.04	0.03	0.02	0.03
Liabilities [10^6 FIM]	0.02	0.04	0.02	0.03
SPOUSAL CHARACTERISTICS				
Spouse employed	0.44	0.54	0.31	0.57
Spouse has comprehensive ed.	0.58	0.51	0.66	0.46
Spouse has post-comp. education	0.34	0.39	0.27	0.43
Spouse has higher education	0.08	0.11	0.08	0.10
Spouse's income [10^6 FIM]	0.08	0.08	0.05	0.09
Spouse's wealth [10^6 FIM]	0.04	0.04	0.02	0.04
Spouse's liabilities [10^6 FIM]	0.05	0.07	0.04	0.07
Number of observations	**2387**	**1470**	**483**	**332**

TABLE A5 Summary statistics by end status, **men.**

	Unemployment Mean	**Employment** Mean	**Studying** Mean	**Non-particip.** Mean
INDIVIDUAL CHARACTERISTICS				
Age 15-24	0.18	0.18	0.61	0.24
Age 25-39	0.39	0.47	0.22	0.45
Age 40-54	0.36	0.32	0.17	0.28
Age 55-	0.07	0.03	0.00	0.02
Married	0.32	0.43	0.19	0.24
Cohabiting	0.18	0.20	0.14	0.17
Single	0.50	0.37	0.67	0.59
Age of youngest child 0y.	0.04	0.05	0.02	0.04
Age of youngest child 1-3y.	0.07	0.10	0.06	0.07
Age of youngest child 4-7y.	0.06	0.08	0.03	0.06
Comprehensive education	0.35	0.29	0.27	0.47
Post-comprehensive education	0.58	0.60	0.65	0.48
Higher education	0.07	0.11	0.08	0.05
Home owner	0.56	0.62	0.59	0.45
Disability	0.06	0.02	0.04	0.05
LABOUR MARKET VARIABLES				
Residential unemployment rate	20.52	19.70	19.50	18.99
Residential area urban	0.58	0.54	0.68	0.66
Residential area population centre	0.17	0.19	0.17	0.15
Residential area rural	0.26	0.27	0.15	0.19
Partial professional skills	0.19	0.19	0.13	0.24
Complete professional skills	0.55	0.57	0.26	0.41
Unemployed 1995	0.38	0.17	0.26	0.38
ALMP participation 1995	0.25	0.10	0.17	0.17
INCOME VARIABLES				
No unemployment benefits	0.02	0.13	0.13	0.21
Wealth [10^6 FIM]	0.04	0.04	0.02	0.02
Liabilities [10^6 FIM]	0.03	0.05	0.02	0.02
SPOUSAL CHARACTERISTICS				
Spouse employed	0.28	0.39	0.15	0.21
Spouse has comprehensive ed.	0.66	0.54	0.75	0.70
Spouse has post-comp. education	0.29	0.38	0.20	0.27
Spouse has higher education	0.05	0.09	0.05	0.04
Spouse's income [10^6 FIM]	0.04	0.05	0.02	0.03
Spouse's wealth [10^6 FIM]	0.02	0.02	0.01	0.01
Spouse's liabilities [10^6 FIM]	0.02	0.02	0.01	0.01
Number of observations	**2465**	**1812**	**489**	**165**

TABLE A6 The determinants of labour market position for the whole sample.

	EMPLOYED VS. UNEMPLOYED		STUDYING VS. UNEMPLOYED		NON-PART. VS. UNEMPLOYED	
INDIVIDUAL CHARACTERISTICS	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**
Female	-0,11**	(0,053)	0,19**	(0,079)	0,68***	(0,115)
Age 15-24	1,61***	(0,163)	3,53***	(0,474)	0,88**	(0,346)
Age 25-39	1,48***	(0,148)	2,17***	(0,468)	0,70**	(0,325)
Age 40-54	1,03***	(0,139)	1,97***	(0,461)	0,41	(0,312)
Married	0,39***	(0,094)	0,05	(0,162)	-0,57***	(0,202)
Cohabiting	0,16*	(0,094)	-0,42***	(0,153)	-0,72***	(0,205)
Age of youngest child 0 years	0,36**	(0,146)	0,41*	(0,233)	3,46***	(0,177)
Age of youngest child 1-3 years	-0,54***	(0,088)	-0,09	(0,145)	0,22	(0,191)
Age of youngest child 4-7 years	-0,16*	(0,092)	0,03	(0,167)	0,15	(0,214)
Post-comprehensive education	0,26***	(0,057)	0,26***	(0,088)	-0,32***	(0,117)
Higher education	0,75***	(0,093)	0,59***	(0,155)	-0,06	(0,198)
Home owner	0,03	(0,062)	-0,11	(0,103)	-0,30**	(0,131)
Disability	-0,72***	(0,122)	-0,26	(0,178)	-0,05	(0,209)
LABOUR MARKET VARIABLES						
Residential unemployment rate	-0,03***	(0,006)	-0,02*	(0,009)	-0,01	(0,012)
Residential area urban	-0,15**	(0,063)	0,31***	(0,104)	-0,10	(0,133)
Residential area population centre	-0,02	(0,078)	0,22*	(0,129)	0,00	(0,166)
Partial professional skills	0,04	(0,074)	-0,64***	(0,107)	-0,14	(0,144)
Complete professional skills	0,09	(0,072)	-0,43***	(0,114)	-0,21	(0,145)
Unemployed 1995	-0,75***	(0,058)	-0,40***	(0,087)	0,06	(0,116)
ALMP participation 1995	-0,64***	(0,065)	-0,31***	(0,090)	-0,60***	(0,134)
INCOME VARIABLES						
No unemployment benefits	1,57***	(0,103)	1,06***	(0,143)	1,88***	(0,162)
Wealth [10^6 FIM]	0,76**	(0,332)	-0,08	(0,680)	0,30	(0,837)
Liabilities [10^6 FIM]	1,31***	(0,301)	-1,07	(0,737)	-0,63	(0,785)
SPOUSE'S CHARACTERISTICS						
Spouse employed	0,34***	(0,078)	-0,14	(0,140)	0,45***	(0,169)
Spouse has post-comp. education	0,12	(0,073)	0,14	(0,134)	-0,04	(0,157)
Spouse has higher education	0,10	(0,114)	0,39**	(0,198)	-0,21	(0,248)
Spouse's income [10^6 FIM]	-1,67***	(0,623)	-0,56	(1,105)	1,65	(1,031)
Spouse's wealth [10^6 FIM]	-0,17	(0,297)	-0,50	(0,651)	0,05	(0,533)
Spouse's liabilities [10^6 FIM]	-0,32	(0,232)	-0,08	(0,364)	0,13	(0,273)
Constant	-1,16***	(0,206)	-3,73***	(0,520)	-2,85***	(0,446)

Number of obs	9603	Number of transitions to employment	3282
LR chi2(87)	2792,64	*/**/*** significant at the 10 / 5 / 1% level	
Log likelihood	-9137,77		
Pseudo R2	0,133		
IIA chi2(60)	-92,06		

TABLE A7 The determinants of labour market position for **women** in the sample.

	EMPLOYED VS. UNEMPLOYED		STUDYING VS. UNEMPLOYED		NON-PART. VS. UNEMPLOYED	
INDIVIDUAL CHARACTERISTICS	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**
Age 15-24	1,43***	(0,247)	2,79***	(0,543)	0,81*	(0,447)
Age 25-39	1,25***	(0,226)	1,75***	(0,534)	0,42	(0,414)
Age 40-54	0,95***	(0,215)	1,50***	(0,524)	0,21	(0,388)
Married	-0,01	(0,138)	-0,18	(0,211)	-0,21	(0,269)
Cohabiting	-0,20	(0,142)	-0,55***	(0,207)	-0,37	(0,276)
Age of youngest child 0 years	1,91***	(0,392)	2,41***	(0,433)	5,81***	(0,396)
Age of youngest child 1-3 years	-0,86***	(0,120)	-0,31*	(0,182)	0,29	(0,235)
Age of youngest child 4-7 years	-0,19	(0,124)	-0,02	(0,200)	0,26	(0,267)
Post-comprehensive education	0,47***	(0,091)	0,26**	(0,127)	-0,17	(0,172)
Higher education	1,11***	(0,134)	0,40*	(0,215)	0,16	(0,268)
Home owner	0,05	(0,090)	-0,22	(0,138)	-0,29	(0,177)
Disability	-0,72***	(0,166)	-0,56**	(0,253)	0,09	(0,275)
LABOUR MARKET VARIABLES						
Residential unemployment rate	-0,03***	(0,009)	0,00	(0,013)	0,00	(0,017)
Residential area urban	0,01	(0,096)	0,13	(0,146)	-0,20	(0,184)
Residential area population centre	0,06	(0,121)	0,14	(0,183)	-0,02	(0,227)
Partial professional skills	-0,02	(0,105)	-0,49***	(0,145)	-0,20	(0,203)
Complete professional skills	-0,08	(0,103)	-0,53***	(0,153)	-0,18	(0,199)
Unemployed 1995	-0,71***	(0,087)	-0,51***	(0,125)	0,00	(0,169)
ALMP participation 1995	-0,59***	(0,089)	-0,17	(0,120)	-0,73***	(0,186)
INCOME VARIABLES						
No unemployment benefits	1,58***	(0,140)	0,70***	(0,215)	1,65***	(0,224)
Wealth [10^6 FIM]	-0,38	(0,564)	-0,61	(1,029)	1,27	(1,045)
Liabilities [10^6 FIM]	1,96***	(0,546)	0,01	(1,062)	1,03	(1,020)
SPOUSE'S CHARACTERISTICS						
Spouse employed	0,46***	(0,119)	-0,06	(0,188)	0,30	(0,230)
Spouse has post-comp. education	0,13	(0,104)	0,08	(0,173)	-0,10	(0,203)
Spouse has higher education	-0,02	(0,159)	0,36	(0,255)	-0,19	(0,311)
Spouse's income [10^6 FIM]	-1,15	(0,716)	-0,32	(1,276)	0,90	(1,270)
Spouse's wealth [10^6 FIM]	0,25	(0,337)	-0,24	(0,737)	0,48	(0,568)
Spouse's liabilities [10^6 FIM]	-0,06	(0,193)	0,02	(0,339)	0,04	(0,394)
Constant	-1,21***	(0,311)	-2,93***	(0,619)	-2,76***	(0,581)

Number of obs	4672	Number of transitions to employment	1470
LR chi2(87)	1768,10	*/**/*** significant at the 10 / 5 / 1% level	
Log likelihood	-4392,70		
Pseudo R2	0,168		
IIA chi2(57)	-10,93		

TABLE A8 The determinants of labour market position for **men** in the sample.

	EMPLOYED VS. UNEMPLOYED		STUDYING VS. UNEMPLOYED		NON-PART. VS. UNEMPLOYED	
INDIVIDUAL CHARACTERISTICS	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**	**Coeff.**	**s.e.**
Age 15-24	1,79***	(0,223)	4,80***	(1,029)	0,66*	(0,593)
Age 25-39	1,68***	(0,201)	3,09***	(1,023)	0,90*	(0,562)
Age 40-54	1,11***	(0,187)	2,90***	(1,014)	0,77*	(0,544)
Married	0,68***	(0,137)	0,22*	(0,266)	-0,30*	(0,375)
Cohabiting	0,33**	(0,136)	-0,38*	(0,242)	-0,43*	(0,367)
Age of youngest child 0 years	-0,09*	(0,177)	-0,59*	(0,404)	0,17*	(0,452)
Age of youngest child 1-3 years	-0,08*	(0,138)	0,19*	(0,249)	0,06*	(0,375)
Age of youngest child 4-7 years	-0,14*	(0,143)	-0,09*	(0,312)	0,32*	(0,377)
Post-comprehensive education	0,12*	(0,076)	0,23*	(0,123)	-0,56***	(0,172)
Higher education	0,44***	(0,135)	0,82***	(0,227)	-0,77*	(0,402)
Home owner	0,02*	(0,087)	0,04*	(0,156)	-0,33*	(0,231)
Disability	-0,65***	(0,182)	0,13*	(0,256)	-0,20*	(0,365)
LABOUR MARKET VARIABLES						
Residential unemployment rate	-0,04***	(0,007)	-0,03**	(0,013)	-0,05***	(0,020)
Residential area urban	-0,25***	(0,085)	0,46***	(0,151)	0,09*	(0,220)
Residential area population centre	-0,06*	(0,103)	0,29*	(0,184)	0,01*	(0,283)
Partial professional skills	0,06*	(0,106)	-0,81***	(0,163)	-0,11*	(0,230)
Complete professional skills	0,21**	(0,102)	-0,28*	(0,175)	-0,41*	(0,235)
Unemployed 1995	-0,80***	(0,080)	-0,31**	(0,123)	0,10*	(0,178)
ALMP participation 1995	-0,79***	(0,097)	-0,50***	(0,142)	-0,44*	(0,223)
INCOME VARIABLES						
No unemployment benefits	1,59***	(0,156)	1,38***	(0,201)	2,26***	(0,242)
Wealth [10^6 FIM]	1,24***	(0,432)	0,24*	(0,912)	-0,62*	(1,504)
Liabilities [10^6 FIM]	0,76**	(0,338)	-1,74*	(1,050)	-0,75*	(1,355)
SPOUSE'S CHARACTERISTICS						
Spouse employed	0,31***	(0,116)	-0,30*	(0,233)	-0,20*	(0,339)
Spouse has post-comp. education	0,08*	(0,106)	0,27*	(0,215)	0,43*	(0,308)
Spouse has higher education	0,20*	(0,171)	0,38*	(0,329)	0,07*	(0,545)
Spouse's income [10^6 FIM]	-1,34*	(1,362)	1,56*	(2,692)	2,01*	(3,983)
Spouse's wealth [10^6 FIM]	-1,16*	(0,662)	-1,69*	(1,516)	-2,01*	(2,334)
Spouse's liabilities [10^6 FIM]	-1,61**	(0,646)	-1,50*	(1,441)	-0,28*	(1,684)
Constant	-1,22***	(0,280)	-4,80***	(1,073)	-1,90**	(0,745)

Number of obs	4931	Number of transitions to employment	1812
LR chi2(87)	1320,68	*/**/*** significant at the 10 / 5 / 1% level	
Log likelihood	-4553,39		
Pseudo R2	0,127		
IIA chi2(57)	-21,69		

CHAPTER 4

THE DETERMINANTS OF UNEMPLOYMENT DURATION BY GENDER IN FINLAND

Virve Ollikainen

ABSTRACT[*]**.** This paper models unemployment duration by gender in Finland using a nationally representative data set from 1997. Overall, we find considerable negative duration dependence in exits from unemployment, with a benefit exhaustion-related upturn after two years of unemployment. These exits are not directed towards employment, but rather towards active labour market programmes and economic inactivity. The longer unemployment periods of men are explained by women's eagerness to participate in active labour market programmes. The results indicate that young children and foreign citizenship decrease women's probability of exiting unemployment, while education appears as a highly positive factor, for women in particular. The propensity to exit unemployment is greatest in rural areas, but mostly explained by exits to active labour market programmes.

Keywords: unemployment duration, gender differences, duration models, employment, labour market transitions

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1 Introduction

Within the last few decades women have demonstrated an increasing commitment to the European labour market, but still have not achieved occupational equality. The concentration of female employment in specific sectors has not changed and, although otherwise viewed as countries of equal opportunities, the Nordic countries along with Finland remain among the most occupationally segregated countries in Europe (Dijkstra, 1997). Thus, it is only natural also to expect gender related behaviour also where unemployment is concerned.

Finland offers an interesting case with respect to this issue, as the country experienced an exceptionally deep recession in the 1990s when the average length of a period of unemployment rose rapidly from under 20 weeks at the beginning of the decade to over 50 weeks in the early 2000s (Figure 1). Statistics clearly show that on average unemployment periods tend to be longer for men than for women, and this gap grew towards 2000s.

In this paper we present evidence on the determinants of unemployment duration for men and women in Finland, using a nationally representative data set from 1997 onwards. The data at our disposal is particularly well suited for this line of research, since we have detailed information about the exact dates when spells of unemployment started and ended for each individual in the sample. Also, we have information of several spells per individual per year, and thus we are able to account for consecutive spells. This paper investigates the duration of unemployment spells ending in employment, participation in active labour market programmes and economic inactivity.

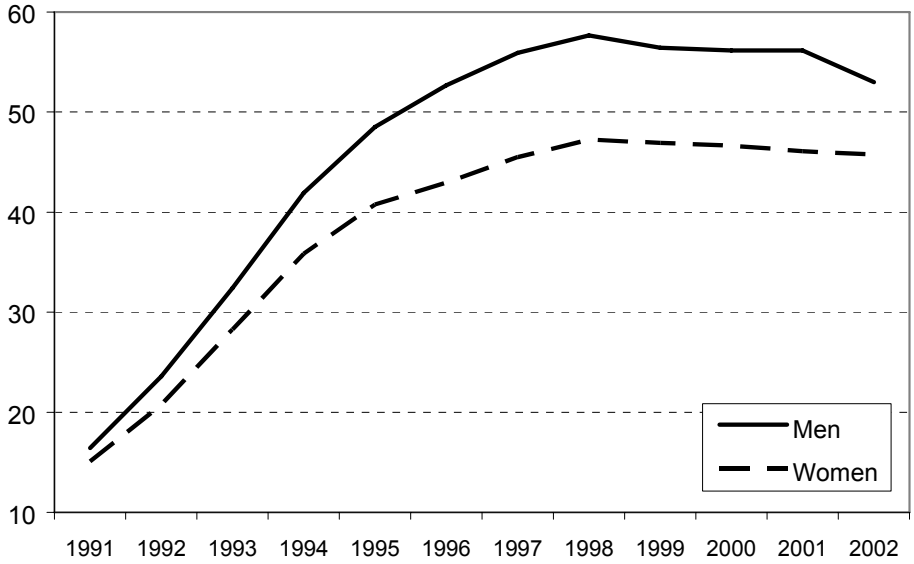

FIGURE 1 Average duration of unemployment for the unemployed jobseekers at the employment service 1991–2002, weeks. Source: Ministry of Labour.

In order to estimate the hazard rates for exits we estimate the piecewise constant hazard model in the single and competing risks framework. Further, we apply the split population modelling framework, which takes into account the fact that some fraction of the sample will never exit unemployment, meaning that the probability of eventual exit is an additional parameter to be estimated, and may be less than one.

Gender specific studies of the duration of spells of unemployment are rare, with some exceptions, e.g. Lynch (1989) who focused on youth unemployment in the United States and Hildreth et al. (1998) who studied unemployment in Britain. The determinants of the duration of unemployment in Britain, with consideration to gender, have also been studied e.g. by Böheim & Taylor (2000), who found that spells of unemployment tend to be shorter among women than men, but that most of this is explained by exits to part-time work and withdrawal from the labour market. A localized Finnish study found that gender differences in exit rates from unemployment are mainly due to men's closer attachment to the labour market, the family responsibilities affecting women and the traditional gender structure of the Finnish labour market (Gonzalo & Saarela, 2000). The present paper aims to shed light on gender-related differences in unemployment duration on a national scale in Finland.

The rest of the paper proceeds as follows. In the next section we briefly describe the Finnish unemployment compensation system as well as the data and the variables used. The empirical models are presented in Section 3. A summary of the statistics and the results of the estimations are presented and interpreted in Section 4, and Section 5 concludes.

2 Descriptive analysis

To put the study of unemployment duration and potential duration dependence into perspective, we start by very briefly describing the Finnish unemployment compensation system. Finland maintains a fairly generous unemployment compensation system in order to secure the basic needs of unemployed individuals. Previously full-time employed individuals receive basic unemployment allowance on top of which members of unemployment insurance funds are entitled to an earnings-related unemployment allowance. For a person with median earnings the net replacement ratio can climb up to 64 per cent of previous income (Koskela & Uusitalo, 2003).

After 500 working days (approximately 2 years) of continuous unemployment the allowance is cut off, after which individuals are still eligible to means-tested labour market support. Those not having been previously employed are also eligible for the means tested labour market support. Both the basic unemployment allowance and labour market support are currently 23,02 euros per day (2003), the only difference being that in order to qualify for the

allowance one must have been employed for 43 weeks during the past two years. An exception to the 500-day allowance maximum is made for the older unemployed persons who reach age 57 before the expiry date[40]. They are entitled to receive benefits until the age of 60, when they become eligible for unemployment pension.

All these benefits are conditioned on registering as a full time unemployed jobseeker, and a waiting period is applied both to those who resign from their jobs (90 days) as well as to those who refuse a job offer or a labour market programme for a non-valid reason (60 days). Neither of the above-mentioned benefits are paid to students or entrepreneurs. In addition, young people without further education, aged below 25, are obliged to actively apply for further education in order to be eligible for labour market support.

2.1 Data

This paper is based on comprehensive panel data originating from the 1997 population census and supplied by Statistics Finland. The data set at our disposal is a 10 per cent random sample of this census, i.e. approximately 350 000 Finns aged 12–75 (in 1997). Statistics Finland has expanded the census data by including information from several official registers, including e.g. tax, pension, benefit, student and labour administration registers. The resulting data base includes a wide range of information on individuals' demographic and socio-economic characteristics, details of unemployment and involvement in active labour market programmes etc. Altogether, almost 200 variables are available.

The objective of this paper is to study the determinants of the duration of unemployment in Finland and the potential gender related differences therein. All individuals who entered unemployment during the year 1997 were chosen for the sample (N=26 747), which covers the period from 1997 to the end of 1999. Thus the period of unemployment can start at any time during 1997, but all exits observed after the end of 1999 are treated as censored. Individuals whose unemployment begun and ended on the same day were dropped from the sample due to non-existent duration of unemployment. Consequently, the sample contains 26 308 unemployed individuals. Of this number 25 435 spells of unemployment ended within the observation period.

40 The age limit for the extended benefit was 55 years up to 1997, when it was raised to 57 years (Koskela & Uusitalo, 2003).

2.2 Variables

We calculate the duration of a spell of unemployment as the difference between the first and last day of unemployment. It must be stressed, that in this study the spell of unemployment is measured in calendar days (i.e. 365 per year), while the unemployment benefit eligibility is measured in working days (i.e. approximately 20 per month, or 240 per year). Hence, care needs to be exercised when interpreting the results concerning duration dependence with respect to benefit expiry.

Also, the definition of the end of a spell of unemployment is somewhat problematic. An unemployed person might transit momentarily to employment or an active labour market programme, but return to unemployment in a matter of days. This behaviour shows up as several consecutive spells of unemployment. In this study we chose to treat two consecutive spells of unemployment as a single spell if they are separated by less than 20 days. The duration of this combined spell is calculated as the sum of the durations of the single spells and the breaks between the spells. This definition has previously been used in e.g. Kyyrä (1999) and Rantala (1998)[41].

The procedure can also be justified as a technical solution for two reasons. First, there are some irregularities in the data as well as recording errors, most of which can be eliminated using the "20-day rule". Second, Finnish labour market policy is such that de facto infinite period of unemployment is often artificially cut off by a brief exit to an active labour market programme. Thus, by this procedure we can take this problem into account and eliminate the briefest breaks in the duration of unemployment.

Using the 20-day rule means that we had to eliminate some observations (34 individuals) from the sample due to periods of unemployment originating in 1996. We also distinguish between end states employment, participation in active labour market programmes and economic inactivity. By the end of the observation period these end states were occupied by 10727, 7854 and 6854 people, respectively.

The independent variables consist of personal variables, such as age, marital status, the existence of young children in the household, education, income and citizenship. All of these variables are implied by Pencavel (1986), Killingsworth & Heckman (1986) and Altonji & Blank (1999) to have differing effects on men and women in the labour market. In particular, marriage and young children are expected to generate gender differences by increasing the supply of male and decreasing that of female labour and thus motivating men in particular to seek employment more actively (Pencavel, 1986; Killingsworth & Heckman, 1986). Along with gender, ethnicity is also expected to influence labour market outcomes in a discriminatory manner (Altonji & Blank, 1999). We attempt to control for the effects of ethnicity by including a variable for citizenship, but admit that this is only a very rough estimate for ethnicity.

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41 When conducting the estimations on the simple definition of unemployment duration, we find only minor differences in the results compared to the specification utilising the "20-day rule".

Some labour market-related variables such as experience, unemployment history and unemployment benefits are included. The use of these variables is motivated by Hamermesh (1993) and by other empirical studies, e.g. Nilsen et al. (2000) and Hämäläinen (1998). Some occupational variables are also included, though one must be wary in interpreting these coefficients, since the Finnish labour market exhibits extreme gender segregation (Kolehmainen, 1999). Personal income was tried out but excluded, since the variable correlated with several variables in the model. A breakdown of the data and all the independent variables with their mean values are given in Tables A1 and A2 in the Appendix.

3 Econometric framework

The central concept in the analysis of duration data is the hazard function, which is the conditional probability of exiting unemployment in the next infinitesimal period, given that individual is still unemployed at t, i.e.

$$h(t) = \lim_{\Delta t \to 0} \frac{\Pr(t \le T < t + \Delta t \mid T \ge t)}{\Delta t} = \lim_{\Delta t \to 0} \frac{F(t + \Delta t) - F(t)}{\Delta t} \frac{1}{1 - F(t)} = \frac{f(t)}{1 - F(t)} = \frac{f(t)}{S(t)} ,$$

where $f(t)$ is the probability density function, $F(t)$ the distribution function and $S(t)$ the survivor function. The survivor function gives the probability that unemployment spell has lasted until t.

If the hazard rate is constantly decreasing or increasing over time, there is duration dependence. Positive duration dependence, i.e. $h(t)/\Delta t > 0$, means that the hazard increases over the course of time. This may result if the unemployed individual becomes increasingly desperate for a job and accepts the first job offered. Negative duration dependence, i.e. $h(t)/\Delta t < 0$, means that the probability of exiting unemployment decreases with time. This might occur if an employer chooses to discriminate against the long-term unemployed or if the individual's search activity decreases as the spell is prolonged.

There is some evidence that the probability of exiting unemployment decreases with the length of the spell (e.g. Lancaster, 1990), but it may not decrease monotonically. The classic theoretical analysis by Mortensen (1970, 1977) showed that as an individual approaches the end of benefit eligibility his reservation wage declines, leading to an increase in the outflow rate. Carling et al. (1996), Hui (1991) and Katz & Meyer (1990a, b), among others, show empirically that the escape rate from unemployment increases, as the exhaustion time of benefits gets closer. They offer two explanations for this behaviour: on the one hand the search activity of the unemployed individual increases and on the other hand his reservation wage decreases as benefits are about to expire. Thus benefit systems, like the Finnish one, can actually induce this observed duration dependence.

The standard estimation method in duration studies is the semi-parametric Cox proportional hazard model with an unrestricted baseline[42]. The explanatory variables are included in the proportional hazard form, i.e. the hazard function depends on a vector of explanatory variables x with coefficients β and baseline hazard $h_0(t)$:

$$h(t) = h_0(t)\exp\{x'\beta\}.$$

To better observe the shape of the baseline we use the non-parametric piecewise constant hazard specification. Now the time axis, i.e. duration of unemployment, is divided into K intervals, here approximately three months each

$$h_0(t) = \begin{cases} \theta_1 \text{ if } 0 < t < c_1 \\ \theta_2 \text{ if } c_1 < t < c_2 \\ \vdots \quad \vdots \quad \vdots \\ \theta_K \text{ if } c_{K-1} < t < \infty \end{cases}$$

where θ_K are constants, c_K points in time, $0 < c_1 < c_2 < \ldots < c_{K-1} < \infty$, and the baseline hazard is assumed to be constant within each interval, but can fluctuate freely between intervals. Using the specification $\theta_K = \exp(\gamma_K)$ the hazard may now be written as

$$h(t) = \exp(d_K\gamma_K)\exp\{x'\beta\} = \exp(x\beta + d_K\gamma_K),$$

where $d_K = 1$ when duration falls within K^{th} interval, otherwise $d_K = 0$.

The split population model is applied to account for a specific type of heterogeneity, i.e. the possibility that some individuals will never experience the event of interest while others will. What we are estimating here is, first, the probability of exiting unemployment and, second, the timing of this event conditional on the probability of exiting. Thus, the probability of eventual exit is an additional parameter to be estimated, and may be less than one[43].

We introduce the split population framework by redefining the specific survivor function as $S_m^j = 1 - P_j + P_j S_m$, where P_j is the proportion of movers associated with destination j. Following the computation in Addison & Portugal (2003) we obtain the single risk split-specific transition rate

$$h(t_i; x_i, G_i = 1) = \frac{f(t_i; x_i, G_i = 1)}{S(t_i; x_i, G_i = 1)} = \frac{p_i f(t_i; x_i, G_i = 1)}{1 - p_i + p_i S(t_i; x_i, G_i = 1)} = \frac{P(C_i = 1)}{P(C_i = 0)},$$

42 See e.g. Meyer (1990) and Narendranathan and Stewart (1993).

43 The split population model dates back to Anscombe (1961) in the statistics literature and has been further developed in the current, though not economic context by e.g. Schmidt & Witte (1989). Recent economic applications have been presented by e.g. Addison & Portugal (2003).

where G_i indicates whether individual i would or would not eventually exit unemployment and C_i indicates whether or not the individual has exited unemployment by the end of the observation period. The split parameter, $P(G_i = 1) = p_i$, is the estimated mean probability of individuals experiencing the event of interest. Thus, the model collapses into a standard duration model if $p_i \to 1$.

With the split population model we can better observe gender differences in duration dependence by examining the baseline hazards given by the model. Although the notion that some fraction of unemployment periods last indefinitely is interesting and plausible, some caveats should be made regarding the Finnish unemployment system. The Finnish registry system is such that long periods of unemployment are often cut off by a, however brief, exit to an active labour market programme. Therefore, we are unable to identify all of the infinite periods of unemployment in our data and are not able to make optimal use of the properties of the split population model.

An individual's exit from unemployment can be set off by many reasons. Since the data allows us to distinguish between different destination states, we now extend the previous piecewise constant framework to a competing risks model, where we can explicitly account for different destinations. Using the testing suggested by Narendranathan & Stewart (1991) it is stated by Jensen & Westergaard-Nielsen (1990) that the specification of a competing risks model increases the amount of information compared to the single risk model and should thus be preferred.

In a competing risks model both the exogenous variables and their impact on duration as well as the time-specific effects are allowed to vary across exit routes. We define three destination states; employment, participation in an active labour market programme and economic inactivity. Thus, the cause-specific hazard function to destination j is

$$h_j(t) = \lim_{\Delta t \to 0} \frac{P(t \le T < t + \Delta t \mid T \ge t, J = j)}{\Delta t}, \quad j = 1, 2, 3.$$

The hazard for all exits can be obtained by summing the transition probabilities, one for each destination:

$$h(t) = \sum_{j=1}^{3} h_j(t).$$

As is customary in the literature (see e.g. Addison & Portugal, 2003; Jensen & Svarer, 2003; Carling et al., 1996; Lilja, 1992) the transition probabilities are assumed to be independent, conditional on the explanatory variables. Since we assume independence between exits, maximum likelihood estimations of the durations to each destination state can be made separately.

The Cox proportional hazard model does not allow for unobserved heterogeneity, however. Estimation results may therefore be affected by

selection on unobservables. If so, the estimates of the baseline hazard will not be consistent, and the parameter estimates may be biased as well. There is evidence that unobserved heterogeneity may be less of a problem when flexible baseline hazards are used, while being a more serious problem with parametric models that assume a particular parametric form for the baseline hazard. A number of studies have found that incorporating unobserved heterogeneity into semiparametric duration models has only a minor effect on the results (e.g. Meyer, 1990, and Han and Hausman, 1990). Further, according to Wooldridge (2002) introducing unobserved heterogeneity is indistinguishable from simply allowing a more flexible duration distribution.

Hence, since our model has a fully flexible baseline specification in this paper we do not control for unobserved heterogeneity. In addition, the split population model itself controls for a particular type of heterogeneity, which is often left unaccounted for. Had we used e.g. gamma-heterogeneity, the interpretation of the baseline would have become more difficult and results might have been distorted. According to Narendranathan and Stewart (1993) there is no reason for any resulting distortions to be less serious than those caused by ignoring unobserved heterogeneity[44]. Hence, after this discussion, in this paper we choose to focus on the flexible duration distribution approach thus placing more weight on the results of the covariates, and taking caution in interpreting the baseline parameters.

4 Results

The estimated effects of the explanatory variables on the duration of unemployment are presented in Tables A3 to A7 in the Appendix. The estimations have been run for the joint sample and for women and men separately. All models give consistent results[45]. Apart from the industry and the income variables most coefficients are statistically significant.

4.1 Explanatory variables

The age group coefficients show, as expected, that the younger an individual is, the better his/her prospects are of exiting unemployment and thus, the shorter the spell of unemployment. However, the results indicate that the youngest age group (16–19 years) is most prone to exits to active labour market programmes and economic inactivity, which here also includes studying. Thus, where exits to employment are concerned, the age differences are less marked, although individuals in the 20–29 and 30–39 age groups still are slightly better off. The interaction terms for gender and age groups show, consistently with the

44 See also Arulampalam and Stewart, 1995; Böheim and Taylor, 2000.

45 All the results referred to but not shown here are available from the author on request.

gender-specific estimations, that particularly women aged 16–19 and 40–54 have higher propensity to exit than their male counterparts.

The competing risks specification shows that women aged 16–19 are more likely to exit to employment than men of the same age and less likely to exit to economic inactivity. It seems that women have the highest likelihood of exits to employment when aged 16–29. Men, on the other hand, find employment better between ages 20–39. Women aged 20–29 have a higher probability of exiting to economic inactivity than their male counterparts. Although the effects of having children are controlled for, one could speculate whether the cause of this phenomenon is family related. In this age group there are four times as many women with infants (aged under 1 year) in the data exiting to economic inactivity than there are men[46]. Statistics show that particularly during economic downturns women in Finland are more likely to exit the labour market. It is possible that women seek to make the most of their unemployment by having children during a time when they are already excluded from working life. If already having a family, it may be easier on the woman to retire home to take care of the children when employment seems unlikely.

Also noteworthy are the findings regarding the elderly. The coefficients indicate that exits to active labour market programmes are very unlikely for the oldest age group, 55 years and older. Furthermore, the likelihood of exiting to employment is lowest in this age group. It seems that the only viable option to unemployment for individuals older than 55 is retiring from the labour force altogether and ending up in economic inactivity.

As expected, the results indicate that young children (aged 1-7 years) are somewhat irrelevant to male spells of unemployment but have a significant negative effect on women's propensity to exit unemployment. Young children are of negligible significance with regard to participation in ALMP, but have a strong effect on hindering exits to employment and economic inactivity for women. Marriage has an ameliorating effect for both female and male spells of unemployment, but the effect is larger for men. Both married women and men have a higher propensity of employment than the rest of the population, but the effect is slightly stronger for women. Education significantly improves the likelihood of exiting unemployment for both men and women, but for women the effect is even more drastic than for men.

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46 The Finnish social security system is such that an employed mother on maternity leave is categorised as employed, while an unemployed mother on maternity leave is categorised as economically inactive.

TABLE 1 Estimation results for the competing risks specification.

	END STATE					
	Employment		**ALMP**		**Economic inactivity**	
	Men	*Women*	*Men*	*Women*	*Men*	*Women*
	Coeff.	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*	*Coeff.*
tp1	-6,61***	-6,57***	-8,88***	-9,25***	-6,08***	-6,33***
tp2	-7,01***	-7,21***	-9,26***	-9,56***	-5,80***	-6,10***
tp3	-7,52***	-7,62***	-9,08***	-9,44***	-5,93***	-6,31***
tp4	-7,97***	-7,68***	-9,05***	-9,25***	-6,23***	-6,40***
tp5	-8,02***	-7,76***	-8,73***	-8,97***	-6,41***	-6,40***
tp6	-8,23***	-8,17***	-8,89***	-9,15***	-6,39***	-6,54***
tp7	-8,69***	-8,10***	-9,21***	-9,27***	-6,53***	-6,87***
tp8	-8,54***	-8,44***	-8,65***	-9,20***	-5,27***	-5,64***
tp9	-8,78***	-8,95***	-9,16***	-9,20***	-6,10***	-6,44***
tp10	-8,82***	-8,21***	-9,02***	-9,81***	-6,06***	-6,21***
Age 16–19	1,36***	1,62***	3,37***	3,63***	1,12***	1,01***
Age 20–29	1,75***	1,61***	2,64***	2,72***	0,64***	0,90***
Age 30–39	1,50***	1,44***	2,33***	2,56***	0,21**	0,39***
Age 40–54	1,31***	1,39***	2,18***	2,49***	-0,10	0,02
Age of youngest child 1–7 years	0,002	-0,35***	-0,01	-0,05	-0,08	-0,54***
Married	0,11**	0,12***	0,11*	-0,04	0,02	0,05
Home owner	0,10***	0,07**	0,02	0,02	0,00	0,02
Post-comprehensive ed.	0,25***	0,35***	0,26***	0,27***	0,10**	0,25***
Higher education	0,39***	0,60***	0,52***	0,33***	0,02	0,14**
Healthcare	-0,18*	0,09*	0,09	0,34***	-0,04	-0,15**
Clerical	-0,30***	-0,23***	0,25**	0,37***	0,07	-0,30***
Commercial	-0,39***	-0,15**	0,23**	0,28***	-0,20*	-0,19**
Agriculture	0,27***	0,06	-0,07	0,04	-0,11	-0,50***
Tranportation	0,10	-0,05	-0,16	0,18	-0,07	-0,01
Industrial	0,26***	-0,08	-0,06	0,20**	-0,02	-0,29***
Services	-0,11	0,01	-0,08	0,05	-0,03	-0,25***
Other	-0,42***	-0,54***	0,57***	0,68***	0,22**	0,25***
Partial professional skills	0,01	0,11***	-0,13**	-0,02	-0,08	-0,00
Complete professional skills	-0,01	0,02	-0,13**	-0,06	-0,06	0,04
Disability	-0,83***	-0,74***	-0,13*	-0,12**	0,02	-0,01
Residential area urban	-0,08**	-0,04	-0,42***	-0,31***	-0,02	0,05
Res. area population centre	0,10**	-0,04	-0,16***	-0,22***	-0,01	0,12**
Spouse unemployed > 6 months	-0,19***	-0,28***	-0,24***	-0,15**	-0,37***	-0,14**
Spouse has post-comp or higher	0,12***	0,09**	0,19***	0,08**	0,04	0,01
Basic UE allowance	-0,38***	-0,38***	-0,26***	-0,14*	-0,73***	-0,72***
Labour market support	-0,84***	-0,88***	0,18***	0,35***	-0,83***	-0,73***
Earnings related UE allowance	-0,33***	-0,42***	0,16***	0,21***	-1,13***	-0,90***
No unemployment 1996	-0,25***	-0,26***	-0,18***	-0,08**	0,06	-0,08*
Unemployed > 6 months 1996	-0,43***	-0,36***	-0,09*	-0,04	-0,28***	-0,28***
Capital income	-3,04**	-1,36	-3,58	-0,44	-0,89	-0,38
Wealth [10^6 FIM]	0,32**	-0,11	-0,25	0,03	0,23	0,08
Liabilities [10^6 FIM]	0,60***	0,60***	-0,05	0,33	0,01	0,78***
Spouse's income [10^6 FIM]	0,93**	-0,18	0,54	0,24	-0,48	-0,06
Spouse's wealth [10^6 FIM]	0,15	-0,17	0,21	0,02	0,40	0,20
Spouse's liabilities [10^6 FIM]	0,10	0,12	-0,71	-0,23	-0,20	0,02
Citizenship other than Finnish	-0,59***	-0,81***	0,34***	0,13	0,07	0,07

* / ** / *** significant at the 10 / 5 / 1 % level

Home-owners have a higher propensity of exiting unemployment, particularly to employment. The dummy variables controlling for professional skills turn out to be scarcely significant and, where significant, professional skills increase the probability of exits to employment but decrease exits to ALMP. Another control variable, disability, turns out to be highly negative everywhere except in exits to economic inactivity. Thus, individuals with a disability are less likely to exit unemployment than the rest of the population. Although this is an expected result, one might expect ALMP to balance the score to some extent but even the exits to ALMP are less likely for the disabled. Only the unemployment periods ending in economic inactivity are unaffected by disability. This does not give a very promising picture of labour market opportunities for the disabled in the Finnish context. Citizenship other than Finnish also has significant negative effect on exits from unemployment for women, but conflicting effects for men, as foreign citizenship reduces transitions to employment but increases transitions to ALMP for the latter.

The sector dummies show that women have better prospects of regaining employment in the health-care sector, while for men the favourable sectors are agriculture and industry. Both men and women in the commercial and clerical sectors as well as women in the health-care sector are more likely to exit into active labour market programmes. Apparently the employment agencies provide the kind of active programmes that are viewed as most productive when targeted at individuals in these sectors, i.e. computer courses for the clerical sector etc. The greater likelihood of exits for individuals with no occupation (occupational sector other) is explained by the composition of the group, i.e. very young people with no professional qualifications, and thus by early exits to ALMP and economic inactivity. The somewhat mixed effects of the sector dummies can be attributed to the particularly strong sex segregation that characterizes the Finnish labour market[47].

In general, individuals residing in rural rather than urban areas are more likely to exit unemployment. Men have somewhat better prospects of finding employment in population centres, but the effects of residential area are particularly strong in the case of exits to ALMP. The same finding was presented in Lilja (1992). Finnish labour market policy has a very strong regional emphasis, meaning that a higher-than-average proportion of persons participating in active labour market programmes come from regions with a high unemployment-to-vacancies ratio, i.e. rural, peripheral areas.

Concurrent unemployment of a spouse (> 6 months) strongly hinders exits from unemployment for the individuals in the sample, regardless of the end-state, and this negative effect is larger for men. On the other hand, an educated spouse increases the probability of exiting unemployment, particularly for men, where exits to employment or ALMP are concerned. Thus, while educating women has a strong positive effect on their opportunities in the labour market, it might also reinforce their husband's attachment to the labour market. This outcome might be further reinforced by income effects, since for men, although

47 See e.g. Kolehmainen (1999).

minor, spouse's higher income promotes the return to employment. Still, the possibility of assortative mating cannot be disregarded here[48].

According to the results personal wealth has little significance for exits from unemployment, whereas liabilities increase the propensity to exit, the effect being particularly strong for exits to employment. Capital income has a surprisingly strong negative effect for men. It seems that unemployed men with increasing capital income have a decreasing probability of regaining employment. Thus, for men higher capital income acts as a strong disincentive to seek employment. Evidently, people with additional income can better afford a prolonged spell of unemployment until finding suitable employment.

A startling result is the strong and significant negative effect of the unemployment allowance dummies. Although striking, this result is in accordance with previous findings by Pääkkönen (1990) and Lilja (1992). The probable cause of these effects lies in the composition of the data, i.e. individuals in receipt of benefits have some unobserved characteristics that weaken their chances of leaving unemployment that this model is lacking. Part of the explanation might be that those not in receipt of benefits include people whose spells of unemployment were so short that they weren't even eligible. When viewing the end state-specific results, we find that individuals on basic unemployment allowance have a lower propensity to participate in ALMP than individuals on labour market support or earnings-related unemployment allowance.

The unemployment history dummies give somewhat confounding results. As can intuitively be expected, previous unemployment (> 6 months in 1996) has a negative effect on future prospects. However, this conflicts with the fact that also nonexistent previous unemployment has a negative effect. This suggests that unemployed persons with underlying unemployment of 1–6 months have the best prospects of leaving unemployment, irrespective of the end state. This is far too simple a conclusion and should not be drawn hastily. The result is not explained by e.g. transitions to ALMP, but is also evident in the transitions to employment. A viable explanation for these unexpected results might be seasonal unemployment, which is experienced in certain occupational sectors, particularly given that over 25 per cent of the individuals with 1–6 months of underlying unemployment were working in the industrial sector.

48 On assortative mating see e.g. Mare (1991).

4.2 Baseline hazards

The duration of unemployment is divided into 10 periods of roughly 100 days, i.e. 3 months, each. In the following we focus on the coefficients of these time intervals, and graphically examine the baseline hazard functions of each specification.

The baseline hazards for exiting unemployment, disregarding the end state show negative duration dependence (Figure 2). A slight peak appears at the interval 400–500 days and a more distinct one at 700–800 days (i.e. 2 years of receipt of benefits). During the first year of unemployment men are slightly more likely to exit than women, but after 400 days this difference is reversed. Here, the model specification is such that individuals with infinite duration of unemployment are censored from the data.

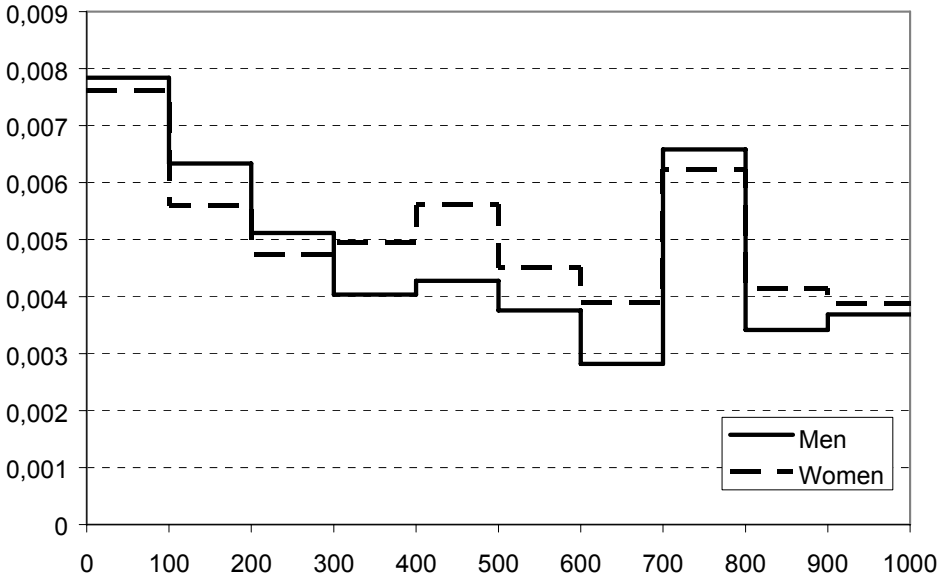

FIGURE 2 The baseline hazard rates by duration of unemployment (days); piecewise constant hazard model.

In Figure 3 we can observe the change in the baseline hazard when the split population model is imposed and individuals with infinite duration of unemployment are also included in the modelling process. Here the baseline hazard for exiting is calculated not only from the time-period estimates, but also using the split parameter given by the model. The split parameter is estimated separately for each model specification[49].

[49] The split parameter is the estimated mean probability that the unemployed individual never exits unemployment.

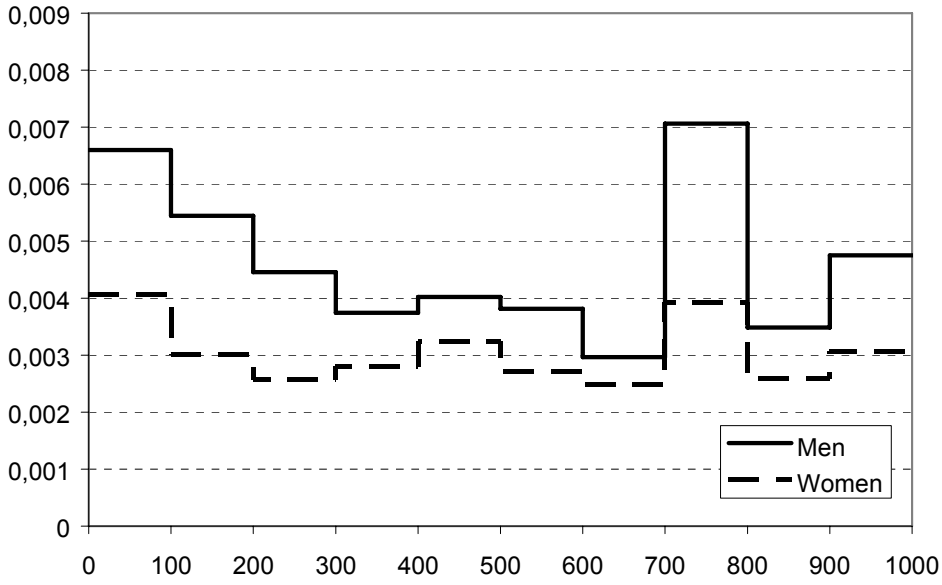

FIGURE 3 The baseline hazard rates by duration of unemployment (days); split population model.

The split population model highlights the gender differences between the specifications. Firstly, we find that the baseline is lower, which is expected as a result of the inclusion of individuals with infinite durations. Second, we find that the difference between male and female baselines is larger here than in the piecewise model. This result, however, does not appear to be explained by the number of individuals with infinite durations. There are roughly equivalent numbers of women and men with infinite durations in the data; 441 women (3,04 % of all women) and 432 men (3,52 % of all men). Although interesting, the utilisation of the split population model evidently requires further investigation.

The baseline hazard rate to employment exhibits very strong negative duration dependence (Figure 4). Entering employment is significantly more unlikely the longer the unemployment period gets. The hazard to employment is more than halved by the time the period of unemployment has lasted for 300 days. Men are slightly more likely to find employment during the first year of unemployment, but otherwise no gender differences emerged. What is striking, though, is the fact that the baseline shows no upturn around the time of benefit exhaustion (i.e. at the interval of 700 to 800 days of continuous unemployment). Typically, in previous studies, such an upturn has been found for transitions into both employment and other states (see Carling et al., 1996 or Machin & Manning, 1999). According to our results, the benefit exhaustion-related exits from unemployment are completely directed towards active labour market programmes and economic inactivity.

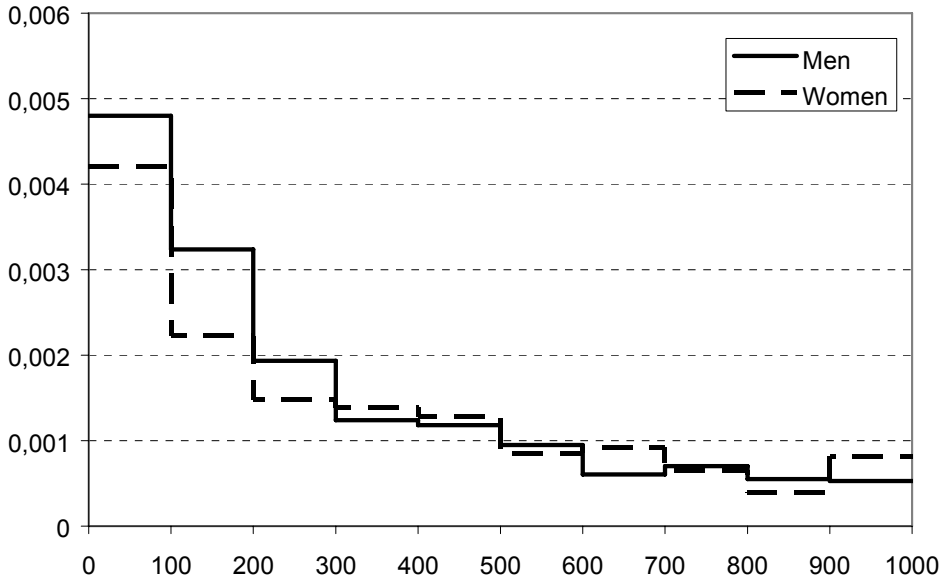

FIGURE 4 The baseline hazard rates to employment by duration of unemployment (days); piecewise constant hazard model.

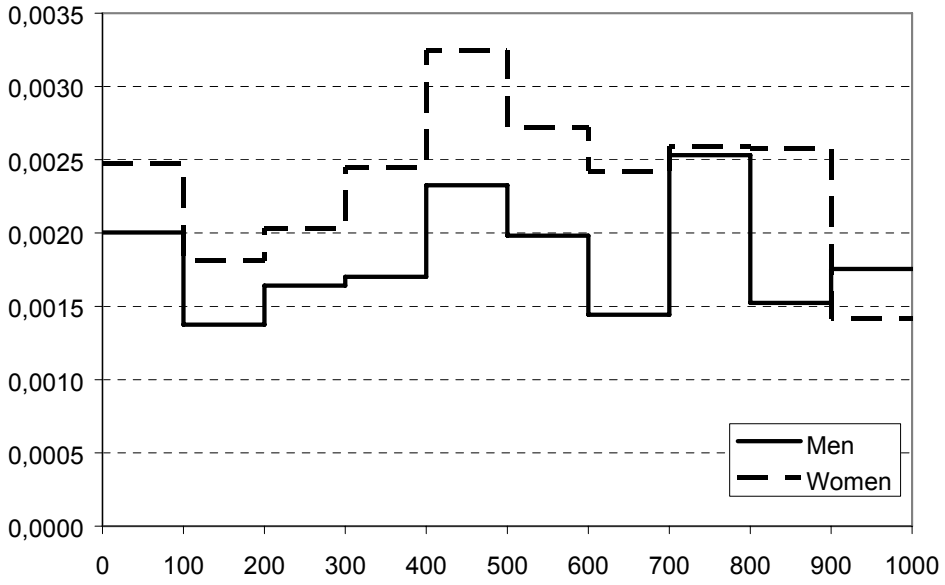

FIGURE 5 The baseline hazard rates to ALMP by duration of unemployment (days); piecewise constant hazard model.

Some gender differences in the baseline hazard to active labour market programmes are found. In general, women have a higher baseline to ALMP than men, regardless of the duration of unemployment (Figure 5). Thus, the longer periods of unemployment generally observed for men in Finland are explained by women's eagerness to participate in active labour market programmes. The hazard rates for transitions to ALMP have two distinct peaks, the first at around 400–500 days of unemployment for both sexes, and the second at around 700–800 days (i.e. 2 years of receipt of benefits), particularly

for men. Women appear to be transiting to ALMP somewhat sooner than men, i.e. prior to benefit exhaustion, which might indicate that for them participation is a voluntary choice. Nevertheless, the level of the baseline hazard in transitions to ALMP is low compared to the other end states. Thus, it is not as common for the unemployed to transit into ALMP as it is to transit into secure employment.

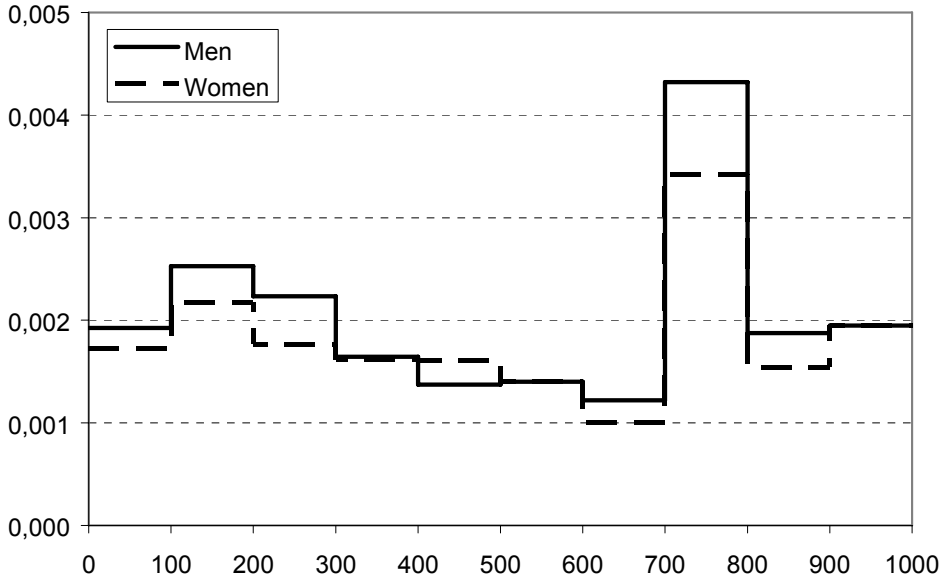

FIGURE 6 The baseline hazard rates to economic inactivity by duration of unemployment (days); piecewise constant hazard model.

In Figures 2 and 3 we observed a clear peak in the baseline hazard for exiting unemployment at 700–800 days of unemployment (i.e. 2 years of benefit collection). From Figure 6 it becomes evident that most of that peak in exits is accounted by the exits to economic inactivity. At least a part of this peak can be explained by exits from regular unemployment to unemployment pension schemes. Individuals over the age of 55 are eligible for the unemployment pension scheme after they have exhausted their standard right to unemployment benefit, which usually takes some 2 years. The rise in the baseline hazard to economic inactivity at 100–200 days of unemployment can at least in part be accounted for by students, who register as unemployed between semesters.

5 Conclusions

The present study analysed the determinants of the duration of unemployment in Finland during the period 1997–1999, seeking differences in the time that men and women exit from unemployment and the end-states they exit to. The aim was, first, to find out whether the patterns of duration dependence differed between the two genders and, second, to investigate the factors affecting male and female unemployment duration. The data consisted of 26 308 individual who registered as unemployed during 1997. Out of these 25 435 terminated their period of unemployment by the end of 1999.

In the analysis the conventional piecewise constant hazard model is estimated in the single and competing risks framework. Further, we apply the split population modelling framework, which takes into account also the censored fraction of the sample. The split population model emphasizes the gender differences between the specifications. Firstly, we find that the probability of exit from unemployment is lower, which is expected as a result of the inclusion of individuals with infinite duration of unemployment. Second, the difference between male and female exit probabilities is larger than in the piecewise model.

In general, we find considerable negative duration dependence regarding exits from unemployment for both sexes. The probability of exiting shows an upturn after two years of unemployment, that is, around the time of benefit exhaustion. However, this upturn is not directed to employment, but rather to active labour market programmes and economic inactivity. The longer unemployment periods generally observed for men in Finland are explained by women's eagerness to participate in active labour market programmes.

The effects of the explanatory variables were in line with those found in previous studies and showed that having young children and having foreign citizenship decrease the probability of exiting unemployment for women. Education, on the other hand, appears as a highly positive factor, particularly for women. In general, receiving unemployment assistance was found to be a highly negative factor. The results also point out the implications of Finnish regional labour market policy, as not only was the propensity to exit unemployment found to be greatest in rural areas, but was also mostly explained by exits to active labour market programmes.

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APPENDIX

TABLE A1 Definitions of variables.

VARIABLE	DEFINITION
Tp1, tp2, tp3…	Dummy variables designating whether a person's unemployment period has ended during the specified interval. Intervals separated at 0,100, 200, 300, 400, 500, 600, 700, 800, 900 and 1094 days.
Female	1 if female, 0 if male
Age in 1997	Dummy variables designating the age of a person at the end of 1997: 16–19, 20–29, 30–39, 40–54, 55 upwards (ref.)
Children	Dummy variable designating that age of a person's youngest child is 1–7 years
Marital status	Dummy variables designating whether a person is married or single (ref.)
Home-ownership	1 if a person is a home owner, otherwise 0
Education	Dummy variables designating whether a person has comprehensive (ref.), post-comprehensive or higher education
Occupational variables	Dummy variables designating whether the unemployed jobseeker's occupation is in the technical (ref.), health-care, clerical, commercial, agriculture, transportation, industrial or service sector or unknown
Professional skills	Dummy variables designating whether a person has complete, partial or no professional skills (ref.)
Disability	1 if a person is disabled, otherwise 0
Residential area	Dummy variables designating whether a person's residential area is urban, densely populated or rural (ref.)
Spouse's unemployment	1 if a person's spouse was unemployed for at least 6 months in 1997, otherwise 0
Spouse's education	Dummy variable designating that a person's spouse has post-comprehensive or higher education
Unemployment allowance	Dummy variables designating that a person is receiving basic UE allowance, labour market support and/or earnings-related UE allowance
Unemployment history	Dummy variables designating that a person was not unemployed in 1996 or that a person was unemployed for more than 6 months in 1996
Income variables	A person's capital income, wealth and liabilities /1 000 000 FIM
Spouse's income	Spouse's income, wealth and liabilities /1 000 000 FIM
Citizenship other than Finnish	Dummy variable designating that a person's citizenship is other than Finnish

TABLE A2 Means of the variables.

Variable (N. Obs = 26308)	**Mean**	**Std. Dev.**	**Min**	**Max**
Age	32,9	11,6	16,00	65,00
UE duration, days	181,6	228,9	1,00	1094,0
Female	0,54	0,50	0,00	1,00
Age 16–19	0,10	0,30	0,00	1,00
Age 20–29	0,36	0,48	0,00	1,00
Age 30–39	0,24	0,43	0,00	1,00
Age 40–54	0,25	0,43	0,00	1,00
Age 55–	0,05	0,21	0,00	1,00
Age of youngest child 1–7 years	0,18	0,39	0,00	1,00
Married	0,34	0,47	0,00	1,00
Single	0,66	0,47	0,00	1,00
Home owner	0,39	0,49	0,00	1,00
Comprehensive education	0,26	0,44	0,00	1,00
Post-comprehensive education	0,61	0,49	0,00	1,00
Higher education	0,14	0,34	0,00	1,00
Healthcare	0,13	0,33	0,00	1,00
Engineering	0,10	0,30	0,00	1,00
Clerical	0,11	0,32	0,00	1,00
Commercial	0,07	0,25	0,00	1,00
Agriculture	0,03	0,18	0,00	1,00
Tranportation	0,03	0,17	0,00	1,00
Industrial	0,24	0,43	0,00	1,00
Services	0,11	0,31	0,00	1,00
Other	0,18	0,38	0,00	1,00
Partial professional skills	0,20	0,40	0,00	1,00
Complete professional skills	0,38	0,49	0,00	1,00
Disability	0,05	0,23	0,00	1,00
Residential area urban	0,61	0,49	0,00	1,00
Residential area population centre	0,16	0,37	0,00	1,00
Residential area rural	0,22	0,42	0,00	1,00
Spouse unemployed > 6 months	0,07	0,25	0,00	1,00
Spouse has post-comp. or higher ed.	0,38	0,49	0,00	1,00
Basic UE allowance	0,07	0,25	0,00	1,00
Labour market support	0,35	0,48	0,00	1,00
Earnings related UE allowance	0,44	0,50	0,00	1,00
No unemployment 1996	0,50	0,50	0,00	1,00
Unemployed > 6 months 1996	0,22	0,42	0,00	1,00
Capital income	0,00	0,02	0,00	1,52
Wealth [10^6 FIM]	0,03	0,13	0,00	15,3
Liabilities [10^6 FIM]	0,03	0,07	0,00	2,04
Spouse's income [10^6 FIM]	0,05	0,07	0,00	2,02
Spouse's wealth [10^6 FIM]	0,03	0,09	0,00	4,64
Spouse's liabilities [10^6 FIM]	0,03	0,11	0,00	9,42
Citizenship other than Finnish	0,03	0,17	0,00	1,00

TABLE A3 Piecewise constant hazard model, all exits (pooled).

	All		Men		Women	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
tp1	-5,73***	(0,063)	-5,69***	(0,080)	-5,92***	(0,076)
tp2	-6,01***	(0,064)	-5,90***	(0,081)	-6,23***	(0,077)
tp3	-6,20***	(0,066)	-6,12***	(0,084)	-6,40***	(0,079)
tp4	-6,28***	(0,068)	-6,35***	(0,088)	-6,36***	(0,081)
tp5	-6,19***	(0,069)	-6,30***	(0,092)	-6,23***	(0,083)
tp6	-6,38***	(0,074)	-6,43***	(0,098)	-6,45***	(0,091)
tp7	-6,59***	(0,080)	-6,71***	(0,110)	-6,59***	(0,099)
tp8	-5,94***	(0,076)	-5,86***	(0,097)	-6,12***	(0,097)
tp9	-6,48***	(0,099)	-6,52***	(0,137)	-6,53***	(0,127)
tp10	-6,47***	(0,109)	-6,44***	(0,147)	-6,60***	(0,147)
Female	-0,11	(0,068)				
Age 16–19	1,71***	(0,060)	1,74***	(0,068)	1,86***	(0,065)
Age 20–29	1,40***	(0,054)	1,44***	(0,061)	1,46***	(0,058)
Age 30–39	1,16***	(0,053)	1,16***	(0,058)	1,22***	(0,056)
Age 40–54	0,93***	(0,052)	0,94***	(0,053)	1,10***	(0,053)
Female x Age 16–19	0,16**	(0,078)				
Female x Age 20–29	0,06	(0,071)				
Female x Age 30–39	0,02	(0,073)				
Female x Age 40–54	0,17**	(0,072)				
Age of youngest child 1–7 years	-0,20***	(0,019)	-0,01	(0,033)	-0,29***	(0,023)
Married	0,08***	(0,018)	0,09***	(0,030)	0,05**	(0,024)
Home owner	0,06***	(0,016)	0,07***	(0,025)	0,04*	(0,022)
Post-comprehensive education	0,24***	(0,016)	0,20***	(0,022)	0,28***	(0,023)
Higher education	0,36***	(0,027)	0,30***	(0,045)	0,42***	(0,034)
Healthcare	0,09***	(0,028)	-0,08	(0,069)	0,12***	(0,034)
Clerical	-0,06*	(0,030)	-0,05	(0,050)	-0,05	(0,038)
Commercial	-0,08**	(0,034)	-0,17***	(0,054)	-0,03	(0,044)
Agriculture	0,03	(0,043)	0,09	(0,057)	-0,09	(0,071)
Tranportation	-0,03	(0,045)	-0,03	(0,055)	0,04	(0,104)
Industrial	0,07**	(0,028)	0,11***	(0,039)	-0,05	(0,044)
Services	-0,05*	(0,031)	-0,09	(0,054)	-0,05	(0,039)
Other	0,16***	(0,031)	0,13***	(0,047)	0,19***	(0,041)
Partial professional skills	-0,002	(0,018)	-0,05*	(0,028)	0,04	(0,024)
Complete professional skills	-0,03	(0,020)	-0,05*	(0,030)	-0,01	(0,026)
Disability	-0,31***	(0,029)	-0,35***	(0,045)	-0,29***	(0,037)
Residential area urban	-0,14***	(0,016)	-0,16***	(0,023)	-0,12***	(0,022)
Residential area popul. centre	-0,04*	(0,020)	0,002	(0,030)	-0,07**	(0,028)
Spouse unemployed > 6 months	-0,21***	(0,027)	-0,24***	(0,041)	-0,20***	(0,035)
Spouse's ed. post-comp. or high	0,11***	(0,017)	0,12***	(0,028)	0,07***	(0,023)
Basic UE allowance	-0,40***	(0,028)	-0,45***	(0,038)	-0,38***	(0,041)
Labour market support	-0,48***	(0,018)	-0,57***	(0,027)	-0,39***	(0,025)
Earnings related UE allowance	-0,36***	(0,019)	-0,40***	(0,028)	-0,33***	(0,026)
No unemployment 1996	-0,17***	(0,016)	-0,17***	(0,023)	-0,16***	(0,021)
Unemployed > 6 months 1996	-0,27***	(0,019)	-0,31***	(0,027)	-0,23***	(0,026)
Capital income	-1,15**	(0,456)	-1,96***	(0,748)	-0,72	(0,565)
Wealth [10^6 FIM]	0,03	(0,035)	0,20*	(0,108)	-0,001	(0,043)
Liabilities [10^6 FIM]	0,44***	(0,080)	0,34***	(0,107)	0,59***	(0,138)
Spouse's income [10^6 FIM]	-0,03	(0,124)	0,52**	(0,260)	0,005	(0,141)
Spouse's wealth [10^6 FIM]	-0,002	(0,069)	0,25	(0,195)	-0,005	(0,075)
Spouse's liabilities [10^6 FIM]	-0,04	(0,067)	-0,11	(0,222)	0,01	(0,070)
Citizenship other than Finnish	-0,10**	(0,039)	-0,05	(0,057)	-0,15***	(0,054)

TABLE A4 Piecewise constant hazard model, exits to employment.

	All		Men		Women	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
tp1	-6,48***	(0,104)	-6,61***	(0,123)	-6,57***	(0,128)
tp2	-7,01***	(0,105)	-7,01***	(0,126)	-7,21***	(0,131)
tp3	-7,48***	(0,109)	-7,52***	(0,132)	-7,62***	(0,137)
tp4	-7,72***	(0,115)	-7,97***	(0,145)	-7,68***	(0,143)
tp5	-7,80***	(0,121)	-8,02***	(0,155)	-7,76***	(0,153)
tp6	-8,12***	(0,137)	-8,23***	(0,174)	-8,17***	(0,182)
tp7	-8,30***	(0,154)	-8,69***	(0,216)	-8,10***	(0,195)
tp8	-8,41***	(0,179)	-8,54***	(0,231)	-8,44***	(0,253)
tp9	-8,76***	(0,256)	-8,78***	(0,324)	-8,95***	(0,396)
tp10	-8,43***	(0,256)	-8,82***	(0,373)	-8,21***	(0,337)
Female	-0,18	(0,125)				
Age 16–19	1,30***	(0,112)	1,36***	(0,120)	1,62***	(0,124)
Age 20–29	1,68***	(0,092)	1,75***	(0,099)	1,61***	(0,106)
Age 30–39	1,49***	(0,090)	1,50***	(0,095)	1,44***	(0,103)
Age 40–54	1,30***	(0,088)	1,31***	(0,090)	1,39***	(0,099)
Female x Age 16–9	0,37**	(0,153)				
Female x Age 20–29	-0,03	(0,129)				
Female x Age 30–39	-0,08	(0,131)				
Female x Age 40–54	0,10	(0,130)				
Age of youngest child 1–7 years	-0,22***	(0,028)	0,002	(0,044)	-0,35***	(0,036)
Married	0,14***	(0,027)	0,11**	(0,041)	0,12***	(0,036)
Home owner	0,10***	(0,024)	0,10***	(0,036)	0,07**	(0,034)
Post-comprehensive education	0,29***	(0,026)	0,25***	(0,034)	0,35***	(0,040)
Higher education	0,50***	(0,040)	0,39***	(0,065)	0,60***	(0,054)
Healthcare	0,09**	(0,039)	-0,18*	(0,101)	0,09*	(0,048)
Clerical	-0,24***	(0,045)	-0,30***	(0,078)	-0,23***	(0,057)
Commercial	-0,23***	(0,051)	-0,39***	(0,082)	-0,15**	(0,067)
Agriculture	0,21***	(0,060)	0,27***	(0,078)	0,06	(0,102)
Tranportation	0,06	(0,064)	0,10	(0,077)	-0,05	(0,166)
Industrial	0,20***	(0,039)	0,26***	(0,056)	-0,08	(0,066)
Services	-0,005	(0,045)	-0,11	(0,080)	0,01	(0,057)
Other	-0,48***	(0,052)	-0,42***	(0,076)	-0,54***	(0,073)
Partial professional skills	0,07**	(0,028)	0,01	(0,041)	0,11***	(0,038)
Complete professional skills	0,01	(0,029)	-0,01	(0,042)	0,02	(0,041)
Disability	-0,78***	(0,056)	-0,83***	(0,086)	-0,74***	(0,073)
Residential area urban	-0,06**	(0,025)	-0,08**	(0,035)	-0,04	(0,036)
Residential area popul.centre	0,03	(0,031)	0,10**	(0,043)	-0,04	(0,045)
Spouse unemployed > 6 months	-0,23***	(0,042)	-0,19***	(0,058)	-0,28***	(0,062)
Spouse's ed. post-comp. or high	0,13***	(0,026)	0,12***	(0,039)	0,09**	(0,036)
Basic UE allowance	-0,38***	(0,041)	-0,38***	(0,055)	-0,38***	(0,062)
Labour market support	-0,87***	(0,030)	-0,84***	(0,043)	-0,88***	(0,044)
Earnings related UE allowance	-0,37***	(0,028)	-0,33***	(0,040)	-0,42***	(0,039)
No unemployment 1996	-0,26***	(0,023)	-0,25***	(0,033)	-0,26***	(0,032)
Unemployed > 6 months 1996	-0,40***	(0,028)	-0,43***	(0,039)	-0,36***	(0,041)
Capital income	-1,96**	(0,821)	-3,04**	(1,265)	-1,36	(1,078)
Wealth [10^6 FIM]	-0,01	(0,057)	0,32**	(0,137)	-0,11	(0,108)
Liabilities [10^6 FIM]	0,61***	(0,111)	0,60***	(0,139)	0,60***	(0,201)
Spouse's income [10^6 FIM]	-0,06	(0,181)	0,93**	(0,379)	-0,18	(0,210)
Spouse's wealth [10^6 FIM]	-0,15	(0,107)	0,15	(0,258)	-0,17	(0,120)
Spouse's liabilities [10^6 FIM]	0,09	(0,082)	0,10	(0,294)	0,12	(0,086)
Citizenship other than Finnish	-0,71***	(0,085)	-0,59***	(0,114)	-0,81***	(0,128)

TABLE A5 Piecewise constant hazard model, exits to ALMP.

	All		Men		Women	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
tp1	-9,08***	(0,194)	-8,88***	(0,221)	-9,25***	(0,191)
tp2	-9,42***	(0,195)	-9,26***	(0,224)	-9,56***	(0,193)
tp3	-9,28***	(0,196)	-9,08***	(0,226)	-9,44***	(0,195)
tp4	-9,15***	(0,197)	-9,05***	(0,229)	-9,25***	(0,195)
tp5	-8,86***	(0,197)	-8,73***	(0,229)	-8,97***	(0,196)
tp6	-9,04***	(0,200)	-8,89***	(0,235)	-9,15***	(0,202)
tp7	-9,23***	(0,205)	-9,21***	(0,249)	-9,27***	(0,209)
tp8	-8,96***	(0,206)	-8,65***	(0,241)	-9,20***	(0,216)
tp9	-9,19***	(0,221)	-9,16***	(0,281)	-9,20***	(0,232)
tp10	-9,43***	(0,239)	-9,02***	(0,285)	-9,81***	(0,290)
Female	0,03	(0,239)				
Age 16–19	3,34***	(0,189)	3,37***	(0,201)	3,63***	(0,174)
Age 20–29	2,64***	(0,184)	2,64***	(0,193)	2,72***	(0,169)
Age 30–39	2,36***	(0,184)	2,33***	(0,190)	2,56***	(0,168)
Age 40–54	2,20***	(0,182)	2,18***	(0,184)	2,49***	(0,164)
Female x Age 16–19	0,28	(0,246)				
Female x Age 20–29	0,05	(0,242)				
Female x Age 30–39	0,15	(0,244)				
Female x Age 40–54	0,27	(0,243)				
Age of youngest child 1–7 years	-0,03	(0,033)	-0,01	(0,066)	-0,05	(0,039)
Married	0,01	(0,034)	0,11*	(0,061)	-0,04	(0,040)
Home owner	0,02	(0,030)	0,02	(0,051)	0,02	(0,038)
Post-comprehensive education	0,26***	(0,028)	0,26***	(0,044)	0,27***	(0,037)
Higher education	0,38***	(0,050)	0,52***	(0,088)	0,33***	(0,062)
Healthcare	0,24***	(0,054)	0,09	(0,132)	0,34***	(0,067)
Clerical	0,29***	(0,056)	0,25**	(0,096)	0,37***	(0,072)
Commercial	0,23***	(0,063)	0,23**	(0,101)	0,28***	(0,082)
Agriculture	-0,03	(0,086)	-0,07	(0,120)	0,04	(0,130)
Tranportation	-0,08	(0,094)	-0,16	(0,116)	0,18	(0,195)
Industrial	0,02	(0,055)	-0,06	(0,081)	0,20**	(0,080)
Services	-0,02	(0,059)	-0,08	(0,108)	0,05	(0,075)
Other	0,61***	(0,057)	0,57***	(0,090)	0,68***	(0,075)
Partial professional skills	-0,07**	(0,033)	-0,13**	(0,055)	-0,02	(0,042)
Complete professional skills	-0,09**	(0,036)	-0,13**	(0,060)	-0,06	(0,045)
Disability	-0,12***	(0,046)	-0,13*	(0,077)	-0,12**	(0,057)
Residential area urban	-0,35***	(0,028)	-0,42***	(0,045)	-0,31***	(0,036)
Residential area popul.centre	-0,19***	(0,036)	-0,16***	(0,057)	-0,22***	(0,047)
Spouse unemployed > 6 months	-0,17***	(0,045)	-0,24***	(0,078)	-0,15**	(0,056)
Spouse's ed. post-comp. or high	0,13***	(0,031)	0,19***	(0,054)	0,08**	(0,038)
Basic UE allowance	-0,18***	(0,058)	-0,26***	(0,085)	-0,14*	(0,079)
Labour market support	0,28***	(0,033)	0,18***	(0,051)	0,35***	(0,042)
Earnings related UE allowance	0,20***	(0,035)	0,16***	(0,056)	0,21***	(0,046)
No unemployment 1996	-0,11***	(0,029)	-0,18***	(0,047)	-0,08**	(0,038)
Unemployed > 6 months 1996	-0,06*	(0,033)	-0,09*	(0,050)	-0,04	(0,043)
Capital income	-1,36	(1,147)	-3,58	(2,342)	-0,44	(1,001)
Wealth [10^6 FIM]	0,01	(0,085)	-0,25	(0,328)	0,03	(0,078)
Liabilities [10^6 FIM]	0,15	(0,168)	-0,05	(0,247)	0,33	(0,257)
Spouse's income [10^6 FIM]	0,17	(0,225)	0,54	(0,486)	0,24	(0,253)
Spouse's wealth [10^6 FIM]	0,005	(0,128)	0,21	(0,415)	0,02	(0,136)
Spouse's liabilities [10^6 FIM]	-0,31**	(0,151)	-0,71	(0,545)	-0,23	(0,155)
Citizenship other than Finnish	0,21***	(0,058)	0,34***	(0,090)	0,13	(0,078)

TABLE A6 Piecewise constant hazard model, exits to economic inactivity.

	All		Men		Women	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
tp1	-6,18***	(0,103)	-6,08***	(0,140)	-6,33***	(0,130)
tp2	-5,94***	(0,104)	-5,80***	(0,142)	-6,10***	(0,132)
tp3	-6,11***	(0,107)	-5,93***	(0,146)	-6,31***	(0,136)
tp4	-6,30***	(0,111)	-6,23***	(0,154)	-6,39***	(0,141)
tp5	-6,38***	(0,117)	-6,41***	(0,165)	-6,40***	(0,148)
tp6	-6,45***	(0,123)	-6,39***	(0,172)	-6,54***	(0,160)
tp7	-6,69***	(0,136)	-6,53***	(0,185)	-6,87***	(0,184)
tp8	-5,44***	(0,114)	-5,27***	(0,155)	-5,64***	(0,150)
tp9	-6,26***	(0,157)	-6,10***	(0,216)	-6,44***	(0,214)
tp10	-6,13***	(0,166)	-6,06***	(0,235)	-6,21***	(0,220)
Female	-0,09	(0,087)				
Age 16–19	1,23***	(0,089)	1,12***	(0,107)	1,01***	(0,101)
Age 20–29	0,69***	(0,080)	0,64***	(0,097)	0,90***	(0,088)
Age 30–39	0,27***	(0,081)	0,21**	(0,091)	0,39***	(0,085)
Age 40–54	-0,08	(0,076)	-0,10	(0,081)	0,02	(0,077)
Female x Age 16–19	-0,27**	(0,107)				
Female x Age 20–29	0,18*	(0,095)				
Female x Age 30–39	0,09	(0,104)				
Female x Age 40–54	0,10	(0,104)				
Age of youngest child 1–7 years	-0,41***	(0,041)	-0,08	(0,074)	-0,54***	(0,050)
Married	0,05	(0,038)	0,02	(0,064)	0,05	(0,048)
Home owner	0,01	(0,033)	0,00	(0,051)	0,02	(0,044)
Post-comprehensive education	0,18***	(0,029)	0,10**	(0,041)	0,25***	(0,043)
Higher education	0,09*	(0,054)	0,02	(0,090)	0,14**	(0,069)
Healthcare	-0,07	(0,058)	-0,04	(0,138)	-0,15**	(0,071)
Clerical	-0,14**	(0,060)	0,07	(0,095)	-0,30***	(0,078)
Commercial	-0,16**	(0,066)	-0,20*	(0,103)	-0,19**	(0,088)
Agriculture	-0,26***	(0,093)	-0,11	(0,121)	-0,50***	(0,153)
Tranportation	-0,10	(0,088)	-0,07	(0,108)	-0,01	(0,186)
Industrial	-0,12**	(0,055)	-0,02	(0,078)	-0,29***	(0,088)
Services	-0,15**	(0,061)	-0,03	(0,102)	-0,25***	(0,079)
Other	0,25***	(0,058)	0,22**	(0,088)	0,25***	(0,079)
Partial professional skills	-0,03	(0,036)	-0,08	(0,054)	-0,00	(0,048)
Complete professional skills	-0,01	(0,041)	-0,06	(0,062)	0,04	(0,055)
Disability	0,002	(0,050)	0,02	(0,076)	-0,005	(0,066)
Residential area urban	0,02	(0,032)	-0,02	(0,046)	0,05	(0,046)
Residential area popul.centre	0,06	(0,041)	-0,01	(0,060)	0,12**	(0,058)
Spouse unemployed > 6 months	-0,23***	(0,053)	-0,37***	(0,085)	-0,14**	(0,068)
Spouse's ed. post-comp. or high	0,03	(0,035)	0,04	(0,056)	0,01	(0,045)
Basic UE allowance	-0,70***	(0,053)	-0,73***	(0,071)	-0,72***	(0,078)
Labour market support	-0,78***	(0,032)	-0,83***	(0,047)	-0,73***	(0,046)
Earnings related UE allowance	-1,00***	(0,036)	-1,13***	(0,053)	-0,90***	(0,049)
No unemployment 1996	-0,03	(0,031)	0,06	(0,047)	-0,08*	(0,043)
Unemployed > 6 months 1996	-0,28***	(0,039)	-0,28***	(0,056)	-0,28***	(0,054)
Capital income	-0,59	(0,557)	-0,89	(0,748)	-0,38	(0,881)
Wealth [10^6 FIM]	0,12**	(0,054)	0,23	(0,193)	0,08	(0,058)
Liabilities [10^6 FIM]	0,33*	(0,176)	0,01	(0,251)	0,78***	(0,290)
Spouse's income [10^6 FIM]	-0,15	(0,258)	-0,48	(0,558)	-0,06	(0,298)
Spouse's wealth [10^6 FIM]	0,26**	(0,128)	0,40	(0,437)	0,20	(0,137)
Spouse's liabilities [10^6 FIM]	-0,06	(0,148)	-0,20	(0,432)	0,02	(0,153)
Citizenship other than Finnish	0,08	(0,069)	0,07	(0,101)	0,07	(0,096)

TABLE A7 Split population model, all exits (pooled).

	All		Men		Women	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
tp1	-1,12***	(0,065)	-1,08***	(0,084)	-1,31***	(0,080)
tp2	-1,38***	(0,066)	-1,28***	(0,086)	-1,61***	(0,080)
tp3	-1,57***	(0,068)	-1,48***	(0,089)	-1,77***	(0,080)
tp4	-1,59***	(0,070)	-1,65***	(0,093)	-1,68***	(0,080)
tp5	-1,48***	(0,071)	-1,58***	(0,096)	-1,53***	(0,090)
tp6	-1,62***	(0,076)	-1,63***	(0,103)	-1,71***	(0,090)
tp7	-1,79***	(0,084)	-1,89***	(0,116)	-1,80***	(0,100)
tp8	-1,14***	(0,081)	-1,02***	(0,107)	-1,34***	(0,100)
tp9	-1,70***	(0,104)	-1,72***	(0,145)	-1,76***	(0,130)
tp10	-1,47***	(0,117)	-1,41***	(0,158)	-1,59***	(0,160)
Female	-0,13*	(0,069)				
Age 16–19	1,77***	(0,062)	1,81***	(0,071)	1,93***	(0,067)
Age 20–29	1,46***	(0,056)	1,53***	(0,064)	1,54***	(0,060)
Age 30–39	1,23***	(0,055)	1,23***	(0,061)	1,32***	(0,059)
Age 40–54	1,01***	(0,054)	1,04***	(0,057)	1,17***	(0,055)
Female x Age 16–19	0,19**	(0,080)				
Female x Age 20–29	0,08	(0,072)				
Female x Age 30–39	0,04	(0,074)				
Female x Age 40–54	0,16**	(0,073)				
Age of youngest child 1–7 years	-0,21***	(0,020)	0,03	(0,035)	-0,31***	(0,024)
Married	0,08***	(0,019)	0,06*	(0,032)	0,05**	(0,024)
Home owner	0,05***	(0,017)	0,08***	(0,027)	0,02	(0,023)
Post-comprehensive education	0,24***	(0,017)	0,20***	(0,024)	0,29***	(0,024)
Higher education	0,35***	(0,028)	0,27***	(0,047)	0,41***	(0,036)
Healthcare	0,07**	(0,029)	-0,07	(0,073)	0,08**	(0,036)
Clerical	-0,08**	(0,031)	-0,06	(0,053)	-0,08**	(0,040)
Commercial	-0,11***	(0,035)	-0,18***	(0,056)	-0,07	(0,046)
Agriculture	-0,00	(0,045)	0,05	(0,060)	-0,13*	(0,074)
Tranportation	-0,06	(0,048)	-0,05	(0,058)	0,01	(0,108)
Industrial	0,03	(0,029)	0,08**	(0,041)	-0,12**	(0,045)
Services	-0,08**	(0,032)	-0,09	(0,057)	-0,09**	(0,041)
Other	0,15***	(0,032)	0,12**	(0,049)	0,16***	(0,044)
Partial professional skills	-0,03	(0,019)	-0,08***	(0,030)	0,02	(0,025)
Complete professional skills	-0,05**	(0,021)	-0,07**	(0,032)	-0,03	(0,028)
Disability	-0,33***	(0,030)	-0,38***	(0,048)	-0,30***	(0,039)
Residential area urban	-0,14***	(0,017)	-0,19***	(0,025)	-0,12***	(0,023)
Residential area popul. centre	-0,05**	(0,022)	-0,02	(0,032)	-0,08***	(0,029)
Spouse unemployed > 6 months	-0,23***	(0,028)	-0,28***	(0,043)	-0,21***	(0,037)
Spouse's ed. post-comp. or high	0,11***	(0,018)	0,13***	(0,029)	0,06**	(0,024)
Basic UE allowance	-0,41***	(0,030)	-0,48***	(0,042)	-0,38***	(0,044)
Labour market support	-0,51***	(0,020)	-0,60***	(0,029)	-0,43***	(0,027)
Earnings related UE allowance	-0,38***	(0,021)	-0,44***	(0,031)	-0,36***	(0,028)
No unemployment 1996	-0,17***	(0,016)	-0,16***	(0,025)	-0,16***	(0,022)
Unemployed > 6 months 1996	-0,28***	(0,019)	-0,32***	(0,028)	-0,23***	(0,027)
Capital income [10^6 FIM]	-1,06**	(0,437)	-2,03***	(0,744)	-0,61	(0,532)
Wealth [10^6 FIM]	0,03	(0,037)	0,23*	(0,128)	-0,01	(0,045)
Liabilities [10^6 FIM]	0,40***	(0,084)	0,26**	(0,112)	0,55***	(0,146)
Spouse's income [10^6 FIM]	0,11	(0,137)	0,66**	(0,273)	0,19	(0,158)
Spouse's wealth [10^6 FIM]	0,03	(0,072)	0,37*	(0,208)	0,03	(0,078)
Spouse's liabilities [10^6 FIM]	-0,04	(0,065)	-0,08	(0,233)	0,01	(0,067)
Citizenship other than Finnish	-0,10**	(0,041)	-0,04	(0,060)	-0,15***	(0,056)
Split parameter, const	-5,06***	(0,139)	-4,79***	(0,171)	-5,25***	(0,192)
c = Pr(never fail)	0,006313		0,008277		0,005229	
Likelihood ratio test of c=0:	chi2(01)=125,30***		chi2(01)=82,02***		chi2(01)=73,23***	

CHAPTER 5

DIFFERENTIAL EFFECTS OF ACTIVE LABOUR MARKET PROGRAMMES IN THE EARLY STAGES OF YOUNG PEOPLE'S UNEMPLOYMENT

Virve Ollikainen*

ABSTRACT.** This study evaluates the long-run effects of Finnish active labour market programmes in youth labour markets. The effectiveness of programmes is measured by a number of outcomes, including employment, unemployment, programme participation, education, being out of the labour force and annual earnings. A non-parametric propensity score matching approach adapted for the case of multiple programmes is applied to estimate the average programme effects. Our results point out distinct variation in the success of programmes, and indicate that job placement and labour market training are successful not only in promoting employment but also in increasing the earnings of participants. In addition, men seem to benefit from participation more than women. The largest of all programmes, youth practical training, is not found to have any impacts on young persons' labour market careers.

Keywords: active labour market programmes, propensity score, matching, heterogeneous treatment effects

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* This paper has been written jointly with Kari Hämäläinen (Principal Economist, Government Institute for Economic Research, PhD in Econ.). Virve Ollikainen is the first author of this paper and responsible for the statistical estimation. Writing the paper and interpreting the results have been done jointly with Kari Hämäläinen.

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1 Introduction

Finland experienced a severe economic crisis in the 1990s, during which time the unemployment rate shot up from 4 per cent to nearly 17 per cent. Since then the unemployment rate has been declining slowly but steadily, running currently, in 2004, at some 10 per cent. Young people were hit especially hard by the economic slump. It is of some concern that their unemployment rate has remained at a very high level, particularly among the youngest age groups (see Figure 1).

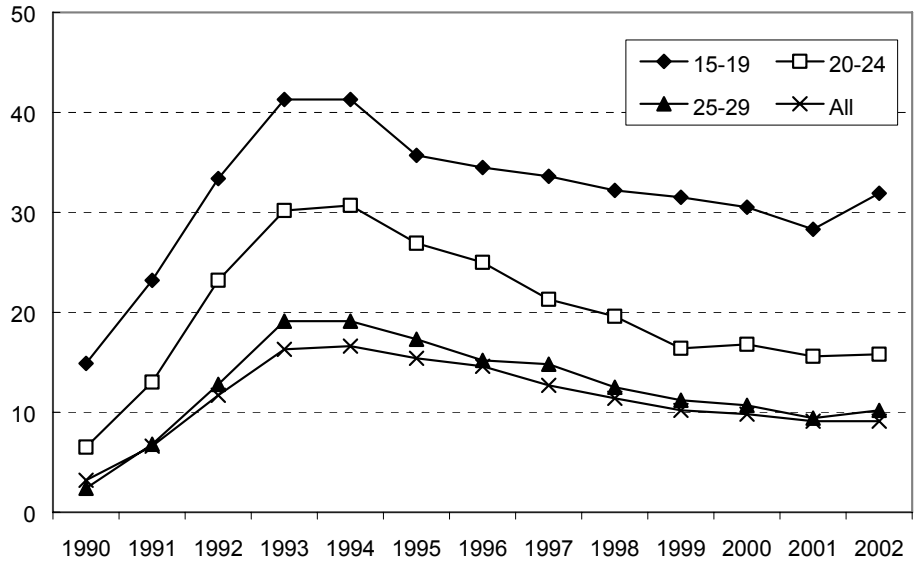

FIGURE 1 Youth unemployment rates (%) by age group in Finland.

In response to the unemployment crisis, the Finnish government increased spending on active labour market programmes (ALMPs) in order to improve the chances of the unemployed to return to regular employment. In 1997 the proportion of participants in active programmes peaked at nearly 4.5 per cent of the labour force, a volume which exceeds the open unemployment rate of the late 1980s. Despite the massive spending in active labour market policy, its usefulness in improving the participants' labour market position has been in serious doubt.

In addition to changes in the level of active labour market policy, its composition has been altered. During the late 1990s the share of participants in labour market training increased, while the number of selective employment measures was reduced. A new feature was the introduction of means-tested labour market support which was aimed at individuals who had not fulfilled the time-at-work condition before becoming unemployed. Under this scheme it became possible to fund an individual's practical training by an amount equalling the labour market support. For the young unemployed, placement in practical training (youth practical training) soon largely displaced the other forms of active programmes. As it happens, youth practical training is also the

cheapest form of active measures, so it is worth examining how successful this relatively inexpensive programme is compared with older and more expensive programmes. At the same time, results concerning the effectiveness of different programmes give us some guidance as to whether the implemented changes in the composition of active labour market policy have been successful in terms of promoting young persons' labour market careers.

Previous microeconometric studies of active labour market programmes in the Nordic countries have not been particularly encouraging (see e.g. Ackum 1991, Korpi 1994, Regnér 1997, Larsson 2003, Sianesi 2003, Raaum et al. 2002, Jespersen & Munch, 2004). In particular, Swedish studies have found mainly negative or zero effects of the programmes on labour market outcomes. The only exception is formed by private sector job subsidies that are found to improve the participants' employment prospects. It is interesting to see how the Finnish evidence compares with the Swedish evidence, given that these two countries have fairly similar labour market institutions and welfare systems.

This study focuses on the average treatment effects on the treated, which are estimated by propensity score matching methods. Our approach departs from the existing ALMP evaluation literature in that whereas most of the studies cover only the immediate effects of a few (usually 1-3) outcome variables, our data enable us to evaluate the impact of programmes on a variety of outcome variables. By this means, we are able to provide a more thorough examination of the role that active labour market policy has in youth labour markets. In addition, the outcome period under examination covers up to five years after the start of a programme, so we are able to discuss both the short-run and the long-run impacts of active programmes. Since labour market programmes, and particularly labour market training, can be considered as public investments in human capital, the long-run effects are important in considering the effectiveness and social returns of these programmes. The estimations are carried out in a multiple programme framework that allows us to explore possible heterogeneities in the impacts of ALMPs. Finally, heterogeneity in the treatment effects between men and women is also examined.

The rest of this paper proceeds as follows. The next section outlines the structure of Finnish active labour market policy. The data is introduced in the third section, along with the determinants of programme participation. The fourth section introduces the propensity score matching framework and the evaluation results. Finally, section five concludes.

2 Active labour market policy in Finland

Unlike the case in many other countries, the active labour market policy in Finland has a strong emphasis towards selective employment measures. Figure 2 shows that the number of participants in selective employment measures more than doubled in the early 1990s. Since the increase in labour market trainees remained quite modest, the relative importance of selective employment measures peaked in 1994. During that year 2.7 per cent of the labour force was placed in selective employment measures.

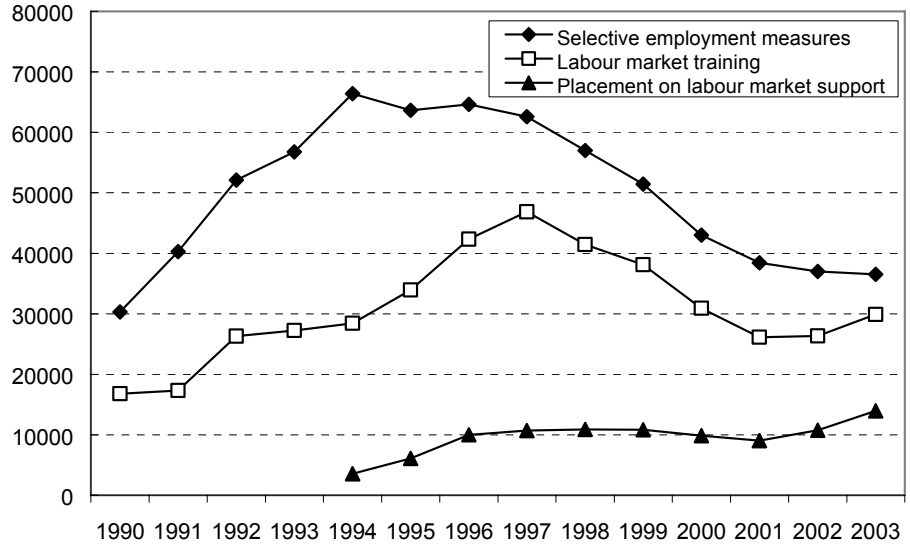

FIGURE 2 The number of participants in different programmes.

A change in the implementation of active labour market policy coincided with the reform of the unemployment compensation system in 1994. At the beginning of that year means-tested labour market support was introduced. It was targeted at unemployed persons who had not fulfilled the time-at-work condition before becoming unemployed. It soon turned out that the exit rate out of unemployment was much lower among individuals receiving labour market support than among those receiving other forms of unemployment compensation. As a result, the activating part of labour market support, according to which unemployed persons may participate in practical training or coaching for working life while receiving labour market support, was strengthened. By the year 2003 the number of participants in these measures climbed up to 15 000 (placement on labour market support). Figure 2 implies that this increase has partially been compensated by a reduction in selective employment measures. This, together with a recent increase in labour market trainees, has sharply reduced the gap between selective employment measures and labour market training.

A standard employment subsidy paid to an employer varies among sectors, covering all wage costs in central government and equalling the

unemployment allowance in local government and in the private sector. The employment subsidy can be increased by the maximum of 80 per cent under certain conditions; under these conditions it equalled 770 euros per month in 2003 for the local government and private sectors. During the placement period a participant receives the prevailing market wage set in collective agreements. In addition to the amount of a subsidy, job contracts also vary across sectors. Job placements in central and local government are typically on fixed-term bases, offering an unemployed individual a temporary job for 6 months. This falls short of fulfilling the 10 months' time-at-work condition that is the prerequisite for receiving earnings-related unemployment benefits. In contrast, job placements in the private sector require a job contract between a participant and an employer that is expected to continue after completion of the job placement. However, in practice this requirement does not seem to be binding, as some of the participants in private sector job placements return to unemployment straight after completing the job placement.

Labour market training (LMT) consists of two parts. Adult, non-basic vocational training, which may involve also practical training, is mainly offered to persons over 20 years of age, but in some cases younger persons are also eligible. The average duration of a vocational training period is slightly less than five months. Preparatory training differs from vocational training in two respects. It is of shorter duration and is aimed at offering basic skills required in the labour market. Participation in a labour market training programme is free for the participants. During participation they receive a sum equalling their unemployment compensation together with a daily allowance for maintenance and possibly for accommodation. Labour market training is organised by vocational adult education centres or other suppliers of training services. The suppliers are selected by regional authorities or local employment agencies on the basis of offers sent to the invitations for tenders.

Placement on labour market support forms the activating part of the unemployment compensation system. It offers an opportunity for an unemployed person under the age of 25 to participate in practical training and for an unemployed person over 25 years of age to participate in coaching for work life. It is also possible for local employment agencies to place individuals on labour market support in practical training/coaching. These schemes are financed by labour market support payments so that a participant receives an amount equalling labour market support (500 euros per month in 2003). Labour market support is paid to a participant even if he/she is not entitled to unemployment benefits. Participants in these programmes do not have any formal job contract with an employer during the participation period, which may last for a maximum of 18 months. Since there is no formal job contract, this period does not add to the time-at-work condition. From 1998 onwards it has also been possible to combine labour market support to an employment subsidy if an employer hires a person who has been unemployed for over 500 days. From 2002 onwards this programme may last for two years. During the first year an employer receives both subsidies and the employment subsidy is

dropped after the first year, i.e. the level of subsidy equals labour market support during the second year. If an unemployed person is hired under this combined scheme, he/she receives the prevailing market wage just as in standard selective employment measures.

The aims and target groups differ across different programmes. Young persons are among the target groups in selective employment measures, placements on labour market support and preparatory labour market training. Long-term unemployment is tackled with selective employment measures and with combined employment subsidy when the period of unemployment exceeds 500 days. Vocational labour market training is mainly targeted at individuals over 20 years of age. As to the goals of these measures, labour market training is given structurally oriented goals that aim at preventing labour shortages and facilitating economic growth. More individually oriented goals of LMT consist of stabilising the unemployed persons' work career and preventing the threat of unemployment. Selective employment measures and placements on labour market support share these individual level goals; additional targets consist of improving individuals' employment possibilities and preventing displacement from the labour market. An additional goal set for young people is to help young, unemployed individuals in getting formal education and, in general, connecting them to the labour market.

An interesting issue in the evolution of Finnish active labour market policy is that placements on labour market support (practical training and coaching for work life) are mainly targeted at young people and this measure has, to a large extent, displaced other forms of programmes. This is especially evident among unemployed persons under 20 years of age. At the end of the 1990s around three-fourths of all active measures targeted at this age group were organised through practical training. What makes the issue especially interesting is that this kind of youth practical training is a relatively inexpensive way in which to organise active measures. Its cost per participant is around 5 900 euros, while the costs in selective employment measures are 8 900 euros (ranging from 7 800 euros in local government and in the private sector to 18 400 euros in central government) and in labour market training 13 800 euros per participant[50]. The effect of this shift to less expensive programmes on youth labour markets is one of the main issues of interest in this study.

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50 The figures are collected from the 2002 budget proposal published by the Ministry of Labour and they correspond to the yearly averages of programme participants. The figures do not include combined subsidies or enterprise allowances. The costs of labour market training include labour market support paid to trainees, whereas costs not directly connected to labour market training (e.g. job-seeking allowances) are excluded.

3 Data and programme participation

3.1 Sample

The analyses in this study are based on panel data originating from the 1997 population census. The data set consists of a 10 per cent random sample of individuals who were 12-75 years of age on December 31, 1997 (around 350 000 observations). Statistics Finland has expanded the census data by collecting information on these individuals from various registers including, for example, tax registers, pension and benefit registers, student registers and, most importantly, the register of unemployed job seekers maintained by the labour administration. The resulting register-based data set covers the years 1988-2000 and includes a wide range of information on individual demographic and socio-economic characteristics, details of unemployment and involvement in active labour market programmes etc. Altogether, almost 200 variables are available.

A series of sample selection rules were employed in constructing the final sample employed in the analyses. First, we selected all individuals who had registered as job seekers during 1995 or 1996. The size of this sample was some 50 000 individuals. Second, we restricted the sample to young persons of 16-30 years of age on their first unemployment spell. The reason for focusing on the first period of unemployment is that it offers a way to control both for previous unemployment experience and multiple programme participation. By this means, individuals in the sample have exactly the same unemployment experience and there are no re-participants who have not benefited from previous programmes. This selection rule also sets the focus of this study on young persons in the early stages of their labour market careers. The upper limit of age restriction ensures that university graduates, whose average graduating age is close to 28 years, are also included in the analyses. At this point, the sample consisted of some 10 000 individuals, of whom 2 290 ended their first period of unemployment by participating in an active programme within two years after entering unemployment[51].

Finally, the last selection rule was constructed to control for the impact of the duration of unemployment on the selection process. It is evident that the duration of a period of unemployment influences both the probability of participation and further labour market outcomes. This means that the duration of unemployment needs to be included among the characteristics explaining the participation process. Furthermore, the dependence between the selection process and the duration of an ongoing period of unemployment means that active programmes are not an alternative for all unemployed persons,

[51] We employed the 7-day rule in deciding whether a person participated in a programme directly from unemployment. This takes into account potential differences in programme starting dates and unemployment ending dates arising from administrative reasons, such as a period of unemployment being registered as ending on a Friday if a programme starts on a Monday etc.

especially for those who manage to get a job immediately after registering at an employment agency. It is intuitive that meaningful evaluations of active programmes require that the individuals in the no-programme group have, at least, the possibility to participate in an active programme.

Before controlling for the duration of an ongoing period of unemployment in the selection process, the variable needs to be created. The problem with this is that we do not observe any non-participant actually participating in a programme. Following Lechner (1999) we randomly draw a hypothetical programme starting date for the non-participants from the sampling distribution of the participants' starting dates. To control for potential differences in durations of unemployment across periods of unemployment starting at different periods of time, the sample was split into monthly intervals according to the starting date of the unemployment period. Within these intervals a hypothetical starting date was constructed for each non-participant. To ensure that all non-participants had the opportunity to participate in a programme, those non-participants whose actual duration of unemployment was shorter than the simulated one were excluded from the analyses. This resulted in the final sample consisting of 6 493 observations, out of which 2 290 participated in an active programme within the observation period. Out of the participants 492 participated in selective employment measures, 1 377 in youth practical training and 421 in labour market training.

3.2 Modelling participation in programmes

Microeconometric evaluations try to provide an answer to the question as to whether participants in active labour market programmes have experienced improvements in their labour market position and whether this outcome would have been observed even without participation. The main problem arises from missing data, since we do not observe the outcome under the counterfactual state of non-participation. The construction of this counterfactual state requires the modelling of the selection process that places individuals in different programme categories. In experimental research design this is solved by randomly assigning the unemployed in different programmes, in which case the outcome and the participation decision are independent of each other through the research design. Social experiments are typically thought of creating such reliable results of the impact of programmes on labour market outcomes that experimental findings are employed as benchmarks in testing the reliability of the results provided by non-experimental evaluations, see, for example, LaLonde (1986), Heckman et al (1997), Dehejia and Wahba (1999).

Experimental research designs are rare in Nordic labour markets, so researchers have to turn to non-experimental evaluations and an analyst needs a comparison group, which is thought of representing the counterfactual outcome for programme participants. This creates an additional problem, since data is generated by individuals who make choices about belonging to one of possibly many groups. If the choice process depends on factors that also affect the outcome, the data generating process is one that includes selection bias, and

this must be taken into account in constructing the non-experimental evaluation estimator. In this case, the identification of the programme effect requires some underlying assumptions that cannot be tested, and their relevance must be judged against the origin of selection bias and the available data set.

The solution to the selection bias depends on whether it arises, in Heckman and Hotz's (1989) terminology, as selection on observables or on unobservables. These two terms are closely connected to each other and depend on the institutional setting of active programmes. It is evident that the richer the data set the larger the share of the selection process allocated to observables. In an extreme case, when an analyst has information on all the factors affecting the allocation process and all of these are included in the selection model, all selection is based on observables. As Frölich (2004) points out, a bureaucratic and rule-based administration of active programmes results in a selection process that one finds easier to control by assuming that the selection is based on observable factors. The rule-based administration makes it easier to select the relevant factors for the empirical model of programme participation. At the same time it reduces the requirements for the data set, as the major factors influencing participation can be related to the selection process carried out by the labour administration.

This study adopts the propensity score matching framework, where the underlying assumption is that selection is based on observables, i.e. we assume that, conditional on observables, the means of counterfactual outcomes are independent of participation in a treatment, see Heckman et al. (1998). In the Finnish context it is easier to argue that this assumption holds in job-related measures than in the case of labour market training. As is discussed above, participants in job-related measures are selected by local public employment agencies, which follow the guidelines set by the Ministry of Labour. These guidelines are, to a large extent, rule-based, targeting job-related measures principally at the long-term unemployed and young unemployed people. In addition, the data set includes some information gathered by public employment agencies at the time an individual is registered as an unemployed job seeker, so we have much of the same information as a person who selects the unemployed into job-related measures, added with information provided by other registers.

The decision to participate in labour market training requires more activity from an unemployed job seeker than does participation in a job-related measure. Given the training programmes provided by the local employment agency, the selection process consists of sending an application, being accepted by an employment agency and finally starting a training course. This leaves more room for individual aspirations, not all aspects of which are necessarily observed by researchers. There are, however, two reasons why we believe that the selection on observables assumption is acceptable in our study. First, previous evaluations of LMT imply that the role of unobservable factors declined during the early 1990s, see Hämäläinen (2002). Second, the occurrence of mass unemployment in the early 1990s more than quadrupled the number of

applications in LMT, which, in turn, was likely to increase the importance of observed factors in the final selection stage carried out by local employment agencies. By these means, we believe that our data set is rich enough to cover the factors that determine both the motivation to apply for LMT and, more importantly in the era of high unemployment, success during the final stage of selection.

To explore the heterogeneity of treatment effects, the programmes are divided into selective employment measures, youth practical training and labour market training. The independent variables control for a wide variety of observable differences among the unemployed. Typical background characteristics, such as gender, age, presence of children and education, are also controlled for in this study. In addition, we have information on the spouse (employment, education, income and debt) and on personal debt that may affect both the participation decision and future labour market outcomes. These factors are connected to the probability of employment through reservation wages. For instance, higher personal debts lower the reservation wage, provided that an unemployed person accepts lower job offers to cover the debt instalments. If personal debts or a spouse's economic situation also affect the participation decision, these factors need to be controlled for in empirical analyses.

Heckman et al. (1999) pointed out that it is vital to control for labour market histories. In this study this requirement is mainly satisfied by focusing on the first period of unemployment. To complement the unemployment history, the participation probability is allowed to depend on the employment status, the graduation status and the child home care allowance status on the previous year, the last one controlling for whether a person has taken care of children at home. In addition, preliminary data analyses revealed that some persons enrolled in a programme shortly after graduation. For this reason, graduation in the year of becoming unemployed and in the previous year is also included among the explanatory variables.

There are wide differences in the supply of active programmes across regions and occupations. One of the aims of Finnish active labour market policy is to reduce regional differences in unemployment rates. Accordingly, the participation rate is higher in high unemployment regions. This calls for the inclusion of variables controlling for the travel-to-work unemployment rate and individuals' labour market areas. By this means, we are able to place the programme participants and the controls in the same labour market, which is essential, given the wide and persistent unemployment differences across Finnish regions. Similarly, an unemployed person's occupation influences both his/her employment possibilities and probabilities of participating in different programmes.

The final set of variables, viz. disability, professional skills, job-seeking area and the working hours an unemployed person is willing to accept, is based on the interview between a job seeker and an employment agency officer. These interviews are carried out at the time a job seeker registeres as an unemployed

person. This information is potentially important, since it reflects the skills and motivation of a job seeker. By this means, we are able to reduce the proportion of individual heterogeneity that is allocated to unobservables. We expect that after controlling for all these factors there is nothing that systematically introduces correlation between the participation decision and labour market outcomes[52].

Before carrying out the propensity score matching, one has to obtain the participation probabilities. At the minimum, an analyst needs the conditional probabilities, $p^{m|ml}$, that determine the probability of participation in a programme m among the participants in programmes m and l. These can be estimated by separate binary logit or probit models as in Sianesi (2003) and Jespersen and Munch (2004). This requires the estimation of M(M-1)/2 separate binary models, where M equals the number of programme groups.

An alternative to separate binary models is to model programme participation within a multiple choice model, see Lechner (2002a). According to his results, these two approaches have fairly similar balancing properties and, hence, lead to similar evaluation results. This implies that the choice of empirical model employed in estimating participation probabilities is not crucial for evaluation results. For this reason, we follow Larsson (2003) and Raaum et al. (2002) and estimate the propensity scores within a unifying framework by employing the multinomial logit model (MNL) in constructing the propensity scores[53].

3.3 Determinants of participation

Table A3 in the Appendix reports the results of participation equations that are identified by setting the non-participants in the reference category. Encouragingly, the parameter estimates of the independent variables included in participation equations are well determined and in line with what we would expect, based on our understanding of the Finnish active labour market policy system.

Among individual characteristics the main determinants of programme participation are gender, age, marital status and a spouse's labour market position. The influence of these factors is mainly shown in selective employment measures and youth practical training equations. The targeting of these measures at young people is highlighted in the results by significant and negative parameter estimates of the age variable. Age does not have any significant impact in the LMT equation, most probably since, owing to data limitations, vocational and preparatory training are grouped together. An

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52 The definition of variables and basic statistics is described in Tables A1 and A2 in the Appendix.

53 Unreported results show that the evaluation results reported below are fairly robust for the choice of empirical model (binary probit models vs. multinomial logit model) adopted in estimating the propensity score. These results are available from the authors on request.

interesting finding is that a spouse's employment and income increase the odds of participating in job-related measures as opposed to non-participation. This is consistent with the findings according to which a spouse's employment is positively connected to an individual's own employment and closer attachment to labour markets; see, for example, Dex et al. (1995).

It is equally important to control for the previous labour market state in the selection process. History variables obtain large and statistically significant parameter estimates, even though we control for previous unemployment/programme participation and various other factors affecting participation. According to the results in Table A3, the selection process sorts young unemployed persons with previous employment experience (Employed previous year) into selective employment measures and labour market training. This is an intuitive result, since they do not necessarily need any practical training, given their previous work experience. Labour market training is also offered to young persons who enter unemployment after taking care of their children at home (Child home care allowance prev. year). These individuals may have been out of the labour force for several years, so their working skills need updating. This task is carried out by complementary training rather than by youth practical training. Finally, youth practical training is provided for young persons who have registered as unemployed job seekers straight after graduation (Same year graduate). Since many university graduates work while studying, this result is likely to concern mainly graduates from lower levels of education. If this is the case, they already have a vocational education, which is reflected in their lower odds of participating in labour market training straight after graduation.

Also, the effects of labour market variables are consistent with a priori knowledge of the aims and target groups of different programmes. A person with a longer period of unemployment is more likely to end up in an active programme than a similar person with a shorter period of unemployment. Since youth practical training is aimed at offering young persons their first contact with working life, it is not surprising that young people who have acquired an occupation are less likely to end up in youth practical training when compared with non-participants. Instead, they are placed in selective employment measures. The aim of reducing regional unemployment differences through ALMP is clearly reflected in the results. Almost all of the parameter estimates for the regional dummies gain significant and positive parameter estimates. In particular, job-related measures are more heavily aimed at regions with high unemployment.

Finally, information gathered by an employment office at the time an individual is first registered as an unemployed job seeker is found to explain participation in an active programme. Young persons who are less adaptable to working hours are more likely to end up in youth practical training. One explanation for this finding is that young persons with the least knowledge of working life believe that the job offers for young persons are predominantly full-time jobs with regular working hours. More experienced persons have

noticed that this is not necessarily the case, and they put less weight on regular working hours. Similarly, young individuals who are willing to seek and accept jobs outside their living area are less likely to participate in youth practical training when compared with non-participation. One reason for this is that they are more motivated in finding a job that offers wage earnings above the unemployment compensation. Finally, if a young person has a disability, he/she is more prone to participate in a selective employment measure as opposed to non-participation, other things being equal.

4 The evaluation of active programmes

4.1 Empirical model

This study adopts the propensity score matching framework in constructing the causal model for the impact of participation in an active measure on future labour market outcomes. Rosenbaum and Rubin (1983) showed that under the assumption of selection on observables conditional independence also holds when the propensity score is used in conditioning, given the explanatory variables. Imbens (2000) and Lechner (2001) generalised this result for the evaluation of multiple treatments. In this case, the relevant propensity score is either the conditional probability of participating in a programme m for a participant in programmes m or l, given the pre-treatment variables X, $P^{m|ml}(X)$, or a metric based on the participation probabilities, $P^m(X)$ and $P^l(X)$. These two approaches lead to similar results, but there is some evidence that the estimators based on $P^m(X)$ and $P^l(X)$ outperform the estimators based on conditional participation probabilities; see Lechner (2002a).

In setting up the causal model, the principal problem is that the counterfactual labour market outcomes of the participants in treatment m, $E(Y^l \mid T = m)$, are unknown. In propensity score matching these counterfactuals are created by control observations whose probability of participating in a treatment resembles that of the treated. Under the CIA assumption the generalised propensity score matching estimator for the average treatment effect on the treated (ATT) can be written as (see for example Heckman et al., 1999),

$$ATT = E(Y^m - Y^l \mid P^m(X), P^l(X), T = m) = \frac{1}{N_m}\sum_{i=1}^{N_m}\left(Y_i^m - \sum_{j=1}^{N_l} w(i,j)Y_j^l\right),$$

where N_m (N_l) is the number of the treated (controls), Y_i^m (Y_j^l) is the outcome of the i^{th} (j^{th}) treated person (person in the control group) and w(i,j) are the weights attached to persons in the control group. Different estimators differ from each other by the weights given to control observations. For instance, the nearest neighbour pair-matching estimator with replacement is obtained by

setting the weight to one for the control observation whose estimated propensity score is the closest to the i^{th} treated individual[54].

Other matching estimators are obtained by varying the number of control observations that are assigned positive weights and the size of these weights. Asymptotically, different estimators lead to the same results, but in finite samples there may be large differences in the results. Employing more neighbours for the participant observation for which the counterfactual is being constructed reduces variance but increases bias as matches become poorer. An increase in bias may be reduced by weighting more heavily those control observations whose match is closer to the i^{th} treated individual; see Heckman et al (1997, 1999). This can be done, for example, via Kernel matching, which is found to outperform nearest-neighbour matching in the studies by Frölich (2004) and Black and Smith (2004). The Kernel method sets the weighting function w(i,j) equal to

$$G\left(\frac{P_j - P_i}{\alpha_n}\right) \Big/ \sum_{k=1}^{N_1} G\left(\frac{P_k - P_i}{\alpha_n}\right),$$

where the P's refer to probability measures employed in matching. This requires the choice of a Kernel function, G, as well as the choice of a bandwidth parameter, α_n. Encouragingly, Black and Smith (2004) show that there are no large differences between Kernel functions, and the method is relatively insensitive to the choice of bandwidth until very small bandwidths are employed.

4.2 Success of matching

Before implementing the propensity score matching, we need to make sure that observations from the four groups could be observed as having similar participation probabilities. Following Lechner (2002b) this requirement is carried out by removing all observations with probabilities larger than the smallest maximum and smaller than the largest minimum of all sub-samples.

After implementing the common support requirement we match the participants in different programmes to non-participants by employing the Epanechnikov Kernel and the Mahalanobis metric, based on participation probabilities. The following means of propensity scores are reported in Table 1. The first column refers to the treated, the second to the unmatched non-participants and columns 3-6 to the matched non-participants. The last column reports the number of participants. The numbers change somewhat across different bandwidths employed in Kernel matching, even though the common support condition is also employed in Kernel matching. It is evident that, originally, the treated and the non-participants differ sharply from each other in

54 The nearest neighbour matching with replacement is commonly employed in recent non-experimental evaluation studies; for detailed descriptions and applications of this method see Heckman et al. (1997, 1999), Lechner (2002a, 2002b), Gerfin and Lechner (2002), Dehejia and Wahba (1999, 2002), Larsson (2003), Sianesi (2003) and Raaum et al. (2002).

terms of participation probabilities, the mean of probability values being much smaller for non-participants.

TABLE 1 The means of predicted participation probabilities.

Treated	**Non-participants**					
	Before matching	Nearest neighbour matching	Kernel matching (bandwidth) (Rule-of-thumb)	(0.4)	(0.2)	N
Selective employment measures						
.191	.061	.190 (0.5)	.181 (7.5)			470
.187				.181 (4.8)		465
.178					.175 (2.8)	456
Youth practical training						
.338	.179	.338 (0.6)	.325 (8.5)			1280
.338				.329 (6.3)		1280
.338					.333 (3.3)	1277
Labour market training						
.179	.054	.178 (0.5)	.167 (9.3)			402
.179				.169 (6.4)		400
.168					.163 (3.9)	388

Notes: Rule-of-thumb corresponds to a bandwidth calculated as $2.34*N^{-1/5}$. The figures presented in parentheses next to the matched participation probabilities refer to absolute standardized mean bias; see Lechner (1999).

The estimated matching models do a great job in balancing the propensity scores. The standardized differences reported in parentheses are far from the level of 20 that is characterised as being large in Rosenbaum and Rubin (1985). Not surprisingly, the nearest-neighbour pair-matching produces mean values that are the closest to the treated. The Kernel method puts some weight on poorer matches in creating the counterfactual and results in lower mean values than the nearest-neighbour method. However, a reduction in the bandwidth cuts the difference between the treated and the matched non-participants group. The drawback is that the number of the treated drops as the bandwidth gets smaller. A reduction in the means of predicted participation probabilities shown in the first column implies that smaller bandwidths are not able to create suitable counterfactuals for participants whose propensity scores are situated in the upper part of the probability distribution. This issue can be further explored by examining the distribution of predicted propensity scores based on the rule-of-thumb bandwidth reported in Figure set A1 in the Appendix. Even though the distribution of propensity scores is fairly similar between the treated and the matched non-participants, the matching method has some difficulties in creating corresponding observations for participants with very high propensity scores. This finding calls for sensitivity analyses in which the treatment effect is estimated by dropping the treated with the highest participation probabilities. These results are reported along with other sensitivity analyses in Table A8 in the Appendix.

Through balancing the propensity scores, matching is expected to balance the pre-treatment variables employed in constructing the participation probabilities. This issue is explored in Table A4 in the Appendix, which puts the balancing property of the rule-of-thumb Kernel matching under scrutiny through standardized bias and the regression-based test suggested by Smith and Todd (2003). In the latter, each variable is regressed by the quadratic of estimated propensity scores and the quadratic of propensity scores interacted with the participation dummy. Provided that the balancing condition holds, the interaction terms should not provide any information about explanatory variables.

All in all, the covariates are well balanced between the groups. In particular, the performance of the absolute values of standardized differences is excellent, their values being well below the benchmark of 20 proposed by Rosenbaum and Rubin (1985). This also holds in unreported balancing tests that were carried out for the nearest-neighbour matching method. This indicates that the results are not driven by an increase in the number of control observations owing to Kernel matching, the point that was put forward in Smith and Todd (2003). Having said that, the regression-based balancing tests indicate potential problems, especially in the context of youth practical training.

Our reading of the results concerning balancing properties is that they do not prevent us from employing the matching method in the current context. At the same time, some worrying test results call for sensitivity analyses to confirm the robustness of the evaluation results. In what follows, we discuss the average treatment effects for the treated (ATT) based on the Epanechnikov Kernel, in which the bandwidth is set to the level of Silverman's (1986) rule-of-thumb. The choice of bandwidth is purely based on its common use in empirical studies. In accordance with the Black and Smith (2004) study, various experiments with smaller bandwidths gave results similar to those reported below.

4.3 Average treatment effects on the treated

We are able to evaluate the effects of ALMP participation on employment, unemployment, studying, annual earnings consisting of wage and entrepreneurship income, subsequent programme participation and being out of the labour force for other reasons than studying. Excluding annual earnings, all outcome variables are measured during the last week of a year. Data limitations prevent us from creating monthly measures of outcome variables. This limitation is not likely to be of great importance for two reasons. First, Gerfin and Lechner (2002) report that the concept of time (monthly vs. a particular calendar time) has no significant impact on the evaluation results. Second, the evaluation period of this study covers five years after the start of a programme, which reduces the need for more frequent measures of outcome variables.

The studies on Swedish active labour market programmes have raised an issue on how to interpret the evaluation studies when practically all unemployed persons may participate in an active programme at some point of

their unemployment history; see Larsson (2003) and Sianesi (2003, 2004). The conclusion of this discussion is that the evaluation results of Swedish ALMP are interpreted as reflecting participation now versus joining later rather than the programme effects that arise in a counterfactual world without participation.

The Swedish discussion also concerns the interpretation of the results in this study. Finnish active programmes are ongoing, so it is possible that a control person will participate in a programme at some later stage. When investigating the subsequent participation of the control group in the Finnish context, we find that some 1100 out of 4000 controls do participate in an active programme at some point during the five-year observation period[55]. In addition, the delay from the end of the first unemployment period until the programme participation turned out to be extremely long. Only ten per cent of the controls participated in a programme within 100 days after the end of their first period of unemployment, the maximum delay for some individuals reaching up to 1800 days. When it comes to the 3000 control persons who never entered active programmes, two thirds of them have managed to regain employment while 500 of them were studying at the end of the observation period. Some 200 were registered as unemployed and another group of 200 persons were out of the labour force for other reasons. Thus, it seems to be the case that the evaluation results reported below are to be interpreted as being somewhere between the Swedish interpretation of waiting longer and the no-programme interpretation, particularly since the high level of unemployment in Finland effectively means that ongoing programmes are not open to all the unemployed. This is highlighted by comparing the activation rates (participants per participants + unemployed) that are some 15 percentage points lower in Finland than in Sweden.

Figure set 3 reports the results for the changes in outcome variables owing to the participation in a programme. The comparison is carried out between the participants in a specific programme and the matched non-participants. Naturally, matching results in very different comparison groups across the three programme categories, even though the evaluation results of different programmes are presented in the same figures. The exact figures, together with bootstrapped standard errors, are presented in Table A5 in the Appendix.

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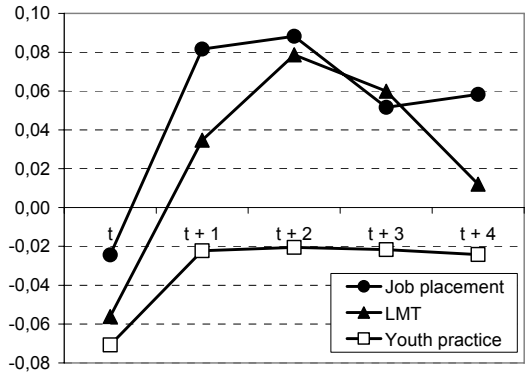
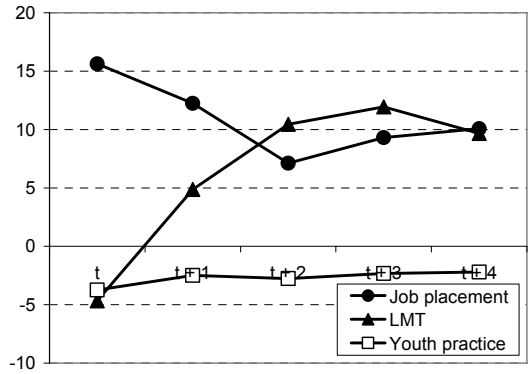
55 It is possible that some non-participants participated in a programme straight from the first period of unemployment provided that the duration of the spell exceeded two years. This turned out to be relatively rare, participation terminating the first period of unemployment of non-participants in only 50 cases.

FIGURE 3 Average treatment effects on the treated.

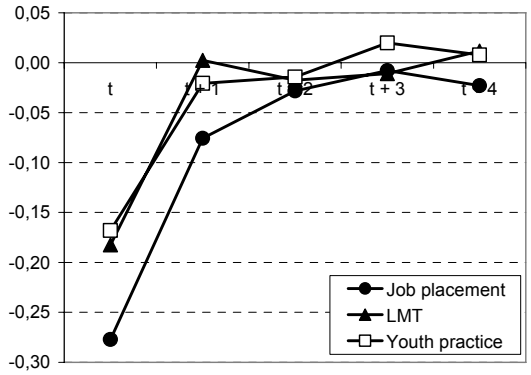
Open employment (% points)



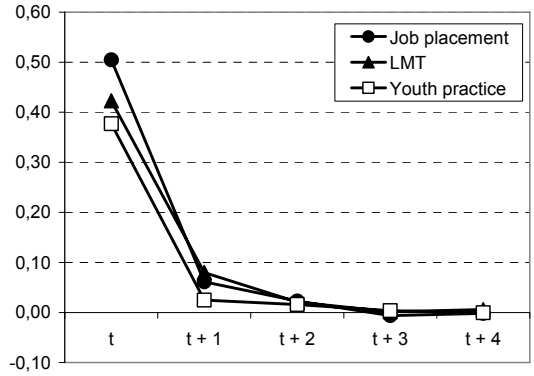
Annual earnings (10 000 FIM)



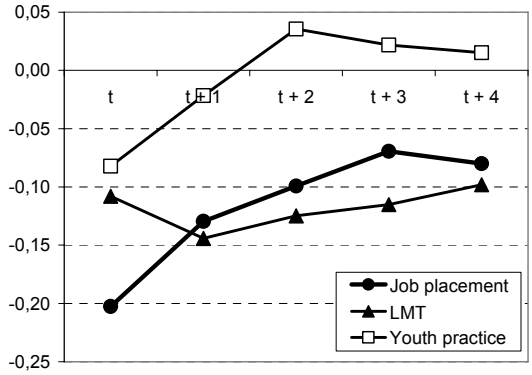
Unemployment (% points)



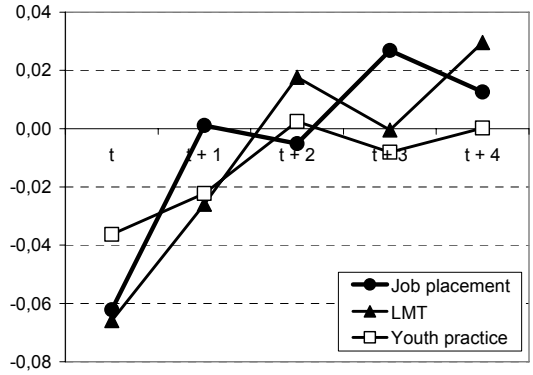
Programme participation (% points)



Studying (% points)



Out of the labour force (% points)



The negative treatment effects during the first observation year, t, present the locking-in effect that arises from a less intensive search process. During the period of participation the differences between programme participants and their counterfactual non-participants are similar across programme categories. The exception is formed by participants in selective employment measures who are found to have significantly higher annual earnings than non-participants at t. This is not surprising, given that they receive the market wage while being in subsidized work.

The evaluation results for post-programme periods show clear differences between the three programmes. Selective employment measures and labour market training are found to improve the participants' labour market prospects in terms of higher employment and annual earnings. In contrast, the results strongly suggest that youth practical training has no effect on the participants' future labour market career. Its impact is effectively zero during the entire observation period, regardless of the outcome variable under examination.

Even though both selective employment measures and LMT improve the labour market career of the participants, the paths of long-term impacts differ between these two measures. The results indicate that both increase the probability of employment by some 6-8 percentage points at t+2 and t+3. Better employment prospects are also reflected in annual earnings that exceed the earnings of control groups by some 10 000 FIM (1 675 euros) during these years. The beneficial employment effect of LMT vanishes at t+4 while the impact on annual earnings remains significantly positive but to a smaller extent than in previous two years. Contrary to LMT, the long-term impacts of selective employment measures are found to be persistent.

The explanation for the observed differences in the dynamic effects is offered by the other outcome variables presented in Figure 3. Neither selective employment measures nor LMT have any significant impact on unemployment, future programme participation or moving out of the labour force, but their impact on the probability of being a student turns out to be statistically significant and negative. This indicates that young unemployed persons who do not participate in active programmes use further education as an alternative for active measures in obtaining the skills they need in labour markets.

In the case of LMT, the catching-up happens as more and more of the controls finish their alternative education and move to the labour market. This is, however, a long route, as after four years there is still a significant difference in participation in education between the participants in LMT and non-participants. Even though the differences in the probability of employment cancel out in time, the longer working careers of the labour market trainees result in higher annual earnings. Since the control group is matched with respect to age, education and occupation, the discussion above suggests that LMT is a fairly effective way to help the young unemployed in their first steps in labour markets. It takes several years to catch up the boost of LMT via alternative routes.

The persistent positive effects of selective employment measures may highlight the importance of work experience in connecting to the labour market. It is well known that the early working careers of young people are irregular, and consist of fixed-term job contracts and frequent changes between labour market states. Selective employment measures, especially in private labour markets where subsidized job contracts are expected to continue after completion of the job placement, offer one route for a young person to attach himself/herself to open employment. The results imply that alternative routes, such as further education, do not totally compensate for direct work experience in the youth labour market.

There are two more observations worth making from Figure 3. First, there is no evidence on circulation between active programmes and unemployment. The impacts of all programmes on unemployment and further programme participation are found to be negligible on all post-programme years. This may be partially explained by non-participants participating in active programmes at further stages of their labour market career, but only partially. After all, the vast majority of individuals in the non-participant group never participated in a programme during the observation period. Second, the results concerning being out of the labour force suggest that ALMP is not very effective in preventing displacement in youth labour markets. In this case a word of caution is in place. Displacement is a complicated phenomenon that cannot be totally captured by examining whether persons are out of the labour force for other than study-related reasons or not, especially since the outcome variable includes child-rearing. However, since different groups are matched across numerous background characteristics that also control for child-rearing, we believe that this result gives some guidance on the effectiveness of active measures in preventing displacement in youth labour markets.

4.4 Separate analysis of women and men

In order to observe potential gender related heterogeneity in the effects of ALMP we calculate the results separately for women and men[56]. The previous results were average effects over the whole sample, whereas now Figure set 4 reports the average treatment effects conditional on gender. The exact figures, along with bootstrapped standard errors, are presented in Tables A6 and A7 in the Appendix.

The differences between men and women are somewhat striking. We find considerable heterogeneity in the success of ALMP between the sexes. Apparently, the beneficial effects of selective employment measures and labour market training observed earlier were highly driven by men. Men have a considerably higher payoff from participation to both selective employment measures and labour market training than their female counterparts. The results concerning youth practical training remain unchanged.

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[56] Separate selection equations have also been tried out but the results remain unaffected. This suggests that our multinomial logit selection equation works quite well.

Also the long-term impacts of selective employment measures and LMT differ between women and men. The results indicate that, for men, both measures increase the probability of employment by some 10-15 percentage points at t+2 and t+3. Better employment prospects are also reflected in the annual earnings of men, that exceed the earnings of the control groups by some 12 000 to 17 000 FIM (2 000 to 2 800 euros) during these years. For women, however, these effects are smaller. The employment effects of selective employment measures are negligible, while participation in LMT increases the probability of employment by 6 percentage points at t+2 and t+3. The employment effects logically also spill over to earnings, where participation in LMT increases the annual earnings of women by some 10 000 FIM (1 675 euros) at t+2 and t+3. Participation in selective employment measures shows smaller income effects that turn out to be significant at t+3 and t+4. The beneficial employment effect of LMT vanishes at t+4 for women and diminishes for men. The impact on annual earnings also diminishes for women, but for men the income effect stays high even at t+4, both for LMT and selective employment measures.

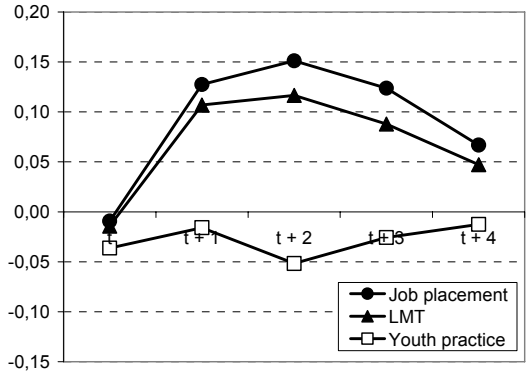
The observed differences between women and men seem call for closer investigation. Table 2 presents the number of participants in different programmes by gender. We find first, that the number of participating women is significantly higher than that of men. This is more or less an expected result, as unemployed women have been found to be more active in their search efforts and to endorse more flexibility in exit choices than men (see e.g. Charles & James, 2003), but the extent of the difference here might be considered slightly surprising. Since there are more or less as many unemployed men as there are women in our sample, we would not expect such huge differences in participation. Second, there are roughly as many men as there are women participating in private sector employment measures and labour market training. The relative surplus of female participants in our sample is allocated into public sector employment measures, where there are more than twice as many women than men, and into youth practice, where the predominance of women is also nearly twofold.

The reason for these findings is not self-evident. Are women really this much more active in participating in ALMP than men? According to the ministry of labour in 1997 some 35 per cent of all unemployed women but only 25 per cent of unemployed men participated in ALMP (Ministry of Labour, 1997). In light of these numbers we would expect some 45 per cent of all participants in ALMP to be men. Instead, in our restricted sample there are relatively fewer male participants, slightly less than 40 per cent of all participants.

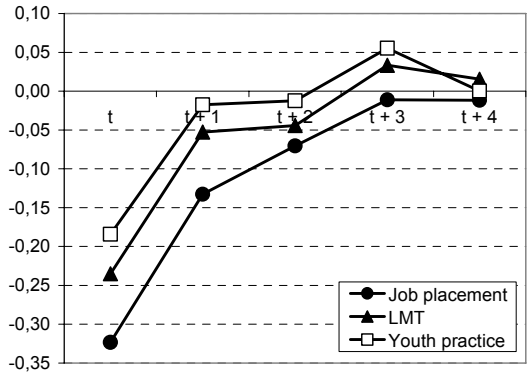
FIGURE 4 Average treatment effects on the treated in the sample by gender.

MEN

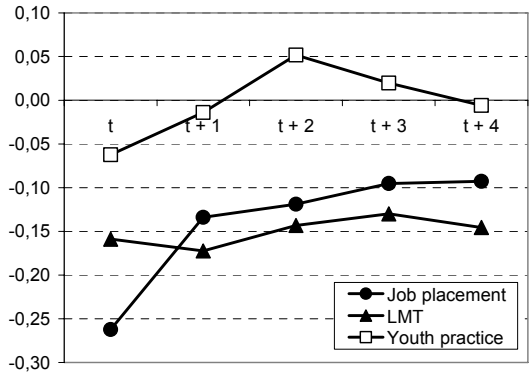
Open employment (% points)



Unemployment (% points)

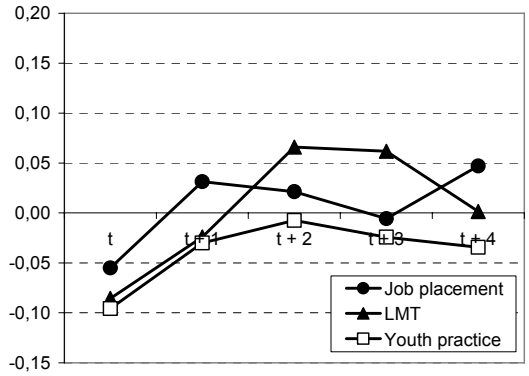


Studying (% points)

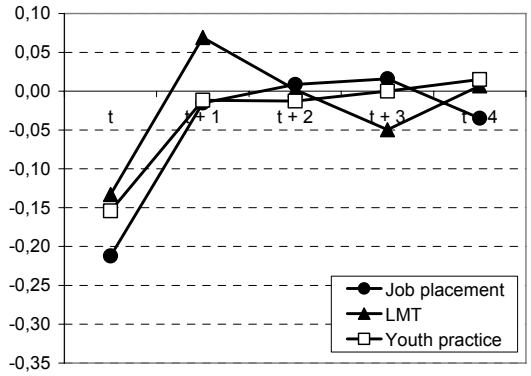


WOMEN

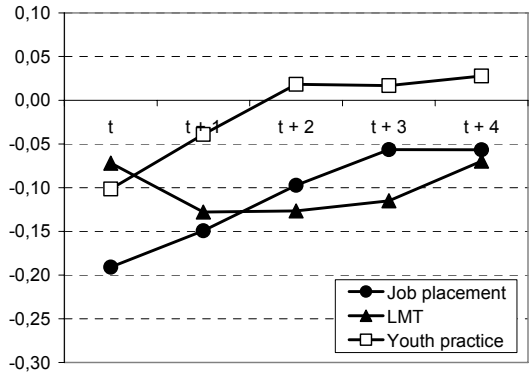
Open employment (% points)



Unemployment (% points)

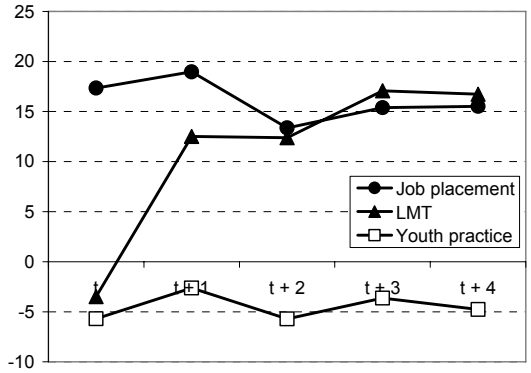


Studying (% points)

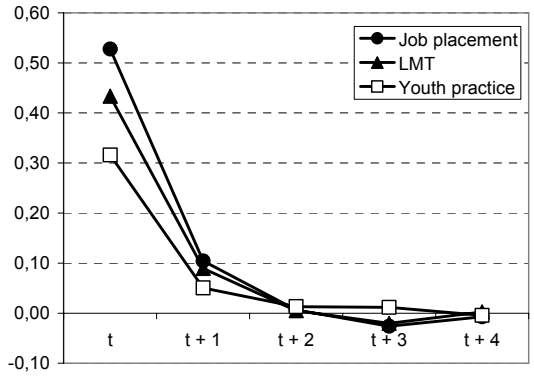


MEN

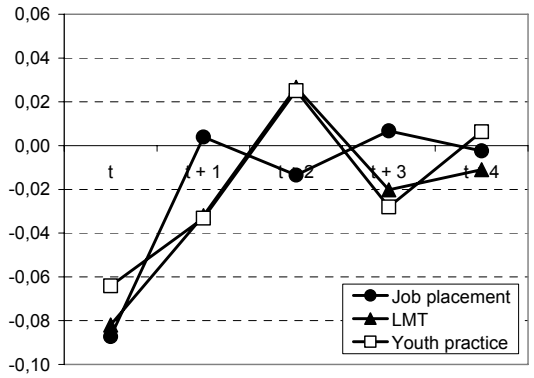
Annual earnings (10 000 FIM)



Programme participation (% points)

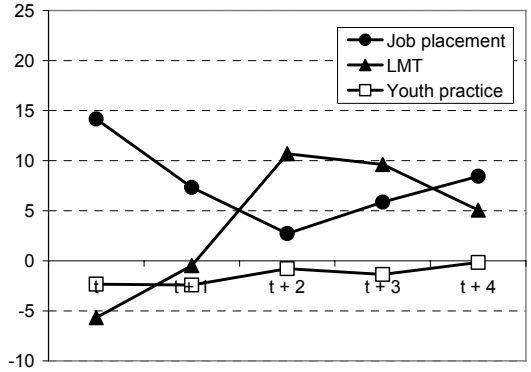


Out of the labour force (% points)



WOMEN

Annual earnings (10 000 FIM)



Programme participation (% points)

Out of the labour force (% points)

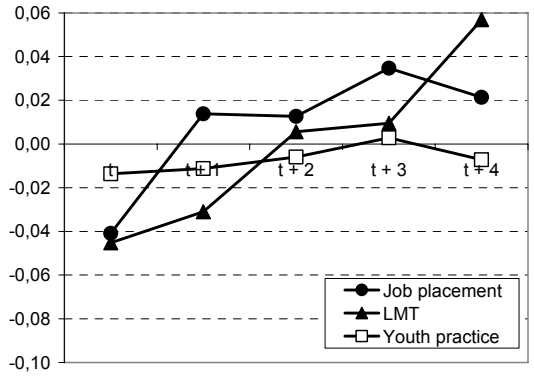


TABLE 2 Number of participants in different programmes by gender.

	Employment subsidies		LMT	Youth practice	TOTAL
	Public	Private			
Men	67	131	207	486	891
	(7.5 %)	(14.7 %)	(23.2 %)	(54.5 %)	
Women	159	138	219	894	1410
	(11.3 %)	(9.8 %)	(15.5 %)	(63.4 %)	

Vast differences in the types of programmes men and women participate in have also been observed. Employment service statistics show that in 1997 men and women were equally represented in labour market training and private sector subsidised employment (Ministry of Labour, 1997). The greatest differences were found in selective employment measures, where women clearly dominate subsidised employment not only in the public sector, but also in part-time jobs and via job alternation programmes. Compared to private sector wage subsidies these measures may have less potential in helping the unemployed find stable employment. Previous research indicates private sector employment subsidies to be more effective than public sector placements (see e.g. Hämäläinen, 1999). The larger proportion of women in subsidised employment in the public sector in our sample can in part explain the observed differences.

As to women's smaller employment and income effects from participation in labour market training, where women and men are more equally represented in our sample, we find that there is considerable professional segregation among the LMT participants (see Table 3). Women are over-represented in healthcare, clerical, commercial and service sectors, while over 30 per cent of male participants seek employment from the industrial sector. This may also explain our results to some extent.

TABLE 3 Number of participants in labour market training by previous occ. sector.

	Women	Men
Healthcare	12	1
Commercial	18	7
Services	38	5
Clerical	34	18
Engineering	22	25
Industrial	24	65
Agriculture	4	7
Transportation	1	7
Other / unknown	66	72
	219	**207**

In general labour market training in Finland is more directed to male-dominated sectors in order to relieve potential labour shortages there (Ministry of Education, 2004). Sector-wise, according to Luukkonen et al. (2005) recruitment from LMT is most common in metal industry. Furthermore, in the Finnish LMT system there is a possibility for the employer to organize tailor-made LMT jointly with the employment service. These joint ventures are jointly financed and designed to recruit new employees or to upgrade the skills of old employees in order to maintain their employment. In recruiting purposes, participation in these programmes virtually guarantees a job for the participants. It is possible that these particular programmes are more commonly used in male-dominated sectors, which would then logically produce better employment results for men.

4.5 Comparison with other studies

It is not possible to compare all the findings of this study with other studies, but, as far as is possible, they compare quite well with the available evidence from other Nordic countries. The selective employment measures analyzed in this study are a combination of Swedish relief work and job subsidies that are separately evaluated for adults in Sianesi (2003). Her results show that private sector job subsidies improve employment prospects, having no impact on the probability of unemployment benefit collection. Public sector relief work, on the other hand, has no or a negative impact on the probability of employment and a positive impact on benefit collection. Owing to data limitations, we had to combine public and private sector subsidies, but unreported results for separate programmes produced similar results to those in Sianesi.

In contrast to selective employment measures, labour market training seems to be more effective in Finland than in Sweden. Larsson (2003) reports negative earnings and negative or negligible employment effects for young people in Sweden. Sianesi (2003) reports similar employment results for the adults who are entitled to unemployment benefits. In addition, their results suggest that LMT has only minor effects on further education among young people and a positive impact on benefit collection among the entitled adults. Our results are more in line with the Norwegian ones reported in Raaum et al. (2002), who report that participation in LMT significantly increases post-training earnings among adults and that these effects remain for 4 or 5 years.

The closest comparison to the results concerning youth practical training is Larsson (2003). In her study a slightly different Swedish youth practical training programme is found to have a negative impact on earnings and employment at t+1 and a negligible impact at t+2. The impact on further education turned out to be non-existent in both post-programme periods. These results are well in line with the Finnish experience of youth practical training.

There are very few studies allowing for heterogeneity in the treatment effects between women and men. Larsson (2003) considers this issue briefly, and concludes that there is considerable heterogeneity between the sexes and that generally the programmes are slightly better for women than for men,

although this result is mainly due to the larger negative employment effects for men. The earnings effects are found to be similar for both sexes. These results seem to be conflicting with ours, but we must bear in mind that also the programmes differ between Finland and Sweden. The gender specific evaluation in Raaum et al. (2002) is more in line with our results, indicating that the earnings effect of LMT exceeds its direct costs and is higher for men among labour market entrants. However, for participants with recent work experience the results are inconclusive.

4.6 Robustness of the results

To put the results of this study under scrutiny we re-estimated the matching models with different estimation methods and different sets of explanatory variables. For the sake of brevity, Table A8 in the Appendix reports the average treatment effects only for the probability of employment[57]. Contrary to expectations, the exclusion of regional dummies introduces only small changes in the results. The likely reason for this is that we also control for the travel-to-work unemployment rate, which might capture a part of the impact that regional labour markets have on the results. Next, we dropped occupational dummies from the propensity score estimations. After this change the initially insignificant parameter estimates of youth practical training turned out to be significantly negative. This result reflects the importance of occupational indicators in the selection process that sorts the unemployed to youth practical training. If the observed difference arising from occupational status is not taken into account, one compares participants in youth practical training with non-participants who have already achieved an occupation. This is inevitably reflected as a downward bias in the evaluation results. As a final exclusion restriction, we also left out the control variables under the heading labour market variables. To recall, these variables control for observed differences in unemployment experience, and regional rate of unemployment, as well as in individual skills and motivation. This further reduced the programme effects, also turning the impacts of labour market training into insignificant ones.

The experiments with different sets of control variables clearly show the importance of controlling for differences in regional labour markets, and occupation, as well as in individual working skills and aspirations. This is a predictable finding, given that these are among the main factors that influence both the propensity to participate in active programmes and further labour market careers. However, the changes induced by the exclusion of these variables turned out to be smaller than we expected. The results are surprisingly robust with respect to small changes among the background variables. We need to leave out more than half of the background variables before we observe any significant changes in the results concerning the

[57] When it comes to the unreported results, neither a change of the estimation method from Kernel to nearest neighbour pair-matching with replacement nor a change in the bandwidth employed in the Kernel function alters the qualitative results. These results are available from the authors on request.

effectiveness of labour market training. Even then, the results concerning selective employment measures remain practically unaffected.

The most crucial thing turns out to be whether we match participants with non-participants who were unemployed long enough to be potential participants or not. The last column of Table A8 reveals that if the control group consisted of all the individuals whose first period of unemployment started at the same time as the participants, the evaluation results would have been drastically worse than the ones reported above. This clearly shows the importance of aiming at comparing the comparables. After all, there is no sense in comparing programme participants with the unemployed who have already left the pool of unemployment before participants participate in programmes.

Finally, Table A9 in the Appendix presents the average effects of participation in a particular programme compared with participation in another programme. These results are in accordance with our previous findings, suggesting that job placement and labour market training perform better than youth practical training and provide more positive labour market outcomes for the participants. Between these two programmes, selective employment measures dominate LMT, but only during the last observation period.

5 Conclusions

This study explores the long-run effects of active labour market programmes in youth labour markets in Finland during 1995-2000. To offer a comprehensive picture, the impacts are analyzed with respect to post-programme employment, unemployment, education, annual earnings, subsequent programme participation and being out of the labour force. The potential heterogeneity of treatment effects across different programmes is examined by evaluating job placements in a selective employment measure, youth practical training and labour market training. Potential heterogeneity in the treatment effects between women and men is also considered. All the estimated effects are average treatment effects on the treated. We focus on the role of active programmes during the first period of unemployment in order to control for differences in individuals' unemployment history and to avoid endogeneity problems arising from previous participation periods.

The non-experimental evaluation in this study is based on propensity score matching. Using propensity score matching we can, *ex post*, carefully select the most fitting comparison group of non-participants in measuring the counterfactual outcomes of the participants. The choice of the estimation method is motivated by a large data set that contains the vast majority of background information that is expected to be employed in the actual, fairly rule-based selection process. The balancing properties of matching estimators are, to a large extent, very good. However, since there are some exceptions to this rule, the sensitivity of the results is put under scrutiny by exploring the

effects of changes in estimation methods, background variables and common supports.

From a policy perspective, the main focus of the study is in examining the relative effectiveness of various programmes in the early stages of young persons' labour market careers. The findings can now be summarized. First, publicly sponsored programmes can be employed in improving young persons' labour market prospects. Second, there is considerable heterogeneity in the treatment effects between women and men. Despite the government's best efforts to conduct gender neutral policy, it seems that at least with respect to ALMP they are failing, in all probability due to the extensive occupational segregation in the Finnish labour market. According to our results participation in these programmes benefits almost solely men while for women the effects of participation remain modest in every respect.

Third, not all programmes are effective. In particular, we do not find any significant differences between the participants in youth practical training and their matched controls. This is a rather disconfirming result for the Finnish system of active labour market programmes operating in youth labour markets, given that some 60 per cent of all placements offered to young persons were organized through youth practical training during the years 1995-96. Youth practical training might be appealing as the least expensive of active programmes offered to young unemployed persons but it is the least effective as well. Lastly, young persons may also boost their labour market career through alternative routes, such as further education. Alternative and longer routes do not, however, immediately compensate for the work experience that participants in selective employment measures and in labour market training have gained owing to larger employment rates during the first two or three years after participation.

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APPENDIX

TABLE A1 Definitions of the variables.

VARIABLE	DEFINITION
Dependent variable	
Programme code	The active programme the person participated in: 1 = job placement, 2 = youth practical training, 3 = labour market training, 0 = not participating in any programme.
Independent variables	
Female	1 if a person is female, 0 if male.
Age	Person's age at the beginning of the unemployment period, continuous.
Marital status	Dummy var. designating whether a person is married or single (ref.).
Children	Dummy var. designating the age of a person's youngest child: 1-3 years or 4-7 years.
Living with parents	1 if a person is still living with his/her parents, otherwise 0.
Residential area	Dummy variables designating whether a person's residential area is urban, population centre or rural (ref.).
Disability	1 if a person is disabled, otherwise 0.
Education	Dummy variables designating whether a person had comprehensive (ref.), post-comprehensive or higher education.
Graduation	Dummy variables designating whether a person has graduated in the year of unemployment or in the previous year.
Income variables	1 if the person's or his/her spouse's income, wealth or liabilities are above the sample mean, otherwise 0.
Spouse's employment	1 if a person's spouse has been employed in the year the person's unemployment period began.
Spouse's education	Dummy variable designating whether a person's spouse had post-comprehensive or higher education.
Occupational sector	1 if a person is seeking employment from a specific occupational sector (8 sectors), 0 if no occupation or the occupation is unknown.
Unemployment duration	Length of a person's unemployment period until placement, continuous. Simulated duration for the control group.
Travel-to-work unemployment rate	The unemployment rate of the person's travel-to-work area at the beginning of unemployment, continuous,
Professional skills	Dummy variables designating whether a person has complete or partial professional skills or no professional skills (ref.)
Employment history	1 if a person was employed in the year prior to unemployment.
Job seeking area wide	1 if a person is willing to accept work outside his/her residential municipality.
Only typical working hours accepted	1 if a person is willing to accept only full-time work with no irregular hours.
Labour districts	1 if the person's place of residence is within a particular labour district. The reference group is the Helsinki labour district (metropolitan area).

TABLE A2 Means of the variables by programme participation.

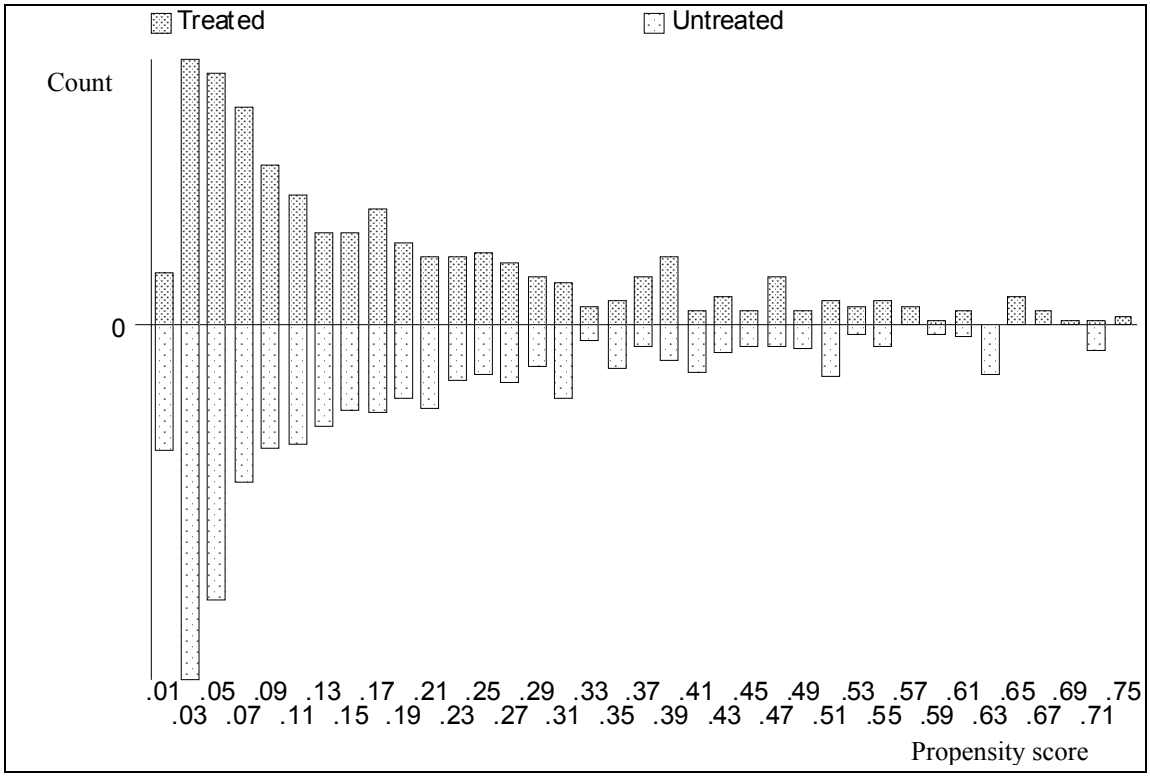
VARIABLES	Mean	Mean	Mean	Mean
Programme code	0	1	2	3
INDIVIDUAL CHARACTERISTICS				
Female	0,50	0,60	0,65	0,51
Age	21,08	21,22	19,05	22,74
Married	0,09	0,10	0,02	0,15
Age of youngest child 1-3 years	0,06	0,07	0,02	0,14
Age of youngest child 4-7 years	0,01	0,01	0,00	0,03
Living with parents	0,57	0,47	0,71	0,44
Residential area population centre	0,15	0,17	0,15	0,18
Residential area urban	0,65	0,57	0,57	0,58
Disability	0,01	0,02	0,01	0,02
Post-comprehensive education	0,69	0,70	0,75	0,57
Higher education	0,12	0,15	0,02	0,17
Previous year graduate	0,12	0,15	0,07	0,10
Same year graduate	0,55	0,55	0,68	0,37
Personal debt	0,07	0,07	0,01	0,12
Child home care allowance prev. year	0,05	0,05	0,01	0,13
Spouse employed	0,17	0,25	0,09	0,24
Spouse's ed. post-comp. or higher	0,19	0,26	0,09	0,26
Spouse's income	0,10	0,13	0,04	0,18
Spouse's debt	0,04	0,05	0,01	0,07
OCCUPATIONAL SECTOR				
Engineering	0,08	0,08	0,01	0,11
Healthcare	0,06	0,12	0,04	0,03
Clerical	0,05	0,10	0,03	0,12
Commercial	0,04	0,05	0,01	0,06
Agriculture	0,02	0,03	0,01	0,02
Transportation	0,01	0,02	0,01	0,02
Industrial	0,19	0,22	0,10	0,21
Services	0,08	0,10	0,05	0,10
LABOUR MARKET VARIABLES				
Unemployment duration	41,00	146,00	58,00	154,00
Travel-to-work unemployment rate	19,49	20,39	21,28	19,73
Partial professional skills	0,19	0,22	0,12	0,22
Complete professional skills	0,10	0,09	0,01	0,18
Employed previous year	0,44	0,53	0,29	0,52
Job seeking area wide	0,08	0,08	0,03	0,08
Only typical working hours accepted	0,75	0,76	0,78	0,76
LABOUR MARKET AREA				
Turku labour district	0,09	0,08	0,05	0,11
Häme labour district	0,14	0,14	0,16	0,14
Kymi labour district	0,06	0,10	0,08	0,07
Mikkeli labour district	0,04	0,06	0,05	0,02
Vaasa labour district	0,09	0,08	0,10	0,11
Keski-Suomi labour district	0,05	0,06	0,05	0,07
Kuopio labour district	0,05	0,04	0,09	0,06
Pohjois-Karjala labour district	0,03	0,03	0,06	0,03
Kainuu labour district	0,02	0,02	0,04	0,02
Oulu labour district	0,08	0,09	0,08	0,06
Lappi labour district	0,04	0,06	0,07	0,03
Satakunta labour district	0,04	0,05	0,05	0,07
p0	0,71	0,49	0,55	0,51
p1	0,06	0,19	0,06	0,15
p2	0,18	0,18	0,34	0,15
p3	0,05	0,13	0,04	0,18
N	4203	492	1377	421

TABLE A3 Results of the multinomial logit model.

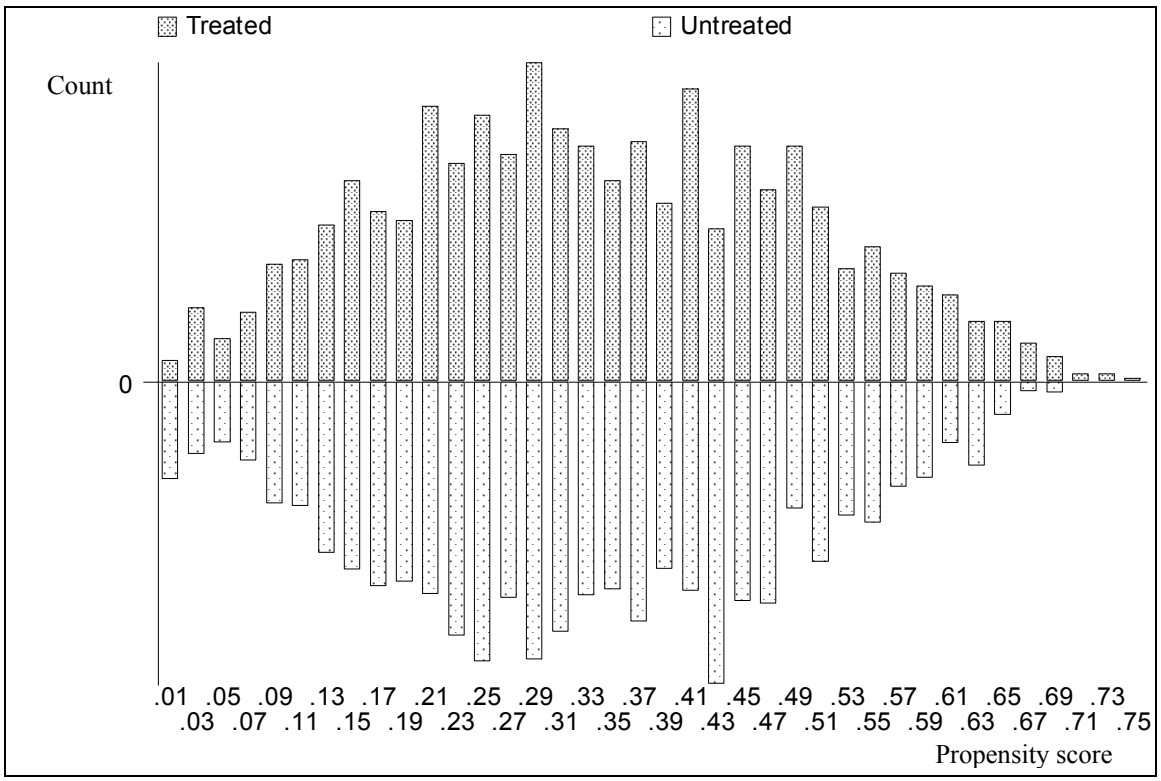
	Job placement		Youth practice		LMT	
INDIVIDUAL CHARACTERISTICS	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Female	0,341***	(0,127)	0,569***	(0,077)	-0,092	(0,132)
Age	-0,130***	(0,030)	-0,152***	(0,031)	-0,014	(0,028)
Married	-0,100	(0,239)	-0,615**	(0,291)	-0,189	(0,230)
Age of youngest child 1-3 years	-0,361	(0,354)	1,241***	(0,379)	-0,163	(0,317)
Age of youngest child 4-7 years	-0,768	(0,531)	0,113	(0,598)	-0,041	(0,427)
Living with parents	-0,245*	(0,145)	-0,152	(0,093)	-0,175	(0,158)
Residential area population centre	0,010	(0,169)	-0,312***	(0,114)	0,011	(0,181)
Residential area urban	-0,418***	(0,139)	-0,311***	(0,090)	-0,407***	(0,150)
Disability	0,842**	(0,414)	0,002	(0,375)	0,413	(0,425)
Post-comprehensive education	0,293	(0,249)	-0,192	(0,269)	-0,007	(0,213)
Higher education	0,881**	(0,389)	-0,245	(0,429)	0,821**	(0,358)
Previous year graduate	0,255	(0,240)	0,384	(0,260)	-0,530**	(0,243)
Same year graduate	-0,160	(0,224)	0,824***	(0,246)	-0,715***	(0,204)
Personal debt	-0,052	(0,228)	-0,973**	(0,380)	0,074	(0,210)
Child home care allowance prev. year	0,362	(0,370)	-1,056**	(0,461)	0,806**	(0,320)
Spouse employed	0,546**	(0,233)	-0,049	(0,204)	-0,219	(0,259)
Spouse's ed. post-comp. or higher	-0,142	(0,211)	-0,282	(0,178)	-0,026	(0,215)
Spouse's income	-0,331	(0,236)	0,547**	(0,233)	0,391	(0,259)
Spouse's debt	0,246	(0,300)	0,260	(0,355)	-0,252	(0,299)
OCCUPATIONAL SECTOR						
Engineering	0,387	(0,283)	-1,385***	(0,348)	-0,008	(0,285)
Healthcare	0,870***	(0,224)	-0,685***	(0,191)	-1,083***	(0,362)
Clerical	0,785***	(0,218)	-0,895***	(0,195)	0,669***	(0,227)
Commercial	0,603**	(0,261)	-1,489***	(0,288)	0,189	(0,277)
Agriculture	0,501	(0,336)	-1,639***	(0,370)	0,046	(0,381)
Transportation	0,918**	(0,388)	-0,848**	(0,388)	-0,087	(0,460)
Industrial	0,542***	(0,164)	-1,110***	(0,116)	0,275	(0,177)
Services	0,294	(0,208)	-1,111***	(0,152)	0,091	(0,232)
LABOUR MARKET VARIABLES						
Unemployment duration	0,013***	(0,001)	0,007***	(0,001)	0,013***	(0,001)
Travel-to-work unemployment rate	0,009	(0,021)	0,036***	(0,014)	-0,014	(0,022)
Partial professional skills	0,175	(0,140)	-0,078	(0,106)	0,097	(0,154)
Complete professional skills	-0,443*	(0,260)	-1,031**	(0,408)	-0,512**	(0,232)
Employed previous year	0,555***	(0,116)	-0,106	(0,077)	0,316**	(0,128)
Job seeking area wide	-0,315	(0,204)	-0,580***	(0,185)	-0,295	(0,217)
Only typical working hours accepted	0,087	(0,124)	0,199**	(0,081)	-0,049	(0,132)
LABOUR MARKET AREA						
Turku labour district	0,260	(0,217)	0,076	(0,162)	0,644***	(0,213)
Häme labour district	0,473**	(0,205)	0,722***	(0,136)	0,577***	(0,219)
Kymi labour district	0,936***	(0,242)	0,624***	(0,169)	0,806***	(0,275)
Mikkeli labour district	0,733**	(0,297)	0,408**	(0,207)	-0,178	(0,421)
Vaasa labour district	0,251	(0,231)	0,699***	(0,145)	0,742***	(0,228)
Keski-Suomi labour district	0,331	(0,290)	0,260	(0,198)	0,753**	(0,298)
Kuopio labour district	0,176	(0,314)	0,844***	(0,177)	0,625**	(0,311)
Pohjois-Karjala labour district	0,215	(0,389)	0,930***	(0,221)	0,624	(0,406)
Kainuu labour district	0,730	(0,487)	0,865***	(0,285)	0,730	(0,529)
Oulu labour district	0,499**	(0,243)	0,305*	(0,166)	0,160	(0,286)
Lappi labour district	0,941***	(0,359)	0,871***	(0,232)	0,458	(0,435)
Satakunta labour district	0,501*	(0,296)	0,660***	(0,202)	0,976***	(0,294)
Constant	-1,774**	(0,728)	0,347	(0,633)	-2,648***	(0,719)

FIGURE SET A1 Histograms of the propensity scores – Treated vs. matched controls.

Selective employment measures



Youth practical training



Labour market training

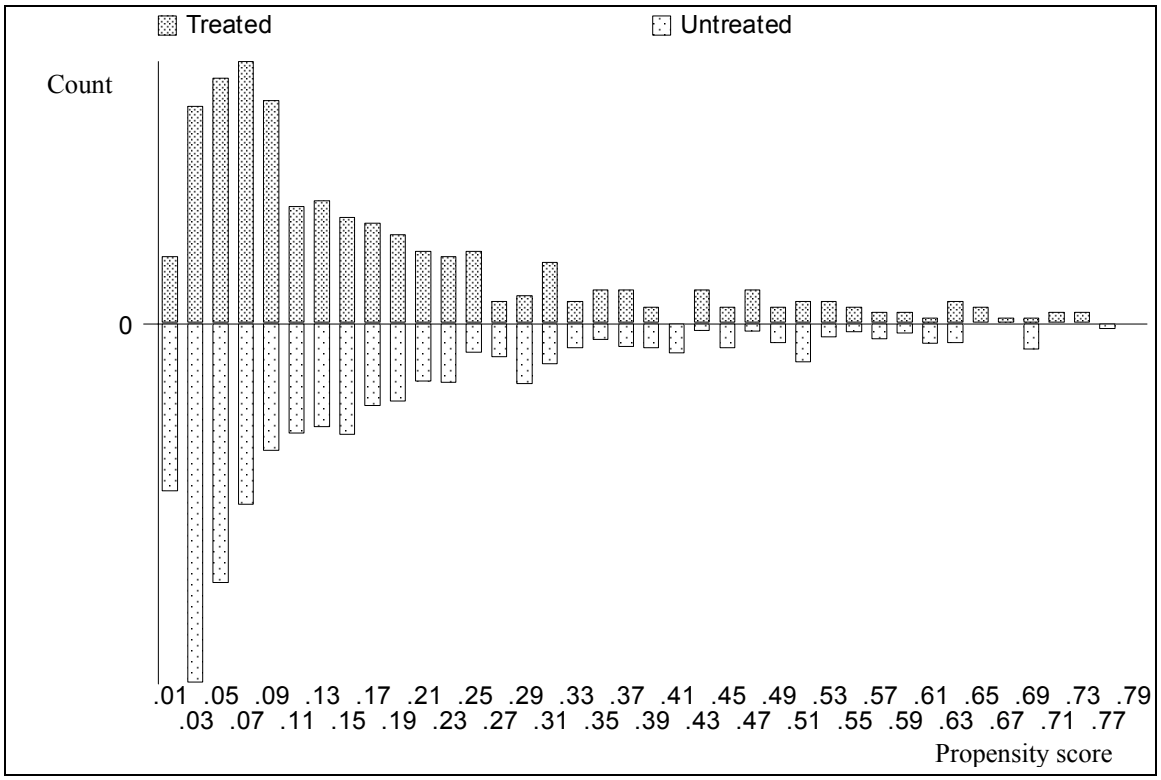


TABLE A4 Balancing tests.

VARIABLES	Mean	Mean	Diff	Mean	Mean	Diff	Mean	Mean	Diff
Programme code	1	0		2	0		3	0	
INDIVIDUAL CHARACTERISTICS									
Female	0,589	0,540	9,9	0,638	0,609	6,0	0,502	0,510	1,5
Age	21,2	21,3	3,6	19,0	19,1	3,7	22,6	22,1	10,7
Married	0,094	0,091	1,0	0,016	0,021	2,4	0,142	0,114	9,0
Age of youngest child 1-3 years	0,060	0,063	1,6	0,016	0,016	0,3	0,137	0,117	6,7
Age of youngest child 4-7 years	0,013	0,012	0,3	0,003	0,002	1,2	0,027	0,021	4,8
Living with parents	0,479	0,478	0,1	0,699	0,702	0,5	0,453	0,480	5,5
Residential area population centre	0,170	0,196	7,0	0,159	0,165	1,7	0,177	0,171	1,5
Residential area urban	0,572	0,561	2,2	0,560	0,559	0,3	0,575	0,583	1,7
Disability	0,019	0,016	2,6	0,009	0,010	1,0	0,022	0,021	1,4
Post-comprehensive education	0,694	0,699	1,2	0,738	0,718	4,4	0,560	0,567	1,6
Higher education	0,151	0,132	5,5	0,026	0,031	1,9	0,172	0,153	5,2
Previous year graduate	0,157	0,153	1,4	0,077	0,081	1,4	0,102	0,103	0,2
Same year graduate	0,545	0,522	4,5	0,665	0,634	6,3	0,373	0,377	0,7
Personal debt	0,068	0,078	3,8	0,006	0,012	3,1	0,102	0,107	1,9
Child home care allowance prev. year	0,047	0,048	0,7	0,009	0,011	1,8	0,117	0,098	7,1
Spouse employed	0,247	0,248	0,2	0,084	0,086	0,5	0,231	0,202	7,3
Spouse's ed. post-comp. or higher	0,251	0,240	2,7	0,094	0,100	1,9	0,251	0,231	4,8
Spouse's income	0,123	0,143	6,4	0,039	0,045	2,5	0,172	0,146	7,6
Spouse's debt	0,053	0,061	3,7	0,009	0,013	3,3	0,072	0,057	6,6
OCCUPATIONAL SECTOR									
Engineering	0,074	0,074	0,4	0,010	0,014	1,9	0,109	0,087	7,6
Healthcare	0,096	0,087	3,3	0,030	0,029	0,8	0,030	0,029	0,5
Clerical	0,100	0,073	10,0	0,031	0,029	0,9	0,127	0,101	8,9
Commercial	0,053	0,046	3,1	0,012	0,013	1,0	0,052	0,046	2,8
Agriculture	0,030	0,045	9,5	0,007	0,008	1,0	0,022	0,022	0,0
Transportation	0,026	0,031	4,0	0,007	0,008	0,7	0,020	0,027	5,7
Industrial	0,226	0,226	0,1	0,103	0,105	0,5	0,204	0,191	3,2
Services	0,100	0,089	3,9	0,055	0,052	0,9	0,095	0,095	0,0
LABOUR MARKET VARIABLES									
Unemployment duration	141	133	7,2	61	57	6,1	146	132	15,4
Travel-to-work unemployment rate	20,3	20,0	8,4	21,0	21,1	0,4	19,7	19,7	0,8
Partial professional skills	0,215	0,211	0,9	0,121	0,125	0,9	0,224	0,219	1,1
Complete professional skills	0,087	0,095	2,6	0,005	0,012	3,4	0,162	0,151	3,4
Employed previous year	0,536	0,547	2,2	0,301	0,316	3,2	0,502	0,514	2,4
Job seeking area wide	0,083	0,081	0,8	0,030	0,030	0,3	0,077	0,072	2,1
Only typical working hours accepted	0,753	0,727	6,0	0,780	0,764	4,0	0,764	0,750	3,1
LABOUR MARKET AREA									
Turku labour district	0,085	0,072	4,7	0,056	0,058	0,6	0,109	0,094	5,1
Häme labour district	0,140	0,164	6,8	0,174	0,169	1,3	0,147	0,160	3,7
Kymi labour district	0,098	0,090	2,8	0,083	0,084	0,3	0,075	0,073	0,5
Mikkeli labour district	0,062	0,054	3,4	0,034	0,038	1,8	0,017	0,024	3,9
Vaasa labour district	0,077	0,096	7,0	0,108	0,108	0,2	0,104	0,110	1,7
Keski-Suomi labour district	0,062	0,050	5,0	0,052	0,055	1,5	0,075	0,057	7,0
Kuopio labour district	0,045	0,035	4,7	0,074	0,077	1,3	0,060	0,049	4,5
Pohjois-Karjala labour district	0,028	0,021	4,3	0,062	0,051	5,3	0,030	0,030	0,0
Kainuu labour district	0,021	0,020	0,7	0,033	0,033	0,0	0,020	0,022	1,4
Oulu labour district	0,087	0,087	0,2	0,076	0,082	2,4	0,055	0,068	5,1
Lappi labour district	0,060	0,055	2,2	0,063	0,068	2,3	0,032	0,035	1,3
Satakunta labour district	0,049	0,038	5,1	0,050	0,051	0,5	0,067	0,052	6,5
Mean of standardized differences			3,7			2,0			4,1
Maximum of standardized differences			10,0			6,3			15,4
Regression test – significant at 1 %			1			5			0
Regression test – significant at 5 %			3			0			0
Regression test – significant at 10 %			2			4			3

Notes: Diff refers to the absolute value of standardized difference. Regression test reports the number of variables for which the joint test is statistically significant at the stated significance level.

TABLE A5 Average participation effects on the treated with bootstrapped standard errors (400 iterations).

	Employment		Earnings		Unemployment		Programme part.		Studying		Inactivity	
	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.
Job placement												
t	-0,024	(0,022)	15,617	(1,461)	-0,277	(0,026)	0,505	(0,024)	-0,203	(0,028)	-0,062	(0,014)
t + 1	0,082	(0,031)	12,241	(2,426)	-0,076	(0,027)	0,061	(0,019)	-0,129	(0,026)	0,001	(0,018)
t + 2	0,088	(0,030)	7,124	(2,763)	-0,028	(0,025)	0,023	(0,013)	-0,099	(0,027)	-0,005	(0,019)
t + 3	0,052	(0,029)	9,310	(3,419)	-0,008	(0,026)	-0,006	(0,010)	-0,069	(0,027)	0,027	(0,019)
t + 4	0,058	(0,028)	10,072	(3,658)	-0,023	(0,021)	-0,002	(0,006)	-0,080	(0,026)	0,013	(0,020)
Youth practice												
t	-0,071	(0,010)	-3,744	(0,472)	-0,168	(0,016)	0,377	(0,014)	-0,082	(0,016)	-0,036	(0,010)
t + 1	-0,022	(0,014)	-2,493	(0,785)	-0,021	(0,015)	0,025	(0,010)	-0,022	(0,016)	-0,022	(0,010)
t + 2	-0,021	(0,016)	-2,751	(1,052)	-0,014	(0,012)	0,016	(0,008)	0,036	(0,015)	0,002	(0,009)
t + 3	-0,022	(0,017)	-2,317	(1,285)	0,020	(0,012)	0,004	(0,009)	0,022	(0,015)	-0,008	(0,010)
t + 4	-0,024	(0,018)	-2,193	(1,485)	0,008	(0,012)	0,000	(0,006)	0,015	(0,017)	0,000	(0,010)
LMT												
t	-0,056	(0,022)	-4,659	(1,381)	-0,182	(0,027)	0,423	(0,028)	-0,108	(0,027)	-0,066	(0,014)
t + 1	0,035	(0,028)	4,880	(2,247)	0,002	(0,026)	0,080	(0,019)	-0,144	(0,029)	-0,026	(0,019)
t + 2	0,079	(0,031)	10,444	(3,246)	-0,018	(0,025)	0,021	(0,016)	-0,125	(0,026)	0,018	(0,019)
t + 3	0,060	(0,031)	11,951	(3,555)	-0,011	(0,026)	0,001	(0,012)	-0,115	(0,026)	0,000	(0,017)
t + 4	0,012	(0,031)	9,679	(4,343)	0,012	(0,024)	0,006	(0,009)	-0,098	(0,025)	0,030	(0,020)

TABLE A6 Average participation effects on the treated **men** with bootstrapped standard errors (400 iterations).

	Employment		**Earnings**		**Unemployment**		**Programme part.**		**Studying**		**Inactivity**	
	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.
Job placement												
t	-0,009	(0,033)	17,354	(2,269)	-0,323	(0,038)	0,528	(0,037)	-0,262	(0,039)	-0,087	(0,021)
t + 1	0,127	(0,042)	18,972	(3,468)	-0,133	(0,040)	0,104	(0,030)	-0,134	(0,031)	0,004	(0,026)
t + 2	0,151	(0,042)	13,364	(4,035)	-0,070	(0,033)	0,006	(0,021)	-0,119	(0,037)	-0,013	(0,023)
t + 3	0,124	(0,038)	15,386	(4,869)	-0,011	(0,031)	-0,026	(0,014)	-0,095	(0,036)	0,007	(0,018)
t + 4	0,067	(0,040)	15,521	(5,607)	-0,012	(0,029)	-0,007	(0,007)	-0,093	(0,036)	-0,002	(0,021)
Youth practise												
t	-0,036	(0,015)	-5,698	(0,674)	-0,184	(0,026)	0,316	(0,024)	-0,062	(0,026)	-0,064	(0,016)
t + 1	-0,016	(0,020)	-2,628	(1,050)	-0,018	(0,025)	0,051	(0,017)	-0,014	(0,026)	-0,033	(0,022)
t + 2	-0,052	(0,024)	-5,716	(1,700)	-0,012	(0,020)	0,013	(0,015)	0,052	(0,027)	0,025	(0,015)
t + 3	-0,026	(0,027)	-3,642	(2,236)	0,055	(0,019)	0,012	(0,015)	0,020	(0,026)	-0,028	(0,014)
t + 4	-0,013	(0,027)	-4,767	(2,211)	0,000	(0,018)	-0,004	(0,008)	-0,006	(0,026)	0,006	(0,014)
LMT												
t	-0,014	(0,033)	-3,498	(1,759)	-0,235	(0,041)	0,433	(0,039)	-0,159	(0,041)	-0,082	(0,020)
t + 1	0,107	(0,039)	12,521	(3,275)	-0,053	(0,034)	0,089	(0,028)	-0,172	(0,039)	-0,032	(0,025)
t + 2	0,117	(0,044)	12,394	(4,912)	-0,044	(0,033)	0,005	(0,025)	-0,143	(0,039)	0,027	(0,024)
t + 3	0,088	(0,042)	17,083	(5,342)	0,033	(0,030)	-0,021	(0,020)	-0,130	(0,038)	-0,020	(0,021)
t + 4	0,047	(0,045)	16,736	(6,695)	0,015	(0,035)	0,002	(0,011)	-0,146	(0,035)	-0,011	(0,025)

TABLE A7 Average participation effects on the treated **women** with bootstrapped standard errors (400 iterations).

	Employment		**Earnings**		**Unemployment**		**Programme part.**		**Studying**		**Inactivity**	
	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.
Job placement												
t	-0,055	(0,033)	14,177	(1,802)	-0,212	(0,036)	0,484	(0,033)	-0,191	(0,036)	-0,041	(0,018)
t + 1	0,031	(0,043)	7,338	(2,893)	-0,015	(0,033)	0,032	(0,026)	-0,149	(0,035)	0,014	(0,024)
t + 2	0,021	(0,041)	2,729	(3,459)	0,009	(0,029)	0,042	(0,016)	-0,097	(0,037)	0,013	(0,028)
t + 3	-0,006	(0,041)	5,864	(4,033)	0,016	(0,029)	0,001	(0,015)	-0,056	(0,037)	0,035	(0,030)
t + 4	0,047	(0,046)	8,445	(3,999)	-0,035	(0,037)	0,002	(0,010)	-0,057	(0,032)	0,021	(0,030)
Youth practise												
t	-0,096	(0,016)	-2,324	(0,609)	-0,154	(0,020)	0,411	(0,019)	-0,101	(0,019)	-0,014	(0,010)
t + 1	-0,030	(0,017)	-2,421	(0,989)	-0,012	(0,016)	0,005	(0,013)	-0,039	(0,021)	-0,011	(0,010)
t + 2	-0,007	(0,022)	-0,785	(1,298)	-0,013	(0,016)	0,020	(0,009)	0,018	(0,020)	-0,006	(0,011)
t + 3	-0,024	(0,023)	-1,376	(1,655)	0,000	(0,017)	-0,001	(0,010)	0,017	(0,020)	0,003	(0,013)
t + 4	-0,034	(0,026)	-0,166	(1,801)	0,015	(0,016)	0,002	(0,007)	0,028	(0,021)	-0,007	(0,014)
LMT												
t	-0,086	(0,034)	-5,682	(1,845)	-0,133	(0,043)	0,409	(0,039)	-0,072	(0,040)	-0,045	(0,021)
t + 1	-0,024	(0,041)	-0,482	(3,262)	0,069	(0,041)	0,066	(0,029)	-0,128	(0,039)	-0,031	(0,030)
t + 2	0,066	(0,044)	10,696	(4,455)	0,002	(0,039)	0,039	(0,020)	-0,127	(0,038)	0,006	(0,031)
t + 3	0,062	(0,047)	9,633	(4,797)	-0,050	(0,038)	0,016	(0,018)	-0,115	(0,039)	0,010	(0,030)
t + 4	0,002	(0,049)	5,071	(4,618)	0,007	(0,041)	0,009	(0,016)	-0,070	(0,032)	0,057	(0,034)

TABLE A8 Average participation effects on employment with differing model specifications, bootstrapped standard errors (400 iterations).

	Basic		**No regional dummies**		**No occupation dummies**		**No reg. & occ. dummies**		**Only individ. characteristics**		**Thick support p < 0,5**		**No common support**		**No UNDUR**	
	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.
Job placement																
t	-0,024	(0,023)	-0,032	(0,024)	-0,022	(0,021)	-0,013	(0,019)	-0,057	(0,019)	-0,024	(0,024)	-0,031	(0,022)	-0,106	(0,018)
t + 1	0,082	(0,029)	0,082	(0,031)	0,091	(0,028)	0,101	(0,028)	0,061	(0,023)	0,082	(0,029)	0,077	(0,028)	0,026	(0,023)
t + 2	0,088	(0,030)	0,104	(0,029)	0,088	(0,030)	0,099	(0,031)	0,061	(0,024)	0,068	(0,029)	0,085	(0,029)	0,015	(0,024)
t + 3	0,052	(0,029)	0,040	(0,030)	0,054	(0,030)	0,059	(0,030)	0,026	(0,023)	0,038	(0,028)	0,050	(0,028)	-0,014	(0,022)
t + 4	0,058	(0,030)	0,033	(0,033)	0,048	(0,030)	0,046	(0,030)	0,036	(0,025)	0,045	(0,030)	0,061	(0,030)	0,009	(0,025)
Youth practice																
t	-0,071	(0,011)	-0,071	(0,011)	-0,076	(0,009)	-0,073	(0,010)	-0,098	(0,010)	-0,076	(0,012)	-0,072	(0,010)	-0,098	(0,009)
t + 1	-0,022	(0,014)	-0,029	(0,013)	-0,050	(0,013)	-0,055	(0,013)	-0,077	(0,013)	-0,031	(0,015)	-0,024	(0,013)	-0,047	(0,012)
t + 2	-0,021	(0,017)	-0,027	(0,016)	-0,047	(0,015)	-0,050	(0,016)	-0,074	(0,015)	-0,025	(0,018)	-0,021	(0,016)	-0,052	(0,014)
t + 3	-0,022	(0,018)	-0,032	(0,017)	-0,044	(0,017)	-0,052	(0,018)	-0,077	(0,016)	-0,029	(0,018)	-0,022	(0,016)	-0,056	(0,016)
t + 4	-0,024	(0,019)	-0,031	(0,018)	-0,043	(0,017)	-0,055	(0,019)	-0,067	(0,016)	-0,015	(0,019)	-0,024	(0,018)	-0,045	(0,016)
LMT																
t	-0,056	(0,025)	-0,053	(0,023)	-0,049	(0,021)	-0,060	(0,025)	-0,101	(0,018)	-0,055	(0,023)	-0,068	(0,023)	-0,149	(0,018)
t + 1	0,035	(0,029)	0,037	(0,028)	0,039	(0,029)	0,030	(0,029)	-0,013	(0,023)	0,033	(0,029)	0,024	(0,030)	-0,039	(0,022)
t + 2	0,079	(0,031)	0,088	(0,029)	0,090	(0,028)	0,091	(0,028)	0,048	(0,026)	0,075	(0,031)	0,077	(0,032)	-0,002	(0,025)
t + 3	0,060	(0,029)	0,062	(0,029)	0,069	(0,028)	0,077	(0,027)	0,025	(0,026)	0,053	(0,032)	0,059	(0,032)	-0,011	(0,026)
t + 4	0,012	(0,032)	0,005	(0,032)	0,015	(0,031)	0,023	(0,031)	-0,020	(0,027)	-0,008	(0,033)	0,004	(0,032)	-0,039	(0,027)

TABLE A9 Average participation effects compared with participation in another programme.

	Employment		Earnings		Unemployment		Programme part.		Studying		Inactivity	
	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.	Effect	s.e.
SEM vs YPT												
t	0,058	(0,028)	19,995	(1,968)	-0,004	(0,029)	0,070	(0,038)	-0,166	(0,029)	-0,020	(0,014)
t + 1	0,098	(0,036)	15,562	(2,709)	-0,003	(0,027)	-0,014	(0,027)	-0,085	(0,025)	0,014	(0,019)
t + 2	0,107	(0,035)	11,132	(3,172)	-0,028	(0,028)	-0,013	(0,020)	-0,108	(0,029)	-0,002	(0,024)
t + 3	0,067	(0,037)	12,241	(3,800)	-0,016	(0,027)	-0,020	(0,016)	-0,083	(0,028)	0,024	(0,021)
t + 4	0,102	(0,037)	11,364	(4,710)	-0,023	(0,027)	-0,003	(0,008)	-0,094	(0,025)	-0,002	(0,024)
LMT vs YPT												
t	0,000	(0,036)	2,302	(1,659)	0,047	(0,033)	0,057	(0,040)	-0,031	(0,030)	-0,039	(0,026)
t + 1	0,089	(0,042)	10,881	(2,620)	-0,011	(0,043)	0,031	(0,027)	-0,077	(0,025)	-0,002	(0,021)
t + 2	0,189	(0,040)	19,935	(3,632)	-0,075	(0,045)	-0,003	(0,028)	-0,144	(0,037)	-0,005	(0,027)
t + 3	0,107	(0,041)	20,291	(4,962)	-0,058	(0,037)	-0,016	(0,020)	-0,130	(0,037)	0,006	(0,021)
t + 4	0,092	(0,048)	18,720	(5,519)	-0,033	(0,037)	0,009	(0,010)	-0,081	(0,028)	0,022	(0,025)
SEM vs LMT												
t	0,034	(0,028)	20,363	(1,643)	-0,064	(0,032)	0,067	(0,039)	-0,132	(0,034)	-0,003	(0,013)
t + 1	0,092	(0,034)	12,069	(2,646)	-0,071	(0,030)	-0,010	(0,025)	-0,027	(0,030)	0,011	(0,023)
t + 2	0,046	(0,036)	1,154	(3,537)	-0,019	(0,029)	-0,002	(0,019)	-0,004	(0,033)	-0,021	(0,023)
t + 3	0,034	(0,036)	1,189	(3,994)	-0,004	(0,026)	-0,017	(0,017)	0,030	(0,034)	0,014	(0,024)
t + 4	0,062	(0,038)	1,977	(5,292)	-0,043	(0,026)	-0,003	(0,009)	0,001	(0,030)	-0,017	(0,027)

SEM = Selective Employment Measures
YPT = Youth Practical Training
LMT = Labour Market Training

CHAPTER 6

SUMMARY AND CONCLUSIONS

The aim of this thesis was to give empirical evidence on gender-related differences in the Finnish labour market, particularly in unemployment. The thesis first addressed some theoretical considerations regarding gender differences in the labour market, and then discussed the structures of the Finnish labour market and the position of women therein. The four studies constituting this thesis gave empirical evidence on the existence of gender differences in unemployment from different viewpoints.

This chapter will give a brief concluding summary of the issues raised by the preceding studies. The chapter first summarises the main results, discusses the significance and some reservations of outcomes reached, and finally, offers some concluding remarks.

1 Main results

Overall, the results of this thesis confirm the existence of gender differences in the labour market, more specifically in unemployment, and give support to studying male and female unemployment separately. The findings may not be surprising, but they do give strong empirical evidence, in the context of Finland, of the factors motivating and restricting the labour market behaviour and choices of unemployed women and men.

Chapter 2 described the magnitude and evolution of worker flows in Finland during the 1990s on an aggregate level. Gender differences were observed principally in the rapidity and intensity of the responses to the shock. Female flow into unemployment lagged constantly behind the male flow, which was also the case with the outflows. This finding was interpreted as a logical consequence of the extensive occupational segregation characterising the Finnish labour market, as the male dominated sectors such as industry and construction are more vulnerable to economic fluctuations, while the female dominated public sector reacts to fluctuations at a slower paste. This conclusion, based on the aggregate level results only, may appear ad hoc but is

nevertheless consistent with the labour market situation in Finland and was also supported by the results obtained in Chapters 3-5.

Chapter 3 analysed gender differences in the probabilities of transiting from unemployment to employment, studying and non-participation using the multinomial logit model. According to the results labour market outcomes turned out to be more responsive to family related background characteristics for women than for men. Previous unemployment was observed to be particularly scarring with respect to the labour market position of men. For women, education appeared as a most significant, improving factor regarding female labour market position. Unemployed women with higher education came out with an even better probability of employment than their male counterparts. Although segregation was stressed as the main explanatory factor of the results obtained in Chapter 2, in this chapter the occupational variables were not included due to the small size of the highly segregated sample. This weakness was more aptly addressed in Chapter 4, where the larger sample size enabled us to include also the variables indicating the previous occupation of the unemployed individuals.

Chapter 4 extended the theme of the aforementioned studies by presenting evidence on the determinants of unemployment duration by gender. Overall, the results showed evidence of considerable duration dependence regarding exits from unemployment, with a benefit exhaustion related upturn after two years of unemployment. This upturn was not, however, directed to employment but rather to active labour market programmes and economic inactivity. In the case of Finland the periods of unemployment tend to be longer for men than for women on average. The results of the study indicated that this finding is explained by women's eagerness to participate in active labour market programmes. Consistently with Chapter 3, the gender differences observed in the factors determining the duration of unemployment and the probability of exiting were mainly connected to family and education. The existence of young children was shown to hinder women from exiting unemployment having no effects on men, while education promoted exits from unemployment to a great extent, particularly for women but also for men. The now included occupational variables confirm the existence of distinct sectoral variation both between genders and between exit states. The probability of employment varies significantly between sectors but also between genders within sectors. The sectoral effects on the probability of entering an active labour market programme are also evident.

Chapter 5 evaluated the long-run effects of Finnish active labour market programmes and gender differences therein, focusing on the young unemployed. As in Chapter 3, also in this case the size of the sample was an unfortunate restriction in disaggregating the analysis further. The results of the study exhibited distinct variation in the success of programmes. First, overall, the type of the programme emerged as a most crucial determinant of its success. Job placements and labour market training were found to be successful not only in promoting employment but also in increasing the earnings of participants,

while youth practical training displayed no effects on any of the outcome variables. Second, despite the gender neutral nature of Finnish active labour market policy, results of this study indicated that there is considerable heterogeneity in the treatment effects between women and men. On average, it seems that participation in these programmes benefits almost solely men but does little for women. This result is, at least in part, explained by the sectoral differences in the programmes available to the unemployed, i.e. ultimately segregation.

2 Concluding remarks

Summing up, from the results of this thesis we can conclude that with increased unemployment duration the unemployed individuals are less and less likely to find regular employment. Notably, the threat of the exhaustion of unemployment benefits after two years of continuous unemployment has virtually no effects on the probability of employment. The individuals faced with this threat escape unemployment either via active labour market programmes or by exiting the labour force altogether. According to the results education promotes employment for all unemployed, more so for women than for men. This result is in line with previous findings indicating that women have higher gains from schooling than men. Although encouraging, some caution is in order here, though. The sample in all these studies consists of unemployed individuals. Thus, due to obvious selection bias, this result cannot be generalized further to the whole population or to the effects of education in general. The results also put to question the effectiveness of the active labour market policy practised in Finland. Out of the three available programme types this thesis found the most common, but also the most inexpensive one, to be virtually ineffective.

Gender-wise, the findings of this thesis present women as a group demonstrating more flexibility in their labour market choices than men. Women's unemployment periods tend to be shorter than men's on average, and women have a higher propensity to exit unemployment, but when exiting they are more likely to enter into active labour market programmes or economic inactivity than employment. Obviously, the matter of cause and consequence is difficult to establish here. Are women voluntarily more open to alternative options, or do they take them up only when gaining employment seems unlikely? Nevertheless, with this higher activity and lack of prejudice to alternative choices women may end up finding themselves in a worse off situation. By over-crowding labour market programmes women do not end up gaining extra benefits from the policies, but are instead overly allocated into the most futile of programmes, thus dragging down the average effectiveness of programmes on women.

For some reason men do not exploit the other available choices to the same extent as women, but instead choose rather to stay unemployed until finding suitable employment. One of the observations in this thesis was that previous unemployment is particularly scarring with respect to the labour market position of men. These findings insinuate of the societal expectation of men having a stable career, while for women career breaks are more acceptable, even expected. Hence, also the existence of a family comes out as a burden only on the labour market position of women, having either no or even positive effects on the position of men.

Our results point out that no matter how gender neutral the designed policies themselves may be, in terms of equality they are failing and even inducing distortions when applied to a highly segregated labour market such as in Finland. Now, how should we respond to these differences? Should we aim at abolishing segregation altogether, which is a difficult task but hopefully feasible over the long run? Or should we focus on formulating policies that strive for gender-wise equality in results by taking into account the existing segregation, which may be more realistic in the short run? These questions remain to be answered.

We can conclude by saying, that seeing as to some extent the problems faced by the two genders obviously differ, then so do the solutions. Given the existence of such differences, there may be scope for improving the currently practised policies to better fit the needs of the unemployed. Affirmative action targeted at diminishing segregation and its' implications would be most fruitful both in increasing equality, but potentially also in increasing the efficiency of the economy via improved matching as Rosén's theory suggests.

This thesis has provided some viewpoints, and hopefully also some insights into the discussion of unemployment and gender differences therein, in the context of Finland. Although it gives some answers it also certainly raises many new questions. This study was unable to cover the issues of temporary and part-time employment, both of which certainly are gender related problems as well, leaving them open for future research.

SUMMARY IN FINNISH (YHTEENVETO)

Tämä väitöskirja koostuu neljästä empiirisestä tutkimuksesta, joissa analysoidaan sukupuolieroja työttömyydessä Suomessa. Varsinaisia tutkimuksia edeltää johdantoluku, joka esittelee lyhyesti väitöskirjan teoreettisen taustan, rajaa tutkimusongelman, kuvailee suomalaisia työmarkkinainstituutioita ja raportoi väitöskirjan keskeiset tulokset. Väitöskirjan tavoitteena on selvittää sukupuoleen liittyviä eroja työttömyydessä, erityisesti työttömien työmarkkinasiirtymissä, työttömyyden kestossa ja aktiivisen työvoimapolitiikan tehokkuudessa. Tutkimusaineistona käytetään pääsääntöisesti suomalaista pitkittäisaineistoa vuosilta 1995–2000.

Toisessa luvussa dokumentoidaan työmarkkinavirtoja ja niiden kehitystä Suomen työmarkkinoilla 1990-luvulla, ja tutkitaan työntekijävirtojen ja varantojen dynaamisia ominaisuuksia siirtymissä työttömyyteen ja pois työttömyydestä. Tulosten mukaan negatiivinen taloudellinen shokki kasvattaa työttömyyttä ja shokin vaikutusten havaitaan eroavan sukupuolen mukaan. Havaittujen erojen arvioidaan johtuvan Suomen työmarkkinoiden voimakkaasta segregoitumisesta.

Kolmas luku analysoi sukupuolieroja todennäköisyyksissä siirtyä työttömyydestä työllisyyteen, opiskelemaan tai työvoiman ulkopuolelle. Multinomiaalisen logit –mallin tulokset osoittavat, että perhetekijät vaikuttavat voimakkaammin naisten työmarkkinatulemiin. Koulutuksella havaitaan olevan erityisen voimakas rooli naisten työmarkkina-aseman edistämisessä.

Neljännessä luvussa mallinnetaan naisten ja miesten työttömyyden kestoa Suomessa käyttäen hasardimalleja. Tuloksista käy ilmi voimakas negatiivinen kestoriippuvuus poistumille työttömyydestä, työttömyystukien loppumisen näkyessä piikkinä kahden vuoden kohdalla. Tukien päättymisen aikaan työttömyydestä poistuneet eivät kuitenkaan työllisty, vaan poistuvat joko aktiivisen työvoimapolitiikan toimenpiteille tai työvoiman ulkopuolelle. Yleisesti havaitut miesten pidemmät työttömyysjaksot selittyvät naisten voimakkaalla hakeutumisella aktiivisen työvoimapolitiikan piiriin.

Viimeisessä tutkimuksessa arvioidaan Suomessa harjoitetun aktiivisen työvoimapolitiikan pitkän aikavälin vaikutuksia ja sukupuolieroja näissä vaikutuksissa. Toimenpiteiden tuloksellisuutta mitataan työllisyyden, työttömyyden, tulojen, toistuvan osallistumisen, opiskelun ja työvoiman ulkopuolelle siirtymisen suhteen. Propensity score matching –menetelmän tulosten perusteella eri toimenpideryhmien vaikutuksissa osallistujien työmarkkina-asemaan on merkittäviä eroja. Lisäksi havaitaan toimenpiteiden tuloksellisuuden vaihtelevan merkittävästi sukupuolen mukaan.

Luku 6 päättää väitöskirjan ja kertaa väitöskirjan keskeiset tulokset. Tulosten tarkastelun ohella luku pyrkii tuomaan esiin tutkimuksessa ilmenneitä ongelmia ja tulosten tulkitsemiseen liittyviä varauksia. Luvun lopuksi keskustellaan väitöskirjan kontribuutioista ja tuloksiin liittyvistä politiikkajohtopäätöksistä.