Are the Marginalised Truly Marginalised?

A Study of Labour Force Attachment in Denmark

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Social Integration and Marginalisation
Working Paper 24:2002

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Abstract

In most economic models of the labour market non employment is described with at most two distinct states: "unemployed" and "out of labour force". The question is whether these two states give an adequate account of the labour market. Jones and Riddell (1998) propose an additional state denoted "marginalised". The state includes individuals who report that they wish to work but are not presently searching and is as such an alternative to the Danish marginalisation definition. In this paper I use data from the Danish Labour Force Survey 1995-1999 to examine whether there in Denmark exists a group of marginalised individuals according to the definition by Jones and Riddell. The questions used in the Danish survey is not exactly identical to the questions used by Jones and Riddell and it is therefore possible to examine the robustness of the marginalisation definition regarding the questionnaire design.

First of all, I find that it is important for the definition of the marginalised state that the questions used to pick out individuals are very precise and identical from study to study. Secondly, I do find a group of marginalised individuals in Denmark with a lower employment probability than unemployed individuals but higher employment probability than individuals outside the labour market. I decompose the marginalised state according to reason for marginalisation. I find that the state contains very heterogenous subgroups. Also, I compare the marginalised state as define by Jones and Riddell with the Danish marginalisation definition. It does not appear that the marginalised individuals as defined by Jones and Riddell have a long history of unemployment. Rather a large of group of them appear to be on different permanent pension schemes (early retirement pension, disability pension etc.) which in Denmark contains individuals who conventionally are regarded as outside the labour force.

Contents

1 Introduction

In most economic models of the labour market it is assumed that individuals' labour market behaviour can be described with at most 3 different labour market states: employment, unemployment and out of labour force. One example is search theory where unemployment is often modelled at an interior point with regard to the optimal amount of time spent on job search and out of labour force is likewise modelled as a corner solution resulting in no search, cf. Devine and Kiefer (1991). A thorough understanding of the labour market may, however, require a more diversified modelling of the labour market than just three states. This point has been brought forward by, among others, Atkinson and Micklewright (1991). In their survey article on unemployment compensation and labour market transitions they write:

> "A central theme of the paper is that it is necessary to distinguish several different labor market states, and not to consider only employment and unemployment." (pp. 1680)

Jones & Riddell (1995) propose a supplemental state containing individuals who wish to work but who are not searching for a job. This state is by Jones and Riddell called "marginalised" in the meaning that individuals are at "the margin of the labour force". This definition covers a broad selection of individuals who report different reasons for their present state. Individuals in this state will in most countries be counted as outside the labour force due to their lacking search effort. The fact that these individuals themselves report that they wish to find employment may indicate, however, that some of these individuals have not left the labour market altogether. As pointed out by Jones and Riddell (1998), if "waiting" for employment, as done by marginalised individuals, proves to be productive with regard to employment, then the state may be important for analysis of job search. This may lead to

a different understanding of, for instance, unemployment periods which are divided by periods of non search.

Research in the different labour market states is, when compared to the relative interest it holds for most people, surprisingly limited. Since the beginning of the 1980's there has been some debate about whether the different proposed labour market states are really different when it comes to individuals' prospects of finding employment. Clark and Summers (1982) as well as Flinn and Heckman (1983) discuss whether it makes sense to divide non employed young people into the two states unemployed and out of labour force. Flinn and Heckman propose a test for examining whether individuals display the identical movement between states. Jones and Riddell (1998) use this test to examine whether the marginalisation definition catches individuals who display labour market behaviour different from unemployed individuals as well as individuals out of labour force.

Using data from the Danish LFS for the period 1995 to 1999 I will in this study examine whether a marginalised group in Denmark with distinct labour market behaviour exists. I will use the data to construct four states: employed, unemployment, marginalised and out of labour force. I will compare the transition probability between the different states in order to test whether marginalised individuals display different labour market behaviour than individuals in other states. In my analysis of marginalised individuals, I will decompose the group according to reasons for non search and examine the labour market behaviour of the different groups. The LFS as conducted in Denmark is a rolling panel which makes it possible to follow individuals labour market behaviour both one quarter after first interview and one year after second interview. It is therefore possible to compare both short term as well as long term labour market behaviour for the different labour market states. I will use the structure of the data to look for any possible dura-

tion dependence, for instance indications on whether marginalisation is an absorbing state. Finally I will make some tentative comparisons of the marginalisation definition and the Danish labour market definitions. In Denmark since mid 1990 marginalisation has been defined as a form of long term unemployment (more than 60-80 per cent unemployment within a 3 years period). By comparing the Danish definitions with the international and preference based marginalisation definition it is possible to get a first view on whether marginalisation as defined by Jones and Riddell is a product of long periods of non employment

In section 2 I will go through the literature on the marginalisation definition. In section 3 I will describe the statistical setup which I will use for the analysis of the labour market state. In section 4 I present the data which is used in the analysis and I give a brief description of the data values in section 5. In section 6 I present estimates of the average transition probabilities betweeen the labour market states and in section 7 I present estimation results and test values of the hypothesis that the marginalised state is a distinct state. In section 8 I compare the marginalised state with the Danish labour market definitions in order to derive some information about the labour market background for the individuals who end up in the marginalised state. Finally I conclude in section 9.

2 Literature

The definition of marginal attachment which will be applied in this paper dates back to Jones and Riddell (1995). In an article on regional aspects of labour market flows in Canada they introduce this intermediate state on the labour market defined as individuals who wish to find employment but are not presently searching for a job. For the analysis they apply a special longitudinal data set created by matching the Canadian cross-sectional Sur-

vey of Job Opportunities (SJO), which measures search methods and reasons for non search, with the subsequent month of the Canadian Labour Force Survery (LFS). The matching utilises the fact that the LFS is constructed as a rolling panel where 1/6 of the interviewed individuals are replaced each month thereby making it possible to follow individuals for up to 6 months. Since the SJO, which supplies information about the marginalised state, is only conducted once a year it is not possible to test marginalised as a both departure and arrival state. For the analysis they use observations for the years 1980, 1995 and 1992. Jones and Riddell find that marginalised people constitute between 6.6 per cent and 9.3 per cent of the non employed in Canada. Out of the marginalised group aproximately 35 per cent reported that they were waiting for a job and aproximately 30 per cent reported discouragement as reason for not searching.

Jones and Riddell continue the study of the marginalised state in their subsequent work. In an article from 1998 they extend the analysis of the state by comparing and testing the labour market behaviour of marginalised individuals against individuals in other labour market states. In this article the focus is on exploration of the data as well as test results, where as the definition and testing method are carefully described in Jones and Riddell (1999). The test which they apply is inspired by Flinn and Heckman (1983). In response to an article by Clark and Summers (1982) on youth non employment, Flinn and Heckman propose that especially young people may have identical probability of finding employment independently of whether they search or not. In order to examine the hypothesis Flinn and Heckman develop a test which compares different labour market states on transition probabilities between the states. The test is further described in section 3. Just as in the 1995 article Jones and Riddell use data from the Canadian LFS merged with the SJO. The data set has been extended to all years between

1979 and 1992. Due to the limited number of observations on marginalisation (one per year) Jones and Riddell do not test for duration dependency. The movement between different states is in other words assumed to follow a 4 state Markov model[1]. They perform the test of the marginalised state for different demographic and geographic subgroups and test the state against both unemployment and out of labour force. For both youth and adults, men and women, the hypothesis that marginalised can be merged with other states is rejected (with few exeptions for specific years). When the data set is divided out on regions, the rejection of the hypothesis that marginalised is the same as unemployment weakens. For between 7 and 10 of the 13 years (dependent on region) the hypothesis is not rejected. The other hypothesis continues to be rejected. Jones and Riddell also use answers from the SJO to divide the marginalisation group into two subgroups "waiting" and "non waiting". Waiting means that individuals give reasons for not searching which indicate that they are waiting for employment. Non waiting is the residual group of the marginalised. Jones and Riddell generally find that both the waiting and non-waiting subgroup are distinct states compared to both unemployment and out of labour force. For the different regions they find that especially the hypothesis that the waiting subgroup is identical to unemployment is not rejected for 3 to 6 of the 13 observed years (varying over regions). The non waiting groups rejects strongly for almost all years.

The test has also been applied to US data by Jones and Riddell (2001). They use a set of panels constructed from the new Current Population Survey. The panel consists of four consecutive monthly observations of labour market status which makes it possible to analyse duration dependency for at least four months. The findings of Jones and Riddell indicate that a break down of the non-employed into the three states: unemployed, marginalised, and out

[1] With the states, employment, unemployment, marginalised, outside.

of labour force is a useful approach which is supported by data. Estimations of duration models indicate that neither seasonality nor duration dependency confound this evidence. Furthermore, estimation of a Markov model which takes account of the panel structure indicates that marginalisation may be an absorbing state[2].

3 Statistical framework

A central aspect of a labour market state is how individuals move to and from the state. If for instance unemployed individuals display employment behaviour similar to people outside the labour market, then dividing people into the two states may in some cases be irrelevant. Flinn and Heckman (1983) use this fact and propose that labour market states can be compared and tested on individuals' movement between states. In other words, in order for a labour market state to be regarded as distinct, individuals in the state have to display movement into other states which differs significantly from individuals' movements from other labour market states.

If we assume that there is no states dependency the movement between states can be described by a discreet Markov chain between the following states: employment (E), unemployment (U), marginalisation (M) and outside labour market (O), cf. Ross (1989). P describes the one step transition probability of going from one of these states to another and can be described by the following matrix:

$$P = \begin{bmatrix} P_{EE} & P_{EU} & P_{EM} & P_{EO} \\ P_{UE} & P_{UU} & P_{UM} & P_{UO} \\ P_{ME} & P_{MU} & P_{MM} & P_{MO} \\ P_{OE} & P_{OU} & P_{OM} & P_{OO} \end{bmatrix}. \tag{1}$$

Applying Flinn and Heckman's test to this setup would imply a comparison of the transition probabilities for different states. Heckman and Flinn

[2]The probability of staying marginalised seems to increase the longer individuals have been marginalised.

show that a sufficient requirement for two states to be identical is that transition probabilities to other states from the two states are similar. If we, for example, want to test whether marginalised is equal to outside labour force, then a sufficient requirement is that[3]:

$$P_{ME} = P_{OE}$$

$$P_{MU} = P_{OU}.$$

If this is true the transition matrix (1) goes from 3 to 2 in rank and the model collapses to:

$$P = \begin{bmatrix} P_{EE} & P_{EU} & P_{EN} \\ P_{UE} & P_{UU} & P_{UN} \\ P_{NE} & P_{NU} & P_{NN} \end{bmatrix}$$

where the marginalisation state (M) and the outside labour force state (O) are included in the new state "not on the labour market" (N). Notice that it is not necessary to assume that the transition probabilites into to the two states are identical for the model to collapse. This seems intuitive if states are only characterised by transition probabilities since individuals when they first have entered one of the states are faced with the same probability of leaving the state.

The Markov assumption is illustrative but not necessary for applying the test. Relaxing the state dependency assumption will merely imply that individuals in different states need to have identical hazards over the entire spell duration in order for the two states to be identical[4]. Since the Danish LFS contains three observations on each individual in the sample, it is possible to test the simple Markov model as described in matrix (1). Furthermore, if the Markov assumption is rejected, the data makes it possible to estimate a less restrictive model where transition rates between the labour market states depend on all the information we have. Jones and Riddell (2001) propose

[3] See Flinn and Heckman (1983) for proof.

[4] See Flinn and Heckman (1983) for an application of the test to a duration analysis with flexible time dependence.

an expanded Markov model to tentative examine for state dependency. The model can be applied to the Danish data. This gives a transition matrix as described in table 1. Notice that some of the states by definition have zero

Table 1: Transition paths using all three interviews

From\To	E_1	E_2	E_3	U_1	U_2	U_3	M_1	M_2	M_3	O_1	O_2	O_3
E_1		ee-		eu-			em-			eo-		
				-eu			-em			-eo		
E_2			eee	eeu			eem			eeo		
U_1	ue-				uu-		um-			uo-		
	-ue				-uu		-um			-uo		
U_2	uue					uuu	uum			uuo		
M_1	me-			mu-				mm-		mo-		
	-me			-mu				-mm		-mo		
M_2	mme			mmu					mmm	mmo		
O_1	oe-			ou-			om-				oo-	
	-oe			-ou			-om				-oo	
O_2	ooe			oou			oom					ooo

probability. It is, for instance, not possible to go from two consecutive employment periods (E_2) to only one employment period (E_1). Since the time periods between the three observations are not identical (one quarter and one year), it is not possible to directly compare the transition probabilities between the three states. Still, with that in mind, some observations can be made from the data. For example, the Markov model, as described in table 1, makes it possible to examine whether the probability of staying marginalised is different for individuals who have been marginalised for at most one quarter (-mm) compared to individuals who have experience at least a year and a quarter (mmm) of marginalisation. In this way we can examine whether there are indications of marginalisation as an absorbing state ($P_{-mm} < P_{mmm}$). Since we do not correct for heterogeneity, we have to be aware that results may also be driven by different transition probability among different groups on the labour market.

Table 2: Transitions paths of Markov model applying all three observations

From\To	E	U	M	O
EE	eee	eeu	eem	eeo
UE	uee	ueu	uem	ueo
ME	mee	etc.		
OE				
EU				
UU				
MU				
OU				
EM				
UM				
MM				
OM				
EO				
UO				
MO				
OO				

Using all observations of the LFS it is also possible to construct a Markov model which takes account of all the movements between labour market states in the three interviews. In table 2 this Markov model is presented. Notice that by lifting the markov assumption the number of departure states are expanded from 4 to 16. In order for the markov assumption to hold, the transition probabilities from one state should be independent from previous observed behaviour. For example, for individuals who are unemployment, the movement into any labour market state must comply with:

$$P_{UUX} = P_{MUX} = P_{OUX} = P_{UX},$$

where X here describes movement in to any labour market state from unemployment (U). I will test this assumption on the data.

If the Markov assumption is rejected by data, it is still possible to test the marginal state against other states. Only, we then have to test the transition from the marginalised state taking account of the observations we have

on individuals' labour market history prior to the transition. This can be done by estimating the Markov model as described in table 2 and then test the marginalised state in this setup. For instance, the hypothesis that the marginalised state is indentical to being outside the labour force will in this model imply that

$$\begin{aligned} P_{EME} &= P_{EOE} \\ P_{EMU} &= P_{EOU} \\ P_{UME} &= P_{UOE} \\ P_{UMU} &= P_{UOU} \\ P_{MME} &= P_{MOE} \\ P_{MME} &= P_{MOE} \\ P_{OME} &= P_{OOE} \\ P_{OMU} &= P_{OOU}. \end{aligned}$$

4 Data construction

Since 1994 the Danish LFS has been a continuing survey where individuals are sampled on a quarterly basis. Each quarter 15.600 individuals in the age between 15-69 years are sampled and interviewed. The survey is used to describe the population's labour market attachment as defined by the international guidelines of Eurostat. The survey results are therefore comparable with surveys conducted in other EU countries and are published each year by Eurostat.

The sample used in this analysis covers second quarter 1995 to fourth quarter 1999. The reason for limiting the analysis to 1995 is that some of the questions regarding labour force attachment were changed in the first survey of 1995. Since the changed questions are used in construction of the labour market states used in this paper, it has not been possible to construct labour market states that are identical both before and after 1995.

The survey is based on phone interviews. If individuals do not answer the phone, a questionnaire is sent by mail. If individuals do not reply, one reminder is mailed to them. The survey is constructed as a rolling panel. This

means that out of the 15.600 individuals one third is replaced each quarter, one third is re-interviewed the following quarter, and one third is interviewed for the third time one year after the second interview. For example, one third of the sample in 1. quarter 1998 will be re-interviewed in 2. quarter 1998 and again in 2. quarter 1999. In table 3 the subsamples from 2. quarter 1995 to 4. quarter 1999 are described. Notice how most subsamples appear three times in the data set.

Table 3: The Rolling Panel from 2. quarter 1995 to 4. quarter 1999

Year	Quarter	First interview	Second interview	Third interview
1995	2	F	E	A
	3	G	F	B
	4	H	G	C
1996	1	I	H	D
	2	J	I	E
	3	K	J	F
	4	L	K	G
1997	1	M	L	H
	2	N	M	I
	3	O	N	J
	4	P	O	K
1998	1	G	P	L
	2	R	Q	M
	3	S	R	N
	4	T	S	O
1999	1	U	T	P
	2	V	U	Q
	3	W	V	R
	4	X	W	S

In order to ensure enough observations of individuals who are not in employment, aprox. one third (5,000 individuals) of the sample is picked from individuals who in the previous quarter were registered as unemployed by the Danish unemployment funds or municipalities. The remaining two thirds (10,600 individuals) are picked among individuals who are not registered as unemployed in the previous quarter.

Within the stratas everybody between the age of 15 to 69 years of age has the same probability of participating. The fact that individuals do not reply the questionnaire with the same probability, however, impose a source of bias to estimations performed on the data. In order to minimise the bias, Statistics Denmark has performed analyses of the response percentage in order to determine which factors have the most influence on responses. Based on the results Statistics Denmark has constructed weights for the survey observations. The weights have been constructed differently for the two strata. For the 5,000 individuals who were unemployed in the quarter prior to the interview, the weights have been constructed according to income, education, gender and age. For the remaining 10,600 individuals who were not unemployed in the quarter prior to the interview, the weights have been constructed according to income, employment sector, age and gender.

In order to obtain demographic information on individuals, the LFS has been merged with data from the Population database from Statistics Denmark. Since this database contains information on every person who at some point in time has resided in Denmark, it is possible to find demographic information about all of the individuals that have been interviewed in the LFS. The Population database is used to derive information about individuals' age and gender.

In the LFS individuals are asked certain questions which are used to determine their labour market attachment. According to Eurostat guidelines individuals are divided into the following three categories:

- employed
- unemployed
- out of labour force

The individuals in the sample have been categorised according to their

answer to the questions reported in appendix A. In order to be regarded as employed, a person has to have worked for at least one hour during the week of the interview. In order to be regarded as unemployed, a person has to either already have found employment which commences at a specific later date or have searched for a job during the interview week. The exact search requirements are described in appendix A. The state "out of labour force" contains all remaining individuals.

The state "marginalised" is not part of the Eurostat definitions. It has therefore been constructed by subsequently applying informations from the LFS to the labour market states as defined by Eurostat. Jones and Riddell (1995) define marginalised as individuals who wish to be employed but who are not searching for a job. In Jones' and Riddell's studies individuals are regarded as marginalised if they answer that they would like to be employed in the week of the survey[5]. In the Danish LFS non employed individuals are asked whether they

> "would ... like to have a job, now or later..."[6]

This question is somewhat weaker than the question used by Jones and Riddell, but it is the question which is closest to their definition. In the Danish LFS individuals are also asked how quickly they can begin work if they were offered a job. Answers to this question will be used to analyse the marginalisation state and examine whether the difference between the questions used to define marginalisation from Canadian and Danish data, respectively, have an impact on the marginalisation state.

The marginalisation state as described above contains individuals in very different situations and therefore most likely with different labour market

[5]The exact question in the Canadian SJO is "Did ... want a job last week?", cf. Survey of Job Opportunities, Form number 6, Statistics Canada.

[6]Quote from question number 52, Statistics Denmark (1999).

attachment. In the LFS individuals are asked questions which can be used to further divide the marginalised group according to self reported "labour market attachment". This is done by using replies to the following three questions, cf. Statistics Denmark (2001):

1. Have you within the last month done anything in order to find employment?

2. Why have you not done anything in order to find employment?

3. Why can you not commence employment within 2 weeks?

The replies to these questions have been used to divide marginalised individuals into four different subgroups. The first group is called "waiting" and includes individuals who are not searching actively because they are waiting for employment either at a former or new employer. The second group is called "non waiting" and it contains almost any reported reason for being marginalised. The third group is called "education" and it includes everyone who reports education as a reason for being in the marginal state. Jones and Riddell (1998) construct the two subgroups "waiting" and "non waiting" in their study on Canadian data. The reason why I have added a subgroup is because I suspect that a large share of especially younger individuals may end up in the marginalisation state while they undertake education. After all, most students would agree to wanting a job now or later and would at the same time not search for a job while studying. Finally, there is a fourth group of marginalised individuals which I cannot classify due to lack of information. The questions used to construct the sub-groups are presented in appendix B.

Table 4: The sample of individuals used in the analysis divided according to labour market status, 1995-1999

	Employed	Unemployed	Marginalised	Outside	Total
Male	78,040	7,030	4,282	11,931	101,285
15≤Age<30	37,921	4,472	6,174	5,069	53,636
30≤Age<40	41,434	4,036	3,037	2,357	50,864
40≤Age<50	37,283	3,483	1,572	2,494	44,832
50≤Age<60	30,716	3,955	1,323	6,870	42,864
60≤Age	6,396	704	336	14,567	22,003
Total	153,750	16,650	12,442	31,357	214,199

5 Descriptives

In table 4 the sample is described according to labour market status and gender. Due to the stratification it is not possible to derive estimation results directly from the sample. Still, the table shows that the sample consists of a large number of observations from all four labour market states. In the sample, before correcting for stratification, the group of marginalised is almost as big as unemployment. Whether this is due to an over or under sampling of this group is not clear. Due to the extensive coverage of the unemployment insurance system in Denmark it is not unlikely that individuals can receive benefits and still be marginalised. This would lead to an over sampling of the marginalised[7].

The definition of the marginalised also covers individuals who either receive alternative transfers or no transfers, for instance early retirement pension, disability pension, education support etc. If these groups are dominating in the marginalised state, it would result in an under sampling of the mar-

[7] See section 4 for a description of the sampling scheme.

Table 5: Estimated population using weights.

	Employed	Unemployed	Marginalised	Outside	Total
Male	1,445,104	78,148	74,765	238,720	1,836,737
$15 \leq$Age<30	709,319	65,284	114,813	99,810	989,226
$30 \leq$Age<40	676,953	38,936	40,973	39,918	796,779
$40 \leq$Age<50	635,021	32,822	21,289	57,485	746,617
$50 \leq$Age<60	523,384	32,059	14,772	133,097	703,312
$60 \leq$Age	113,262	5,339	3,897	271,899	394,398
Total	2657938	174,439	195,745	602,209	3,630,331

ginalised. In table 5 the sample has been used to estimate the population by applying the weights constructed by Statistics Denmark. Notice that the unemployed are clearly over sampled where as the share of marginal individuals stays almost unchanged. This indicates that a large proportion of the marginalised individuals did not receive unemployment insurance in the quarter prior to the survey. The marginalised group constitutes more than 20 per cent of the non employed individuals and is according to the survey actually larger than the unemployment state. When it comes to the distribution over age the young age groups seem to be over represented in all three non employment states. The two states: marginalised and out of labour force display a heavy over representation of young individuals compared to the state unemployed. This may be due to individuals undertaking an education who may likely end up in these two labour market states. Individuals' choice of retirement age also has an impact on the distribution of the labour market states. It does appear that individuals leave the marginalised group already at an age between 50 and 60 years where as this age group is not to the same extend under represented in the other labour market states. Again this may be due

Table 6: Estimated number of marginalised in Denmark categorised according to age and labour market attachment (using weights).

	No responce	Waiting	Non waiting	Education	Total
15≤Age<30	2,178	2,660	20,130	89,846	114,813
30≤Age<40	1,506	1,494	18,717	19,256	40,973
40≤Age<50	1,045	1,419	9,694	9,131	21,289
50≤Age<60	907	1,467	9,147	3,251	14,772
60≤Age	191	588	2,942	176	3,897
Total	5,827	7,629	60,630	121,660	195,745

the fact that many of the possible contributing reasons for marginalisation disappear for this age group and up. Examples are education as well as child and family minding.

In table 6 the marginalised group is divided into three different states (as well as a residual group). The dominating group is clearly "education" which contains everybody who gives education as a reason for being in the marginalised state. Notice that the education subgroup is almost exclusively in the age group between 15 and 30 years of age. Actually individuals between the age of 15 and 30 years who report education as a reason for being marginalised constitute almost half of all marginalised individuals in Denmark. The "education" group is twice as big as the second largest group which consists of individuals who are not "waiting" for employment. In this group the reasons for marginalisation varies from sickness and handicaps, to family and child care, cf. appendix B for a full description. Especially individuals minding children and family may be the reason for the over representation of individuals between 15 and 40 years of age for this group. The last group is individuals who have ended up in the marginalised state because they are

Table 7: Estimated number of marginalised divided on age and availability for employment (using weights).

	<1 week	<2 weeks	<1 month	Later	No reply	Total
15≤Age<30	11,946	1,067	5,499	95,970	507	114,989
30≤Age<40	5,049	286	2,887	32,191	420	40,833
40≤Age<50	4,592	221	1,854	14,204	357	21,229
50≤Age<60	5,857	201	1,088	7,247	383	14,776
60≤Age	2,540	63	215	1,042	57	3,918
Total	29,984	1,838	11,543	150,654	1,726	195,745

"waiting" for employment. It constitutes less than 5 per cent of the total group of marginalised individuals. Also in this group is there an over representation of young individuals compared to the population average.

In table 7 the estimated group of marginalised individuals is categorised according to age and availability for employment. Only about 15 per cent of the marginalised individuals report that they can undertake employment in the week they are asked. This does indicate that the difference between the question used for the marginalisation definition in the Danish LFS and the Canadian SJO, respectively, does have a substantial impact on the selection of individuals for the state. It is therefore important for a precise definition of marginalisation to ask exactly when individuals would like to work. It is striking that more than 75 per cent of the marginalised individuals report that they need more than a month before they can undertake employment. For the under thirty the share is almost 85 per cent. Still, the share of individuals who can commence work at an emminent date is not so small that the state is irrelevant. Individuals who can begin employment within a month count 5 per cent of all non employed individuals (more than 43,000 people) and is

Table 8: Estimated number of marginalised divided on reason for marginalisation and availability for employment (using weights).

	waiting	non waiting	education	No reply	Total
<1 week	5,480	12,418	9,092	2,993	29,984
<2 weeks	286	801	678	73	1,838
<1 month	358	5,676	5,020	488	11,543
Later	1,434	40,959	106,737	1,524	150,654
No reply	70	775	132	749	1,726
Total	7,629	60,630	121,660	5,827	195,745

about a quarter the size of the unemployed group. For individuals who can begin within a week the share of all non employed individuals is aproximately 3 per cent and aproximately one fifth the size of the unemployed group.

In table 8 the estimated group of marginalised individuals is divided according to reasons for marginalisation and availability for work. Almost 90 per cent of individuals giving education as a reason for marginalisation need more than one month before they are available for work. This does indicate that the questions in the Danish LFS does include a large number of students who are waiting to finish they degree before they apply for jobs. Individuals who can commence employment within a week are spread over all categories. One third give education as a reason or marginalisation. 40 per cent report they are not waiting for employment and 20 per cent say they are waiting for employment. Especially the "waiting" subgroup reports high availability. More than 70 per cent of this group report that they can commence employment within a week.

6 Transfer probabilities

In order to get a view of the movements between labour market states, I will in this paper present average transition shares after a quarter. The shares can be interpreted as rough estimates of the transition probabilities between states. In figure 1 to 4 the estimated transition probabilities after a quarter from the three non employment states are presented for each year between 1995 and 1999. The dotted lines are 95 per cent confidence bands. Generally the figures indicate that marginalised individuals behave significantly different from both unemployed individuals and individuals outside the labour force. Marginalised individuals have a higher probability of entering employment than individuals out of labour force but a lower probability than unemployed individuals. The same goes for the probability into unemployment. When it comes to the probability of leaving the labour force, marginalised individuals have a lower probability than individuals already out of the labour force but higher than unemployed individuals. It is interesting to note that the general boom in the Danish economy from 1993 and onwards seems to have an effect predominantly on unemployed individuals where as the transition probabilities for the marginalised individuals and individuals out of labour force seem to be almost unaffected. This seems especially clear for the movement into employment and unemployment where individuals who are marginalised or out of labour force have an almost constant transition probability over the sample period. This result is surprising since other studies which focus on individuals with marginal attachment to the labour market find that especially the size of the group is negatively correlated with the business cycle, cf. OECD (1987), Ministry of Finance (1997). The reason for this result may be found in the large group of students who are included in this marginalisation definition, cf. section above.

In figure 5 to 8 the transition probabilities from marginalisation are di-

Figure 1: Transition probabilites into employment.

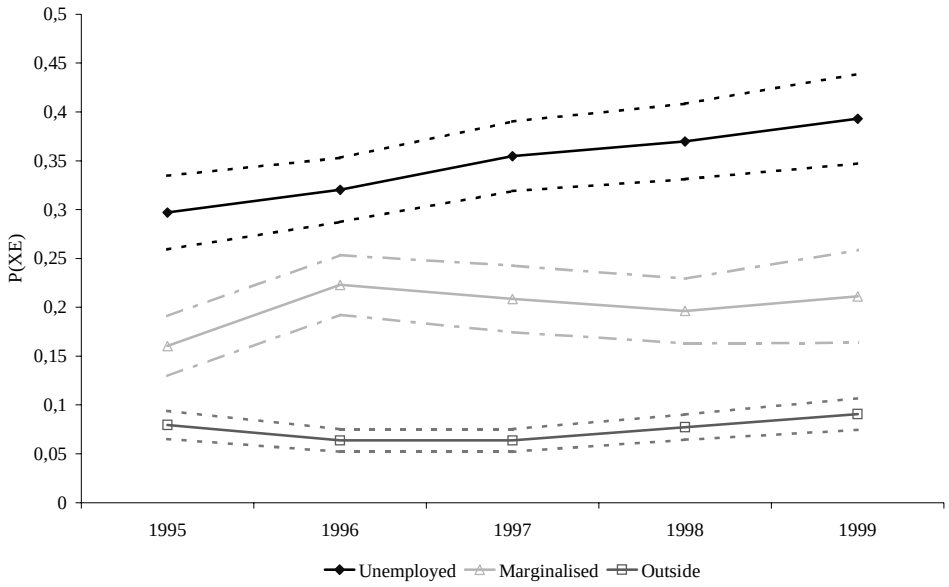


Figure 2: Transition probabilites into unemployment.

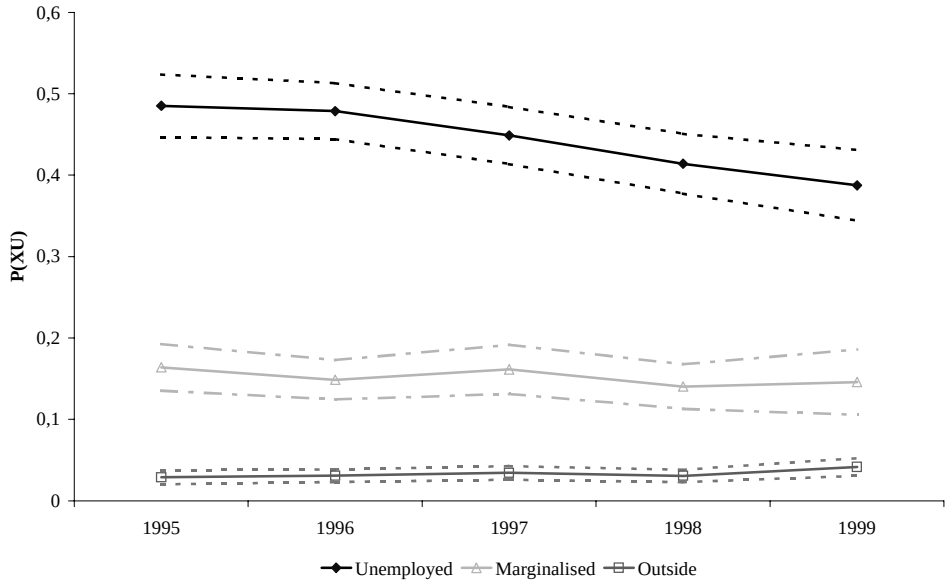


Figure 3: Transition probabilites into marginalisation.

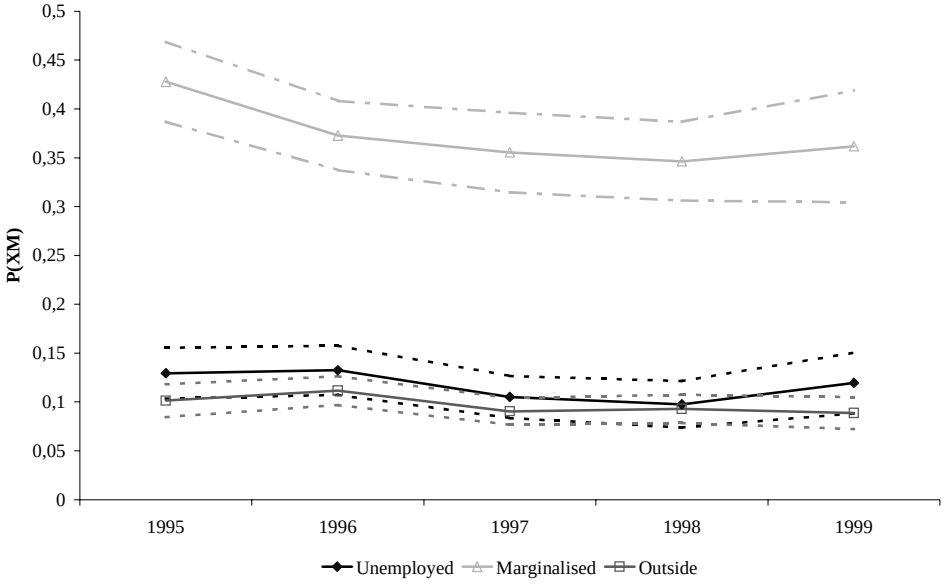


Figure 4: Transition probabilites out of labour force

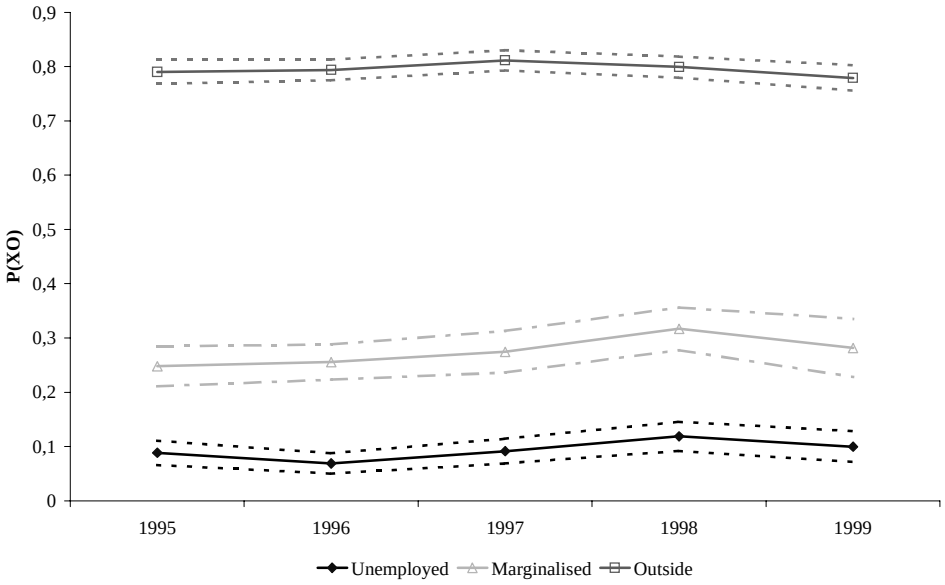


Figure 5: Transition probabilities into employment.

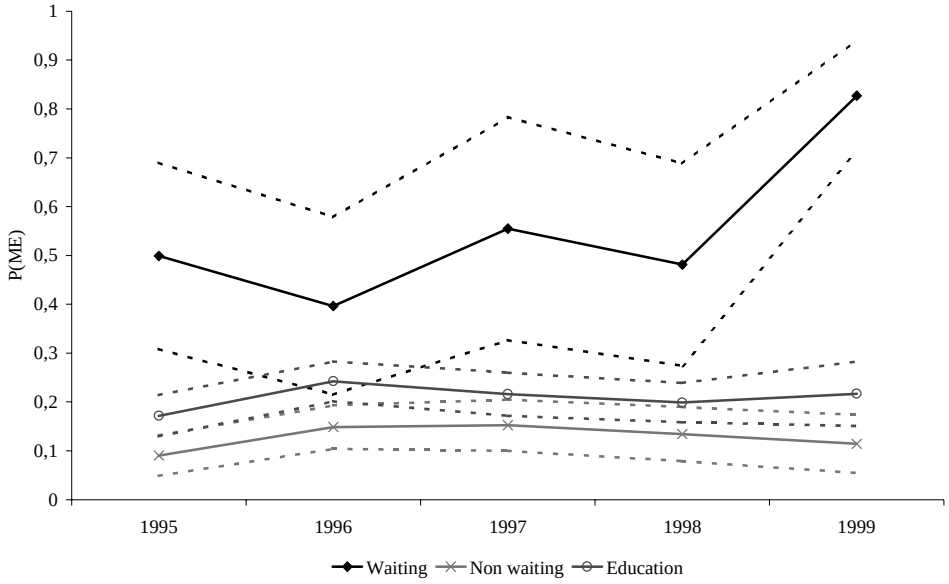


Figure 6: Transition probabilities into unemployment.

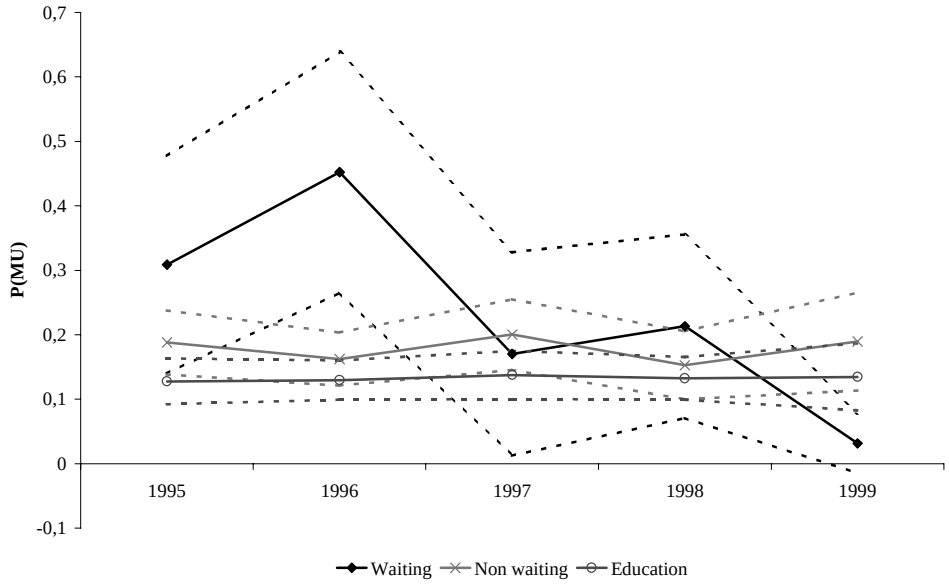


Figure 7: Transition probabilities into marginalisation.

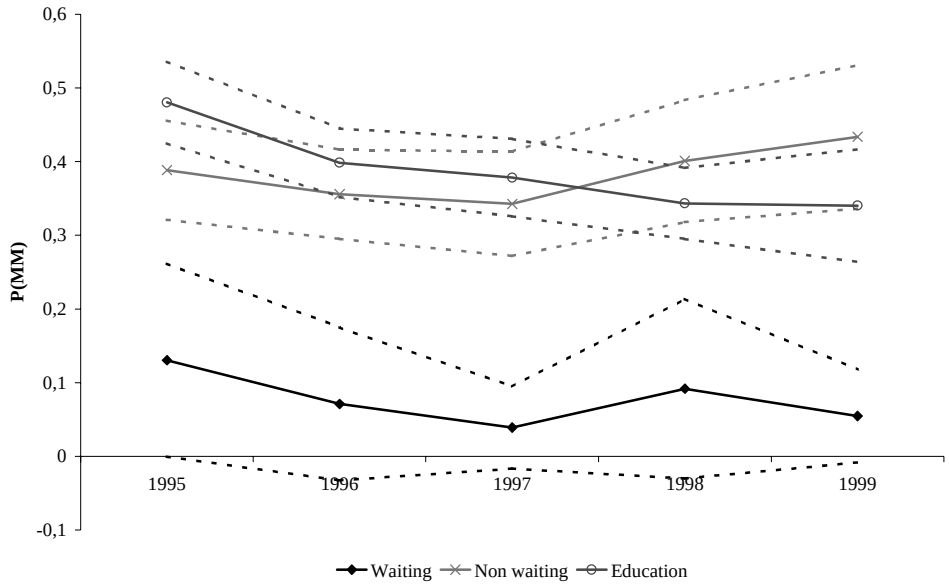
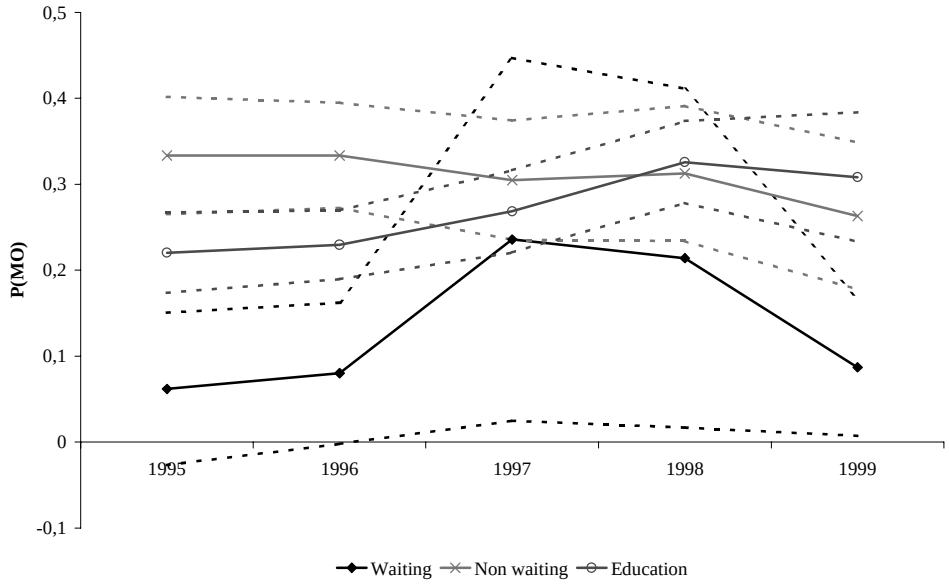


Figure 8: Transition probabilities out of labour force.



vided into the different subgroups according to reason for marginalisation as described in section 4. The estimations are generally restrained by the limited degrees of freedom when the marginalisation state is broken into subgroups. Especially the "waiting" subgroup suffers from wide confidence bands. Still, some interesting observations can be made from the estimators. One interesting finding is that the stable transition probabilities from the marginalisation state as found in figure 1 to 4 seem to be mainly due to individuals stating education or "non waiting" as reason for marginalisation. Individuals who state that they are waiting for employment display transition probabilities which seems to be highly correlated with the boom of the Danish economy since 1994. One reason for this may be that firms due to the boom hire or rehire unemployed individuals who have some contact to the firm for instance through previous employment in the firm. Hiring from this group may inflict less hiring costs on the firm and the individuals' productivity may be higher than other unemployed individuals due to firm specific skills and knowledge.

The figures also indicate a large degree of heterogeneity between the different subgroups. In figure 5 the transition probability into employment is presented. Notice that individuals who report that they are waiting for employment display a transition probability which for most years is significantly higher than both the "non waiting" and "education" group. A similar result is found in figure 7 where the probability of staying marginalised for the waiting subgroup is significantly lower than for the two other subgroups. This also indicates that individuals in the "waiting" subgroup do not wait for very long. The two other subgroups "non waiting" and "education" display very similar transition probabilities. There is some indication that individuals who report education as the reason for marginalisation have a higher probability of entering employment than individuals who are "not waiting" for employment. The difference between the two subgroups, though, is only significant

for 1995 and 1996.

In figure 9 to 12 the subgroups of marginalisation are compared with the unemployment and out of labour force state. The confidence bands have been omitted for clarity. One interesting finding is that the waiting subgroup actually has a higher probability of finding employment than unemployed individuals. Furthermore, the increase in the transition probabilities into employment over the years is stronger for the waiting group than for unemployed individuals. As mentioned before this may be due to firm specific human capital among the waiting subgroup. Apart from when it comes to entering employment or unemployment, the waiting subgroup actually seems to be closely linked with the unemployment subgroup. The probability of both staying in the marginalised state and leaving the labour market is low for the waiting subgroup just as for the unemployed state. The other subgroups, "non waiting" and "education" does not seem to follow the transition pattern of neither the unemployed nor the outside group. The two subgroups generelly appear to have stronger labour market attachment than the outside group but weaker attachment than the unemployed group.

In figure 13 to 16 the transition probabilities are displayed with marginalisation categorised according to availability. This division of the marginalisation group does not give as clear indications as dividing according to reason for marginalisation. There is a weak tendency that individuals who are available within a week or a month have higher probability of finding employment or enter unemployment than individuals who are available later than a month. Also, when it comes to the share that stays marginalised after a quarter, individuals who are available later than within a month do have a higher probability of staying marginalised than individuals who are more quickly available, cf. figure 15.

Figure 9: Transition into employment for different subgroups.

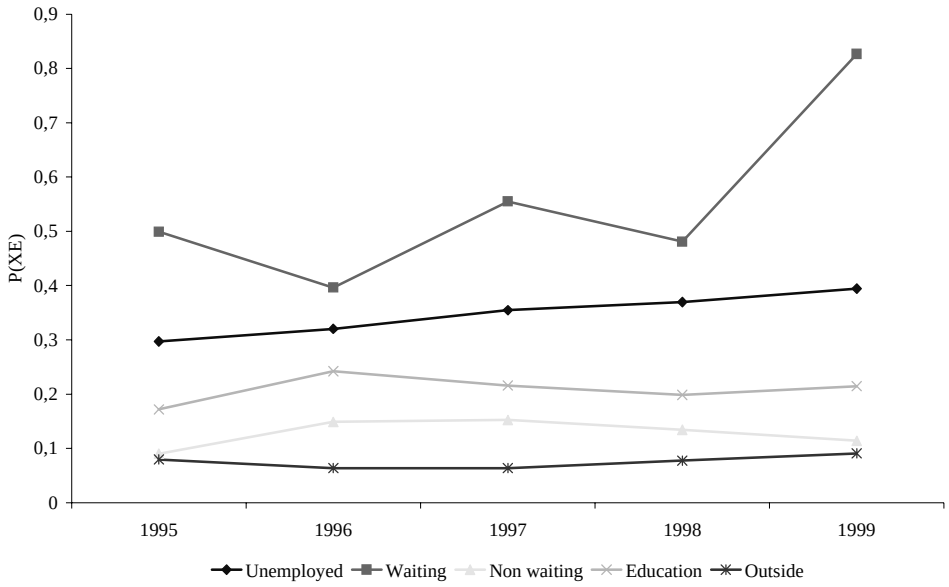


Figure 10: Transition into unemployment for different subgroups.

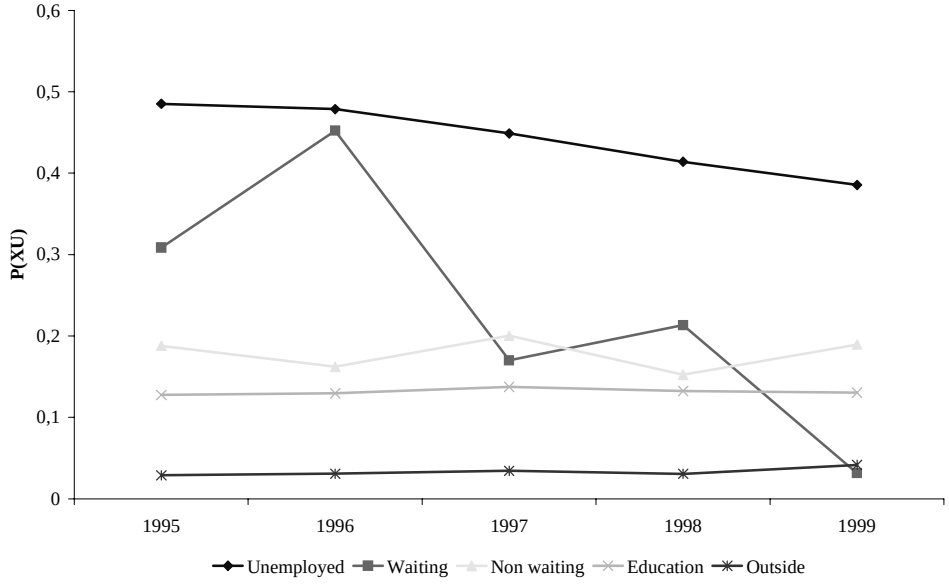


Figure 11: Transition into marginalisation for different subgroups.

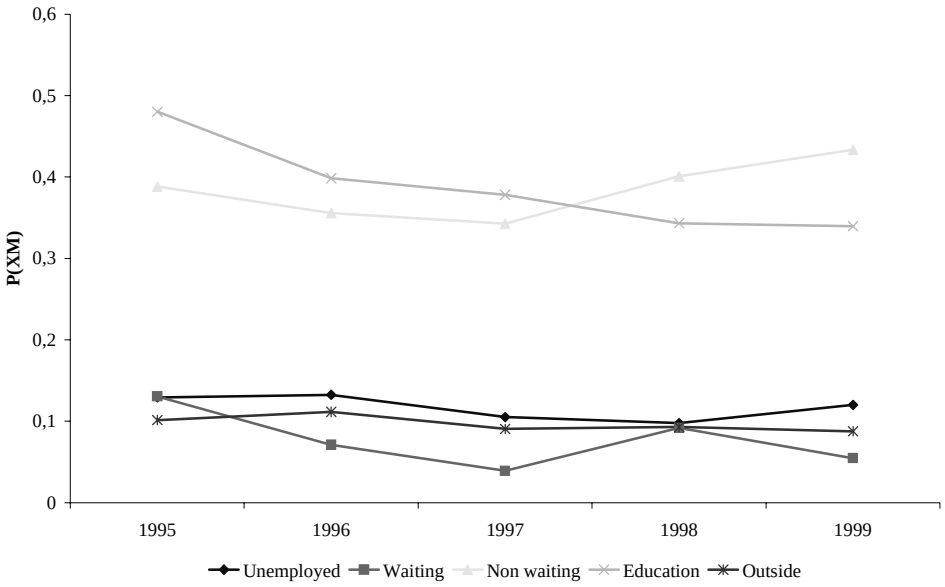


Figure 12: Transition out of the labour force for different subgroups.

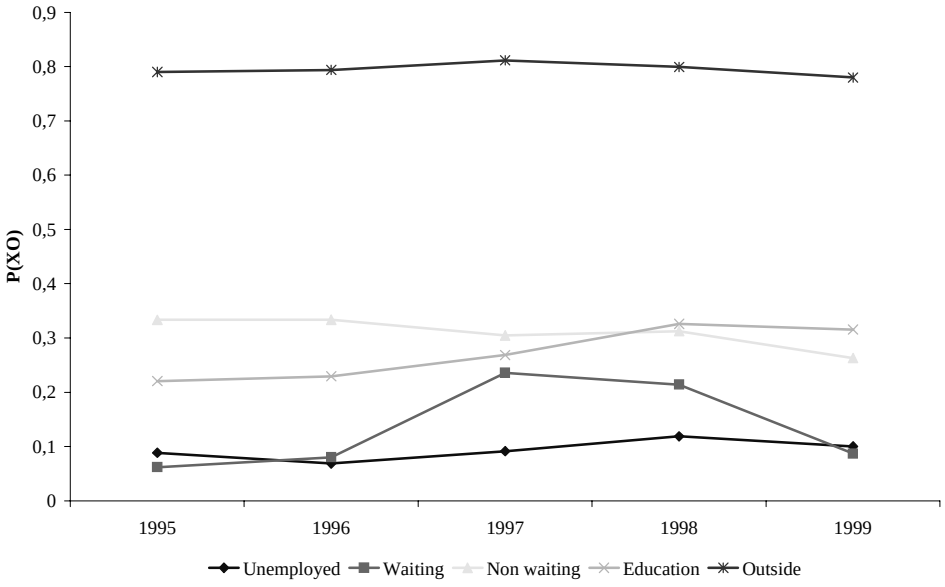


Figure 13: Transition into employment for different subgroups including unemployed and outside.

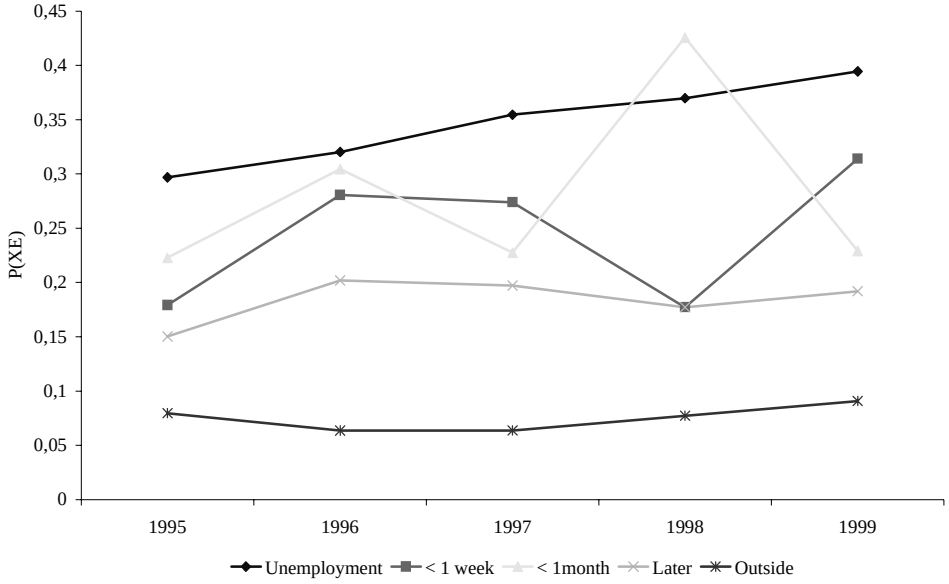


Figure 14: Transition into unemployment for different subgroups including unemployed and outside.

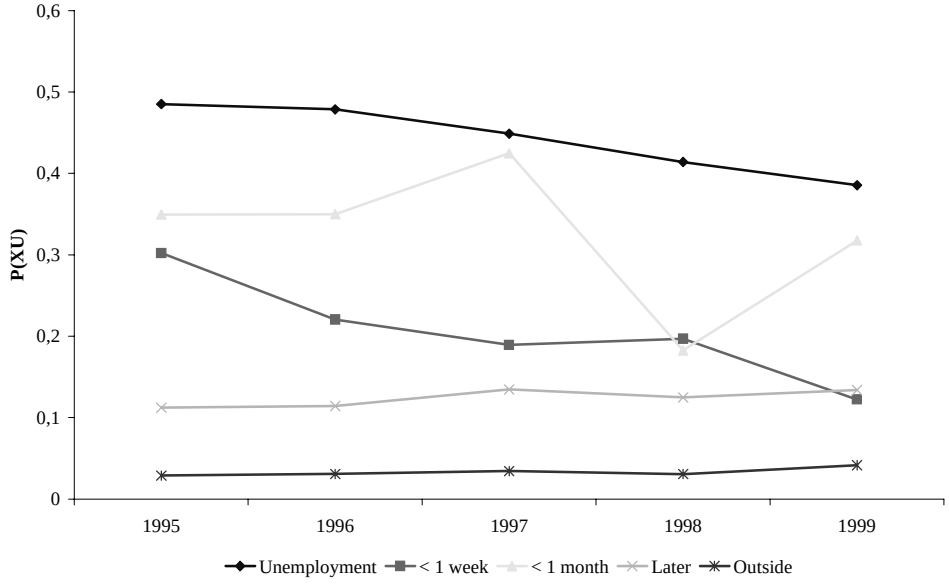


Figure 15: Transition into marginalisation for different subgroups including unemployed and outside.

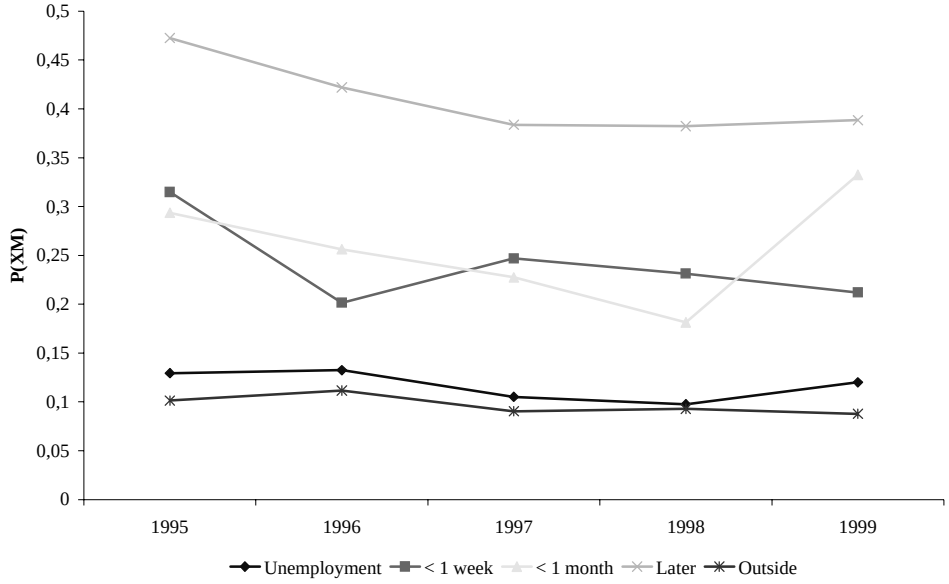
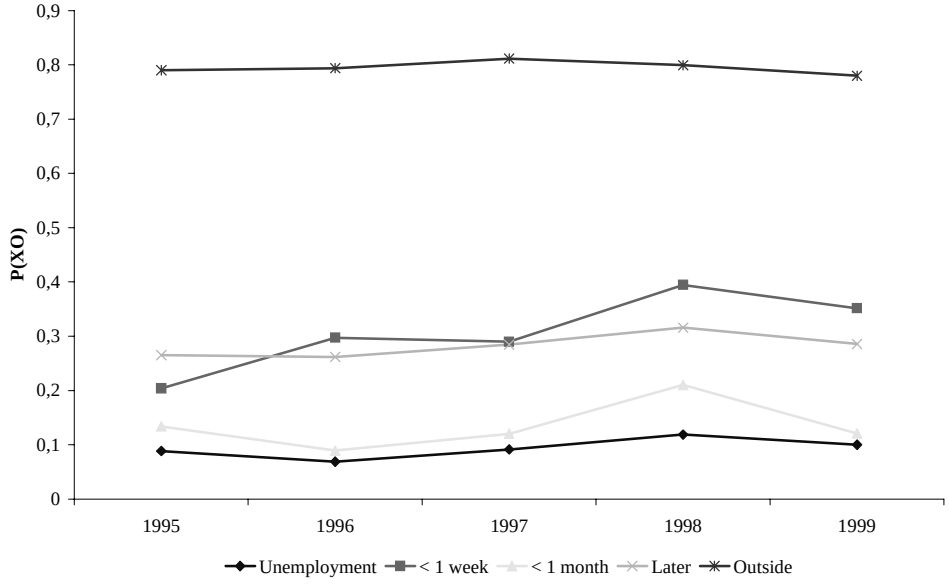


Figure 16: Transition out of the labour force for different subgroups including unemployed and outside.



7 Estimation and equivalence test of labour market states

The next step of the examination of the marginalised state is to estimate the movements between labour market states conditioned on various demographic variables. In the following I present different estimations of movements between states a quarter after and one year after first observation. The data set has been divided both according to age and gender in order to look for specific effects for these subgroups. The estimation results from the divided data set are presented in appendix C. When it comes to departure states, I have limited the data set to the three non employment states (unemployment, marginalised, outside). The movements have been modelled with a multinomial logistic model. In all of the estimations presented, both seasonal dummies as well as year dummies have been included at one point. Almost none of the these dummies turned out significant (typically pr(0)>0.45) and they have therefore been omitted in most of the following estimations. The results from the estimations are presented as average percentage point changes in the probability as a specific dummy is changed from zero to one. For example, the effect of being unemployed on the probability of finding employment is presented as the difference in average probability of employment between individuals who are unemployed and individuals who are not unemployed.

In table 9 the estimation results of the entire sample are presented. The estimation is conditioned on the three non employment states (unemployment, marginalised and outside labour force). In general the results follow the movements displayed in the figure 1 to 4. The probability of employment seems to be highest for unemployed people followed by marginalised individuals and finally individuals outside labour force. After one year this ranking stays unaffected but the differences in the employment probability between the states grow larger. The estimation does reveal some interesting points which does not appear in the average transition shares displayed in figure

Table 9: Estimation results of a Multinomial Logit model of individuals transitions states conditioned on departure states and other covariates.

After a	quarter		year	
Variables	dp/dx	St.error.	dp/dx	St.error
Pr(Employed) =	0.1877		0.2579	
Unemployed	0.2320	0.0124	0.3310	0.0146
Marginalised	0.0627	0.0124	0.1428	0.0149
Male	0.0326	0.0087	0.0411	0.0107
15≤Age<30	0.1323	0.0121	0.1831	0.0141
30≤Age<60	-0.1026	0.0096	-0.1843	0.0103
60≤Age<70	-0.1196	0.0099	-0.2516	0.0100
Pr(Unemployed) =	0.1346		0.0966	
Unemployed	0.4295	0.0136	0.2267	0.0136
Marginalised	0.1822	0.0158	0.1232	0.0138
Male	0.0268	0.0069	0.0063	0.0058
15≤Age<30	-0.0255	0.0071	-0.0201	0.0063
30≤Age<60	-0.0412	0.0071	-0.0308	0.0060
60≤Age<70	-0.1326	0.0072	-0.1218	0.0061
Pr(Marginalised) =	0.1434		0.0914	
Unemployed	-0.0301	0.0065	0.0103	0.0068
Marginalised	0.0877	0.0106	0.0519	0.0087
Male	-0.0074	0.0068	-0.0099	0.0056
15≤Age<30	0.0450	0.0083	0.0455	0.0076
30≤Age<60	-0.1067	0.0071	-0.0786	0.0063
60≤Age<70	-0.2064	0.0065	-0.1436	0.0057
Pr(outside) =	0.5343		0.5541	
Unemployed	-0.6314	0.0086	-0.5680	0.0110
Marginalised	-0.3326	0.0129	-0.3179	0.0147
Male	-0.0520	0.0129	-0.0375	0.0141
15≤Age<30	-0.1517	0.0158	-0.2085	0.0170
30≤Age<60	0.2505	0.0140	0.2937	0.0135
60≤Age<70	0.4585	0.0123	0.5170	0.0113

1 to 4. According to the Logit model estimators, being in the marginalised state does not result in nearly as high a probability of staying marginalised as figure 3 indicates. This difference between the mean transition rates and the Logit estimates may be due to the age distribution of the marginalised group. Remember that almost half of the marginalised individuals are under 30 years of age and report education as reason for being in the marginalised state, cf. table 6. And the "education" subgroup of the marginalised does according to figure 7 have a high probability of staying marginalised. This explanation is supported by the age dummy estimator for marginalisation as transition state, cf. table 9. Dividing the sample according to age and gender (cf. table 20 and 21 in appendix C) does generally not reveal any major differences in the findings reported in table 9.

In table 10 the conditioning variable "marginalised" has been divided into the three substates "waiting", "nonwaiting" and "education"[8]. According to the estimation, individuals who are waiting for employment actually have a higher probability of finding employment the following quarter than unemployed individuals. This result did also appear in the average transition shares, cf. figure 5, and possible explanations for this are given in the section above. It appears that the marginalised state consists of individuals with very different probability of finding employment where individuals who report non waiting or education as a reason for marginalisation have the lowest probability of employment. When the transition period is expanded from one quarter to a year the employment probability for marginalised individuals waiting for employment seems to approach the probability of the unemployed. The probability also increases for the two remaining marginalised groups. But it is still lower than for individuals who are unemployed or waiting for employment. The results from the total sample is also found when the sample is divided

[8]See section 4 for a description of the subgroups.

according to age and gender. One exception is young individuals (less than 30 years of age) for whom being marginalised and waiting for employment does not result in as large a probability for employment as being unemployed. This may be because this group does not possess the same degree of firm specific human capital as the older age groups.

In table 11 the marginalised state has been split up according to availability. Marginalised people who are available for work within a week have a slightly higher probability of finding employment than marginalised individuals who are not as readily available. The difference is only minor, though, and after a year it changes so that individuals who are available within a month have the highest probability of finding employment. This result cannot be refound when the sample only consists of women, cf. table 22 in appendix C. For women the marginalised group who are available within one month have the highest probability of employment both after a quarter and after a year. The same is the case for young people (less then 30 years of age).

A last remark on the estimations on the samples divided according to gender. In general the differences in estimation results between the gender seem to be very limited. This results differs from the findings of Jones and Riddell (1998) on the Canadian labour market. They find that women generally have a lower attachment to the labour market than men. This difference between Denmark and Canada may be a result of the weaker labour market attachment for women in Canada compared to Denmark, cf. OECD (2002).

In table 12 test values of the hypotheses that the marginalised state is equivalent to other labour market states are presented. The hypotheses have been tested using different subsamples of the data set. In general the hypothesis that the marginalised state is equivalent to unemployment is strongly rejected both after a quarter and after a year. One exception is the sample of individuals over the age of 60. The hypothesis that the marginalised state is

Table 10: Estimation results where marginalised has been divided according to reason for being in the state.

Transition after one:	quarter		year	
	dp/dx	St.error	dp/dx	St.error
Pr(employed) =	0.1864		0.2577	
Unemployed	0.2316	0.0122	0.3328	0.0144
Waiting	0.3799	0.0526	0.3057	0.0517
Non waiting	0.0028	0.0173	0.1049	0.0215
Education	0.0393	0.0140	0.1358	0.0176
Male	0.0294	0.0087	0.0403	0.0107
15≤Age<30	0.1386	0.0123	0.1844	0.0142
50≤Age<60	-0.1076	0.0094	-0.1866	0.0102
60≤Age<70	-0.1230	0.0097	-0.2539	0.0099
Pr(unemployed)	0.1360		0.0971	
Unemployed	0.4253	0.0132	0.2208	0.0132
Waiting	0.2132	0.0515	0.1835	0.0480
Non waiting	0.2224	0.0229	0.1532	0.0202
Education	0.1463	0.0191	0.0933	0.0166
Male	0.0271	0.0070	0.0072	0.0059
15≤Age<30	-0.0194	0.0075	-0.0162	0.0066
50≤Age<60	-0.0461	0.0071	-0.0332	0.0060
60 ≤Age<70	-0.1372	0.0071	-0.1245	0.0060
Pr(marginalised)	0.1435		0.0915	
Unemployed	-0.0282	0.0065	0.0112	0.0068
Waiting	-0.0983	0.0152	-0.0105	0.0229
Nonwaiting	0.1173	0.0170	0.0432	0.0127
Education	0.0821	0.0124	0.0575	0.0106
Male	-0.0056	0.0069	-0.0102	0.0056
15≤Age<30	0.0477	0.0087	0.0438	0.0076
50≤Age<60	-0.1073	0.0071	-0.0789	0.0063
70≤Age<70	-0.2062	0.0065	-0.1439	0.0057
P(outside) =	0.5341		0.5538	
Unemployed	-0.6288	0.0087	-0.5647	0.0111
Waiting	-0.4948	0.0149	-0.4787	0.0221
Nonwaiting	-0.3424	0.0165	-0.3014	0.0204
Education	-0.2677	0.0160	-0.2866	0.0180
Male	-0.0509	0.0129	-0.0374	0.0141
15≤Age<30	-0.1669	0.0159	-0.2120	0.0170
50≤Age<60	0.2610	0.0140	0.2987	0.0135
60≤Age<70	0.4664	0.0121	0.5224	0.0111

Table 11: Estimation results where marginalised has been divided according to availability.

Transition after one:	quarter		year	
	dp/dx	St.error	dp/dx	St.error
P(employed)=	0.1880		0.2589	
Unemployed	0.2354	0.0124	0.3313	0.0145
<1 week	0.1054	0.0260	0.1204	0.0289
<1 month	0.0984	0.0356	0.2022	0.0427
Later	0.0385	0.0133	0.1269	0.0162
Male	0.0314	0.0087	0.0407	0.0107
15≤Age<30	0.1385	0.0122	0.1864	0.0142
50≤Age<60	-0.1052	0.0096	-0.1870	0.0103
60≤Age<70	-0.1206	0.0098	-0.2536	0.0100
P(unemployed)=	0.1343		0.0962	
Unemployed	0.4245	0.0134	0.2255	0.0135
<1 week	0.2719	0.0298	0.2286	0.0293
<1 month	0.3875	0.0401	0.1582	0.0390
Later	0.1352	0.0172	0.1019	0.0150
Male	0.0259	0.0069	0.0057	0.0058
15≤Age<30	-0.0209	0.0073	-0.0178	0.0063
50≤Age<60	-0.0443	0.0071	-0.0333	0.0060
60≤Age<70	-0.1346	0.0071	-0.1228	0.0061
P(marginalised) =	0.1443		0.0917	
Unemployed	-0.0293	0.0065	0.0110	0.0068
<1 week	0.0138	0.0174	0.0403	0.0167
<1 month	-0.0220	0.0192	0.0526	0.0245
Later	0.1082	0.0123	0.0516	0.0096
Male	-0.0074	0.0069	-0.0101	0.0056
15≤Age<30	0.0424	0.0083	0.0455	0.0076
50≤Age<60	-0.1069	0.0071	-0.0792	0.0063
60≤Age<70	-0.2074	0.0065	-0.1441	0.0057
P(outside) =	0.5334		0.5531	
Unemployed	-0.6306	0.0086	-0.5679	0.0111
<1 week	-0.3912	0.0183	-0.3893	0.0223
<1 month	-0.4638	0.0181	-0.4129	0.0300
Later	-0.2820	0.0146	-0.2804	0.0165
Male	-0.0499	0.0130	-0.0363	0.0141
15≤Age<30	-0.1601	0.0158	-0.2141	0.0170
50≤Age<60	0.2563	0.0141	0.2995	0.0136
60≤Age<70	0.4626	0.0122	0.5205	0.0112

identical to the outside labour force state is also generally rejected both after a quarter and after one year. But the test values are not as large as in the previous test. Especially for young individuals (age between 15 and 30) the hypothesis is not rejected. This may be due to the large share of students in this agegroup which are likely to be located in both labour market states.

When the marginalised group is divided into subgroups according to reason for marginalisation, the test results changes, cf. table 13. For the subgroup who claim that they are waiting for employment, the hypothesis that they are identical to unemployed individuals is generally not rejected. This is the case after one quarter but even more so after one year. For the other subgroups "non waiting" and "education" the hypothesis that these states are identical to outside labour force is clearly rejected almost no matter how the sample is divided.

Table 12: Hypothesis test of the marginalised state (M) against unemployed (U) and outside labour force (O) (Wald test).

Transition after one:	quarter		year	
	Test value	Prob.	Test value	Prob.
H_0: P(MX) = P(UX)				
Entire sample	598.97	0.0000	293.14	0.0000
Male	230.75	0.0000	118.41	0.0000
Female	376.98	0.0000	175.36	0.0000
15≤Age<30	258.81	0.0000	83.28	0.0000
30≤Age<50	255.12	0.0000	127.78	0.0000
50≤Age<60	59.51	0.0000	33.23	0.0000
70≤Age<70	6.73	0.0346	4.06	0.1313
H_0: P(MX) = P(OX)				
Entire sample	41.94	0.0000	19.92	0.0000
Male	16.64	0.0002	7.67	0.0215
Female	28.88	0.0000	12.74	0.0017
15≤Age<30	1.86	0.3948	1.26	0.5324
30≤Age<50	7.86	0.0197	13.87	0.0010
50≤Age<60	28.18	0.0000	11.41	0.0033
70≤Age<70	21.81	0.0000	3.69	0.1584

In table 14 test results from the estimation where marginalised is divided according to availability is presented. The hypothesis that the subgroups are identical to either unemployment or outside labour force is rejected for most of the subgroups. One exception is individuals who are available within 1 month. After one year the hypothesis that they are identical to individuals outside the labour market cannot be rejected. This is the case no matter how the sample is divided.

Table 13: Hypothesis test of subgroups of marginalised, waiting (MW), non waiting (MNW), education (ME) against unemployed (U) and outside (O) (Wald test).

Transition after one	quarter		year	
	Test value	Prob.	Test value	Prob.
H_0:P(MWX) = P(UX)				
Entire sample	5.97	0.0504	0.09	0.9565
Male	1.59	0.4513	1.86	0.3944
Female	4.73	0.0938	1.02	0.6015
15≤Age<30	0.50	0.7790	0.62	0.7330
30≤Age<50	5.48	0.0644	0.16	0.9232
50≤Age<60	2.31	0.3156	0.93	0.6297
70≤Age<70	.	.	.	.
H_0:P(MEX) = P(OX)				
Entire sample	24.27	0.0000	4.78	0.0915
Male	20.12	0.0000	2.67	0.2625
Female	10.27	0.0059	2.14	0.3427
15≤Age<30	0.63	0.7300	4.87	0.0876
30≤Age<50	4.14	0.1261	4.91	0.0858
50≤Age<60	16.14	0.0003	11.92	0.0026
70≤Age<70	6.50	0.0387	10.74	0.0046
H_0:P(MNWX)=P(OX)				
Entire sample	51.42	0.0000	25.83	0.0000
Male	11.10	0.0039	15.23	0.0005
Female	40.87	0.0000	13.18	0.0014
15≤Age<30	9.68	0.0079	4.16	0.1249
30≤Age<50	8.83	0.0121	7.89	0.0194
50≤Age<60	37.14	0.0000	11.89	0.0026
70≤Age<70	16.34	0.0003	3.50	0.1741

In order to further examine the marginalisation state I present in appendix D an estimation of a Markov Model which uses all three observations in the panel data to examine for state dependency[9]. The model clearly indicates that employment and out of labour force are both absorbing states. If a person has been in one of these states during the first two interviews, then the probability of also being in the state during the third interview is for both states over 90 per cent. Also unemployment and marginalisation shows signs of negative state dependency. For both these states the probability of staying in the state increases if individuals have been in the state for the two previous interviews compared to only one interview. Still, the increase is only marginal (from 20 per cent to 27 per cent for marginalised) and the numbers give no indication of an absorbing state.

Table 14: Hypothesis test of subgroups of marginalised, available within 1 week (M1W), one month (M1M), later (ML) against unemployed (U) and outside (O) (Wald test).

Transition after one:	quarter		year	
	Test value	Prob.	Test value	Prob
H_0:P(M1WX) = P(UX)				
Entire sample	98.76	0.0000	62.41	0.0000
Male	36.11	0.0000	19.04	0.0000
Female	69.24	0.0000	45.60	0.0000
15≤Age<30	40.19	0.0000	20.64	0.0000
30≤Age<50	45.52	0.0000	20.99	0.0000
50≤Age<60	22.84	0.0000	22.82	0.0000
70≤Age<70	5.89	0.0525	6.05	0.0485
H_0:P(M1WX) = P(OX)				
Entire sample	43.89	0.0000	34.28	0.0000
Male	6.13	0.0466	17.06	0.0002
Female	45.34	0.0000	18.33	0.0001
15≤Age<30	7.50	0.0235	0.24	0.8851
30≤Age<50	32.76	0.0000	22.67	0.0000
50≤Age<60	8.10	0.0174	12.16	0.0023
70≤Age<70	14.97	0.0006	4.64	0.0984

[9]The model is described in section 3.

Table 14: Continued.

Transition after one:	quarter Test value	Prob.	year Test value	Prob
H_0:P(M1MX)=P(UX)				
Entire sample	22.08	0.0000	21.00	0.0000
Male	7.79	0.0203	11.75	0.0028
Female	15.51	0.0000	13.59	0.0011
15≤Age<30	12.92	0.0016	4.47	0.1068
30≤Age<50	4.86	0.0880	13.37	0.0012
50≤Age<60	10.48	0.0053	4.38	0.1121
70≤Age<70	1.34	0.5129	.	.
H_0:P(M1MX)=P(OX)				
Entire sample	59.11	0.0000	4.48	0.1064
Male	8.86	0.0119	4.82	0.0897
Female	53.14	0.0000	1.35	0.5091
15≤Age<30	18.85	0.0001	0.83	0.6608
30≤Age<50	31.44	0.0000	3.70	0.1574
50≤Age<60	10.51	0.0052	2.03	0.3629
70≤Age<70	4.87	0.0874	0.51	0.7746
H_0:P(MLX)=P(UX)				
Entire sample	620.86	0.0000	293.49	0.0000
Male	244.40	0.0000	121.59	0.0000
Female	383.79	0.0000	172.83	0.0000
15≤Age<30	267.57	0.0000	83.88	0.0000
30≤Age<50	263.11	0.0000	123.29	0.0000
50≤Age<60	43.38	0.0000	17.72	0.0001
70≤Age<70	2.18	0.3356	0.51	0.7746
H_0:P(MLX)=P(OX)				
Entire sample	31.10	0.0000	9.95	0.0069
Male	21.67	0.0000	2.19	0.3339
Female	12.41	0.0020	8.10	0.0175
15≤Age<30	1.33	0.5130	1.81	0.4051
30≤Age<50	8.28	0.0160	5.83	0.0543
50≤Age<60	19.78	0.0001	7.22	0.0270
70≤Age<70	6.88	0.0320	0.67	0.7163

In order to further examine for state dependence I present in table 15 results from a Logit Model where all three state observations are used[10]. The transition into labour market states is conditioned on 12 possible state combinations where OO is included in the constant term. Notice that the sample used does not contain individuals who were employed in the second interview. The results indicate that previous states do affect the transition probabilities.

[10] See section 3 for a description of the Markov model which is the basis of the estimation.

For instance, the marginal effect on the probability of employment from unemployment is 37 per cent if the person was employed during the first interview and only 17 per cent if the person was outside the labour force during the same interview. The estimation shows in the same way that the probability of staying marginalised goes up with 8 per cent if one was marginalised in the first observed state compared to only 1 or 2 per cent if one was employed or unemployed in the first observed state.

The more flexible model has been used to test whether individuals' movement on the labour market can be modelled with the simplest Markov model assuming no state dependency as described in section 3, cf. table 16. The Markov assumption is clearly rejected.

Table 15: Estimation values of Logit model where all state observations have been applied.

Cond.var.	dp/dx	St.error	dp/dx	St.error
	P(employ)=0.2396		P(marg)=0.0870	
EU	0.3783	0.0356	-0.0287	0.0104
UU	0.3108	0.0276	-0.0088	0.0096
MU	0.3083	0.0399	-0.0057	0.0152
OU	0.1707	0.0487	-0.0138	0.0183
EM	0.3503	0.0373	0.0130	0.0165
UM	0.1733	0.0418	0.0178	0.0199
MM	0.1362	0.0295	0.0764	0.0196
OM	0.1324	0.0328	0.0619	0.0199
EO	0.3218	0.0343	0.0329	0.0182
UO	0.1693	0.0523	-0.0310	0.0153
MO	0.0704	0.0307	0.0670	0.0210
Male	0.0311	0.0124	-0.0109	0.0065
3.quart	0.0103	0.0129	-0.0102	0.0066
15≤Age<30	0.1250	0.0170	0.0394	0.0090
50≤Age<60	-0.1476	0.0125	-0.0666	0.0071
70≤Age<70	-0.2452	0.0126	-0.1271	0.0077

Table 15: Continued.

Cond.var.	dp/dx	St.error	dp/dx	St.error
	P(unempl)=0.0836		P(outs)=0.5898	
EU	0.2487	0.0368	-0.5983	0.0115
UU	0.3555	0.0297	-0.6575	0.0106
MU	0.2503	0.0420	-0.5529	0.0148
OU	0.3137	0.0555	-0.4706	0.0254
EM	0.1145	0.0359	-0.4777	0.0210
UM	0.3454	0.0454	-0.5365	0.0175
MM	0.2466	0.0361	-0.4592	0.0189
OM	0.1853	0.0377	-0.3796	0.0235
EO	0.0687	0.0304	-0.4235	0.0212
UO	0.2693	0.0574	-0.4076	0.0332
MO	0.2276	0.0397	-0.3649	0.0246
Male	0.0074	0.0064	-0.0277	0.0168
3.quart.	0.0056	0.0067	-0.0058	0.0174
15≤Age<30	-0.0268	0.0065	-0.1376	0.0215
50≤Age<60	-0.0203	0.0069	0.2346	0.0171
70≤Age<70	-0.0978	0.0082	0.4701	0.0149

Given this, I have used the estimated model to test the marginalised state against the other labour market states, cf. table 16. The hypothesis that the marginalised state is identical to unemployment is clearly rejected. When it comes to the hypothesis that marginalised is identical to being outside the labour market, the rejection is not equally clear. The hypothesis is rejected at a 5 per cent level but not at a 1 per cent level. This may be due to the large share of individuals undertaking an education in the marginalised group. A natural extension would be to perform estimations of the full model dividing the marginal state into subgroups. Unfortunately my data set is not rich enough to perform this estimation.

Table 16: Hypothesis testing of the markov assumption and the marginalised state using the full model (Wald test).

	D.F.	Test value	Prob.
H_0: Markov assumption	27	1121.26	0.0000
H_0: P(MX)=P(UX)	8	122.92	0.0000
H_0: P(MX)=P(OX)	8	17.03	0.0298

8 Comparison between the Danish and international marginalisation definition

In most countries labour market states are defined and measured by interviewing individuals about their own perception of their labour market attachment. In Denmark statistics on the labour market is almost solely based on administrative data. This is possible primarily because Denmark is a country with a very intense registration of individuals' movements on the labour market as well in other aspects of life. Every person is at birth or immigration given a personal code which follows individuals the entire life. All statistics are linked with that code and it is therefore possible by merging data to obtain extremely detailed and long panels describing individuals' movements on the labour market. These statistics are used to monitor the labour market in Denmark. In Denmark conventional labour market states are employment, unemployment and outside labour force. Employment figures are constructed by using information reported by all firms in Denmark about who they employ over the year. Unemployment figures are constructed by using informations on unemployment insurance and social benefits payments over the year. The unemployment figures are in other words not conditional on individuals' search behaviour or self reported availability for work. As a supplement to the conventional reported labour market statistics, there has since the begin-

Table 17: Estimate fractions of the population divided according to Eurostat definitions and Danish definitions (using weights).

DK def.\Eurostat def.	Employed	Unemployed	Marginalised	Outside	Total
Employment	48.14	19.70	32.72	10.79	39.88
Unemployment	0.81	18.69	4.52	1.46	2.01
Marginalised	0.90	9.96	5.24	1.57	1.70
Outside A	47.22	46.16	42.53	13.61	41.52
Outside B	2.92	5.48	14.99	72.57	14.89
Total	2.637.233	177.384	205.784	575.641	3.596.042

ning of the 1990's been reported numbers on long term unemployment and marginalisation. Marginalisation is in Denmark normally defined as unemployment more than 70 to 80 per cent of the last three years. Marginalisation numbers using this definition has been reported by among others the Ministry of Finance (1997) as well as Ingerslev and Pedersen (1996).

Comparing the Danish labour market states with the labour market states defined by Eurostat as well as Jones and Riddell can produce a first glimpse of the possible reasons for marginalisation. Is it for instance so that long periods of non employment increases the risk of ending up as marginalised as defined by Jones and Riddell? Or is marginalisation more a product of random chocks or specific life cycle decisions which gives people a disadvantage on the labour market[11]?

In table 17 the Danish labour market states are crossed with the Eurostat and Jones and Riddell definitions. Some peculiarities are bound to exist in

[11] An example of a random chock could be disease which influences peoples' performance on the labour market, or give that signal to the employers. Decisions somewhat endogenous to individuals can be the choice of having children and the resulting problem with child minding which may lower the availability for the labour market, or give that signal to the employers.

Table 18: Estimate fractions of the marginalised group divided according to subgroups and Danish labour market definitions (using weights).

DK def.\Marg.subg.	Waiting	Non waiting	Education	No response	Total
Employed	24.66	14.63	42.41	26.51	32.72
Unemployed	13.46	5.66	2.97	13.89	4.52
Marginalised	5.24	7.87	3.85	7.32	5.24
Outside short	43.03	34.65	46.76	34.61	42.53
Outside perm.	13.60	37.20	4.01	17.68	14.99
Total	7.687	63.315	128.594	6.188	205.784

this table due to the difference in timing. The Danish definitions are primarily based on monthly data but also to some extend yearly data. This means that individuals in one months according to Danish data will be categorised as employed but can at the same time in a given week give answers to the LFS which place them in a non employment category according to the Eurostat definitions. For people marginalised according to Jones and Riddell it appears that more than 25 per cent are counted as employed by Danish definitions. This is more than for unemployed individuals (15 per cent). Also, long term unemployment or marginalisation according to the Danish definition is over represented in the marginalised state. But still less overrepresented than in the unemployment state.

In table 18 the marginalised state has been divided according to reason for marginalisation. This does give some more information about the subgroups in the marginalised state. When it comes to the Danish employment state there may be some problems. This is indicated by the fact that more than 40 per cent of the individuals giving education as a reason for marginalisation are classified as employed according to the Danish definitions. The reason

for this may be that the Danish register informations on employment are not as precise as on the different unemployment transfers people can get. The large employment group may also be due to the fact that many students have jobs beside their studies. If they have not at work in the week of the survey, they will not be registred as employed. Another interesting finding is that individuals who by the Danish definitions are counted as permanently outside the labour force (on various pension schemes) constitute more than 37 per cent of the non waiting marginalised. This is about 23.000 individuals or about 11 per cent of the marginalised group. These are individuals who in the Danish system are normally regarded as lost for the labour market. The share of the Danish long term unemployment definition (DK marginalised) in the marginalised group is over average. And the group is largest for the non waiting marginalised. Still, the table does not give any clear evidence that long term unemployment is an important factor in the creation of the marginalised state.

9 Conclusion

In this paper I have tested for the existence of a marginalised state on the labour market in Denmark. I have examined whether this state consists of heterogenous groups with regard to labour market behaviour. The following things can be concluded:

1. It is important for the definition of the marginalised state that the questions used to pick out individuals are very precise and identical from study to study. In this study individuals report whether they would like to work now or later, where as Jones and Riddell ask individuals whether they would like to find employment in a given week. This difference appears to result in some difference in the marginalised groups between the two studies. The evidence of how important a precise definition

is can also be used as an important reminder to other labour market states. The search requirement in the unemployment state, for instance, is defined very differently between countries, cf. OECD (1987).

2. The empirical study indicates that there does exist a marginalised state in Denmark where individuals display labour market behaviour significantly different from both unemployed individuals as well as individuals outside the labour force. The state consists of about 200,000 individuals which is about the same size as the amount of unemployed individuals for the sample period.

3. The state seems to consist of very heterogenous groups. Individuals waiting for employment display labour market behaviour which is similar to unemployed individuals and in the short run actually display an employment probability which surpasses the probability of unemployed individuals.

4. Individuals who are not waiting for employment, display labour market behaviour significantly different from both unemployed individuals and individuals outside labour market.

5. Dividing the marginalised state according to availability reveals that about 30,000 individuals or about 15 per cent of the marginalised report that they are available for employment within 1 week and 22 per cent within 1 month.

6. Tests of state dependency indicate that individuals' labour market behaviour is influenced by individuals' labour market history. The marginalised state does not, however, give indication of being an absorbing state in the same way as employment and outside labour force.

7. Comparing the Eurostat labour market definitions and the marginalised

state with the Danish labour market states does not at first glimpse indicate that entering marginalisation is a result of long term unemployment. Dividing the marginalised state according to reason for marginalisation, however, reveals that almost 40 per cent of individuals who are not waiting for employment are in Denmark counted as permanently outside the labour market[12]. This is almost 11 per cent of the entire marginalised group as measured in this paper. This indicates that some individuals who are commonly regarded as engaged in household production and permantly lost for the labour market actually do wish to find employment.

The findings of this paper raise some new questions. For example, which processes do lead people into the marginalisation state? And what are the prospects of marginalised individuals on the labour market? The finding of heterogenous subgroups in the marginalised state leads me to believe that there are many different reasons for marginalisation which may also reflect in individuals' future chances at the labour market. Future research will hopefully tell us whether this is the case.

[12]This Danish category includes individuals who receive different forms of pensions such as early retirement pension, disability pension etc. cf. section 8.

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A Questions used to define labour market states in LFS

Table 19: Questions used to define employed, unemployed and out of labour force in LFS.

Employed	Were you at work in the reference week? • Yes, worked for at least one hour
Else	
Unemployed	Why do you not want to become employed? • Have already found employment Have you within the last months done anything in order to find employment or start your own firm? • Have already obtained employment which will commence later
Or	Would you like to find employment now or later? • Yes Have you been in contact with the Job Center, the Municipality or unemployment fund? • Yes within the last month • Yes within the last 3 months • Yes more than 3 months ago Have you within the last month done anything else in order to find employment? • Been in contact with private job Center • Direct application to employer • Contacted friends relatives, unions etc. • Put or answered adverticement in papers, TV, magazines etc. • Read but not answered the employment pages in papers, tv, magazines and other places • Have applied permission, licenses, loan enterprice allowance etc. • Have applied for business premises, land, equipment • Have already obtaned job which will commence later • Other ways When would you be able to start working if you got a job or got the opportunity to start as self employed? • Within 1 week • Within 2 weeks
Else	(Continued next page)

Table 19: Continued.

Outside	Have you within the last month done anything else in order to find employment? • Have been promised a job within the next 6 months • Have not done anything • Waiting for answer from application • Waiting for offer from the Job Center or the local Municipality job center • Waiting for results from entrance examination with regard to job in the public sector
And	All remaining individuals

B Questions and answers used to construct subcategories of marginalised

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Waiting

Why have you not done anything in order to find employment?

* Have already been in contact with the employment service within the last 3 months
* Hopes to be re employed

Have you within the last month done anything to find employment?

* Waiting for reply on job application
* Waiting for offer from the Employment Service
* Waiting for test results with regard to employment within the public sector
* Have been promised employment within 6 months

Non waiting

Why have you not done anything in order to find employment?

* Sickness, handicap
* Family related commitments, taking care of children, sick (including maternity leave)
* Is getting or applying for disability pension, early retirement pension
* Have given up finding employment

Why can you not commence employment within 2 weeks?

* Have to finish military service
* Commitments to family, taking care of children, sick (including marternity leave)
* Sickness
* Is finishing vacation or leave

Education

Why have you not done anything in order to find employment?

* Undertaking education/applying or start on an education

Why can you not commence employment within 2 weeks?

* Have to finish education

C Estimation results of transition between labour market states.

Table 20: estimation of labour market states where sample has been divided according to gender.

Data construct	Transfer after a Variables	quarter dp/dx	St.error.	Year dp/dx	St.error
Men	Pr(employed) =	0.1701		0.2409	
	Unemployed	0.2333	0.0161	0.3224	0.0191
	Marginalised	0.0710	0.0149	0.1381	0.0181
	15≤Age<30	0.1210	0.0144	0.1865	0.0175
	30≤Age<60	-0.1066	0.0110	-0.1869	0.0124
	60≤Age<70	-0.1321	0.0111	-0.2449	0.0115
	Pr(unemployed) =	0.1262		0.0972	
	Unemployed	0.4363	0.0178	0.2244	0.0177
	Marginalised	0.1877	0.0192	0.1266	0.0171
	15≤Age<30	-0.0258	0.0086	-0.0176	0.0080
	50≤Age<60	-0.0461	0.0084	-0.0361	0.0077
	60≤Age<70	-0.1273	0.0083	-0.1236	0.0074
	Pr(marginalised) =	0.1503		0.0872	
	Unemployed	-0.0282	0.0084	0.0174	0.0085
	Marginalised	0.0851	0.0131	0.0576	0.0109
	15≤Age<30	0.0456	0.0105	0.0428	0.0090
	50≤Age<60	-0.1175	0.0091	-0.0816	0.0082
	60≤Age<70	-0.2276	0.0079	-0.1557	0.0068
	P(outside) =	0.5087		0.5281	
	Unemployed	-0.6206	0.0141	-0.5726	0.0172
	Marginalised	-0.3099	0.0216	-0.3048	0.0240
	15≤Age<30	-0.1784	0.0266	-0.2107	0.0281
	50≤Age<60	0.2033	0.0259	0.2642	0.0245
	60≤Age<70	0.4129	0.0227	0.5060	0.0205

Table 20: Continued.

Data construct	Transfer after a Variables	quarter dp/dx	St.error.	Year dp/dx	St.error
Women	Pr(employed) =	0.2144		0.2876	
	Unemployed	0.2289	0.0194	0.3450	0.0228
	Marginalised	0.0465	0.0216	0.1494	0.0255
	15≤Age<30	0.1557	0.0216	0.1830	0.0238
	50≤Age<60	-0.0880	0.0183	-0.1792	0.0186
	70≤Age<70	-0.1002	0.0189	-0.2647	0.0187
	Pr(unemployed) =	0.1489		0.0955	
	Unemployed	0.4218	0.0210	0.2284	0.0213
	Marginalised	0.1723	0.0274	0.1177	0.0234
	15≤Age<30	-0.0224	0.0127	-0.0217	0.0100
	50≤Age<60	-0.0292	0.0131	-0.0221	0.0100
	70≤Age<70	-0.1406	0.0134	-0.1188	0.0106
	Pr(marginalised) =	0.1281		0.0888	
	Unemployed	-0.0302	0.0098	-0.0008	0.0103
	Marginalised	0.0911	0.0177	0.0377	0.0135
	15≤Age<30	0.0451	0.0136	0.0494	0.0133
	50≤Age<60	-0.0862	0.0116	-0.0629	0.0105
	70≤Age<70	-0.1720	0.0113	-0.1226	0.0102
	P(outside) =	0.5533		0.5746	
	Unemployed	-0.6414	0.0108	-0.5642	0.0145
	Marginalised	-0.3438	0.0161	-0.3222	0.0187
	15≤Age<30	-0.1409	0.0195	-0.2116	0.0213
	50≤Age<60	0.2701	0.0165	0.3046	0.0161
	70≤Age<70	0.4870	0.0142	0.5242	0.0131

Table 21: Estimation of labour market states where sample has been divided according to age.

Sample construct	Transfer after one: Variables	quarter dp/dx	St.error	year dp/dx	St.erro
15≤Age<30	P(employed) =	0.3007		0.4786	
	Male	0.0215	0.0163	0.0347	0.0183
	Unemployed	0.2462	0.0222	0.1808	0.0236
	Marginalised	0.0210	0.0198	0.0341	0.0211
	P(unemployed) =	0.1618		0.1127	
	Male	0.0238	0.0127	-0.0031	0.0112
	Unemployed	0.2085	0.0207	0.0753	0.0174
	Marginalised	0.0421	0.0173	-0.0018	0.0139
	P(marginalised) =	0.2860		0.2122	
	Male	-0.0246	0.0155	-0.0317	0.0147
	Unemployed	-0.2265	0.0161	-0.0963	0.0176
	Marginalised	0.0274	0.0169	0.0328	0.0166
	P(outside) =	0.2515		0.1965	
	Male	-0.0207	0.0150	0.0001	0.0145
	Unemployed	-0.2282	0.0146	-0.0651	0.0147
	Marginalised	-0.0906	0.0150	-0.1599	0.0145
30≤Age<50	P(employed) =	0.2456		0.3799	
	Male	0.0103	0.0183	0.0447	0.0216
	Unemployed	0.1904	0.0194	0.3265	0.0233
	Marginalised	0.0286	0.0274	0.1163	0.0317
	P(unemployed) =	0.2858		0.2119	
	Male	0.0233	0.0188	0.0084	0.0170
	Unemployed	0.4788	0.0209	0.2255	0.0214
	Marginalised	0.1856	0.0334	0.1497	0.0308
	P(marginalised) =	0.2436		0.1671	
	Male	-0.0340	0.0183	-0.0418	0.0161
	Unemployed	-0.1315	0.0158	-0.0683	0.0155
	Marginalised	0.0426	0.0224	-0.0091	0.0182
	P(outside) =	0.2250		0.2410	
	Male	0.0004	0.0184	-0.0113	0.0197
	Unemployed	-0.5377	0.0138	-0.2568	0.0154
	Marginalised	-0.2567	0.0146	-0.4838	0.0160

Table 21: Continued.

Sample construct	Transfer after one: Variables	quarter dp/dx	St.error	year dp/dx	St.erro
50≤Age<60	P(employed) =	0.1448		0.1518	
	Male	0.0506	0.0189	0.0455	0.0186
	Unemployed	0.1463	0.0163	0.2679	0.0209
	Marginalised	0.0066	0.0259	0.1433	0.0359
	P(unemployed) =	0.1550		0.1062	
	Male	0.0402	0.0175	0.0126	0.0135
	Unemployed	0.5685	0.0188	0.4073	0.0219
	Marginalised	0.3178	0.0423	0.3350	0.0422
	P(marginalised) =	0.1120		0.0585	
	Male	-0.0104	0.0155	0.0025	0.0121
	Unemployed	0.0831	0.0141	0.0531	0.0125
	Marginalised	0.2420	0.0383	0.1082	0.0295
	P(outside) =	0.5883		0.6835	
	Male	-0.0804	0.0308	-0.0606	0.0280
	Unemployed	-0.7978	0.0117	-0.5866	0.0248
	Marginalised	-0.5664	0.0192	-0.7283	0.0158
70≤Age<70	P(employed) =	0.0374		0.0346	
	Male	0.0291	0.0068	0.0188	0.0067
	Unemployed	0.1032	0.0300	0.0661	0.0245
	Marginalised	0.0540	0.0318	0.1225	0.0449
	P(unemployed) =	0.0080		0.0046	
	Male	0.0030	0.0020	0.0007	0.0014
	Unemployed	0.4511	0.0398	0.2054	0.0348
	Marginalised	0.1713	0.0416	0.0531	0.0208
	P(marginalised) =	0.0121		0.0045	
	Male	0.0075	0.0036	0.0048	0.0024
	Unemployed	0.0913	0.0239	0.0741	0.0254
	Marginalised	0.1110	0.0426	0.0277	0.0188
	P(outside) =	0.9425		0.9563	
	Male	-0.0395	0.0082	-0.0244	0.0074
	Unemployed	-0.6456	0.0380	-0.2033	0.0510
	Marginalised	-0.3363	0.0586	-0.3456	0.0422

Table 22: Estimation values of multinomial logit model with marginalisation subgroups and sample split according to gender.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
Men	Pr(employed)	0.1681		0.2403	
	Unemployed	0.2327	0.0158	0.3263	0.0188
	Waiting	0.3710	0.0775	0.2522	0.0738
	Non waiting	-0.0075	0.0189	0.0945	0.0247
	Education	0.0694	0.0179	0.1508	0.0225
	15≤Age<30	0.1178	0.0144	0.1820	0.0176
	50≤Age<60	-0.1098	0.0108	-0.1883	0.0123
	70≤Age<70	-0.1350	0.0107	-0.2457	0.0114
	P(unemployed) =	0.1280		0.0981	
	Unemployed	0.4307	0.0173	0.2153	0.0172
	Waiting	0.2606	0.0766	0.2046	0.0692
	Non waiting	0.2218	0.0269	0.1358	0.0232
	Education	0.1511	0.0238	0.0982	0.0211
	15≤Age<30	-0.0211	0.0090	-0.0148	0.0084
	50≤Age<60	-0.0507	0.0084	-0.0391	0.0076
	70≤Age<70	-0.1324	0.0082	-0.1272	0.0073
	Pr(marginalised) =	0.1503		0.0872	
	Unemployed	-0.0254	0.0085	0.0187	0.0086
	Waiting	-0.1123	0.0190	0.0191	0.0354
	Nonwaiting	0.1142	0.0200	0.0554	0.0156
	Education	0.0785	0.0156	0.0635	0.0135
	15≤Age<30	0.0495	0.0110	0.0420	0.0091
	50≤Age<60	-0.1176	0.0091	-0.0816	0.0082
	70≤Age<70	-0.2267	0.0079	-0.1554	0.0068
	Pr(outside) =	0.5536		0.5743	
	Unemployed	-0.6380	0.0110	-0.5603	0.0147
	Waiting	-0.5194	0.0181	-0.4760	0.0377
	Non waiting	-0.3285	0.0208	-0.2857	0.0254
	Education	-0.2989	0.0196	-0.3125	0.0229
	15≤Age<30	-0.1462	0.0196	-0.2092	0.0214
	50≤Age<60	0.2781	0.0164	0.3090	0.0161
	70≤Age<70	0.4941	0.0137	0.5283	0.0130

Table 22: Continued.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
Women	Pr(employed)	0.2134		0.2878	
	Unemployed	0.2285	0.0191	0.3444	0.0226
	Waiting	0.3798	0.0711	0.3714	0.0656
	Non waiting	0.0336	0.0354	0.1238	0.0414
	Education	-0.0100	0.0222	0.1162	0.0285
	15≤Age<30	0.1774	0.0223	0.1940	0.0243
	50≤Age<60	-0.0961	0.0180	-0.1839	0.0186
	70≤Age<70	-0.1036	0.0188	-0.2702	0.0185
	P(unemployed) =	0.1498		0.0949	
	Unemployed	0.4204	0.0204	0.2273	0.0208
	Waiting	0.1654	0.0689	0.1568	0.0617
	Non waiting	0.2136	0.0425	0.1896	0.0397
	Education	0.1400	0.0318	0.0878	0.0270
	15≤Age<30	-0.0148	0.0133	-0.0164	0.0104
	50≤Age<60	-0.0356	0.0130	-0.0251	0.0099
	70≤Age<70	-0.1452	0.0130	-0.1201	0.0103
	P(marginalised) =	0.1283		0.0890	
	Unemployed	-0.0294	0.0097	-0.0007	0.0102
	Waiting	-0.0779	0.0229	-0.0538	0.0175
	Nonwaiting	0.1249	0.0318	0.0111	0.0203
	Education	0.0851	0.0199	0.0442	0.0158
	15≤Age<30	0.0458	0.0141	0.0454	0.0132
	50≤Age<60	-0.0881	0.0115	-0.0633	0.0105
	70≤Age<70	-0.1741	0.0113	-0.1237	0.0101
	Pr(outside) =	0.5085		0.5282	
	Unemployed	-0.6196	0.0145	-0.5709	0.0175
	Waiting	-0.4673	0.0230	-0.4744	0.0250
	Non waiting	-0.3722	0.0264	-0.3246	0.0345
	Education	-0.2151	0.0275	-0.2482	0.0291
	15≤Age<30	-0.2084	0.0269	-0.2230	0.0282
	50≤Age<60	0.2198	0.0262	0.2724	0.0248
	70≤Age<70	0.4229	0.0226	0.5140	0.0203

Table 23: Estimation values of multinomial logit model with marginalisation subgroups and sample split in age groups.

	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
15≤Age<30	Pr(employed) =	0.2997		0.4796	
	unemployed	0.2401	0.0220	0.1799	0.0238
	Waiting	0.2593	0.0959	0.1895	0.0802
	Nonwaiting	-0.0557	0.0333	0.0040	0.0352
	Education	0.0154	0.0209	0.0328	0.0224
	Male	0.0195	0.0164	0.0349	0.0183
	Pr(unemployed)	0.1634		0.1130	
	unemployed	0.2108	0.0206	0.0749	0.0175
	Waiting	0.1707	0.0941	0.0568	0.0656
	Nonwaiting	0.1049	0.0347	0.0544	0.0257
	Education	0.0285	0.0188	-0.0189	0.0147
	Male	0.0258	0.0129	-0.0006	0.0114
	Pr(marginalised) =	0.2859		0.2113	
	Unemployed	-0.2257	0.0161	-0.0959	0.0175
	Waiting	-0.2338	0.0394	-0.0868	0.0542
	Nonwaiting	0.0567	0.0313	-0.0032	0.0271
	Education	0.0289	0.0181	0.0446	0.0181
	Male	-0.0232	0.0156	-0.0338	0.0146
	Pr(outside) =	0.2510		0.1961	
	unemployed	-0.2252	0.0146	-0.1589	0.0145
	Waiting	-0.1962	0.0339	-0.1595	0.0288
	Nonwaiting	-0.1059	0.0211	-0.0553	0.0218
	Education	-0.0728	0.0153	-0.0585	0.0148
	Male	-0.0221	0.0149	-0.0005	0.0145

Table 23: Continued.

	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
30≤Age<50	Pr(employed) =	0.2438		0.3795	
	unemployed	0.1873	0.0188	0.3325	0.0228
	Waiting	0.3272	0.0822	0.1831	0.0857
	Nonwaiting	-0.0340	0.0318	0.0757	0.0397
	Education	-0.0061	0.0330	0.1312	0.0399
	Male	0.0026	0.0184	0.0418	0.0216
	Pr(unemployed) =	0.2904		0.2144	
	unemployed	0.4714	0.0214	0.2130	0.0206
	Waiting	0.1111	0.0830	0.1634	0.0838
	Nonwaiting	0.1802	0.0409	0.1332	0.0395
	Education	0.1394	0.0421	0.1045	0.0388
	Male	0.0219	0.0190	0.0079	0.0172
	Pr(marginalised) =	0.2409		0.1667	
	Unemployed	-0.1283	0.0157	-0.0674	0.0154
	Waiting	-0.2089	0.0182	-0.1095	0.0322
	Nonwaiting	0.0481	0.0288	-0.0165	0.0221
	Education	0.0743	0.0305	-0.0039	0.0227
	Male	-0.0294	0.0184	-0.0412	0.0162
	Pr(outside) =	0.2249		0.2394	
	unemployed	-0.5304	0.0139	-0.4781	0.0160
	Waiting	-0.2294	0.0121	-0.2371	0.0131
	Nonwaiting	-0.1944	0.0135	-0.1923	0.0150
	Education	-0.2076	0.0131	-0.2317	0.0137
	Male	0.0048	0.0186	-0.0085	0.0197

Table 23: Continued.

	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
50≤Age<60	Pr(employed) =	0.1412		0.1564	
	unemployed	0.1433	0.0160	0.2612	0.0207
	Waiting	0.3406	0.0964	0.2977	0.0915
	Nonwaiting	-0.0822	0.0213	0.0526	0.0434
	Education	-0.0365	0.0357	0.0960	0.0582
	Male	0.0419	0.0186	0.0496	0.0192
	Pr(unemployed)	0.1585		0.1091	
	unemployed	0.5692	0.0187	0.4053	0.0217
	Waiting	0.2235	0.0968	0.2333	0.0872
	Nonwaiting	0.3275	0.0538	0.2979	0.0544
	Education	0.2854	0.0712	0.4778	0.0712
	Male	0.0408	0.0177	0.0160	0.0137
	Pr(marginalised) =	0.1127		0.0588	
	Unemployed	0.0824	0.0141	0.0538	0.0126
	Waiting	0.0043	0.0621	0.0900	0.0565
	Nonwaiting	0.2658	0.0509	0.1352	0.0448
	Education	0.3140	0.0697	0.0884	0.0445
	Male	-0.0062	0.0158	0.0034	0.0122
	Pr(outside) =	0.5877		0.6758	
	unemployed	-0.7949	0.0118	-0.7203	0.0160
	Waiting	-0.5684	0.0209	-0.6210	0.0361
	Nonwaiting	-0.5111	0.0231	-0.4856	0.0348
	Education	-0.5629	0.0208	-0.6622	0.0197
	Male	-0.0765	0.0306	-0.0689	0.0284

Table 23: Continued.

	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
70≤Age<70	Pr(employed) =	0.0374		0.0338	
	unemployed	0.1051	0.0303	0.0678	0.0248
	Waiting	0.1698	0.1237	0.1303	0.1040
	Nonwaiting	0.0375	0.0338	0.1260	0.0525
	Education	0.0940	0.1219	-0.0346	0.0033
	Male	0.0291	0.0068	0.0185	0.0066
	Pr(unemployed)	0.0080		0.0042	
	unemployed	0.4551	0.0400	0.1881	0.0326
	Waiting	0.2734	0.1379	-0.0045	0.0011
	Nonwaiting	0.1580	0.0467	0.0539	0.0226
	Education	0.4499	0.2167	-0.0042	0.0010
	Male	0.0031	0.0020	0.0008	0.0013
	Pr(marginalised) =	0.0110		0.0041	
	Unemployed	0.0823	0.0217	0.0678	0.0233
	Waiting	-0.0122	0.0018	-0.0045	0.0012
	Nonwaiting	0.1117	0.0463	0.0263	0.0198
	Education	0.0896	0.1013	-0.0042	0.0011
	Male	0.0070	0.0032	0.0045	0.0022
	Pr(outside) =	0.9436		0.9579	
	unemployed	-0.6424	0.0383	-0.3237	0.0411
	Waiting	-0.4310	0.1603	-0.1213	0.1040
	Nonwaiting	-0.3073	0.0653	-0.2061	0.0584
	Education	-0.6335	0.2237	0.0430	0.0036
	Male	-0.0393	0.0080	-0.0237	0.0071

Table 24: Estimation values of multinomial logit model with marginalisation split according to availability and sample split according to gender.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
Women	P(employed) =	0.1709		0.2419	
	Unemployed	0.2375	0.0161	0.3221	0.0190
	<1 week	0.0685	0.0319	0.0995	0.0362
	<1 month	0.0923	0.0415	0.2194	0.0540
	Later	0.0578	0.0162	0.1241	0.0196
	15≤Age<30	0.1256	0.0145	0.1893	0.0176
	50≤Age<60	-0.1085	0.0111	-0.1888	0.0125
	70≤Age<70	-0.1331	0.0111	-0.2464	0.0115
	P(unemployed) =	0.1255		0.0972	
	Unemployed	0.4296	0.0176	0.2238	0.0176
	<1 week	0.3271	0.0389	0.2183	0.0379
	<1 month	0.4210	0.0478	0.1576	0.0491
	Later	0.1325	0.0206	0.1120	0.0188
	15≤Age<30	-0.0208	0.0088	-0.0161	0.0081
	50≤Age<60	-0.0491	0.0083	-0.0382	0.0076
	70≤Age<70	-0.1285	0.0082	-0.1242	0.0073
	P(marginalised) =	0.1511		0.0876	
	Unemployed	-0.0270	0.0085	0.0179	0.0086
	<1 week	-0.0077	0.0220	0.0479	0.0215
	<1 month	-0.0313	0.0220	0.0821	0.0337
	Later	0.1082	0.0151	0.0558	0.0118
	15≤Age<30	0.0429	0.0105	0.0432	0.0091
	50≤Age<60	-0.1170	0.0091	-0.0821	0.0082
	70≤Age<70	-0.2285	0.0079	-0.1560	0.0068
	P(outside) =	0.5525		0.5733	
	Unemployed	-0.6401	0.0109	-0.5638	0.0146
	<1 week	-0.3879	0.0258	-0.3657	0.0313
	<1 month	-0.4820	0.0215	-0.4591	0.0358
	Later	-0.2985	0.0179	-0.2918	0.0207
	15≤Age<30	-0.1477	0.0195	-0.2164	0.0214
	50≤Age<60	0.2746	0.0166	0.3090	0.0162
	70≤Age<70	0.4900	0.0140	0.5266	0.0131

Table 24: Continued.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
Men	P(employed) =	0.2138		0.2890	
	Unemployed	0.2309	0.0193	0.3468	0.0227
	<1 week	0.1464	0.0421	0.1449	0.0468
	<1 month	0.1193	0.0667	0.1739	0.0701
	Later	0.0016	0.0225	0.1313	0.0279
	15≤Age<30	0.1654	0.0217	0.1878	0.0241
	50≤Age<60	-0.0914	0.0181	-0.1832	0.0187
	70≤Age<70	-0.1021	0.0187	-0.2684	0.0186
	P(unemployed) =	0.1494		0.0946	
	Unemployed	0.4195	0.0207	0.2262	0.0209
	<1 week	0.2050	0.0455	0.2439	0.0465
	<1 month	0.3097	0.0723	0.1633	0.0653
	Later	0.1410	0.0305	0.0843	0.0250
	15≤Age<30	-0.0185	0.0129	-0.0178	0.0102
	50≤Age<60	-0.0325	0.0130	-0.0249	0.0099
	70≤Age<70	-0.1436	0.0132	-0.1206	0.0104
	P(marginalised) =	0.1291		0.0892	
	Unemployed	-0.0299	0.0098	-0.0002	0.0103
	<1 week	0.0404	0.0269	0.0251	0.0241
	<1 month	0.0035	0.0392	-0.0018	0.0309
	Later	0.1064	0.0208	0.0400	0.0152
	15≤Age<30	0.0430	0.0137	0.0487	0.0133
	50≤Age<60	-0.0872	0.0116	-0.0637	0.0106
	70≤Age<70	-0.1734	0.0113	-0.1234	0.0101
	P(outside) =	0.5077		0.5271	
	Unemployed	-0.6205	0.0142	-0.5728	0.0174
	<1 week	-0.3919	0.0252	-0.4138	0.0306
	<1 month	-0.4325	0.0369	-0.3354	0.0547
	Later	-0.2491	0.0253	-0.2556	0.0275
	15≤Age<30	-0.1899	0.0267	-0.2188	0.0282
	50≤Age<60	0.2111	0.0260	0.2717	0.0248
	70≤Age<70	0.4191	0.0226	0.5124	0.0205

Table 25: Estimation values with marginalisation split according to availability and sample split according to age.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
15≤Age<30	P(employed) =	0.3015		0.4789	
	Unemployed	0.2470	0.0222	0.1803	0.0237
	<1 week	0.0590	0.0450	0.0269	0.0455
	<1 month	0.0793	0.0570	0.1019	0.0623
	Later	0.0080	0.0208	0.0282	0.0219
	Male	0.0212	0.0164	0.0347	0.0183
	P(unemployed) =	0.1607		0.1127	
	Unemployed	0.2071	0.0206	0.0755	0.0174
	<1 week	0.1123	0.0428	0.0205	0.0316
	<1 month	0.1939	0.0577	0.0053	0.0424
	Later	0.0214	0.0183	-0.0051	0.0144
	Male	0.0234	0.0127	-0.0032	0.0112
	P(marginalised) =	0.2861		0.2122	
	Unemployed	-0.2265	0.0161	-0.0963	0.0176
	<1 week	-0.0405	0.0361	0.0328	0.0381
	<1 month	-0.1206	0.0365	-0.0201	0.0486
	Later	0.0442	0.0179	0.0353	0.0175
	Male	-0.0246	0.0155	-0.0318	0.0147
	P(outside) =	0.2517		0.1962	
	Unemployed	-0.2276	0.0146	-0.1595	0.0145
	<1 week	-0.1309	0.0249	-0.0802	0.0254
	<1 month	-0.1525	0.0273	-0.0871	0.0355
	Later	-0.0737	0.0153	-0.0584	0.0149
	Male	-0.0200	0.0150	0.0003	0.0145

Table 25: Continued.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
30≤Age<50	P(employed) =	0.2474		0.3824	
	Unemployed	0.1909	0.0194	0.3223	0.0232
	<1 week	0.0864	0.0499	-0.0046	0.0529
	<1 month	0.0470	0.0553	0.1046	0.0685
	Later	-0.0164	0.0300	0.1075	0.0352
	Male	0.0076	0.0184	0.0450	0.0217
	P(unemployed) =	0.2882		0.2116	
	Unemployed	0.4751	0.0209	0.2256	0.0213
	<1 week	0.2598	0.0554	0.2950	0.0571
	<1 month	0.3331	0.0596	0.1428	0.0670
	Later	0.1137	0.0381	0.1123	0.0346
	Male	0.0216	0.0192	0.0061	0.0170
	P(marginalised) =	0.2410		0.1677	
	Unemployed	-0.1304	0.0157	-0.0678	0.0156
	<1 week	-0.1472	0.0240	-0.0654	0.0263
	<1 month	-0.1457	0.0259	-0.0199	0.0352
	Later	0.1152	0.0277	-0.0016	0.0205
	Male	-0.0296	0.0186	-0.0410	0.0162
	P(outside) =	0.2234		0.2383	
	Unemployed	-0.5356	0.0140	-0.4801	0.0160
	<1 week	-0.1991	0.0131	-0.2250	0.0140
	<1 month	-0.2345	0.0116	-0.2275	0.0135
	Later	-0.2125	0.0135	-0.2182	0.0145
	Male	0.0004	0.0184	-0.0101	0.0197

Table 25: Continued.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
50≤Age<60	P(employed)=	0.1439		0.1526	
	Unemployed	0.1470	0.0164	0.2646	0.0207
	<1 week	0.0344	0.0412	0.0757	0.0483
	<1 month	-0.0987	0.0338	0.1433	0.0963
	Later	-0.0156	0.0314	0.1301	0.0498
	Male	0.0490	0.0188	0.0463	0.0187
	P(unemployed) =	0.1567		0.1058	
	Unemployed	0.5670	0.0195	0.4083	0.0218
	<1 week	0.3097	0.0617	0.3846	0.0601
	<1 month	0.4567	0.1131	0.3030	0.1229
	Later	0.2747	0.0562	0.3388	0.0600
	Male	0.0390	0.0175	0.0129	0.0134
	P(marginalised) =	0.1135		0.0583	
	Unemployed	0.0815	0.0141	0.0532	0.0124
	<1 week	0.1878	0.0552	0.0916	0.0387
	<1 month	0.2208	0.1110	0.1730	0.1077
	Later	0.2722	0.0533	0.1048	0.0421
	Male	-0.0111	0.0157	0.0026	0.0121
	P(outside) =	0.5858		0.6833	
	Unemployed	-0.7955	0.0118	-0.7261	0.0159
	<1 week	-0.5318	0.0233	-0.5519	0.0335
	<1 month	-0.5788	0.0177	-0.6193	0.0346
	Later	-0.5313	0.0220	-0.5736	0.0297
	Male	-0.0770	0.0307	-0.0618	0.0280

Table 25: Continued.

Sample contruct	Transfer after one:	quarter dp/dx	St.error	year dp/dx	St.error
60≤Age<70	P(employed)=	0.0375		0.0327	
	Unemployed	0.1033	0.0300	0.0639	0.0237
	<1 week	0.0524	0.0409	0.1428	0.0573
	<1 month	0.0927	0.1017	-0.0346	0.0033
	Later	0.0525	0.0580	0.1332	0.0945
	Male	0.0291	0.0068	0.0180	0.0064
	P(unemployed) =	0.0080		0.0043	
	Unemployed	0.4513	0.0398	0.1970	0.0337
	<1 week	0.1802	0.0535	0.0700	0.0286
	<1 month	0.2098	0.1258	-0.0045	0.0011
	Later	0.1696	0.0881	0.0302	0.0346
	Male	0.0030	0.0020	0.0007	0.0013
	P(marginalised) =	0.0121		0.0045	
	Unemployed	0.0910	0.0238	0.0752	0.0256
	<1 week	0.0797	0.0496	0.0178	0.0142
	<1 month	0.3232	0.1864	0.0452	0.0560
	Later	0.1537	0.0867	0.0577	0.0651
	Male	0.0076	0.0036	0.0049	0.0024
	P(outside) =	0.9425		0.9585	
	Unemployed	-0.6456	0.0380	-0.3361	0.0417
	<1 week	-0.3122	0.0736	-0.2305	0.0634
	<1 month	-0.6257	0.1516	-0.0061	0.0561
	Later	-0.3758	0.1165	-0.2210	0.1125
	Male	-0.0397	0.0082	-0.0235	0.0070

D Exploratory dynamics of the 8×12 model

	E_1	E_2	E_3	U_1	U_2	U_3	M_1	M_2	M_3	O_1	O_2	O_3
E_1		ee-		eu-			em-			eo-		
		-ee		-eu			-em			-eo		
E_2			eee	eeu			eem			eeo		
U_1	ue-				uu-		um-			uo-		
	-ue				-uu		-um			-uo		
U_2	uue					uuu	uum			uuo		
M_1	me-			mu-				mm-		mo-		
	-me			-mu				-mm		-mo		
M_2	mme			mmu					mmm	mmo		
O_1	oe-			ou-			om-				oo-	
	-oe			-ou			-om				-oo	
O_2	ooe			oou			oom					ooo

	E_1	E_2	E_3	U_1	U_2	U_3	M_1	M_2	M_3	O_1	O_2	O_3
E_1		.9477		.0175			.0142			.0206		
		.6921		.0923			.0824			.1331		
E_2			.9337	.0202			.0169			.0292		
U_1	.3462				.4435		.1178			.0925		
	.5458				.1964		.1108			.1471		
U_2	.4653					.3303	.0909			.1135		
M_1	.1999			.1518				.3745		.2738		
	.4032			.126				.1943		.2765		
M_2	.3355			.1547					.2705	.2394		
O_1	.0741			.0332			.0966				.7961	
	.3152			.099			.1704				.4154	
O_2	.0538			.0129			.0316					.9017

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