

DISCUSSION PAPER SERIES

No. 3028

THE DYNAMICS OF IMMIGRANT WELFARE AND LABOUR MARKET BEHAVIOUR

Jörgen Hansen and Magnus Lofström

LABOUR ECONOMICS



Centre for Economic Policy Research

www.cepr.org

Available online at:

www.cepr.org/pubs/dps/DP3028.asp

THE DYNAMICS OF IMMIGRANT WELFARE AND LABOUR MARKET BEHAVIOUR

Jörgen Hansen, IZA, Bonn and CEPR
Magnus Lövström, University of California, Irvine

Discussion Paper No. 3028
October 2001

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programme in **Labour Economics**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as a private educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions. Institutional (core) finance for the Centre has been provided through major grants from the Economic and Social Research Council, under which an ESRC Resource Centre operates within CEPR; the Esmée Fairbairn Charitable Trust; and the Bank of England. These organizations do not give prior review to the Centre's publications, nor do they necessarily endorse the views expressed therein.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Jörgen Hansen and Magnus Lövström

October 2001

ABSTRACT

The Dynamics of Immigrant Welfare and Labour Market Behaviour

This Paper analyses transitions into and out of three different labour market states: social assistance, unemployment and employment. We estimate a dynamic multinomial logit model, controlling for endogenous initial conditions and unobserved heterogeneity, using a large representative Swedish panel data set, LINDA, for the years 1990–6. The unadjusted data indicates that immigrants are more likely to receive both social assistance and unemployment compensation than natives are. Immigrants are less likely to remain employed in consecutive years than natives are and are more likely to stay on welfare and to receive unemployment insurance in any year, given participation in the previous year. The empirical results suggest that refugee immigrants display a greater degree of ‘structural’ state dependence than natives. Further, immigrants from non-refugee countries display a similar degree of ‘structural’ state dependence as natives. The high welfare participation rates among refugee immigrants seem to be due to the existence of a ‘welfare trap’, while participation among natives and non-refugee immigrants is largely due to permanent unobserved characteristics. These results suggest that welfare reforms will have differential effects on refugee immigrants and natives

JEL Classification: I30, I38, J15, J18 and J61

Keywords: immigration, labour market behaviour, state dependence, transition and welfare

Jörgen Hansen
Concordia University
1455 de Maisonneuve Blvd W
Montreal
Quebec H3G 1M8
CANADA
Tel: (1 514) 848 3924
Fax: (1 514) 848 4536
Email: hansen@vax2.concordia.ca

Magnus Lofström
University of California at Irvine
SSPB 2264
3151 Social Science Plaza
Irvine CA 92697-5100
USA
Tel: (1 949) 824 1505
Fax: (1 949) 824 4717
Email: mlofstro@uci.edu

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=145487

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=145804

Submitted 20 September 2001

1. Introduction

The increase in immigration experienced by many Western countries in the last decade has led to raised concerns regarding immigrant over utilization in welfare programs. In fact, this concern has incited some countries to restrict access to some government transfer programs for immigrants. In the U.S. for example, The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, denies non-citizens who arrived after 1996 the right to receive most types of public assistance. In Germany, immigrants without permanent residency may lose the right to stay in the country or may be denied residency extensions if they depend on social assistance. Although the country studied in this paper, Sweden, does not treat immigrants differently from natives with respect to social assistance, immigration is central to the welfare debate. By the mid-1990's immigrants in Sweden accounted for nearly half of the country's expenditure on social assistance. This is quite remarkable since immigrants represent approximately an 11 percent minority of the population. In addition, given that real expenditures on the social assistance program in Sweden increased by 270 percent between 1983 and 1996 and that the share of immigrants in the population during the same period increased from 7.6 percent to 10.8 percent, it is clear that understanding immigrants' welfare utilization is essential in explaining the expenditure trend.

Although there are differences between Sweden and the so-called traditional immigration countries, like the U.S. and Canada, regarding immigration and public assistance, we will show that there are also many similarities. This suggests that the results presented in this paper are also applicable to other industrialized countries.

Several studies have looked at differences in welfare participation between immigrants and natives (see for instance Baker and Benjamin, 1995; Borjas and Hilton, 1996; Hansen and Lofstrom, 1999 and Riphahn, 1998 for Canada, the U.S., Sweden and Germany respectively). However, to our knowledge, no study has analyzed transitions across labor market states of immigrants. Understanding the dynamic processes underlying the observed utilization of government transfer programs is essential. Questions regarding an existence of a "welfare trap" and if it matters differently for immigrants and natives are important policy issues. If, for example, observed serial

persistence in welfare utilization is due to permanent unobserved heterogeneity, e.g. individuals have time invariant unobserved preferences for welfare participation, the observed dependence is “spurious” and policies directed at getting people off welfare are less likely to be successful. On the other hand, if the persistence is due to “structural” dependence, in the sense that previous participation directly affects current probability of participation, i.e. a “welfare trap” exists, changes in benefit rules are more likely to meet their objectives of utilization reduction. It is also possible that there exist differences in state dependence of transfer program participation between immigrants and natives. This paper aims to investigate this possibility and, if differences exist, to quantify the differences.

One important reason for the increase in welfare participation, and the consequent growth in expenditures, is the rise in the unemployment rate in the 1990’s in Sweden. Figure 1 shows the unemployment rate for the labor force and for foreign citizens. The official unemployment rate grew from 1.7 percent in 1990 to slightly more than 8 percent in 1996. For immigrants, the labor market deteriorated even more. In 1990, approximately 4 percent of foreign citizens were unemployed. This had increased to 23 percent by 1996. The increase in welfare expenditures in Sweden in the 1990’s can partly be explained by the large inflows of immigrants who arrived during this period who were not eligible for unemployment insurance and therefore had to rely on social assistance for their subsistence.

In this paper we confine the analysis to transitions into and out of three states: welfare, unemployment and employment. Our goal is to answer the following questions: Do the probabilities of transitions differ between natives and immigrants? Is there a “welfare trap” in Sweden and, if so, is this state dependence different for immigrants and natives?

To answer these questions, we take advantage of a recently collected large representative longitudinal data set, Longitudinal Individual Data (LINDA), containing information on more than 300,000 individuals annually for the period 1990 to 1996. The data is collected from administrative records which imply essentially no attrition. We estimate a dynamic model that accounts for both unobserved heterogeneity and endogenous initial conditions.

The paper is organized in the following way. In Section 2 we compare immigrants in Sweden to immigrants in the U.S. and in section 3 we give background information about immigration, the social assistance program and unemployment insurance in Sweden. Section 4 describes the data and variables while Section 5 depicts trends and differences, between immigrants and natives, in government transfer program participation and transitions. In Section 6 we provide a discussion of state dependence and in Section 7 we present the model and empirical specification. We discuss the results in Section 8 and conclude in Section 9.

2. Cross Country Comparison: Sweden and the U.S.

Despite many well known economic differences between Sweden and the U.S., such as earnings inequality, public expenditure and union coverage, there are also several similarities. For example, the proportion of immigrants in Sweden is around 11 percent while in the U.S. roughly 10 percent are foreign born. As with the U.S., immigration has increased in the last decade in Sweden. The proportional inflow is slightly higher than what the U.S. experienced in the 1990's, but quite similar to Canada and Australia. Even though the composition of immigrants who arrived during the 1990's differs between the two countries, with mostly refugee immigrants in Sweden and predominantly economic migrants in the U.S., the relative success of immigrants in the host country labor market during this period has declined in both countries, see Bauer et al (2000) and Borjas (1999).

To compare immigrants in Sweden and in the U.S., we calculated some policy relevant labor market measures and educational attainment for each group using the LINDA data and the March Supplement of the Current Population Survey representing the years 1994 and 1995.¹ These are presented in Table 1. The welfare utilization measure used for the U.S. refers to participation in the major cash assistance program, Aid to Families with Dependent Children (AFDC) or in the food stamp program. These two programs are designed to cover roughly similar expenses to the ones social assistance in Sweden covers.

Welfare participation among natives during this period was lower in Sweden than in the U.S., slightly more than 5 percent and close to 10 percent respectively. We find that immigrants in both countries receive welfare to a greater extent than natives, and that immigrants from refugee countries are more likely to utilize welfare than immigrants from non-refugee countries.² However, differences in welfare participation across the groups are greater in Sweden than in the U.S. Regarding unemployment, we find that the unemployment rates are higher among immigrants than among natives in both Sweden and the U.S.³ In Sweden, the unemployment rate is higher among immigrants from refugee countries than among non-refugee immigrants while there is only a very small difference in unemployment rates between these immigrant groups in the U.S.

The entries in Table 1 also indicate similarities in employment rates in the two countries. The employment rates for natives are close to 80 percent in both Sweden and the U.S. Moreover, immigrants' employment probabilities are lower than natives and immigrants from refugee countries have lower employment rates than immigrants from non-refugee countries in both countries. Annual earnings is also lower among immigrants than natives in both countries. The earnings gap is greater in the U.S. than in Sweden partially due to the lower dispersion of earnings in Sweden. The table also shows that immigrants are less likely to be high school graduates in both countries and more likely to have a university degree than natives, except for immigrants from refugee countries in the U.S.

Furthermore, the generosity in terms of benefit levels relative to mean earnings are surprisingly similar. To compare the benefit levels across the two countries we use the 1998 TANF benefit levels and average value of food stamps for a family of three residing in California, the largest immigrant state in the U.S. Using the national benefit structure introduced in 1998 in Sweden, we calculate the benefit levels for a family of

¹ The choice of the years 1994-95, as opposed to 1995-96, is due to the 1996 U.S. welfare reform, PRWORA, which may have affected immigrant welfare utilization.

² For the U.S. data, Afghanistan, Cambodia, Cuba, Czechoslovakia, Ethiopia, Hungary, Laos, Poland, Romania, Thailand, the former U.S.S.R., and Vietnam are defined as refugee countries. These are the main refugee sending countries to the U.S. in the last decades. For the definition of refugee countries applied to the case of Sweden, see the discussion in the Data section.

³ The unemployment rates for Sweden reported in Table 1 show the proportion of unemployment insurance (UI) recipients in the data. Since most of the unemployed workers who participate in labor market programs receive UI, the unemployment rates in Table 1 will be higher than the official unemployment rates.

three. In California, our calculations suggest that our representative family would receive \$565 in TANF and \$223 in food stamps per month. Given average monthly earnings of \$2,600 for workers, this represents approximately 30 percent of the average gross monthly paycheck. In Sweden, a family of three would receive approximately SEK 6,200, or roughly 37 percent of what the average worker earns per month, SEK16,600. These rough figures suggest that the generosity levels are not dramatically different across the countries.⁴ Furthermore, Table 1 shows that immigrants' relative labor market outcomes and schooling levels are quite similar in Sweden and the U.S. These observations suggest that the findings in this paper are at least to some extent applicable to immigrant labor market dynamics in other Western countries.

4. Immigration and Welfare Programs in Sweden

Immigration into Sweden

The inflow of immigrants to Sweden has undergone a number of changes during the last six decades. Figure 2 shows annual immigration to Sweden from 1940 to 1998, both in terms of the level of the immigrant inflow and inflow expressed as the proportion of the total population in the corresponding year. Overall, annual immigration has amounted to about 0.4 percent of the population, but notably higher during the 1990's. Naturally, the large inflow of immigrants has also changed the composition of the population in Sweden.

The reasons people immigrate to Sweden have changed substantially during the post-war period. In principle, we can distinguish between three categories of immigrants, based on the reasons for immigration: economic migrants (e.g. due to the recruitment of labor), tied movers (i.e. family ties) and refugees. In the late 1940's, a large fraction of the immigrants arrived in Sweden as refugees, mainly from the Nordic countries. However, in the period from 1950 to 1970, most of the immigrants were recruited by the Swedish industry or they arrived because of family ties. From 1970 and onwards, the

⁴ Our calculations understate the difference to a certain extent since we do not account for income taxes, which are more progressive in Sweden. Furthermore, the fact that there are no time limits on welfare receipts and the greater availability of additional housing subsidies in Sweden may also mean that the above comparison moderates the welfare generosity difference between the two countries.

proportion of immigrants arriving as refugees has increased significantly, from less than 10 percent of the immigrant inflow in 1970 to about 70 percent in the early 1990's. In 1994, this proportion dropped from 70 percent to about 50 percent, mostly due to the improved conditions in the Balkan countries. Since the 1980's, roughly 1/3 of refugee immigrants migrated from former Yugoslavia and approximately 1/4 from Iran and Iraq. Overall, about one half of immigrants in Sweden today come from Europe, of these, 40 percent are Nordic citizens.

Social Assistance in Sweden

The Swedish welfare system is well known internationally for the high degree of income security that it provides for its citizens. Recently, this generous system has been the target of a number of reforms, mainly due to the recession that hit Sweden, and many other countries, in the early 1990's.

As an ultimate safety net, people in Sweden are covered by social assistance (SA). As with unemployment insurance, the eligibility rules and benefit levels are the same for immigrants and natives. In order to be eligible for SA, all other welfare programs, such as unemployment compensation, housing allowance (bostadsbidrag), child allowance (barnbidrag), maintenance allowance (underhållsbidrag) and various pensions, must be exhausted first. The benefit levels vary, both across family types and regions, but are supposed to cover expenses essential for a "decent" living. To be eligible for SA benefits, a family must have income and assets below certain specified benefits levels, known as norms. The norms were, until 1998, determined in each of the 288 municipalities in Sweden. However, as of the 1st of January 1998, the regional variations in the norms were replaced by a national norm in order to reduce the inequality aspect of having differentiated benefit levels.⁵ The norms serve as guidelines for the social worker who decides the actual size of the benefits. SA benefits are paid according to a schedule that sets a guarantee amount for a family of a given size. These benefits are reduced at a 100 percent reduction rate as the family's income rises.

⁵ According to the national norm in 1998, a single person would receive 2,884 SEK per month in SA while a couple with two children would receive about 7,500 SEK per month (depending on the age of the children). These amounts are intended to cover expenses for so called necessary consumption, such as food,

Unemployment Insurance in Sweden

The Swedish unemployment insurance system consists of two parts: unemployment benefits (Arbetslöshetskassa, UB) and unemployment assistance (Kontant arbetsmarknadsstöd, UA). In 1990, the coverage was slightly less than 80 percent of the labor force, with roughly 70 percent covered by UB and 10 percent by UA. To be entitled to compensation from UB, an unemployed worker must have paid membership fees to the UB fund for the last 12 months and he must have been working for at least 75 days preceding the current unemployment spell. These conditions imply that many of the new entrants in the labor market, such as young workers and immigrants, are not entitled to compensation from UB. There is a time limit on UB and entitled workers can receive benefits for a maximum of 300 working days. Compared to non-Scandinavian countries, the benefit levels are quite generous with replacement rates varying between 75 and 90 percent during the 1990's.⁶

Workers who are not eligible for receiving UB may be entitled to compensation from UA. There exists a similar work requirement for receiving UA as for receiving UB, but there is no "membership" requirement. However, UA is substantially less generous than UB, both in terms of benefit duration and compensation levels.⁷

4. Data

Description of the Data and Sampling Procedures

The data used in this paper is taken from a recently created Swedish longitudinal data set, Longitudinal Individual Data (LINDA). LINDA is a register-based data set and it consists of a large panel of individuals, and their household members, which are representative for the population from 1960 to 1996. LINDA is a joint endeavor between

basic clothing, leisure, health, newspapers, telephone and fees for TV, and partially for housing. Additional assistance for housing is also available, known as "bostadsbidrag".

⁶ Until 1993, the UB replacement rate was 90 percent of earnings up to a maximum level determined by the government. In July 1993, the replacement rate was reduced to 80 percent and in January 1996, it was further reduced to 75 percent. The replacement rate was raised back to 80 percent in September of 1997.

the Department of Economics at Uppsala University, The National Social Insurance Board (RFV), Statistics Sweden, and the Ministries of Finance and Labor. The main administrator of the data set is Statistics Sweden. For a more detailed description of the data used here, including the sampling structure, see Edin and Fredriksson (2000). LINDA contains a 3 percent representative random sample of the Swedish population, corresponding to approximately 300,000 individuals for the period studied here. The sampled population consists of all individuals, including children and elderly persons, who lived in Sweden during a particular year. The sampling procedure used in constructing the panel data set ensures that each cross-section is representative for the population in each year. Attached to LINDA is a non-overlapping representative random sample of immigrants containing the same variables, and created in the same fashion, as the general sample. The immigrant sample consists of 20 percent of all individuals born abroad. We merged this sample with the general population sample. This generates a sample of the Swedish population where immigrants are over-represented, which can be adjusted for by using appropriate methods.

The sample used in this study consists of information from LINDA for the years 1990-1996.⁸ We excluded all individuals younger than 18 years or older than 65 years, students and retired individuals. A person is defined to be an immigrant if he was born abroad, and refugee immigrant if he was born in a refugee country, as defined by the Swedish Immigration Board, or in a sub-Saharan country.⁹ If the person is an immigrant or a refugee, we have information about the year of arrival in Sweden.¹⁰ In the subsequent analysis, we include all immigrants who have been in Sweden for at least two years. The reason for this sample selection is that the great majority of refugee immigrants receive welfare upon arrival to Sweden automatically. The immigration board

⁷ Under the UA program, an unemployed worker receives approximately 200 SEK/day, corresponding to roughly 30 percent of average earnings, and the maximum benefit period is 150 working days.

⁸ We lack information about welfare use prior to 1990.

⁹ The countries defined by the Swedish Immigration Board as refugee countries: Ethiopia, Afghanistan, Bulgaria, Bangladesh, Bosnia, Chile, Sri Lanka, Cuba, Iraq, Iran, India, Yugoslavia, China, Croatia, Lebanon, Moldavia, Peru, Pakistan, Poland, Russia, Soviet Union, Romania Somalia, Syria, Togo, Turkey, Ukraine, Uganda and Vietnam.

¹⁰ All immigrant households included in LINDA, whether defined as refugees or not, have obtained residence permits. This means, for instance, that asylum seekers who have not yet obtained a residence permit are not included in LINDA. Furthermore, the data does not allow us to identify the exact year of arrival for immigrants who arrived in 1968 or earlier.

then assists the refugee immigrants in various activities, including language training, in order to ease them into the labor market. A typical "integration" period lasts for 1-2 years. During this time, the immigrant is extremely limited in choices of labor market states. Including these immigrants may therefore overstate the state dependence in welfare use among immigrants. To ensure that our results are not driven by this exclusion restriction, we estimated the models reported below including the most recent immigrants. The welfare dependence among refugee immigrants increases somewhat, as expected, but the conclusions regarding state dependence and its sources remain the same.¹¹

Variable Definitions

To answer the questions regarding the existence of a "welfare trap" in Sweden, we estimate a dynamic multinomial model controlling for both unobserved individual heterogeneity and initial conditions. We distinguish between three mutually exclusive labor market states for every year: being employed, receiving unemployment benefits and receiving social assistance.

Since LINDA lacks information about individuals' time allocation, we need to rely on the income sources to classify individuals into different labor market states. Specifically, if the sampled person in the household earned more than the "basic amount", 36,200 in 1996 Swedish kronor (SEK), or roughly \$4,000, in income from employment, and at the same time did not receive any welfare benefits (either social assistance or unemployment benefits), we defined the person as being employed that year.¹² Persons who received more than one-half of a "basic amount", SEK 18,100, in unemployment benefits during the year, but did not receive any social assistance were

¹¹ The possibility of non-random return migration is another reason to define the immigrant sample in this way. Edin et al (2000) find that that return migration among refugees is low, less than 10 percent within 5 years since arrival, and if an immigrant is to leave Sweden, it is most likely to take place within the first few years after arrival. By excluding the most recent immigrants we may decrease the potential effects of return migration on our estimates. We also find it comforting that the results do not change very much between the samples with and without the years since migration restriction.

¹² The seemingly arbitrary value of annual earnings chosen to indicate employment, 36,200 SEK, refers to what is known as a "basic amount". Statistics Sweden defines individuals as employed during a year if they earned this amount.

defined as being unemployed. Finally, persons belong to the third state (receiving welfare) if they received social assistance for at least one month during the year.¹³

To account for regional variation in economic conditions, local labor market variables are assigned to each individual in each year based on the individual's region of residence. The information is obtained from three sources. Data on average county earnings growth are obtained using LINDA while data on local unemployment rates, at the county level, were taken from Statistics Sweden's labor force surveys. To address any long-term effects of the economic conditions when joining the labor force, we incorporate annual growth in gross domestic product and the annual unemployment rate at time of labor market entry. For immigrants, year of labor market entry is identical to time of arrival in Sweden, while we use years of education plus seven to define the age when a native enters the labor market. The data is obtained from Statistics Sweden.

The Swedish municipalities provide data on social assistance benefit guidelines, also known as norms. The municipality, in which the individual resides, as well as the family composition, such as marital status, age and number of children determines the norms, which establishes the benefit level. We were able to assign a social assistance norm to each person in the sample in 1994 and in 1996. Unfortunately, we have not been able to obtain similar information for the other years. Nevertheless, the municipal generosity rankings between the two years appear constant, indicating stability across municipality benefit levels over time. To resolve the missing municipal information issue, we assign the 1994 norms to all years prior to 1995 and the 1996 norms to the years 1995 and 1996.

5. Welfare and Labor Market Behavior

Sweden experienced an increase in immigration in the 1990's. During this period the economy was also entrenched in a severe recession, with a trough around 1993-94 which only moderately leveled off by 1996. Table 2 shows welfare participation rates, as well as our measures for unemployment and employment rates, separately by year for the

¹³ Since we need to rely on the income sources to classify individuals into different labor market states, in any given year, approximately three percent of our sample does not satisfy the criteria for the above three

four groups; natives, Nordic immigrants, non-refugee immigrants and refugee immigrants.

Immigrants participated to a greater extent in both the social assistance and unemployment compensation programs than natives did throughout the period studied here. Furthermore, Nordic and other non-refugee immigrants utilized these programs less than refugees. The table also shows that there is a greater difference between immigrant and native welfare utilization than in the immigrant-native difference in participation in the unemployment insurance programs. For example, the average welfare participation rate for refugee immigrants during the 1990-96 period was roughly six times higher than the average utilization rates for natives. The average UI participation rate was “only” around twice as high for refugees, relative to natives. The discrepancy in the relative utilization rates in the programs between immigrants and natives is at least partially due to UI ineligibility for, in particular recent, refugee immigrants.

There are substantial differences in the dynamic welfare and labor market behavior between immigrants and natives. Table 3 shows transition probability matrices separately for the four groups. This table reveals several interesting relationships and patterns. First, we examine the issue of state dependence in the raw data. For all four groups, the most stable state is employment. However, employment is less stable for immigrants, especially refugee immigrants, than it is for natives. The probability a native stays employed for two consecutive years is 0.94 while the corresponding probability is 0.85 for immigrants from refugee countries. Remarkably, welfare is almost as stable of a state for this immigrant group as is employment, 0.80 probability of remaining in welfare the next year versus a likelihood of 0.85 to stay employed. There are only small differences between the four groups in the probabilities of collecting UI in consecutive years, between 0.70 for natives and 0.73 for refugee immigrants.

Table 3 also indicates that immigrants are considerably less likely to move out-of-welfare and into employment than natives. An immigrant from a refugee country is on average less than half as likely to move off welfare and into employment compared to a native born Swede, the probabilities are 0.206 and 0.097 respectively. All groups are more likely to move into employment from unemployment than welfare. However, the

states. These individuals were excluded in the subsequent analysis.

differences in the unemployment to employment transition probabilities between immigrants and natives are less than the immigrant-native differences in transition probabilities between welfare and employment.

Conditional on being employed in a given year, it also appears that immigrants are more likely to collect either welfare or UI than natives are in the next year. Table 3 shows that about 1 percent of natives move from employment to welfare in consecutive years. The equivalent transition probability for refugee immigrants is close to 0.05, while it is 0.026 for both non-refugee and Nordic immigrants. All immigrant groups are also more likely to move from employment to unemployment than natives. Approximately 5 percent of natives go from employment to unemployment in a given year while roughly 6 percent of the immigrants from non-refugee and the Nordic countries experience the same transition. Among refugees, slightly more than 10 percent collect UI the year after being employed.

Given the differences in transition probabilities between immigrants and natives, we would also expect the distribution of the number of welfare and labor market spells to differ across groups. Table 4 shows the distribution of these spells for the balanced panel, a sub-sample consisting of individuals who were observed for the whole period 1990-96.¹⁴ This means that the figures shown in Table 4 are calculated based on a sample that does not include any immigrants who arrived after 1990. Approximately 90 percent of natives did not utilize social assistance at all during the period 1990-96, while only 2/3 of refugee immigrants experienced no welfare participation spell. About 4 percent of refugee immigrants collected welfare for each of the seven years. The respective figure for natives is substantially lower, 0.5 percent. Nordic and non-refugee immigrants appear to have quite similar distributions in both welfare and unemployment spells and are generally utilizing both social assistance and UI less frequently than immigrants from refugee countries.

One of the objectives of this paper is to study the determinants of the transitions between welfare, unemployment and employment, and if there are any differences in

¹⁴ Note that in this case it is inappropriate to use an unbalanced panel since this would underestimate the number of spells. This is a problem, in particular, for refugee immigrants since many arrived during the period analyzed and consequently cannot have as many spells as individuals who were observed the entire period 1990-1996.

these determinants between immigrants and natives. However, before we analyze the observed disparity in the behavior of immigrants and natives, we want to examine differences in the observable characteristics between individuals who stay in a particular state and the ones who change states.

Table 5 shows mean characteristics by previous year's state. In general, it appears that any movements out of welfare into employment are associated with higher educational attainment, being female, being married, having more children and living in a major city. Individuals who move from welfare to employment also seem to live in areas with relatively low unemployment and, surprisingly, a relatively strong decline in earnings growth as well as higher benefit levels. Transitions from unemployment into employment are associated with higher education, being female, being married and having more children. Unlike transitions from welfare to employment, moving from unemployment to employment is positively correlated with economic growth in the county. Regarding transitions from employment to welfare, it appears to be associated with lower levels of schooling, being single, having more children and living in a major city. The only general relationship for state dependency appears to be age, namely, older individuals seem to be less likely to move out of previous year's state.

The descriptive statistics indicates that immigrants are more likely to utilize both welfare and unemployment compensation than natives. Immigrants from refugee countries participate in these transfer programs to a greater extent than Nordic and non-refugee immigrants and there appear to be very small differences between Nordic and non-refugee immigrants. Furthermore, immigrants are less likely to remain employed in consecutive years than natives and more likely to stay on welfare and to receive unemployment insurance in a year, given participation in the previous year. The data also indicates that immigrants have a more difficult time moving into employment than natives. The immigrant-native difference in transition probabilities is particularly great concerning moves from welfare into employment for refugee immigrants.

Some of the above discussed differences between immigrants and natives may be due to differences in schooling levels, age, marital status, family composition, geographic location, economic growth and unemployment rate at time of labor market entry, differences in benefit levels and differences in the local labor market conditions. We next

discuss potential sources of the observed state dependence and then we present an empirical model that takes the above observable characteristics into account, as well as unobserved heterogeneity and initial conditions.

6. State Dependence: Structural v. Spurious

The empirical strategy utilized in this paper allows us to estimate to what extent the observed state dependence is “structural” and “spurious”. However, before empirically analyzing the data, we address what the potential sources are for the different types of serial persistence. The goal of this section is to first define these forms of state dependence and to examine alternative sources of structural and spurious serial persistence respectively. Policy implications of the form of state dependence are discussed in the results section below.

Economist have often observed that individuals who were employed, unemployed or collected social assistance in the previous period are more likely to be observed in those particular event states in the future than person who did not experience those specific events (e.g. Blank, 1989; Chay and Hyslop, 1998; Engberg, Gottschalk and Wolf, 1990; Hyslop, 1999). The source of this observed serial persistence is not clear and may be due to two distinctive explanations. Following Heckman (1981), we define the state dependence to be “structural” or “true” if past experience, i.e. what state the individual was observed in the previous period, has a real effect on the probability of observing the individual in a given current state. According to this definition, past experience has an actual behavioral effect. However, the observed serial persistence may alternatively be due to time invariant, and unobservable, differences across individuals. Under this assumption, the state dependence is termed “spurious” since the persistence is not due to the previous experience of an event.

The notion that previous participation directly affects current probability of participation is consistent with the concept of a “welfare trap” and can consequently be labeled structural, or true, state dependence. Possible explanations for the existence of a welfare trap are *human capital depreciation*, (in which the stock of human capital is depreciated during the period an individual is not active in the work force) or *signaling*

(potential employers believe that a person who has been unemployed or on welfare is not as productive as an identical applicant who has not experienced these events). In either of these cases, wage offers are lowered by participation in the social assistance program and hence, the labor supply decision is affected, holding preferences constant. However, preferences themselves, and consequently the reservation wage, may be affected by participation in a welfare or unemployment compensation program. Nonetheless, if state dependence is structural, policies aimed to reduce participation in social assistance through changes in benefit rules are likely to reduce participation. The main mechanism to lower welfare dependence is through lower entry rates into the program, but exit probabilities are also likely to be affected.

The relationship between observed past and current states may instead be due to time invariant individual differences to experiencing the event, and hence termed spurious. Clearly, some of the differences across individuals are due to observable characteristics, such as age, gender, nativity, education, marital status and number of children, and can easily be controlled for in a model estimating these state propensities. The empirical methodology applied here also allows us to purge the data from time invariant unobserved individual heterogeneity and hence gives us an estimate of spurious state dependence. An important point is that the source is unobserved and permanent, at least in the sense of spanning the whole period analyzed. Potential explanations for the source of spurious state dependence are *labor market discrimination* and differences in time invariant *preferences* (with respect to leisure and/or so-called stigma effects associated with participation in the transfer program).¹⁵ Although our empirical approach does not allow us to separate between these two potential sources, the results presented below will allow us to assess how these two distinct explanations contribute differently to the observed state dependence for immigrants and natives.

7. Model and Empirical Specification

¹⁵ It is also possible that long-term illness or disability is another source of spurious state dependence. This is due to the fact that the data does not permit identification of this state and that we observe individuals from 1990 to 1996 and hence, time invariant, or permanent, refers to no changes over this period.

To analyze transitions into and out of different labor market states, we estimate a dynamic multinomial logit model with random effects. We assume that the dynamic structure can be approximated by a first-order Markov model. The usage of longitudinal data allows us to control for unobserved heterogeneity and to distinguish between “structural” and “spurious” state dependence. The unobserved individual-specific effects are assumed to be independent of observed characteristics and to follow a discrete, non-parametric distribution. The initial condition problem is addressed following Heckman (1981).

To be specific, the model can be described as follows. Assume that individuals (indexed by i , $i=1,2,\dots,n$) belong to any of the following three mutually exclusive states k at time t ($t=2,3,\dots,T_i$): being employed ($k_t=1$), receiving welfare ($k_t=2$), and receiving unemployment benefits ($k_t=3$). Let the value, for individual i , of belonging to state k at time t (V_{ikt}) be specified as:

$$V_{ikt} = X_{it}\beta_k^1 + L_{it}\beta_k^2 + Z_{it}\beta_k^3 + I_i\beta_k^4 + L_{it} * I_i\beta_k^5 + I_i * Z_{it}\beta_k^6 + \varepsilon_{ikt}$$

where,

$$\varepsilon_{ikt} = \mu_{ik} + v_{ikt}$$

X_{it} is a vector of observable characteristics, including time dummies, age, educational attainment, family composition, years since migration and the economic conditions at the time of entry in the labor market. L_{it} is a vector of variables describing the local labor market where the individual resides. It includes information on welfare benefit levels, unemployment rate and average earnings growth. Benefit levels are available at the municipal level (Sweden has close to 300 municipalities), while the other variables are available only at the county level (between 1990 and 1996, there were 24 counties in Sweden). I_i is a vector of dummy variables indicating the person’s immigrant status and Z_{it} is a vector of dummy variables indicating the previous labor market state occupied by the individual. To allow the effects of local labor market conditions and social assistance benefit levels on welfare use to differ for natives and immigrants, we included interactions between I_i and L_{it} . Further, to test if there exist differences in state dependence between natives and immigrants, we also included interactions between Z_{it} and I_i in the model.

The assumptions regarding the error term, ε_{ikt} , can be summarized as follows: it is composed of two terms, of which the first, μ_{ik} , represents an unobserved individual specific and time-invariant effect and the second, V_{ikt} , represents a white-noise error term. The last term is assumed to be serially uncorrelated and to follow a Type I extreme value distribution.¹⁶ The vectors β_k^l $l=1, \dots, 6$ contain parameters to be estimated, and for identification purposes, we normalize β_1^l $l=1, \dots, 6$ and μ_{i1} to zero. Given the distribution assumptions of V_{ikt} , the probability of observing individual i in state k at time t ($t > 1$), conditional on X_{it} , L_{it} , Z_{it} , I_i and μ_{ik} , can be written as:

$$P_t(k_t | \mu) = \frac{\exp(X_{it}\beta_k^1 + L_{it}\beta_k^2 + Z_{it}\beta_k^3 + I_i\beta_k^4 + L_{it} * I_i\beta_k^5 + Z_{it} * I_i\beta_k^6 + \mu_{ik})}{\sum_{s=1}^3 \exp(X_{it}\beta_s^1 + L_{it}\beta_s^2 + Z_{it}\beta_s^3 + I_i\beta_s^4 + L_{it} * I_i\beta_s^5 + Z_{it} * I_i\beta_s^6 + \mu_{is})}$$

Because the state in which a person is initially observed may be endogenous, we adopt a procedure similar to that suggested by Heckman (1981). For the initial period the individual is observed ($t=1$), we estimate a static multinomial logit model including X_{i1} , L_{i1} and I_i as control variables. This procedure approximates the initial conditions for the model, and Heckman (1981) reports that this approximation, in a binary choice model, performs well and that the procedure leads to only a small asymptotic bias. Specifically, let the value, for individual i , of belonging to state k at the initial period ($t=1$) be specified as:

$$V_{ik1} = X_{i1}\theta_k^1 + L_{i1}\theta_k^2 + I_i\theta_k^3 + L_{i1} * I_i\theta_k^4 + \varepsilon_{ik1}$$

where,

$$\varepsilon_{ik1} = \eta_{ik} + v_{ik1}$$

¹⁶ Note however that the permanent factor, μ , allows for a particular form of serial correlation in ε .

and θ_k^l $l=1, \dots, 4$ are parameters to be estimated. As earlier, we assume that v_{ik1} follows a Type I extreme value distribution, and we normalize θ_1^l $l=1, \dots, 4$ and η_{i1} to zero. The probability of observing individual i in state k in the first period, conditional on X_{i1} , L_{i1} , I_i and η_{ik} , can be written as:

$$P_1(k_1 | \eta) = \frac{\exp(X_{i1}\theta_k^1 + L_{i1}\theta_k^2 + I_i\theta_k^3 + L_{i1} * I_i\theta_k^4 + \eta_{ik})}{\sum_{s=1}^3 \exp(X_{i1}\theta_s^1 + L_{i1}\theta_s^2 + I_i\theta_s^3 + L_{i1} * I_i\theta_s^4 + \eta_{is})}$$

The unobserved individual specific effects, η_{ik} , are assumed to be correlated with μ_{ik} , and they can be identified through serial correlation in \mathcal{E}_{ikt} . It is straightforward to estimate the model with maximum likelihood techniques. The likelihood contribution for individual i , with observed states k_1, k_2, \dots, k_T , given observed characteristics and unobserved heterogeneity, can be written as:

$$L_i(\vartheta_i) = \prod_{t=1}^T P_t(k_t | \vartheta_i)$$

where ϑ_i is a vector with μ_{ik} and η_{ik} as elements. However, as ϑ_i is not observed, we have to integrate out this term from the above likelihood to obtain the unconditional likelihood function. To do this, we need to specify a distribution for ϑ_i . In this paper, we follow Heckman and Singer (1984), and assume that the probability distribution of ϑ_i can be approximated by a discrete distribution with a finite number (M) of support points. In this case, integration is replaced by a summation over the number of supports for the distribution of ϑ_i . Associated with each support point is a probability, π_m , where $\sum_{m=1}^M \pi_m = 1$ and $\pi_m \geq 0$. To be specific, we assume that there are M types of individuals and that each individual is endowed with a set of unobserved characteristics, ϑ_i^m (consisting of μ_{ik}^m and η_{ik}^m for $k=1,2,3$), for $m=1, \dots, M$. This implies that the unconditional contribution to the log-likelihood function for individual i is given by:

$$\log L_i = \log \sum_{m=1}^M \pi_m L(\vartheta_i^m)$$

We report estimates based on models where $M=4$. We used the Akaike Information Criterion to compare models with different M , since standard likelihood ratio tests are not appropriate.¹⁷

8. Empirical Results

In this section, we report results from maximizing the likelihood function above. Because of the non-linear nature of the model, the magnitudes of the coefficient estimates provide little information about the size of the effects of the observable characteristics. Therefore, instead of discussing the coefficient estimates, which are reported in Table A1 in the Appendix, we will focus our presentation on the transition probabilities, source of observed state dependence and predicted steady-state participation rates. The predicted transition probabilities are evaluated at the corresponding sample means and are based on the estimates reported in Table A1.

However, before discussing transition probabilities and long-term participation rates, we note that the effects of education and family composition have the expected signs. An interesting result is that the effects of the social assistance norm and local unemployment rate are positive and significant, implying that, everything else held constant, welfare participation rates are higher in municipalities where the norm and the unemployment rate are relatively high. Non-refugee immigrants are less sensitive to variation in the benefit levels than natives while the opposite appears to hold for refugee immigrants. Furthermore, our results indicate that welfare participation among natives and refugee immigrants is positively associated with the unemployment rate at time of entry in the labor market. However, for immigrants from non-refugee countries, the effect of unemployment rate at time of entry in the labor market on current welfare participation is negative.¹⁸

In Table 6 we present the predicted transition matrices separately for natives, Nordic immigrants, non-refugee immigrants and refugee immigrants. The entries in the

¹⁷ In a recent paper, Chay and Hyslop (1998) estimate dynamic models of welfare use and labor force participation and find that the results regarding state dependence are not very sensitive to different distributional assumptions with respect to the unobserved heterogeneity.

top panel (Panel A) refer to a restricted specification that ignores the issue of unobserved heterogeneity and endogenous initial conditions (presented as Model 1 in Table A1). In the lower panel of Table 6 (Panel B), we present results based on estimates from a general model that attempts to control for these matters (presented as Model 2 in Table A1).

The entries in Panel A show that natives display similar state dependence in welfare and unemployment as immigrants from non-refugee countries, but significantly lower than refugees. Moreover, the lower welfare participation rates among natives compared to immigrants, as shown in Table 2, are due to both lower inflow rates and higher outflow rates. As expected, when controls for endogenous initial conditions and unobserved heterogeneity are incorporated in the model, we find a substantial reduction in the estimated state dependences for all groups.¹⁹ The estimated decline in welfare persistence moving from Panel A to Panel B is greatest for natives. The probability that a native will remain in the welfare state in two consecutive years decreased from 0.642 in Model 1 to 0.202 in Model 2.

The transition probabilities that are reported in Table 6 can be used to decompose the estimated state dependence into structural and spurious state dependence. The results from this decomposition are presented in Table 7. For natives, we find that 69 percent of the welfare persistence is spurious and due to unobserved heterogeneity. For Nordic and non-refugee immigrants we find similar results. About 66 and 63 percent of the welfare persistence is spurious among Nordic and non-refugee immigrants, respectively. This suggests that the majority of the observed serial persistence among these immigrant groups and natives is due to time invariant heterogeneity. However, the results are strikingly different for refugee immigrants. We estimate that only 32 percent of the welfare persistence among refugees is spurious. These results are important in analyzing the existence of a “welfare trap”. Our findings indicate that such a trap does exist and that it is considerably larger for refugee immigrants than for natives and other immigrant groups. We will now turn to a discussion of the reasons for these differences.

¹⁸ A possible explanation for this is that a large fraction of non-refugee immigrants in our sample are labor migrants who may have been hired by Swedish employers prior to arriving in Sweden.

¹⁹ A similar reduction in serial persistence when unobserved heterogeneity is incorporated is reported in Chay and Hyslop (1998).

The finding that welfare dependence among natives is spurious, while structural among refugee immigrants, suggests two possible explanations; labor market discrimination and differences in preferences. This appears to imply that native welfare recipients have stronger preferences for welfare participation than refugee recipients, since it is hard to argue that native born Swedes would face more discrimination than refugee immigrants. One implication of this is that a change in the welfare benefit structure is not likely to lower participation as significantly among natives as among refugees. It also suggests that immigrants from refugee countries may be more susceptible to changes in the welfare programs and in work opportunities. Policies directed at getting people off welfare, such as training programs, are more likely to be successful among the refugee population than among the native population.

The results also help explain why we observe higher welfare participation rates among refugee immigrants than other groups, even after several years in the country (Hansen and Lofstrom, 1999). The current policy in Sweden implies a division of the integration process of refugee immigrants into two periods. Before integration into the labor market starts, an introductory period takes place in which the immigrant participates in Swedish language courses. During this period, refugees are introduced and supported by welfare. Given the finding that the observed state dependence among refugees is mainly structural (i.e. the probability of welfare receipt in the previous period directly affects current welfare participation) and the policy of initial support of refugees through welfare, we would expect higher welfare participation for a period of time.

Table 7 also reports the long-run state occupancy probabilities. These are obtained using the transition probabilities presented in Panel B of Table 6.²⁰ These probabilities show the fraction of the population that would occupy each state if the estimated transition matrix applied to transition rates indefinitely. For natives, the steady-state welfare participation rate is 2.1 percent while for Nordic and non-refugee immigrants it is close to 3 percent. The long-run welfare participation rate is significantly higher for

²⁰ The long-run state occupancy probabilities (\mathbf{q}) can be obtained by solving $\mathbf{q}=\mathbf{P}'\mathbf{q}$, where \mathbf{P} is the transition matrix, subject to the constraint that \mathbf{q} must sum to 1, see Amemiya (1985). This derivation of \mathbf{q} is only valid as long as \mathbf{P} is stationary. In this paper, \mathbf{P} is not stationary and the reported \mathbf{q} should be regarded as approximations of the true long-run state occupancy probabilities.

refugees, 19.7 percent. However, these rates are substantially lower than the observed welfare participation rates that were reported in Table 2. This is in line with the result found above that a large fraction of the welfare persistence, especially among natives and Nordic and non-refugee immigrants, is “spurious” and due to unobserved heterogeneity.

It may be the case that some of the difference in welfare utilization and serial persistence in welfare use between natives and, in particular, refugee immigrants is due to differences in observed characteristics. For example, Table 1 showed that immigrants in Sweden are less likely to be high school graduates and slightly more likely to have a university degree than natives. Thus, a larger fraction of immigrants than natives has less than a high school degree. To test if this difference, as well as differences in other characteristics, can explain the difference in welfare utilization and serial persistence in welfare use, we predicted transition matrices for all immigrants groups using the mean characteristics of the native population. The results are presented in Table 8 and show that differences in observed characteristics can explain only a very small fraction of the observed difference in welfare use. The fraction of the welfare state dependence that is attributed to structural reasons and the steady-state welfare participation rates remain virtually unchanged for all immigrant groups. This suggests that the differences in welfare use between natives and immigrants are mainly due to differences in unobserved characteristics, including differences in labor market preferences.

In an attempt to explore the robustness of our results, we re-estimated the two models presented above, with and without controls for unobserved heterogeneity, using a different definition of the welfare state. In the above analysis, a person belongs to the welfare state if he or she received social assistance for at least one month during the year. This definition is arguably ad-hoc, and to verify that our results are not driven by this way of defining the welfare state, we estimated models where persons belong to the welfare state if they received social assistance for at least *three* months during the year. Moreover, from the results above we see that refugees are significantly different from natives and other immigrant groups in their labor market behavior. As a considerable fraction of refugee immigrants arrived in Sweden in the 1990s, our results may, to some extent, be determined by the composition of our refugee sample. To test this, we re-

estimated the models above on a sub-sample that excludes all immigrants that arrived in Sweden during the 1990s.

The results from the sensitivity analysis are found in Table 9. This table shows the proportion of state dependence that is attributed to structural and spurious reasons as well as steady-state participation rates. When we use the alternative definition of the welfare state, we find that the proportions of the state dependence in welfare that is spurious are close to what we reported in Table 7 for all groups. The largest differences are found for refugees, 61 percent using the alternative definition and 68 percent when using the original definition, and natives, 26 and 31 percent respectively. Regarding the steady-state welfare participation rates, we find, as expected, that the rates are lower using the new definition for all groups. Again, the differences are largest for refugee immigrants and natives.

Using the sub-sample that excludes all immigrants who arrived in Sweden during the 1990's, we find that the proportion of the state dependence in welfare that is spurious is very similar to the values in Table 7. Thus, it appears that the result of a considerably larger structural state dependence, and existence of a welfare trap, among refugee immigrants is not due to the large inflow of refugee immigrants in the 1990's. Furthermore, the estimated steady-state participation rates are virtually identical to those reported in Table 7. Overall, our results appear quite robust towards how we define the labor market states and they also appear to be insensitive towards the composition of our refugee sample.

9. Summary and Conclusions

This paper analyzes transitions into and out of 3 different labor market states, social assistance, unemployment and employment, in Sweden. We use data from a large representative Swedish panel data set, LINDA, for the years 1990 to 1996, to investigate if there are differences in transition probabilities between immigrants and natives. The unadjusted data indicates that immigrants are more likely to receive both social assistance and unemployment compensation than natives are. Furthermore, immigrants appear to be less likely to remain employed in consecutive years than natives and more likely to stay

on welfare and to receive unemployment insurance in a year, given participation in the previous year. The raw data also suggest that immigrants have a more difficult time moving into employment than natives. We find evidence of substantial differences between immigrants from refugee countries and natives, but smaller differences between non-refugee and Nordic immigrants and natives. Also, there seem to be only small differences between non-refugee immigrants and Nordic immigrants in terms of both transfer program participation and changes across welfare and labor market states.

Central to the welfare debate is the issue of an existence of a “welfare trap”. If welfare utilization has an addictive effect, and current program participation directly impacts future probability of program utilization, high participation rates may be, at least partially, remedied by changes in welfare program parameters, including benefit levels. The success of welfare reform is more questionable if instead observed serial persistence is due to “spurious” state dependence. In this case, permanent unobserved heterogeneity across individuals is the source of the state dependence. To separate between these sources of state dependence we estimate several dynamic multinomial logit models, including a model that controls for both endogenous initial condition and unobserved heterogeneity. The model also allows us to investigate differences in state dependence between immigrants and natives.

The empirical results suggest that immigrants display a greater degree of state dependence than natives. Furthermore, transfer program participation persistence appears to be less among immigrants from Nordic and non-refugee countries than among other immigrants. Our results also indicate that the source of the state dependence differ across immigrants and natives. In particular, refugee immigrant utilization persistence stems to a greater extent from the “addictive” incentive effects of welfare participation than it does among natives. Consequently, state dependence among natives appears to be due to unobserved heterogeneity, possibly in welfare preferences, to a greater extent than it is among immigrants from refugee countries. This implies that the composition of the immigrant and native welfare population is different. The high welfare participation rates among refugee immigrants seem to be due to the existence of a “welfare trap” while participation among natives is due to a relatively greater extent permanent unobserved heterogeneity, possibly in preferences.

These results suggest that changes in government transfer program eligibility levels and rules will have differential effects on immigrants and natives. Programs aimed at assisting labor market entry or re-entry are more likely to be successful among the refugee immigrant population than among the native population. The results also imply that changes in the welfare program, such as a lowering of benefits levels, are likely to reduce participation to a greater extent among immigrants from refugee countries than among natives.

References

- Amemiya, Takeshi, *Advanced Econometrics*, Harvard University Press, Cambridge, 1985.
- Bauer, Thomas, Lofstrom, Magnus and Zimmermann, Klaus F., "Immigration Policy, Assimilation of Immigrants, and Natives' Sentiments towards Immigrants: Evidence from 12 OECD Countries," *Swedish Economic Policy Review*, 7(2), 2000, 11-53.
- Blank, Rebecca M. "Analyzing the Length of Welfare Spells," *Journal of Public Economics*, 39(3), 1989, 245-273.
- Blank, Rebecca M. and Patricia Ruggles "When Do Women Use Aid to Families with Dependent Children and Food Stamps? The Dynamics of Eligibility versus Participation," *Journal of Human Resources*, 31(1), 1996, 57-89.
- Borjas, George J, *Heaven's Door – Immigration Policy and the American Economy*, Princeton University Press, Princeton, 1999.
- Borjas, George J. and Hilton, Lynette, "Immigration and the Welfare State: Immigrant Participation in means-tested Entitlement Programs", *Quarterly Journal of Economics* 111(2), 1996, 575-604.
- Chay, Kenneth Y and Hyslop, Dean. "Identification and Estimation of Dynamic Binary Response Panel Data Models: Empirical Evidence using Alternative Approaches," Center for Labor Economics, UC Berkeley, WP No 5, October 1998.
- Edin, Per-Anders, LaLonde, Robert J. and Aslund, Olof, "Emigration of Immigrants and Measures of Immigrant Assimilation: Evidence from Sweden," *Swedish Economic Policy Review*, 7(2), 2000, 163-204.
- Edin, Per-Anders and Fredriksson, Peter, "LINDA-Longitudinal Individual Data for Sweden," Working Paper, Uppsala University, Department of Economics, 2000.
- Engberg, John, Peter Gottschalk and Douglas A. Wolf "A Random-Effects Logit Model of Work-Welfare Transitions," *Journal of Econometrics*, 43(1), 1990, 63-75.
- Fitzgerald, John "Welfare Durations and the Marriage Market: Evidence from the Survey of Income and Program Participation," *Journal of Human Resources*, 26(3), 1991, 545-561.
- Hansen, Jorgen and Lofstrom, Magnus "Immigrant Assimilation and Welfare Participation: Do Immigrants Assimilate Into or Out-of Welfare?" *IZA Discussion Paper* No. 100, December 1999.

- Heckman, James “The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Time-Discrete Data Stochastic Process,” in *Structural Analysis of Discrete Data with Econometric Applications*, eds. Manski, C. and D. McFadden, MIT Press, London, 1981, 114-179.
- Heckman, James and Singer, Burton “A Method for Minimizing the Impact of Distributional Assumption in Econometric Models for Duration Data,” *Econometrica*, March, 1984, 271-320.
- Hoynes, Hilary W. “Local Labor Markets and Welfare Spells: Do Demand Conditions Matter?,” *Review of Economics and Statistics*, 82(3), 2000, 351-368.
- Hutchens, Robert M. “Entry and Exit Transitions in a Government Transfer Program: The Case of Aid to Families with Dependent Children,” *Journal of Human Resources*, 16(2), 1981, 217-237.
- Hyslop, Dean R., "State Dependence, Serial Correlation and Heterogeneity in Intertemporal Labor Force Participation of Married Women," *Econometrica*, 67(6), 1999, 1255-1294.
- Meyer, Daniel R. “Child Support and Welfare Dynamics: Evidence from Wisconsin,” *Demography*, 30(1), 1993, 45-62.
- O’Neill, June A., Laurie J. Bassi and Douglas A. Wolf “The Duration of Welfare Spells,” *Review of Economics and Statistics*, 69, 1987, 241-249.
- Plant, Mark W., “An Empirical Analysis of Welfare Dependence,” *American Economic Review*, 74(4), 1984, 673-684.
- Plotnick, Robert “Turnover in the AFDC Population: An Event History Analysis,” *Journal of Human Resources*, 18(1), 1983, 65-81.
- Riphahn, Regina T. “Immigrant Participation in Social Assistance Programs: Evidence from German Guestworkers,” *IZA Discussion Paper* No. 15, July 1998.
- SOPEMI: *Trends in International Migration*, 1998, Paris: OECD.

Table 1.
Comparative Characteristics and Measures, Immigrants and Natives,
Sweden and the U.S., 1994-95.

	Sweden	U.S.	Sweden	U.S.	Sweden	U.S.
	Welfare		Unemployment		Employment	
Natives	0.054	0.099	0.151	0.047	0.795	0.797
Immigrants:						
Non-Refugee Country	0.124	0.131	0.192	0.075	0.684	0.767
Refugee Country	0.319	0.210	0.266	0.073	0.416	0.706
Ratio						
Non-Refugee/Natives	2.292	1.316	1.271	1.603	0.861	0.963
Refugee/Natives	5.889	2.116	1.759	1.560	0.523	0.886
	Annual Earnings		High School		College	
Natives	SEK 189,605	\$30,897	0.729	0.877	0.112	0.266
Immigrants:						
Non-Refugee Country	SEK 182,606	\$26,001	0.661	0.658	0.116	0.279
Refugee Country	SEK 158,956	\$26,457	0.614	0.732	0.127	0.231
Ratio						
Non-Refugee/Natives	0.963	0.842	0.907	0.750	1.041	1.051
Refugee/Natives	0.838	0.856	0.842	0.834	1.138	0.869

Note: Data used for Sweden are from Longitudinal Individual Data for Sweden (LINDA) and for the U.S. March Current Population Survey. The figures are means for 1994-95, the years before the 1996 U.S. welfare reform. The U.S. welfare measure refers to participation in AFDC or the food stamp program.

Table 2.
Observed Unconditional State Probabilities, 1990-96,
by Year and Immigrant Group.

Group:	Natives	Immigrants		
		Non-Refugee	Nordic	Refugee
		Welfare		
Period 1990-96	0.049	0.127	0.109	0.297
1990	0.036	0.088	0.098	0.178
1991	0.041	0.101	0.106	0.228
1992	0.048	0.116	0.112	0.262
1993	0.056	0.131	0.119	0.294
1994	0.055	0.140	0.117	0.315
1995	0.053	0.139	0.105	0.322
1996	0.055	0.147	0.104	0.358
		Unemployment		
Period 1990-96	0.106	0.156	0.136	0.216
1990	0.027	0.040	0.039	0.057
1991	0.044	0.066	0.065	0.104
1992	0.086	0.115	0.114	0.166
1993	0.146	0.190	0.171	0.250
1994	0.156	0.205	0.184	0.266
1995	0.146	0.211	0.174	0.266
1996	0.136	0.195	0.167	0.244
		Employment		
Period 1990-96	0.845	0.718	0.755	0.487
1990	0.937	0.871	0.863	0.765
1991	0.914	0.832	0.829	0.668
1992	0.867	0.769	0.774	0.572
1993	0.798	0.678	0.709	0.456
1994	0.789	0.656	0.699	0.419
1995	0.801	0.650	0.721	0.412
1996	0.808	0.658	0.729	0.398

Note: Source: LINDA 1990-1996.

Table 3.
Transition Matrices, Conditional Probabilities of Leaving Previous Year's State
for the Period 1990-96, by Immigrant Group.

State at Time t	State at Time $t+1$:			State at Time t:	State at Time $t+1$:		
	<u>Natives</u>				<u>Non-Refugee Immigrants</u>		
	Welfare	Unemployment	Employment		Welfare	Unemployment	Employment
Welfare	0.651	0.143	0.206	Welfare	0.719	0.129	0.152
Unemployment	0.047	0.703	0.249	Unemployment	0.083	0.711	0.206
Employment	0.012	0.047	0.941	Employment	0.026	0.065	0.908
	<u>Nordic Immigrants</u>				<u>Refugee Immigrants</u>		
	Welfare	Unemployment	Employment		Welfare	Unemployment	Employment
Welfare	0.700	0.121	0.179	Welfare	0.797	0.106	0.097
Unemployment	0.077	0.709	0.214	Unemployment	0.112	0.729	0.158
Employment	0.026	0.056	0.918	Employment	0.046	0.101	0.853

Note: Source: LINDA 1990-1996.

Table 4.
Distribution of Welfare and Labor Market Spells 1990-96, by Immigrant Group.

	Natives	Nordic Immigrants	Non-Refugee Immigrants	Refugee Immigrants
Number of Welfare Spells				
None	0.904	0.799	0.802	0.666
One or Two	0.057	0.105	0.109	0.157
Three or four	0.021	0.049	0.049	0.085
Five or Six	0.013	0.031	0.028	0.052
Seven (Entire Period)	0.005	0.015	0.013	0.040
Number of Unemployment Spells				
None	0.772	0.735	0.732	0.641
One or Two	0.116	0.133	0.136	0.175
Three or four	0.077	0.083	0.088	0.119
Five or Six	0.031	0.041	0.037	0.006
Seven (Entire Period)	0.004	0.008	0.006	0.006
Number of Employment Spells				
None	0.058	0.111	0.148	0.174
One or Two	0.077	0.116	0.139	0.188
Three or four	0.114	0.132	0.154	0.178
Five or Six	0.146	0.145	0.152	0.151
Seven (Entire Period)	0.605	0.496	0.408	0.308
Number of Households	121,761	15,852	10,452	10,750

Note: Source: LINDA 1990-1996.

**Table 5.
Mean Characteristics by Previous Year's State, 1990-96.**

	State at t:	Welfare			Unemployment			Employment		
	State at t+1:	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment
Age		33.86	30.82	33.62	31.99	36.85	33.83	33.60	35.32	41.85
Elementary School		0.47	0.35	0.35	0.37	0.31	0.24	0.37	0.29	0.27
High School		0.50	0.62	0.61	0.61	0.65	0.68	0.60	0.65	0.60
College		0.03	0.03	0.05	0.02	0.05	0.08	0.03	0.06	0.13
Female		0.44	0.43	0.49	0.43	0.44	0.48	0.49	0.49	0.48
Single		0.83	0.82	0.12	0.82	0.57	0.56	0.76	0.54	0.38
Number of Children		0.64	0.48	0.68	0.55	0.53	0.63	0.73	0.59	0.68
Major City		0.44	0.34	0.45	0.34	0.28	0.32	0.45	0.32	0.38
Social Assistance Norm		5,021	4,703	5,323	4,836	5,344	5,531	5,509	5,673	6,230
County Unemployment Rate (%)		7.05	7.59	6.51	7.71	7.91	7.59	6.31	7.04	6.54
County Avg. Earnings Growth (%)		-2.94	-2.74	-3.55	-2.08	-1.91	-1.37	-4.52	-3.96	-3.76
Number of Observations		70,717	12,029	14,744	8,702	90,652	28,294	14,437	45,054	785,147

Note: Source: LINDA 1990-1996.

Table 6.
Transition Matrices, Predicted Conditional Probabilities of Leaving
Previous Year's State for the Period 1990-96, by Immigrant Group.

Panel A: No Control for Initial Condition and Unobserved Heterogeneity (Model 1)							
State at Time t:	State at Time $t+1$:			State at Time t:	State at Time $t+1$:		
	<u>Natives</u>				<u>Non-Refugee Immigrants</u>		
	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment	
Welfare	0.642	0.131	0.226	Welfare	0.635	0.161	0.203
Unemployment	0.051	0.725	0.224	Unemployment	0.053	0.706	0.241
Employment	0.010	0.038	0.952	Employment	0.013	0.053	0.935
	<u>Nordic Immigrants</u>			<u>Refugee Immigrants</u>			
	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment	
Welfare	0.643	0.134	0.223	Welfare	0.774	0.120	0.106
Unemployment	0.059	0.669	0.272	Unemployment	0.106	0.759	0.135
Employment	0.013	0.045	0.942	Employment	0.046	0.093	0.861

Panel B: Control for Initial Condition and Unobserved Heterogeneity (Model 2)							
State at Time t:	State at Time $t+1$:			State at Time t:	State at Time $t+1$:		
	<u>Natives</u>				<u>Non-Refugee Immigrants</u>		
	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment	
Welfare	0.202	0.078	0.720	Welfare	0.237	0.104	0.659
Unemployment	0.052	0.236	0.712	Unemployment	0.058	0.257	0.685
Employment	0.016	0.014	0.969	Employment	0.022	0.023	0.955
	<u>Nordic Immigrants</u>			<u>Refugee Immigrants</u>			
	Welfare	Unemployment	Employment	Welfare	Unemployment	Employment	
Welfare	0.220	0.071	0.709	Welfare	0.527	0.139	0.334
Unemployment	0.059	0.211	0.729	Unemployment	0.164	0.438	0.397
Employment	0.021	0.017	0.961	Employment	0.108	0.053	0.839

Note: Calculations are based on estimates presented in Table A1.

Table 7.
State Dependence and Steady-State Participation Rates for the Period
1990-96, by Immigrant Group.

Structural vs. Spurious State Dependence in Welfare and Unemployment

	Labor Market State:			
	Welfare		Unemployment	
	Proportion of State Dependence		Proportion of State Dependence	
	Structural	Spurious	Structural	Spurious
Natives	0.314	0.686	0.326	0.674
Nordic Immigrants	0.341	0.659	0.316	0.684
Non-Refugee Immigrants	0.373	0.627	0.363	0.637
Refugee Immigrants	0.681	0.319	0.577	0.423

Steady-State Participation Rates

	Labor Market State:		
	Welfare	Unemployment	Employment
Natives	0.021	0.020	0.959
Nordic Immigrants	0.028	0.024	0.949
Non-Refugee Immigrants	0.030	0.033	0.937
Refugee Immigrants	0.197	0.113	0.689

Note: Calculations are based on the transition matrices presented in Panel B in Table 6.

Table 8.
State Dependence and Steady-State Participation Rates for the Period
1990-96, by Immigrant Group. Using Native's Characteristics for all
Immigrant Groups.

Structural vs. Spurious State Dependence in Welfare and Unemployment

	Labor Market State:			
	Welfare		Unemployment	
	Proportion of State Dependence		Proportion of State Dependence	
	Structural	Spurious	Structural	Spurious
Natives	0.314	0.686	0.326	0.674
Nordic Immigrants	0.353	0.647	0.334	0.666
Non-Refugee Immigrants	0.398	0.602	0.400	0.600
Refugee Immigrants	0.716	0.284	0.596	0.404

Steady-State Participation Rates

	Labor Market State:		
	Welfare	Unemployment	Employment
Natives	0.021	0.020	0.959
Nordic Immigrants	0.024	0.023	0.954
Non-Refugee Immigrants	0.032	0.035	0.933
Refugee Immigrants	0.203	0.115	0.682

Note: Calculations are based on the transition matrices presented in Panel B in Table 6.

Table 9.
State Dependence and Steady-State Participation Rates for the Period
1990-96, by Immigrant Group. Alternative Specifications.

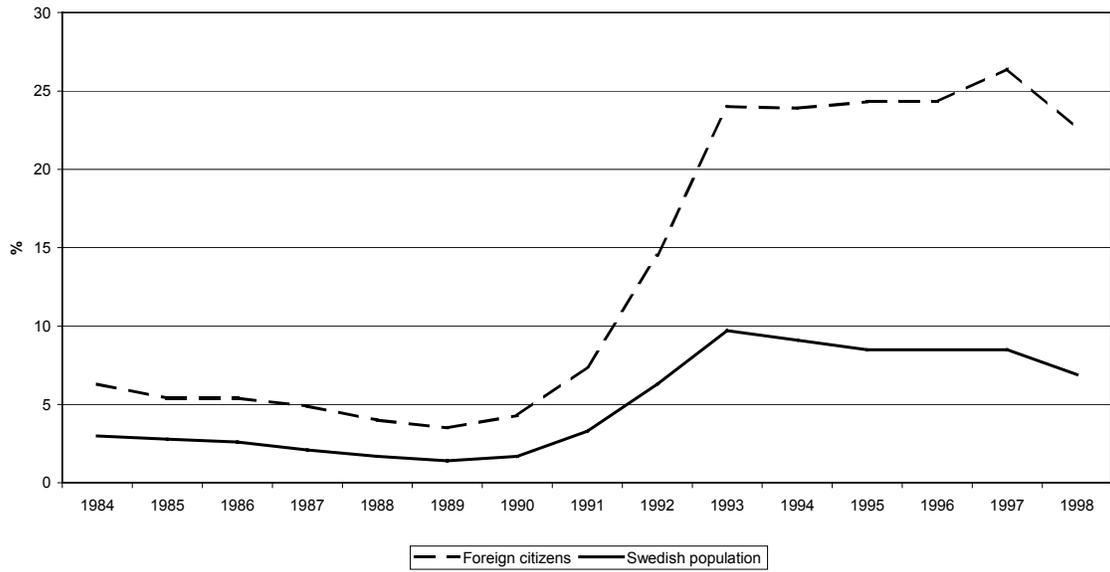
Structural vs. Spurious State Dependence in Welfare and Unemployment				
	Labor Market State:			
	Welfare		Unemployment	
	Proportion of State Dependence		Proportion of State Dependence	
	Structural	Spurious	Structural	Spurious
Welfare Definition: Received Welfare at least <i>three</i> months				
Natives	0.257	0.743	0.306	0.694
Nordic Immigrants	0.350	0.650	0.300	0.700
Non-Refugee Immigrants	0.365	0.635	0.342	0.658
Refugee Immigrants	0.609	0.391	0.557	0.443
Sample Excluding Immigrants who Arrived after 1989				
Natives	0.299	0.701	0.336	0.664
Nordic Immigrants	0.310	0.690	0.333	0.667
Non-Refugee Immigrants	0.329	0.671	0.367	0.633
Refugee Immigrants	0.643	0.357	0.610	0.390

Steady-State Participation Rates

	Labor Market State:		
	Welfare	Unemployment	Employment
	Welfare Definition: Received Welfare at least <i>three</i> months		
Natives	0.012	0.023	0.966
Nordic Immigrants	0.023	0.028	0.949
Non-Refugee Immigrants	0.024	0.037	0.939
Refugee Immigrants	0.104	0.118	0.778
Sample Excluding Immigrants who Arrived after 1989			
Natives	0.020	0.021	0.959
Nordic Immigrants	0.027	0.026	0.947
Non-Refugee Immigrants	0.028	0.034	0.938
Refugee Immigrants	0.203	0.115	0.682

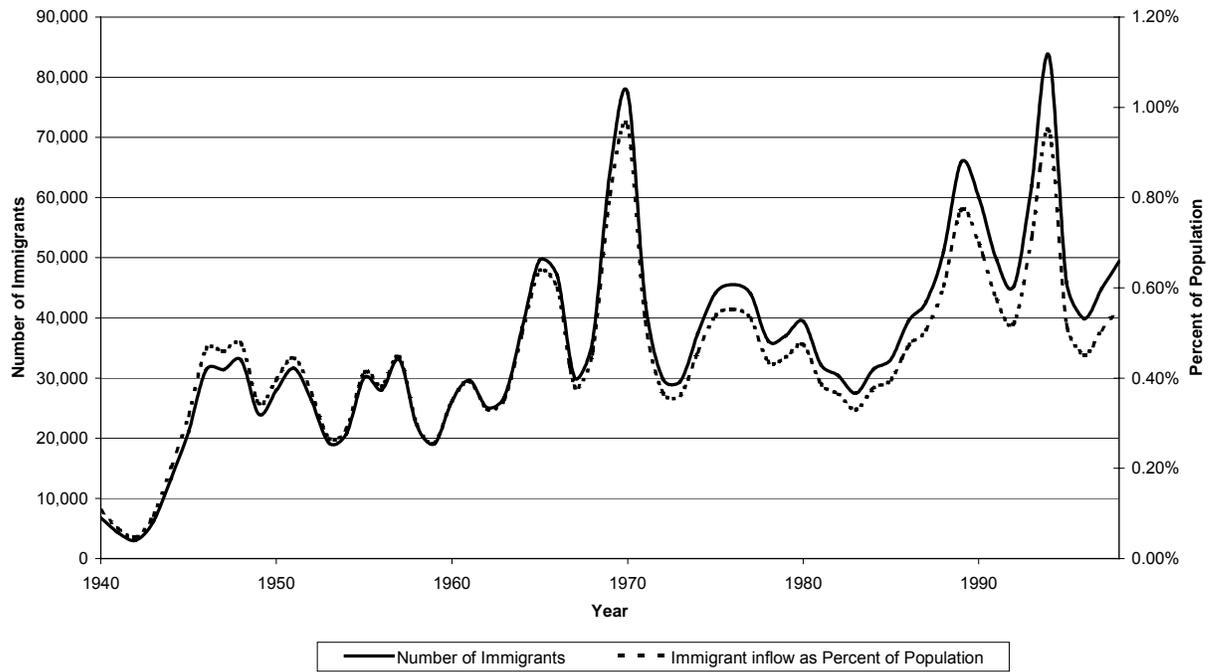
Note: For steady-state participation rates, calculations are based on estimates from models that control for both unobserved heterogeneity and endogenous initial conditions. The model specifications are identical to the ones presented in Table A1.

Figure 1. Average annual unemployment rates 1984-1998. Males and females aged 16-64.



Sources: Labor Force Surveys by Statistics Sweden, 1984-1998.

Figure 2. Immigration into Sweden, Annual Inflow and Proportion of Population, 1940-1998.



Source: Statistics Sweden, Historical Population Development Table, 1999.

Appendix:

**Table A1.
Dynamic Multinomial Logit Models of Labor Market State Probabilities**

	Model 1		Model 2	
	Welfare	Unemploy- ment	Welfare	Unemploy- ment
Individual Characteristics:				
Age	-0.015 (0.004)	-0.024 (0.003)	-0.034 (0.005)	-0.044 (0.003)
High School	-0.356 (0.053)	-0.021 (0.040)	-0.619 (0.080)	-0.060 (0.057)
College	-1.215 (0.044)	-0.576 (0.072)	-1.970 (0.103)	-0.872 (0.089)
Single	1.261 (0.138)	0.107 (0.133)	1.833 (0.116)	0.374 (0.073)
Children	0.096 (0.117)	-0.037 (0.115)	0.134 (0.092)	-0.181 (0.064)
Years Since Migration	-0.076 (0.021)	-0.025 (0.014)	-0.172 (0.024)	-0.073 (0.018)
Immigrant: Nordic Country	-0.045 (0.101)	-0.183 (0.079)	-0.175 (0.098)	-0.270 (0.099)
Immigrant: Non-Refugee Country	3.949 (0.673)	1.651 (0.837)	6.670 (0.530)	2.666 (0.442)
Immigrant: Refugee Country	-2.885 (0.871)	-0.746 (0.576)	-3.025 (0.859)	-0.872 (0.555)
State Dependence:				
Received Welfare Previous Year	4.826 (0.083)	2.260 (0.076)	2.702 (0.111)	1.482 (0.102)
Received Unemployment Previous Year	2.698 (0.096)	4.052 (0.053)	1.841 (0.101)	2.920 (0.073)
<i>Immigrant: Non-Refugee Country interacted with:</i>				
Received Welfare Previous Year	-0.230 (0.118)	-0.021 (0.100)	-0.188 (0.096)	-0.137 (0.089)
Received Unemployment Previous Year	-0.192 (0.131)	-0.382 (0.081)	-0.154 (0.090)	-0.321 (0.082)
<i>Immigrant: Refugee Country interacted with:</i>				
Received Welfare Previous Year	-0.285 (0.130)	-0.234 (0.106)	0.120 (0.107)	-0.113 (0.092)
Received Unemployment Previous Year	-0.097 (0.148)	0.023 (0.092)	0.112 (0.101)	0.314 (0.085)

Continued...

Table A1 Continued:

	Model 1		Model 2	
	Welfare	Unemploy- ment	Welfare	Unemploy- ment
Local Labor Market Variables:				
Social Assistance Norm	0.062 (0.055)	-0.036 (0.056)	0.089 (0.043)	0.007 (0.028)
Local Unemployment Rate	0.078 (0.039)	0.145 (0.016)	0.099 (0.024)	0.173 (0.020)
Local Annual Earnings Growth	-0.026 (0.025)	0.017 (0.015)	-0.013 (0.013)	0.009 (0.010)
<i>Immigrant: Non-Refugee Country interacted with:</i>				
Social Assistance Norm	-0.040 (0.023)	0.014 (0.016)	-0.094 (0.030)	0.025 (0.022)
Local Unemployment Rate	-0.021 (0.031)	0.014 (0.026)	0.054 (0.031)	0.065 (0.024)
Local Annual Earnings Growth	0.014 (0.015)	0.016 (0.011)	0.034 (0.017)	0.028 (0.012)
<i>Immigrant: Refugee Country interacted with:</i>				
Social Assistance Norm	0.064 (0.023)	0.016 (0.020)	0.141 (0.034)	0.045 (0.026)
Local Unemployment Rate	0.047 (0.035)	-0.008 (0.034)	0.012 (0.035)	-0.023 (0.030)
Local Annual Earnings Growth	0.020 (0.017)	0.009 (0.014)	0.034 (0.019)	0.019 (0.015)
Conditions at Time of Entry in the Labor Market:				
Unemployment Rate	0.110 (0.035)	0.013 (0.025)	0.266 (0.046)	0.030 (0.032)
GDP Growth	-0.026 (0.023)	-0.029 (0.015)	-0.100 (0.032)	-0.056 (0.021)
<i>Immigrant: Non-Refugee Country interacted with:</i>				
Unemployment Rate	-0.409 (0.132)	-0.167 (0.145)	-0.737 (0.104)	-0.302 (0.073)
GDP Growth	0.020 (0.038)	0.061 (0.029)	0.083 (0.050)	0.108 (0.039)
<i>Immigrant: Refugee Country interacted with:</i>				
Unemployment	0.509 (0.139)	0.182 (0.112)	0.717 (0.130)	0.295 (0.085)
GDP Growth	-0.001 (0.049)	-0.063 (0.043)	-0.078 (0.063)	-0.103 (0.052)
Controls for Unobserved Heterogeneity	No		Yes	
Controls for Endogenous Initial Conditions	No		Yes	
Includes Cohort Effects	Yes		Yes	
Includes Time Effects	Yes		Yes	
Includes Country Fixed Effects	Yes		Yes	
Number of observations	53,615		53,615	
Number of individuals	8,313		8,313	
Log-likelihood	-15,867		-18,545	