

# Refugees in Sweden: Economic integration and wage convergence\*

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## Abstract

This paper studies refugees' ability to assimilate into the labour market of a developed economy, Sweden. The country is not only the most refugee-friendly country in Europe in per capita terms, but it has also the most extensive set of statistics in the world for analysing unemployment, employment and wage trajectories for all immigrants. As the rich Swedish labour market data covers the entire population, refugees' status can be contrasted with various reference groups among the native population. The approach used in this paper is a comparison between different groups of refugees and natives in the same age category. We primarily consider immigrants from the Balkans during the collapse of the state of Yugoslavia in the early 1990s. As most of these refugees were members of a relatively young population, we focus on those born during the period 1954–1976, corresponding to the age interval 17–40 during the years 1993 and 1994. In the analysis, we contrast these 23 annual cohorts with their counterparts among other immigrants and native-born Swedes. The overall results show sizable heterogeneity in the process of integration depending on immigration category, occupation, education, geographical origin, industrial sector and gender.

**Keywords:** Wages, Refugees, Immigration, Heterogeneity, Selection, Panel data  
**JEL:** J15, J18, J24, J61

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# 1 Introduction

International migration to OECD countries has increased significantly over the past decades. Immigration includes migrants, students, refugees and family-related immigration. In the OECD area as a whole, international migration is expected to account for all labour force growth between 2005 and 2020 (Peri, 2009). Due to population aging, younger cohorts of the native population are too small to replace the current working age population. In this context, immigration is a key economic factor in developed countries. A major concern for the receiving country is the ability of these individuals to become well integrated in their new society and become productive members of the workforce. Unfortunately, there is weak systematic scientific evidence on the ability of economic migrants and refugees to be assimilated in the labour market. The paucity of evidence may be due to a lack of comparable statistics both across countries and within countries. To remedy the lack of systematic and comparable cross-country data, researchers rely on data from various surveys. According to one of these surveys (OECD 2014), across Europe it takes refugees 20 years to reach similar employment rates as natives. When considering the possible convergence of income from employment and entrepreneurship between natives and refugees the empirical evidence is even more scarce.

[Figure 1 here]

To provide an objective evaluation of refugees' ability to assimilate in a developed economy, we study outcomes in Sweden. Despite its modest size, Sweden has been one of the major recipients of immigrants over the past several decades. As Figure 1 illustrates, 16% of the Swedish population was foreign-born in 2014, compared to 12% in France and United Kingdom and 13% in Germany and the U.S. In 2014, Sweden had the largest share of refugees among its migrant population, corresponding to 26% of the total non-EU born population in the EU, followed by Croatia (17%) and Belgium (16%). (OECD 2014). Between 1992 and 2006 the annual count of asylum seekers per 100,000 of the population was 95 in the United Kingdom, 146 in Germany and 270 in Sweden (Hatton 2011).

[Figure 2 here]

Figure 2 shows the evolution of de facto refugees granted a residence permit in Sweden. The number of refugees that received a grant of residence under the Geneva Convention during the period 1990-2014 was 380,864, corresponding to almost 4 per cent of the Swedish population in 2014. The five largest ethnic groups were people from former Yugoslavia (98,095), Iraq (65,897), Syria (39,571), Somalia (34,552) and Afghanistan (20,790). There has been a substantial year-to-year fluctuation around the average of 16,500 people, and the composition of refugee immigrants is closely related to international crises. The two peak periods are 1993-1994 (explained by refugees coming

from former Yugoslavia), and 2011-2012 (refugees from Syria account for close to half of the refugee immigrants.) Sweden is not only the most refugee-friendly country in Europe in per capita terms, but it has also the most extensive set of statistics in the world for analysing unemployment, employment and wage trajectories for all immigrants. As the rich Swedish labour market data covers the entire population, refugees' status can be contrasted with various reference groups among the native population. The large relative number of immigrants and refugee-immigrants together with fine-grained data over many years make Sweden as an interesting test bed for the study of immigrants' integration in the labour market.

This paper studies economic integration and wage convergence among refugees in Sweden. The employment rate of first generation immigrants is 65% in Sweden, which is above the mean among 13 reasonably comparable European countries (Eurostat 2014). With the exception of Switzerland and Slovakia, in all these countries refugees have a lower employment rate than other immigrants, as shown in Figure 3.

[Figure 3 here]

The recent emergence of administrative data in many European countries offers better opportunities to analyse refugees' labour market integration. A general finding from the limited research on administrative data is that the employment gap between refugees and other immigrants in Europe can be explained by differences in education, gender, age and country of origin (e.g., Dams de Matos and Liebig, 2014). Similar factors are also important in driving the heterogeneity in wage outcomes, both within the immigrant population and within the group of refugee immigrants (Bratsberg et al., 2014). Employment and wage outcomes of refugees improve over time, but in almost all European countries this process is slow (OECD 2014). Although our main objective is to study the relative wage level of refugee immigrants, we also consider determinants of employment. Focusing on refugees that arrived to Sweden in the beginning of the 1990s and receiving asylum status in 1993 or 1994, we study their labour market integration over a period of almost two decades. In order to track the individual labour market history over the longest possible period, we limit the data to people in the age group 18-40 in 1994. Thus, most of these people were also in the labour force in 2012, the last year in our study. Our research strategy is to use three categories of reference groups, all consisting of the same cohorts of people born between 1954 and 1976 as the target population. We split the 1993-1994 refugee group into two categories: (1) European refugees outside Europe 25 and (2) non-European refugees. The former cohort consists mainly of people from the former Yugoslavia, and the latter cohort of people from the Middle East and Africa. Several reference groups are used. The first consists of 1993-1994 non-refugee immigrants from Europe outside Europe 25 (mainly family related to the refugees) and non-refugee immigrants from Middle East and Africa.

The second consists of all immigrants that arrived to Sweden before 1993. In average, people in this group arrived in the beginning of 1970. The third group is natives born between 1954 and 1976. By virtue of access to data that is almost globally unique in terms of both quantity and quality, we are able to control for a wide range of factors such as age, sex, family status, number of dependent children, education, experience, geographic location, geographic mobility, mobility between workplaces, occupational mobility, corporate industrial classification, private and public sectors, companies' ownership structure, their size and the results in terms of productivity, profitability, and wages. Applying a selection model within a general structural equation modelling (GSEM) framework, we are able to account for potential statistical challenges related to selectivity, cross-equation correlation and unobserved heterogeneity. To the best of our knowledge, this paper is among the very first to exploit both employee data and firm level data to track the employment and wage profiles of refugee immigrants over time, and to contrast the findings with corresponding information from reference groups. Using administrative register data on both firms and individuals provided by Statistics Sweden, we are able to follow every single individual and firm in Sweden over time. Thus, our study has significant potential to test results from previous studies in this field and to contribute new empirical evidence.

The remainder of this paper is organized as follows. Section 2 provides background for the study, while Section 3 provides an overview of the data, reports summary statistics and introduces our empirical approach. Section 4 presents the econometric results and Section 5 concludes.

## 2 Background

In this section we briefly review recent research on the economic impact of immigration in general, and the integration of refugees on the labour market of their host countries. The literature provides different levels and performance measures for assessing the economic impact of immigration and the efficiency of labour market integration. Due to lack of harmonized international data on migration, few reliable cross-country datasets exist. Even within countries data availability is often a sizable obstacle for analysis of the economics of migration. Recent literature suggests that migration potentially has both direct and indirect economic effects for the host country.

One important indirect factor is the impact on demographic factors because migrants tend to be more concentrated in working-age and childbearing groups compared to natives. This reduces dependency ratios, which could increase aggregate savings and ultimately result in higher total factor productivity (TFP). Another indirect impact is the potential for upward occupational mobility migration for native workers following immigrants' entrance into lower tiers of the labour market. Relatively higher-skilled natives will be able to move to more productive jobs, particularly

if language skills are an issue. In an attempt to estimate the total direct and indirect effects of immigration, Peri (2009) estimates that a one percentage-point increase in foreign-born net migration would have increased productivity growth by 0.3% per year on average for 22 OECD countries. Other studies report both smaller and larger effects, depending on their design and scope.

## 2.1 Studies on immigration using survey data or register data

Due to lack of harmonised systematic international data on immigration, many researcher rely on various cross-country surveys or national surveys. For instance, de Matos and Liebig (2014) study immigrant employment using data from the 2008 European Labour Force Surveys. The authors find that refugees and family-related immigrants employment rates are well below those of other immigrant groups, with estimated employment gaps of up to 30 percentage points when accounting for differences in education, gender, age and country. Beyer (2016) uses a large national survey data to analyse the labour market performance of immigrants in Germany. He finds that new immigrant workers earn on average 20 percent less than native workers with otherwise identical characteristics. The gap is smaller for immigrants from advanced countries, with good German language skills, and with a German degree, and larger for others. The gap declines gradually over time. Immigrants are also initially less likely to participate in the labour market and more likely to be unemployed. However, participation rates fully converge after 20 years.

A few countries, in particular in northern Europe, provide extensive register data that allow for microeconometric analysis of immigrants' interaction with the host economies. Typically, these studies focus on unemployment and employment performance. One example is Arai and Vilhelmsson (2004), who study a sample of Swedish employees in 1991, a time of deep recession in the Swedish economy. They find that unemployment risk is twice as large for non-European immigrants than for natives after controlling for employee and industry characteristics.

Analysing statistics for Norway, Bratsberg et al. (2014) shows that employment rates rise quickly the first years after admission as many refugees enter the labour market. Most cohorts reach a maximum employment rate of around 70% for men and 60% for women. The corresponding figures for native employment in Norway is 90% for men and 85% for women.

## 2.2 Research on refugees' outcomes

While there has been considerable research done on economic outcomes for immigrants in general, work that focuses exclusively on refugees is less common. In particular, very few studies have followed the refugee population over time by intake year or cohort. Concerning aggregate studies, UNHCR (2013) provide an extensive literature review and synthesis the current knowledge

regarding labour-market integration of resettled refugees in different countries. Their conclusion is that in the short run, refugees perform worse in the labour market compared to both other immigrants and natives, while in the longer term, they close the gap. OECD (2014) demonstrates that in the European OECD countries, once relevant individual characteristics are controlled for, refugees from lower-income countries have employment rates that are, respectively, 11 and 18 percentage points higher than their peers who have come as labour migrants. Assessing the employment and earnings trajectories of refugee and family-related immigrants in Canada and Sweden using two national level sources of data, Bevelander and Pendakur (2014) find that the employment and earning trajectories of refugee migrant groups are quite similar in the two host countries, although earnings are higher in Canada than in Sweden.

Using highly detailed longitudinal register data on individual characteristics for blue collar workers in Sweden, Lundborg (2013) reports an initial employment gap of 27% between refugees and native workers. The gap drops to 10% after around 11 years in Sweden and to around 7–8% after around 17 years. After around 30 years in Sweden the employment gap falls, but it never fully closes. Åslund and Rooth (2007) exploit Swedish data on refugees immigrating between 1987 and 1991 and find that early individual outcomes affect their future performance in the labour market, as does geographical immobility in the sense that those who enter in poor locations continuously face high local unemployment, which decreases their chances in the labour market. Lundborg (2003) studies employment rates for several cohorts of refugee immigrants to Sweden. He finds that their employment rates lag that of natives for their whole time in Sweden. Refugees from culturally different countries, such as Iran, Iraq, and the Horn of Africa, experience more unemployment than those from Eastern Europe and Latin America. Following a business cycle upturn, refugees' unemployment declines half as fast as that of natives.

### 2.3 Summary of findings in the literature

Much of the literature suggests that the assimilation of immigrants, and particularly asylum seekers, is a challenge for many developed economies. This may be a particular issue for Sweden, where the native-born are characterized by high educational attainment and skill levels, resulting in high labour productivity. In Sweden, administrative register data enable researchers to track employment and wage profiles of unique individuals over time. The administrative data also allows for linking individual data to firm data where those individuals are employed. We close this section by summarising some general findings on refugee integration provided by the 2014 EU Labour Survey:

- In the first 5 years after arrival, only one in four refugees is employed. After 10 years, their em-

ployment rate reaches 56% but it remains below the employment rate of native-born persons in most countries.

- The average employment rate for native born is 65%, compared with 56% for refugees.
- On average, it takes refugees up to 20 years to attain a similar employment rate as the native-born.
- Refugees are much more likely to be overqualified than other migrants. In total, almost 60% of employed tertiary-educated refugees in the EU are overqualified for their jobs. The corresponding figures for native workers is about 30%.

### 3 Empirical approach

#### 3.1 Data

In total, our administrative register data retrieved from Statistics Sweden includes about 55 million observations on individuals over the period 1990-2014. The data covers the entire population and extensive information also for earlier periods, such as education, migration and nationality of the parents. In the study we limit the data to people born between 1954 and 1976 and follow their labour market career until 2012. The register data for individuals is merged with firm level data for every work place in Sweden. Using a unique identification code for each individual and a unique identification code for each firm, we are able to track employment status and wage for each individual. In order to guarantee the quality of the data on professional occupations, we limit the study to firms with 10 or more employees.

Our research interest is to compare the 1993-1994 refugee cohorts with corresponding cohorts of natives and other immigrants. To do so, we restrict the study to the period 2001-2012, as it typically takes several years for the refugees to enter the labour force, due to compulsory and voluntary educational programmes, geographical mobility (from refugee camps in places with plenty of homes but few jobs to more dynamic labour market regions) and others.

The final data set consists of about 14 million observations and Table 1 presents selected summary statistics. Starting at a level of around 25 percent for native born and immigrants arriving to Sweden before 1993-1994 (in average 1970), unemployment decreases successively over the period and is about 5 percent for natives and 7 percent for immigrants: see Figure 4. This pattern contrasts sharply with that of the 1993–1994 immigrants. Their unemployment is initially very low, as very few are part of the labour force. In Sweden all refugees and their families are encouraged to take 1.5 years of training provided through the Introductory Courses for Newcomer Program for which they are provided a stipend. During this period, the non-economic immigrants do not participate in the

labour force. Moreover, many refugees also choose to upgrade their skills through ordinary studies after the 18 months of resettlement training. In 2012, close to two decades after their immigration, refugees' unemployment level is below 10 percent.

### 3.2 Summary statistics

Table 1 presents the six groups that we are following over the 1994–2012 period. Natives comprise the largest group and corresponds to 95 percent of the observations. The refugees from the Balkans arriving in Sweden in 1993-1994 constitute 3.2 percent of the observations, and other refugees (Middle East and Africa) 1.1 percent. Related to Balkan refugees is “Balkan 9394 non-refugees” and they consist mainly of family members. Our fifth group includes all other 1993-1994 immigrants, who are mainly family related to the refugees from Africa and the Middle East. The final group is all other immigrants that arrived to Sweden before 1993. Since the average arrival year for this group is 1970, they can be considered as rather well established in Sweden already in the beginning of the period of our study.

[Table 1 here]

From the year 2001, it is possible to classify all jobs in the Swedish labour market into different categories depending on their skill and knowledge content. For each year we observe each employee in one of the following categories: (1) Military, (2) Elementary occupations, (3) Plant and machine operators and assemblers, (4) Craft and related trades workers, (5) Service workers and shop sales workers, (6) Clerks, (7) Technicians and associate professionals, (8) Professionals and (9) Legislators, senior officials and managers.

In the analysis, we control for education background using a six level scale, were 1 is elementary education and 6 is doctoral education. An extensive literature shows that wage levels are correlated with geographical location, and commonly a metropolitan bonus exists. In our study we classify the three largest cities in Sweden (Stockholm, Goteborg and Malmö) as metropolitan areas.

From the rich firm level data, we use two sources of information. They are the average wage level and firm size. Both can be assumed to influence the individual wage level. In our econometric analysis, we apply a selection equation in order to estimate determinants of employment. This equation also contains information on individuals' gender and number of children.

Figure 5 shows employment performance over the period 1994-2012 for all individuals in Sweden that we observe in 1994. Initially, 70 percent of the natives in the age interval 18-40 years were employed, and their employment rate increased successively to about 90 percent by 2012. The average employment level in 1994 for group 6 (immigrants arriving before 1993) was just above 40

percent and reached 75 percent at the end of the period. All four groups of the 1993-1994 immigrants were almost not participating in the labour market during their first year in Sweden. Figure 5 reveals that refugees from the Balkans entered the labour market substantially faster than the other 1993-1994 groups, with six out of ten already employed by 2000. The second refugee group reached the same employment level one year later. It is noteworthy that four of the five immigrant groups' employment levels are clustered around 75 percent in year 2012. This corresponds to an employment gap of 15 percent relative to natives. The figure also shows that one category of non-refugee 1993-1994 immigrants had a significantly lower employment level than other immigrants.

Figures 6-9 show the annual average log wage level 1994-2012 for the six groups over that period. During the first nine years on the Swedish labour market, Figure 4 displays a strong process of convergence, however it ceases almost completely over the last nine years. This pattern is found in almost all income categories (percentiles 5, 25, 75 and 90).

### 3.3 Estimation strategy

Our estimation approach is based on the generalized structural equation model (GSEM) of Rabe-Hesketh, Skrondal, and Pickles (2004), originally implemented in their *gllamm* package. The GSEM is based on the generalized linear model (GLM) framework. Stata's GSEM extends that framework to incorporate multiple equation systems and latent variables.

Recognizing the selection problem in estimating a wage equation, we employ a Heckman-style model in order to gauge the importance of the labour force participation decision on wage determination. As illustrated in Stata's GSEM documentation, a regression with selection (the maximum likelihood version of the Heckman model) can be implemented as a GSEM.

If we work exclusively in the standard Heckman framework, we would not need to resort to GSEM, but GSEM offers several advantages: the ability to consider nonlinear response functions, and in addition or separately, the ability to include multilevel effects.

Multilevel effects may be an important component of our extension of the Heckman approach to address panel data, beyond the inclusion of a latent variable accounting for cross-equation correlation and unobserved heterogeneity.

In our application of the GSEM, we implement a selection equation that evaluates the likelihood that an individual will engage in the labour market as an employee or as an entrepreneur. We then combine this with an outcome equation which predicts their wage.

The errors in both the selection equation and the outcome equation are assumed to be Gaussian, with an identity link function. The latent variable captures the correlation between the errors in the two equations that would render an ordinary regression of the outcome equation inconsistent.

The data entering the selection equation comprise the full sample, while the data in the outcome equation are limited to those individuals who are employed and have a labour market income more than 50 percent of the median income in the particular industry classification (2 digit).

Below, we specify the empirical model starting with the selection equation:

$$SELECT_{i,t} = \alpha_0 FEMALE_{i,t} + \alpha_1 KIDS03_{i,t} + \alpha_2 KIDS46_{i,t} + \gamma EDU_{i,t} + \tau YEAR_{i,t} + L + \eta_{i,t} \quad (1)$$

where SELECT is the selection variable, equal to 1 if a person is employed with a wage level > 0.25 \* median wage for the industry, FEMALE=1 if female, KIDS03=number of kids age 0-3, KIDS46=number of kids age 4-6, EDU is a vector of six education levels, YEAR is a set of time indicators, and  $L$  is the latent variable, accounting for cross-equation correlation and unobserved heterogeneity, with its coefficient constrained to unity in the selection equation.

Next, we formulate the outcome equation:

$$\begin{aligned} \log W_{i,t} = & \beta_0 + \beta_1 IMG_{i,t} + \theta EDU_{i,t} + \gamma PROF_{i,t} + \beta_3 METRO_{i,t} + \beta_4 FEMALE_{i,t} + \\ & \zeta (IMG \times EDU)_{i,t} + \theta (IMG \times PROF)_{i,t} + \phi_1 (IMG \times METRO)_{i,t} + \mu (IMG \times FEMALE)_{i,t} + \\ & \kappa (IMG \times YEAR)_{i,t} + \delta_1 \log FIRMWAGE_{i,t} + \delta_2 \log FIRMSIZE_{i,t} + \\ & \tau YEAR_{i,t} + \lambda L + \varepsilon_{i,t} \end{aligned} \quad (2)$$

where IMG takes on values 1 for natives and 2–6 for immigrants, EDU is a vector of six education levels, PROF is a vector of 9 skill categories, METRO=1 for metropolitan workers, FEMALE=1 if female, FIRMSIZE is a vector of 7 size categories, YEAR is a set of time indicators, and  $L$  is the latent variable.

## 4 Empirical results

In this section, we present the regression results and report marginal plots for selected estimates. Recognizing the selection problem in estimating a wage equation, we employ a Heckman-style model on a sub-subsample in order to gauge the importance of the labour force participation decision on wage determination. We estimate wage levels over the period 2001-2012.

[Table 2 here]

Table 2 reports regression results for the outcome equation in the selection model. Column (1) shows the estimate without interaction effects, while they are included in column (2). Our preferred model is reported in column (2). Our analysis below refers to Table 2, column (2).

Using log wage level for native workers as reference group, the point estimate for 1993-1994 refugees from the Balkans is  $-0.056$ , which indicate almost 6% lower wage, ceteris paribus. The corresponding point estimate for the same cohort refugees from the Middle East and Africa is  $-0.125$ . Our first conclusion is thus both a significant difference in wages between native workers and refugees as well as a large difference between the refugees depending on their country of origin.

Next we consider mainly family related immigrants from the 1993-1994 entrants. The point estimate is  $-0.092$  for individuals belonging to the Balkan category, and  $-0.080$  for the Asian/African category. Our second conclusion is that Balkan refugees had a better wage performance than other Balkan immigrants, while the result is the opposite for immigrants from Asia and Africa.

In our analysis, we also include immigrants arriving to Sweden before 1993. A majority of people in this group arrived in Sweden during the 1970s, including both refugees from Greece and Latin America, their families and economic migrants. The estimate for this group is  $-0.032$ , which is significantly smaller than the results for the 1993-1994 immigrants.

One unique feature of our study is the incorporation of firm level information in the analysis, and the results show that this makes sense. Workers' wage levels are significantly associated with the average wage level at the firm, controlling for industry, job occupation and education. The estimated effect is around 30%. With exception of a negative effect for the smallest firms, firm size has only a minor impact on the wage level.

Concerning the other controls, the estimates are what we could expect: the metropolitan bonus on wages of about 6%; females' wage level 20% less than males; the wage premium for higher education is 15-30%; and the wage premium for high qualified occupations is about 60% compared to low qualified occupations.

Finally, we consider the average marginal effects, calculated from the regression results. With native workers' wage levels as the reference category, the marginal effects for year 2001 are  $-0.05$  for Balkan refugees and  $-0.12$  for Asian/Africa refugees, Asian/African family related immigrants and those arriving to Sweden before 1993. The 2001 marginal effect for non-refugees from the Balkans is  $-0.19$ .

Between 2001 and 2012 the average marginal effect only improves marginally for Balkan refugees, while the initial convergence almost completely ceases around 2005 for Asian/African refugees and the early immigrant group. Concerning the 1993-1994 non-refugee immigrants, a deviating pattern may be noted: the convergence continues across the whole period, and the non-refugee Balkan immigrants (mainly females and family related to the Balkan refugees) have exactly the same marginal effects as the Balkan refugees in 2012.

Figures 12 and 13 indicate heterogeneity in the average marginal effects when we split the firms

into two categories: those with average wages above or below the median for the particular industry. Figures 14 and 15 suggest that the professional occupations and industry sectors are important explanatory factors for the wage gap, which calls for further analysis. Our two final marginal plots show that the wage gap is largest in metropolitan areas (Figure 16) and for male immigrants (Figure 17).

## 5 Summary and conclusions

International migration to OECD countries has increased significantly over the past decades. In the OECD area as a whole, international migration is expected to account for all net labour force growth between 2005 and 2020. Due to population aging, younger cohorts of the native population are too small to replace the current working age population. In this context, immigration is a key economic factor in developed countries. A major concern for the receiving country is the ability of these individuals to become well integrated in their new society and become productive members of the workforce

In this paper we have assessed the employment probabilities and earnings differentials of immigrants and natives in Sweden by following their labour market career over nearly two decades. Our interest was to assess the labour market integration of refugees arriving in Sweden in 1993 and 1994. We focus on the 1954–1976 birth cohort, as these individuals are of working age during our period of analysis. In total, the data contains about 14 million observations on both native born people and immigrants.

In our analysis, we apply a general structural modelling approach (GSEM) and estimate a selection equation, controlling for individual characteristics. We find that, after controlling for individual characteristics and firm-level data, a large degree of heterogeneity across different groups of immigrants. Our analysis confirms a process of wage convergence towards the wages of native workers, as reported in prior research. We also find that the convergence process slows over time and halts with 5-10 % lower wages for both refugees and refugee related immigrants arriving to Sweden in the beginning of the 1990s.

The results we present in this paper are preliminary, as we are still confronting the challenges of working with these restricted-access data on a system with sufficient computational capacity. Since we are studying the entire population of the target groups over a fairly long time span, the estimations are very computer demanding, in particular with respect to our empirical GSEM approach.

In our future analysis, we will complement the selection model with dynamic approaches that accounts for both state dependency and endogeneity. Moreover, in further study we will try to attack the key issue whether the remaining wage gap reflects differences in productivity between

refugee immigrants and native workers, or if it depends on some systematic inefficiency on the labour market where two people with the same productivity receive different wages. Another tentative explanation might be a reduced geographical social mobility of refugees, which hampers optimal matching between skills and job opportunities.

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Table 1: Summary statistics, selected variables

Variable	Obs	Mean	Std.	Min	Max
InWage	14,505,966	7.64	0.518	0	12.428
Unemployed	14,505,966	0.067	0.251	0	1
Group 1: Native born	14,505,966	0.95	0.217	0	1
Group 2: Balkan 9493 refugees	14,505,966	0.032	0.177	0	1
Group 3: Other 9394 refugees	14,505,966	0.01	0.102	0	1
Group 4: Balkan 9394 non-refugees	14,505,966	0.001	0.043	0	1
Group 5: Other 9394 non refugee immigrants	14,325,603	0.001	0.039	0	1
Group 6: Earlier immigrants	14,505,966	0.003	0.056	0	1
Birth year	14,505,966	1965	6.387	1954	1976
Profession	14,505,966	4.78	2.652	1	9
Education	14,505,966	3.403	0.995	1	6
Metropolitan	14,505,966	0.294	0.455	0	1
Firm size	14,505,966	4.545	2.111	1	7
Female	14,505,966	0.345	0.475	0	1
Kids age 0-3	14,505,966	0.202	0.474	0	5
Kids age 4-6	14,505,966	0.17	0.416	0	5

Figure 1: Immigrants as a share of population (%)

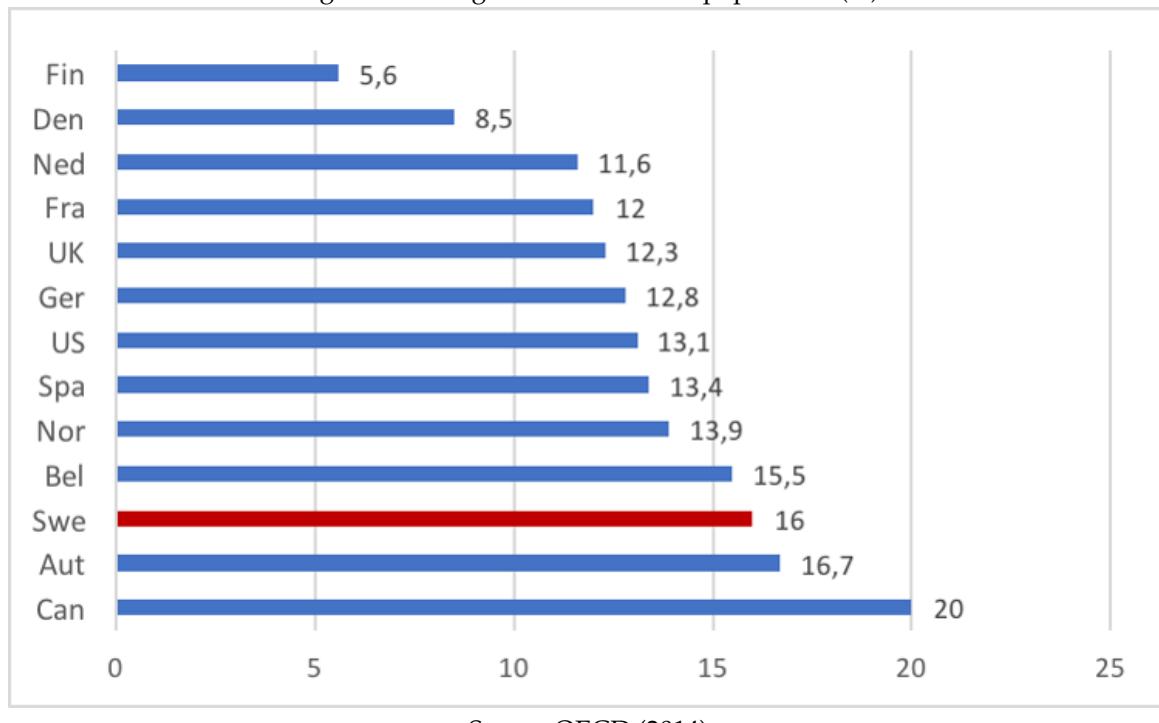
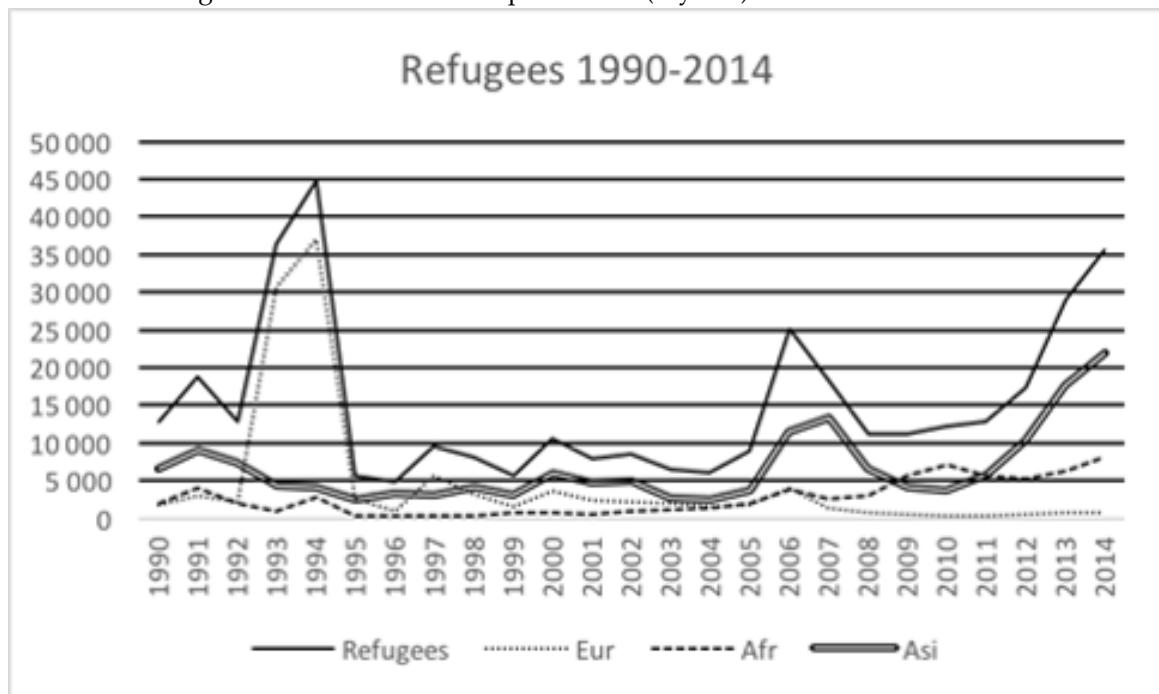


Table 2: Selection model, outcome equation

	(1)	(2)		(1)	(2)
VARIABLES	lnWage2	lnWage2	VARIABLES	lnWage2	lnWage2
Group 1 Natives	0 (0)	0 (0)	Size 1 (Smallest)	0 (0)	0 (0)
Group 2 Balkan R	-0.061*** (0.001)	-0.056*** (0.005)	Size 2	0.029*** (0.000)	0.028*** (0.000)
Group 3 Other R	-0.114*** (0.003)	-0.125*** (0.009)	Size 3	0.050*** (0.000)	0.051*** (0.000)
Group 4 Balkan NR	-0.072*** (0.004)	-0.092*** (0.014)	Size 4	0.071*** (0.000)	0.073*** (0.000)
Group 5 Other NR	-0.068*** (0.003)	-0.080*** (0.008)	Size 5	0.086*** (0.000)	0.089*** (0.000)
Group 6 Earlier Im.	-0.017*** (0.001)	-0.032*** (0.002)	Size 6	0.097*** (0.000)	0.106*** (0.000)
Mean firm ln wage	0.244*** (0.000)	0.281*** (0.000)	Size 7 (Largest)	0.099*** (0.000)	0.108*** (0.000)
Metropolitan	0.064*** (0.000)	0.0644*** (0.000)	Profession 1 (Military)	0 (0)	0 (0)
Female	-0.177*** (0.000)	-0.193*** (0.000)	Profession 2 (Low skill)	-0.190*** (0.000)	-0.199*** (0.000)
Educ 1 (Lowest)	0 (0)	0 (0)	Profession 3	-0.072*** (0.000)	-0.068*** (0.000)
Educ 2	0.007*** (0.001)	0.008*** (0.001)	Profession 4	-0.046*** (0.000)	0.036*** (0.000)
Educ 3	0.018*** (0.001)	0.020*** (0.001)	Profession 5	-0.103*** (0.000)	-0.128*** (0.000)
Educ 4	0.104*** (0.001)	0.111*** (0.001)	Profession 6	-0.095*** (0.000)	0.090*** (0.000)
Educ 5	0.143*** (0.001)	0.144*** (0.001)	Profession 7	0.072*** (0.000)	0.0797*** (0.000)
Educ 6 (Highest)	0.301*** (0.003)	0.302*** (0.003)	Profession 8	0.153*** (0.000)	0.162*** (0.000)
<i>Continued</i>		Profession 9 (High skill)		0.388*** (0.000)	0.393*** (0.000)
		Constant		5.559***	5.232***
		Observations		13,560,890	13,565,613
		R-squared		0.508	0.495

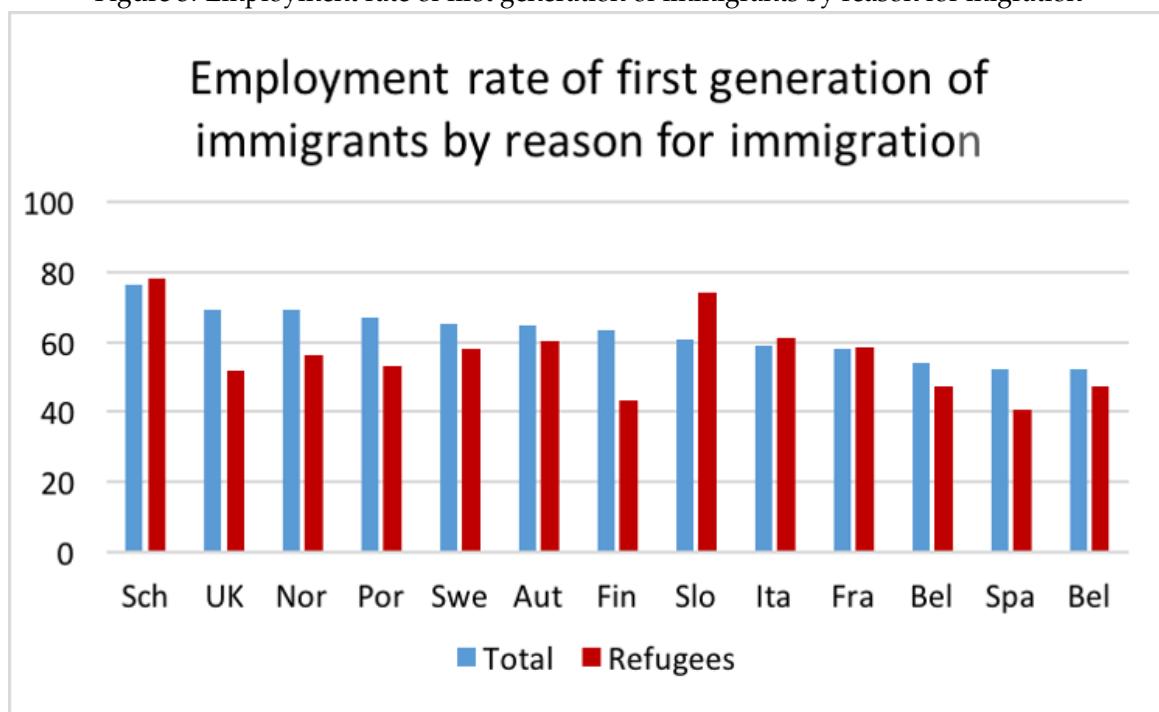
Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Year dummies and Industry dummies included

Figure 2: Granted residence permission (asylum) in Sweden 1990-2014



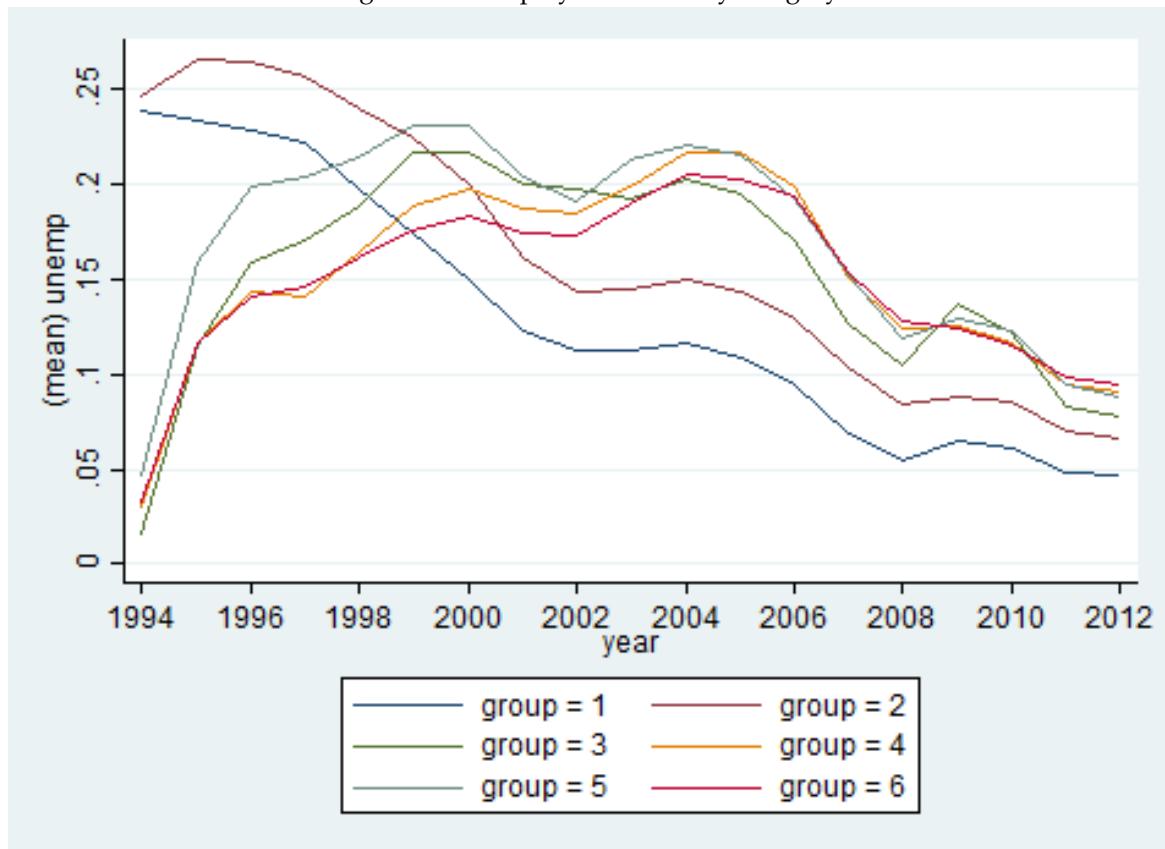
Source: The Swedish Immigration Agency.

Figure 3: Employment rate of first generation of immigrants by reason for migration



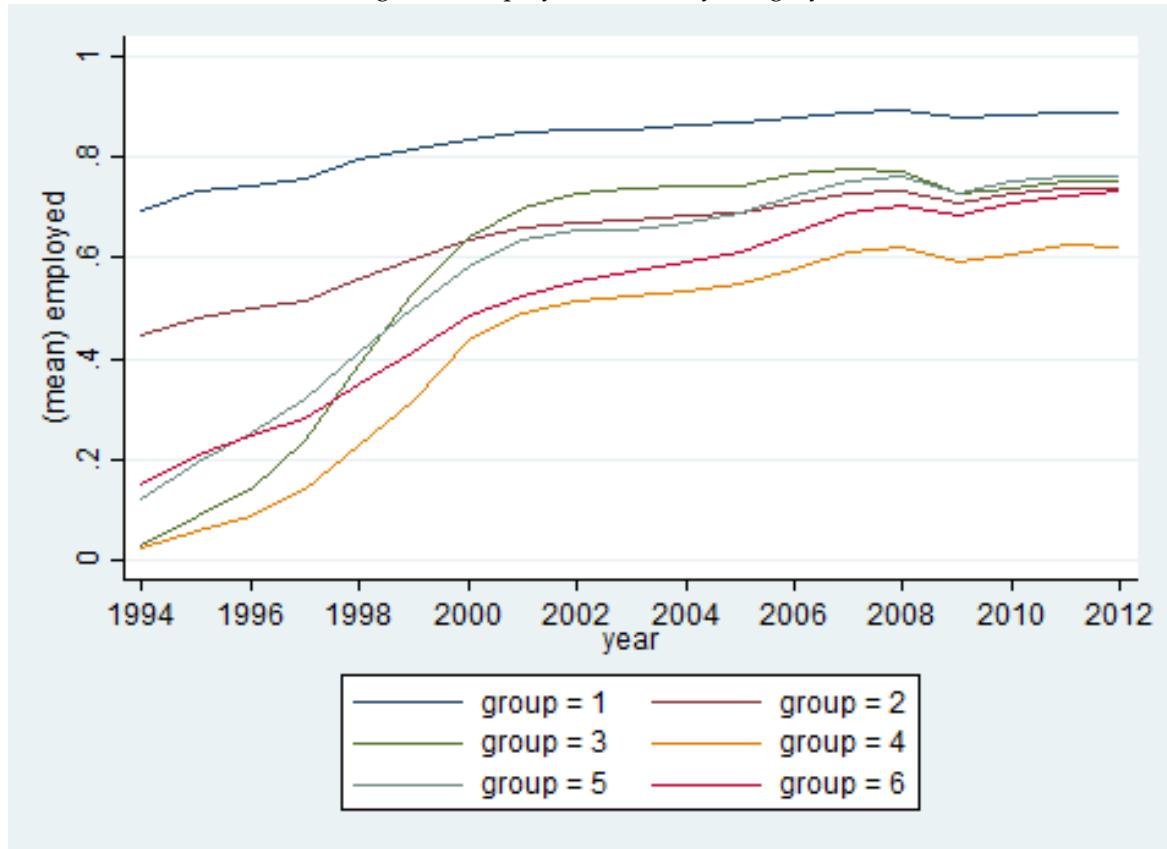
Notes: Source OECD (2014)

Figure 4: Unemployment rates by category



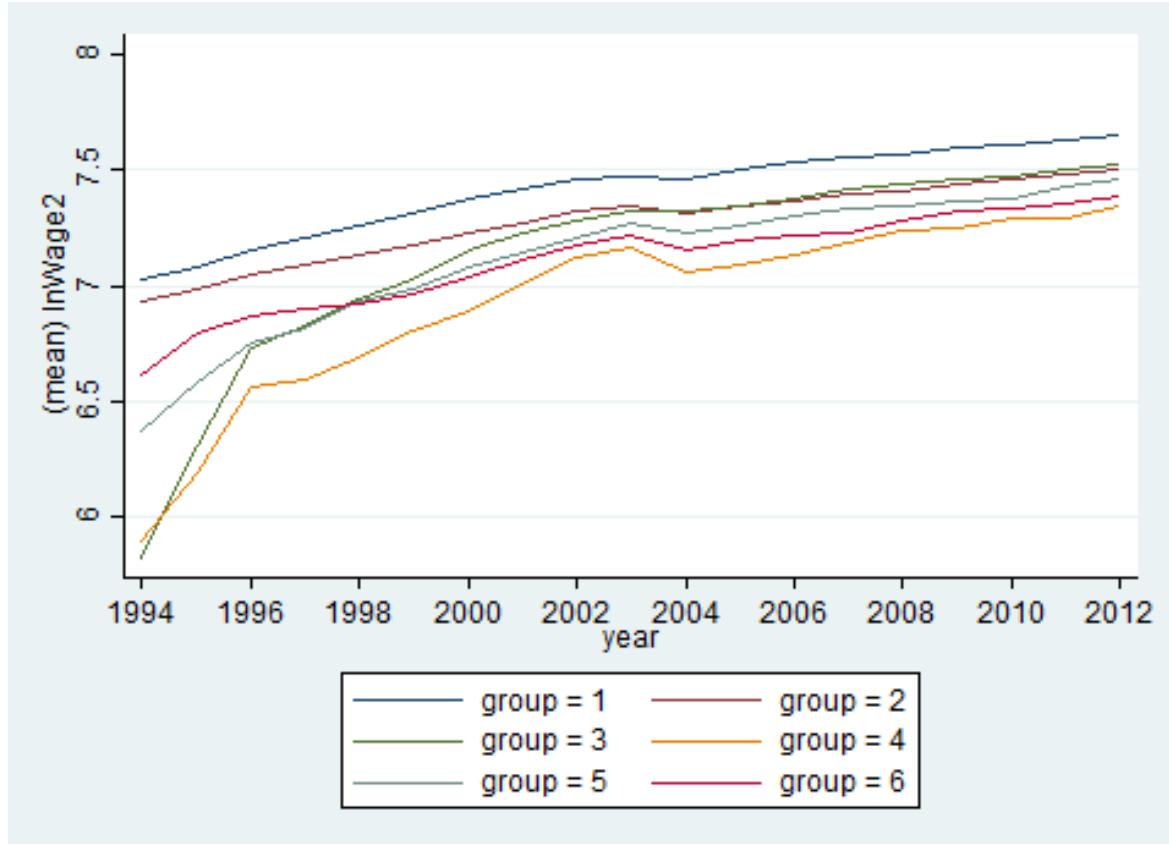
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 5: Employment rates by category



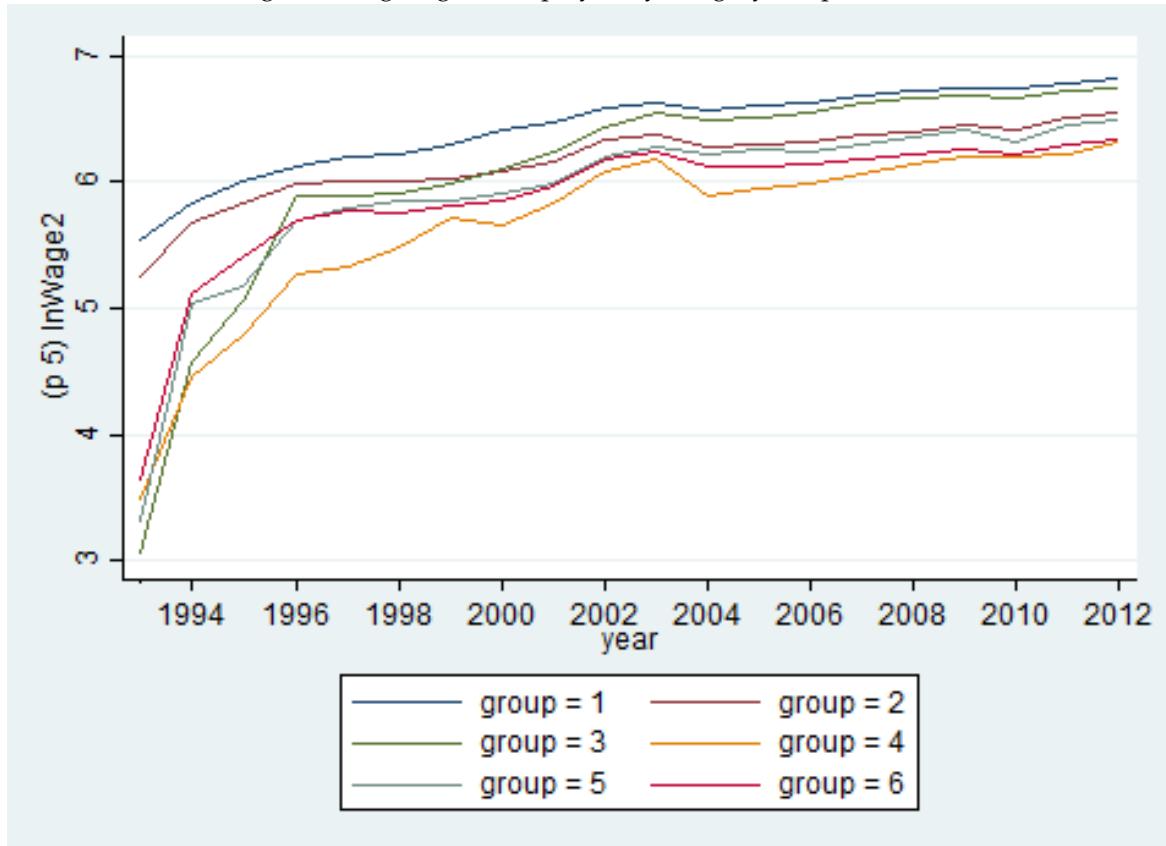
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 6: Mean log wages if employed by category



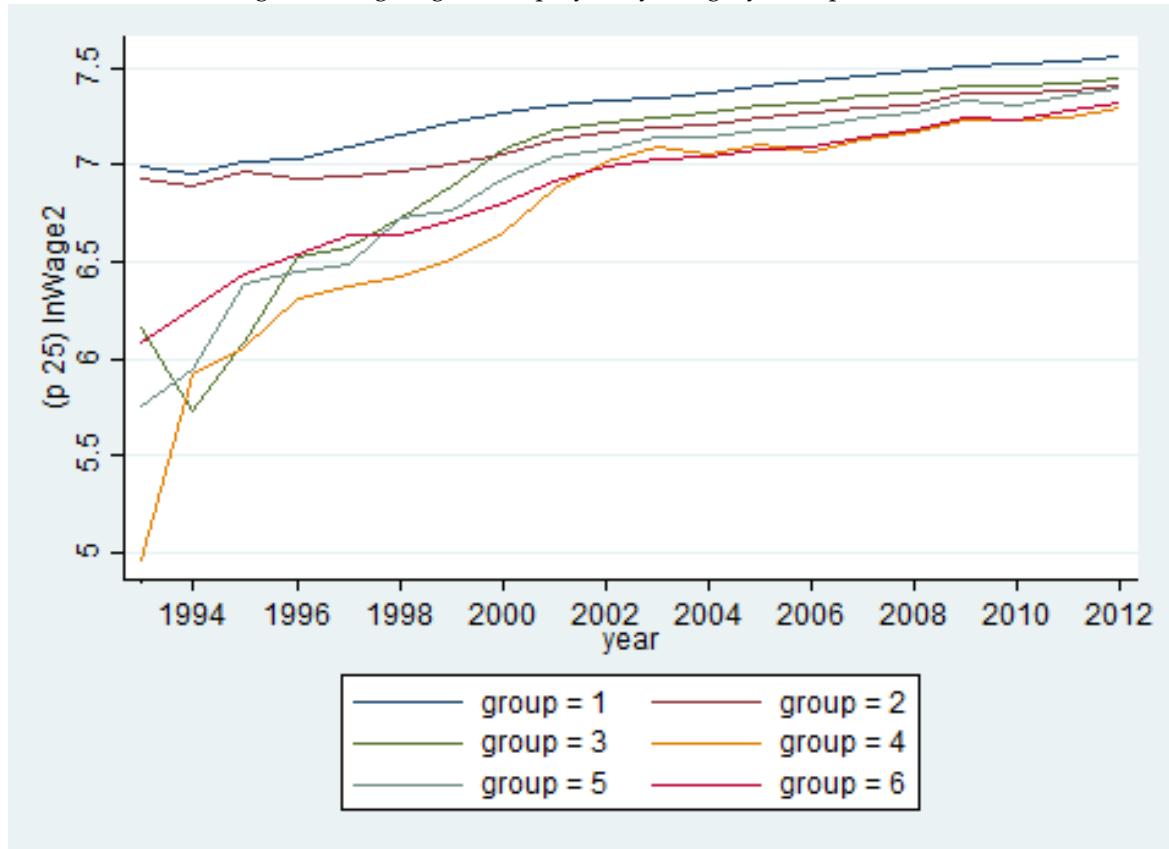
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 7: Log wages if employed by category, 5th percentile



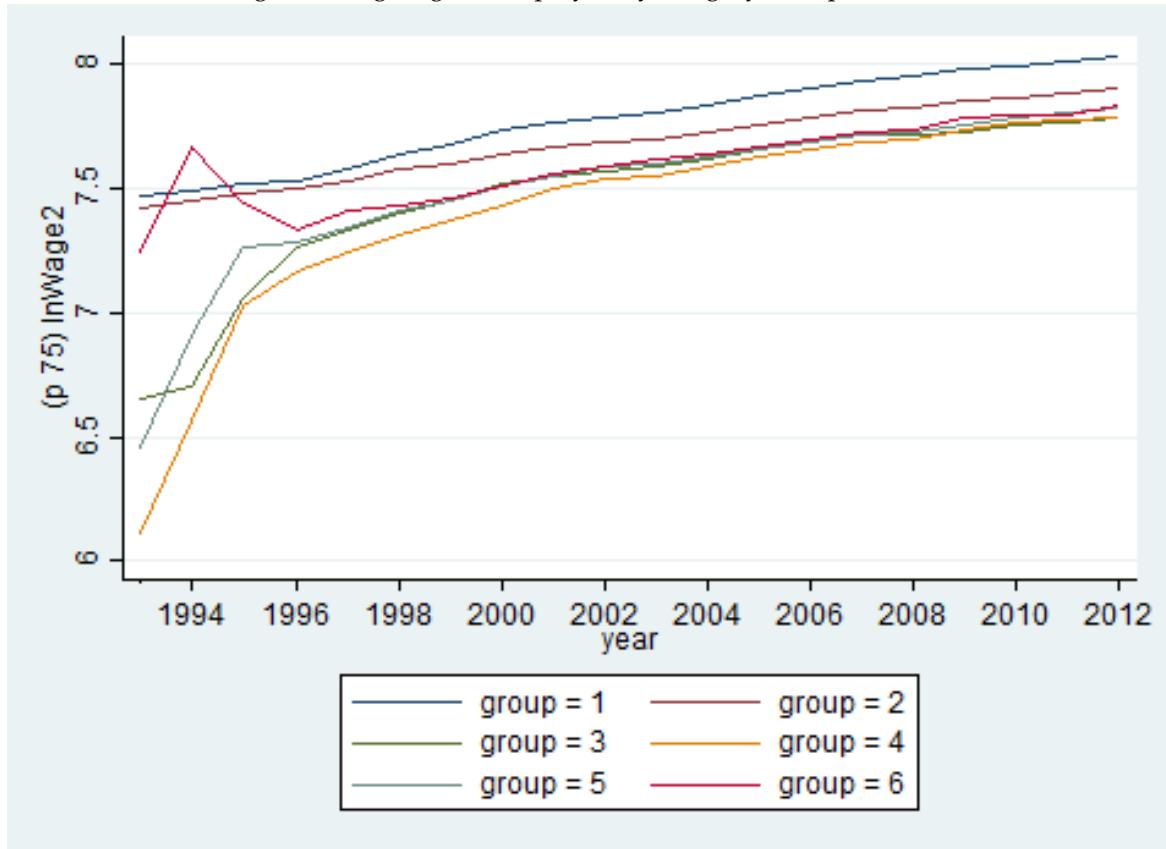
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 8: Log wages if employed by category, 25th percentile



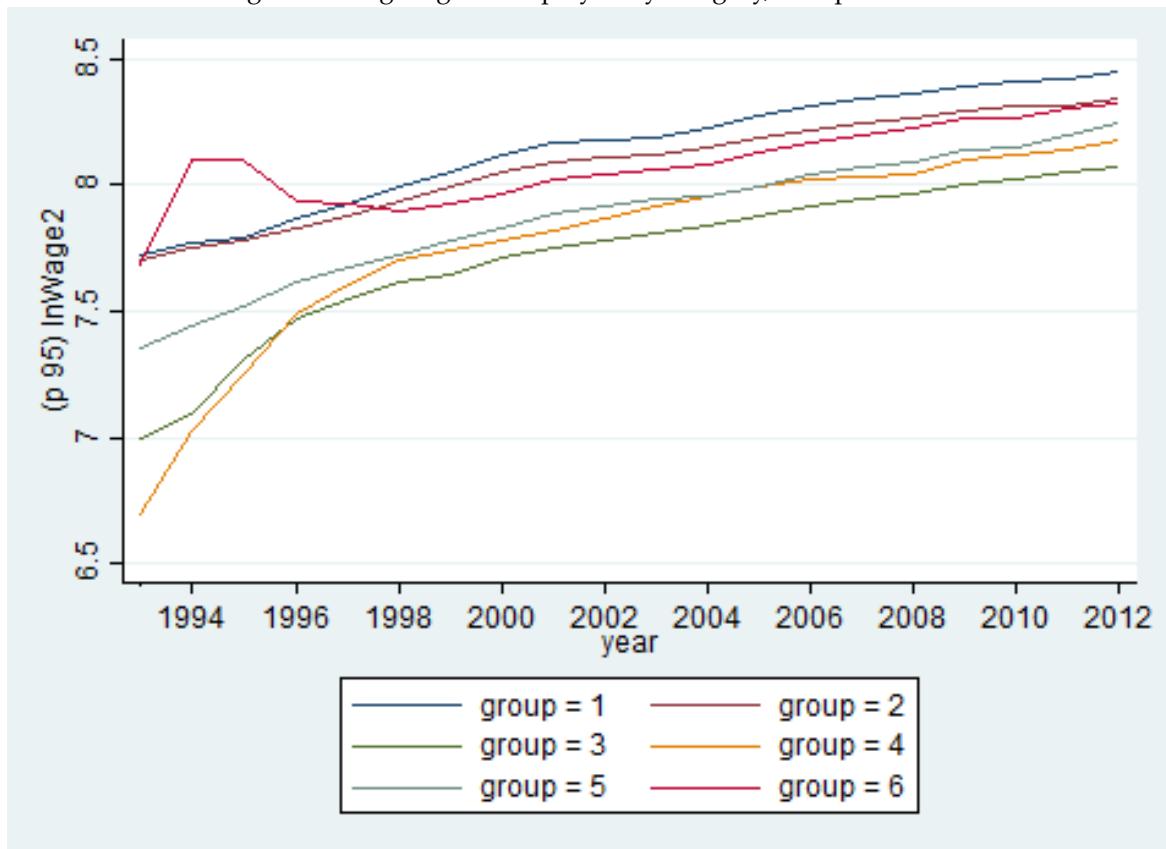
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 9: Log wages if employed by category, 75th percentile



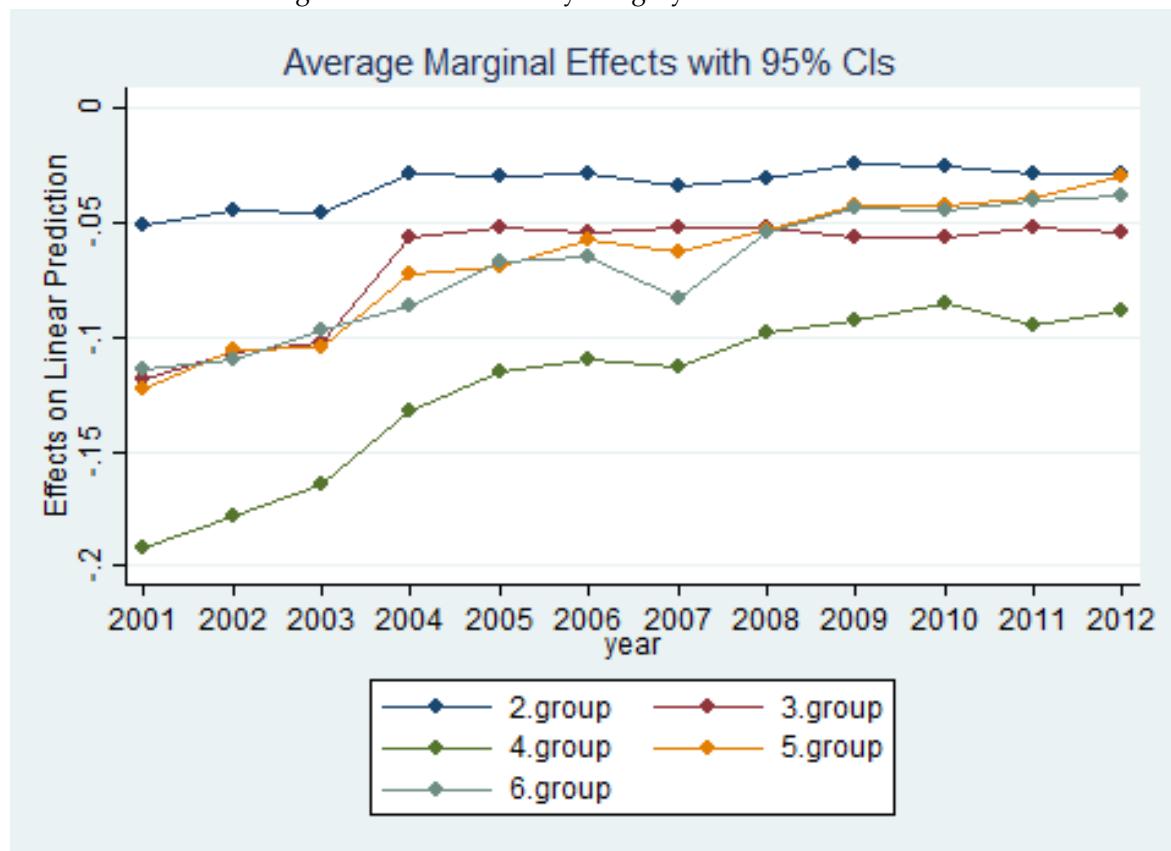
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 10: Log wages if employed by category, 95th percentile



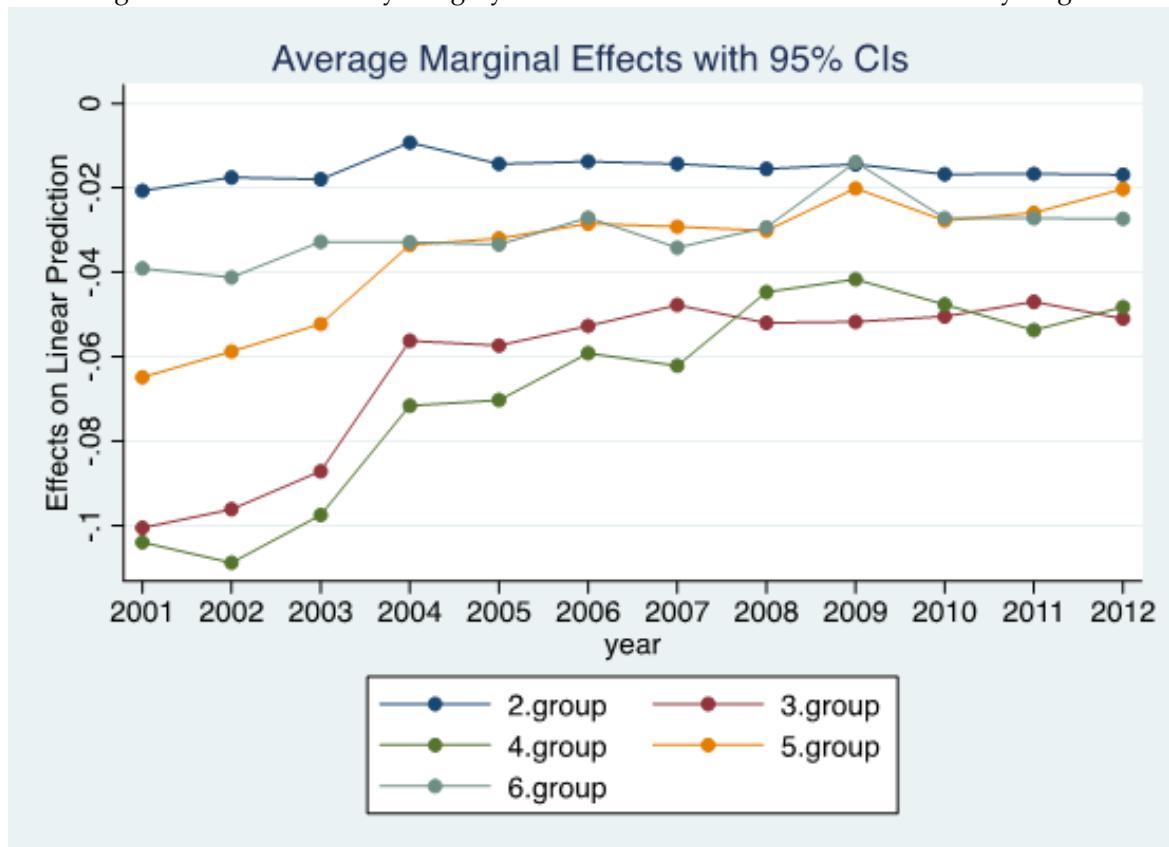
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 11: Differentials by category vs. native workers



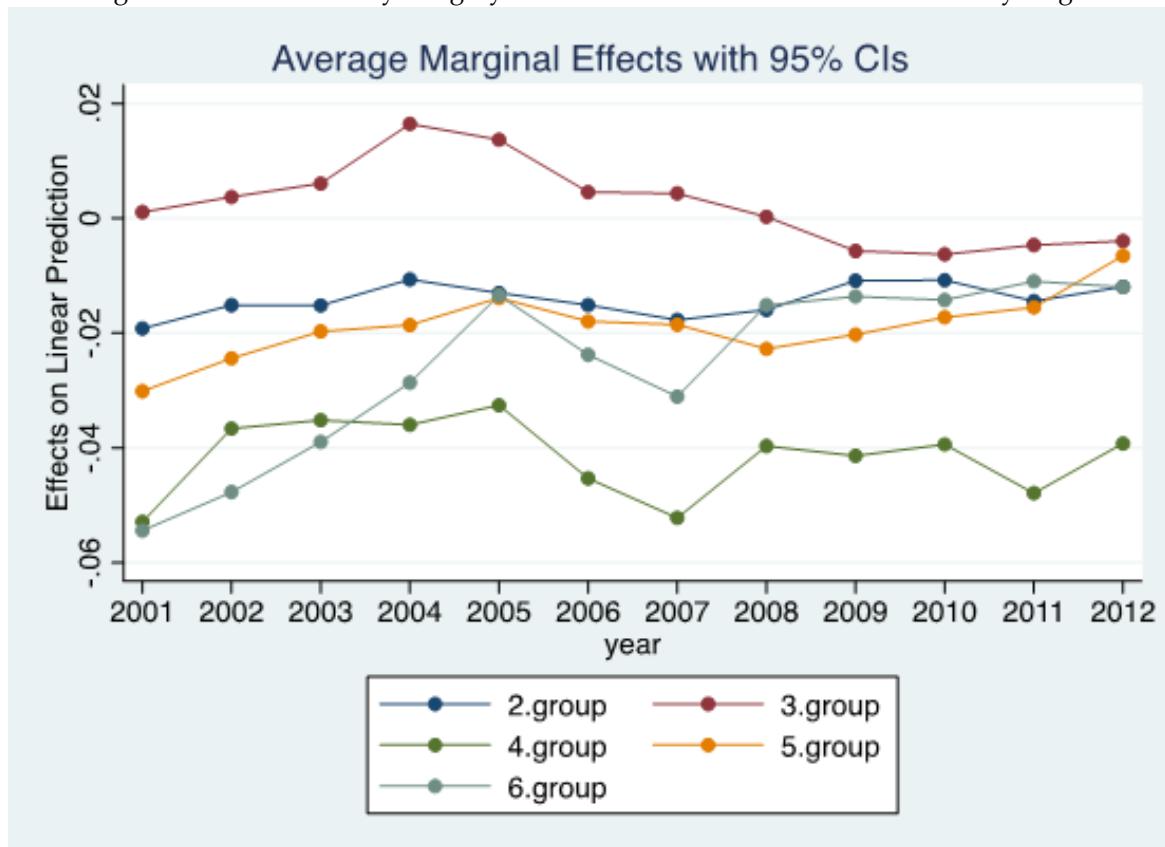
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 12: Differentials by category vs. native workers: above median industry wage



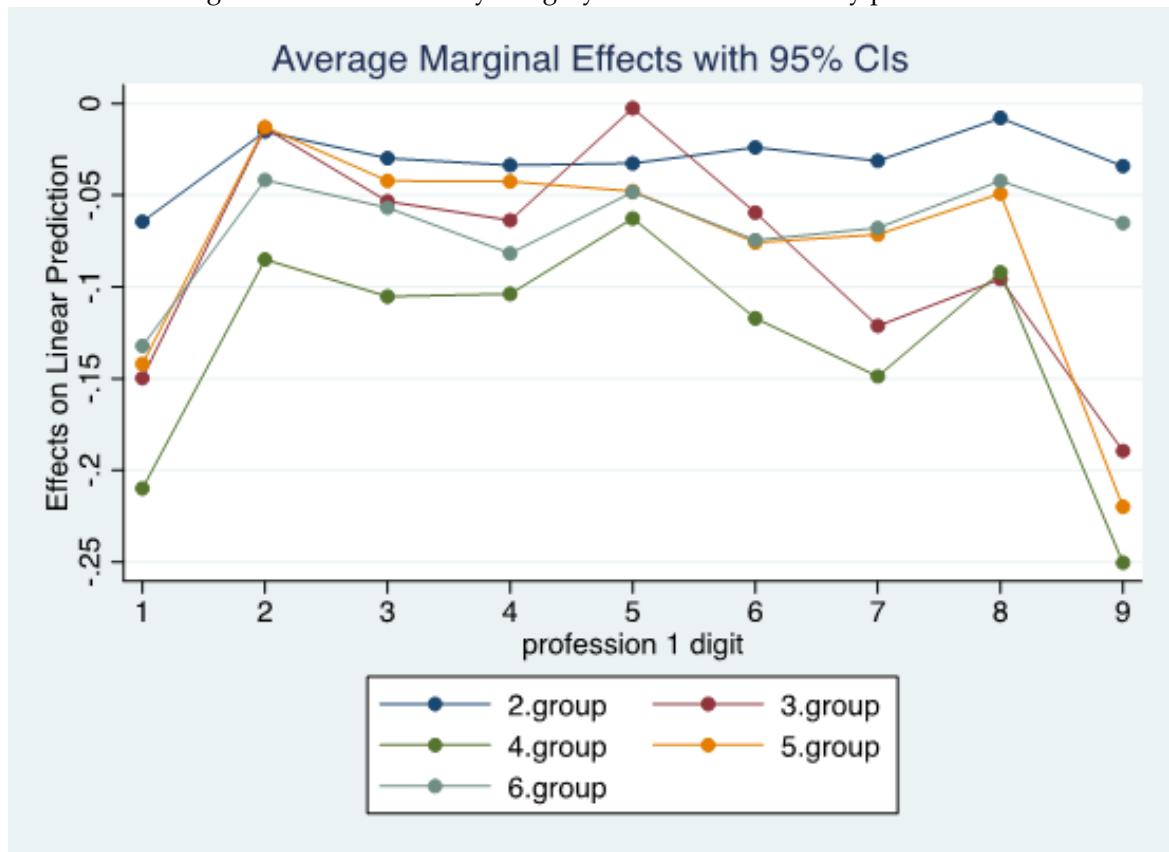
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 13: Differentials by category vs. native workers: below median industry wage



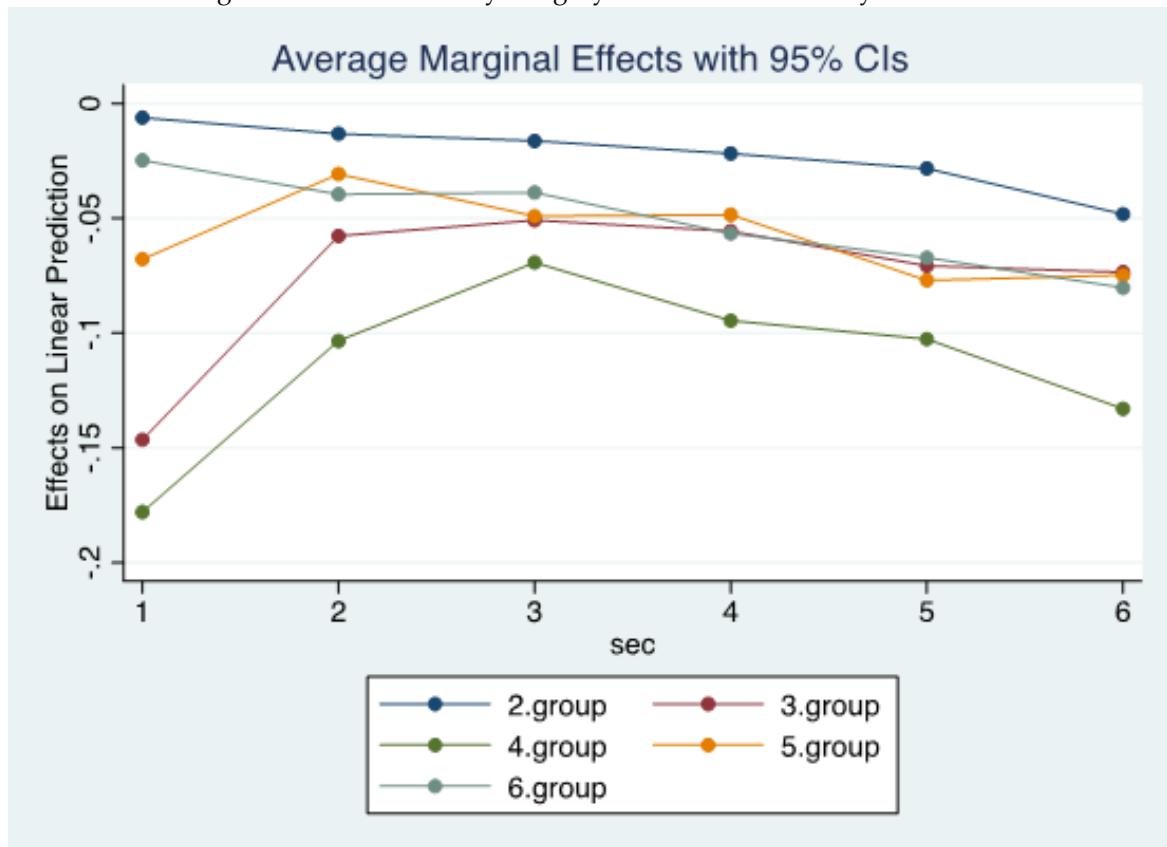
Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 14: Differentials by category vs. native workers: by profession



Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 15: Differentials by category vs. native workers: by firm size



Group (1) Native born people, Group (2) Balkan 93-94 refugees, Group (3) Other 93-94 Refugees, (4) Balkan 93-94 non refugee immigrants, (5) Other 93-94 non refugee immigrants, (6) Immigrants arrived before 1993.

Figure 16: Differentials by category vs. native workers: by metro status

