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Do labour market conditions shape immigrant-native gaps in employment outcomes? A comparison of 19 European countries

Yvonni Markaki
Institute for Social and Economic Research
University of Essex

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Non-technical summary

This article focuses on how well immigrants fare in job markets across 19 countries in Europe and, in particular, how socioeconomic conditions and labour market flexibility may shape differences in employment chances between natives and immigrants. In this sense, this study aims to identify how the national context in the country of residence interacts with immigrants' and natives' characteristics to shape immigrant-native gaps in the labour market.

To measure differences between natives' and immigrants' chances in the labour market, the empirical analysis considers four employment outcomes; monthly earnings, unemployment, underemployment, and working on a precarious contract. The empirical models focus on the interactive impact between immigrant origin and labour market conditions and use survey data from the 2005 and 2010 cross-sectional EU Statistics on Income and Living Conditions, matched with country-level indicators calculated using the EU Labour Force Surveys as well as sourced from Eurostat and the OECD.

The results suggest that immigrant-native gaps are larger in countries with more immigrants. Evidence also indicates that a stricter regulation of regular contracts increases the immigrant-native earnings gap and immigrants' chances of holding temporary contracts. A stricter regulation of temporary contracts tends to increase immigrants' risk of unemployment and underemployment. A higher union density appears to suppress wage differences across some immigrant groups, rather than in comparison to natives.

The findings support the idea that the immigrant-native gaps are partly driven by immigrants and natives occupying different roles in the job market. However, labour market conditions did not necessarily impact both genders and EU/non-EU born immigrants the same way. The different roles in the labour market posited by theory may reflect immigrants' outsider status, which differs across immigrants depending on visa-limitations for non-EU immigrants, gender, or the country's strictness in employment protection. Immigrants' outsider status likely entails that their employment is less protected against, or more responsive to, certain labour market conditions than native workers' outcomes.

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This article draws from different theoretical and empirical literatures to analyse the role of socioeconomic and regulatory conditions on immigrant-native gaps across four outcomes; unemployment, monthly earnings, underemployment, and precarious contracts. The empirical results suggest that immigrant-native gaps are larger in countries with more immigrants. Evidence also indicates that a stricter regulation of regular contracts increases the immigrant-native earnings gap and immigrants' chances of holding temporary contracts. A stricter regulation of temporary contracts increases immigrants' risk of unemployment and underemployment. A higher union density appears to suppress wage differences across some immigrant groups, rather than in comparison to natives.

Keywords: immigrants, unemployment, underemployment, earnings, contracts, Europe, employment protection, union density

JEL Classification: F22**,** J31, J51, J61, J64, J71, J82

Correspondence address
ISER, University of Essex
Wivenhoe Park Colchester
CO4 3SQ United Kingdom
Email: ymarka@essex.ac.uk

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1. Introduction

The successful integration of immigrants in the labour market is of particular interest to both immigrants and host countries. For immigrants, the motivation to emigrate can be in itself the search for better working and living conditions, which are largely dependent on the ability to find a job and operate within the host country's labour market. For host countries, immigrant employment success is beneficial because it can boost the labour market with necessary workers, increase productivity and expand the tax base, while avoiding a possible burden on the welfare state with additional vulnerable social groups.

This paper analyses differences between immigrants' and natives' employment chances across 19 European countries, with a specific focus on how a country's labour market conditions impact the immigrant-native employment gaps. Cross-sectional survey data from the 2005 and 2010 EU Statistics on Income and Living Conditions (EU SILC) are matched with country-level measures, including the percentage of immigrant population, strictness in employment protection legislation, union density, GDP per inhabitant, and economic growth.

Previous literature on immigrant employment integration has shown that immigrants experience significant employment disadvantage upon arrival in labour markets across Europe, Australia, Canada and the US (Antecol et al. 2003; Chiswick et al. 2008; Kahanec and Zaiceva 2009; Reyneri and Fullin 2011). Studies find that immigrants are more likely than natives to be unemployed, while those employed, tend to earn less compared to native born workers. This disadvantage is found to decrease over time spent in the destination country, although it does not disappear entirely for all immigrant groups, including second generation immigrants (Hammarstedt and Palme 2012; Rooth and Ekberg 2003).

The first contribution of this study is to extend empirical evidence of immigrant-native disparities to measures of underemployment and precarious contracts, often ignored in previous cross-country research. Although essential, measures of unemployment and wages cannot account for other disparities between natives' and immigrants', such as chances of working on a precarious contract, or working fewer hours than they would like because they cannot find work for more hours (underemployment or involuntary part-time employment). The empirical analysis in this paper looks into native-immigrant differences in four labour market outcomes; monthly earnings, the likelihood of being unemployed, underemployed, and working on a fixed-term or no contract.

The second contribution of this study is to extend evidence on the way the regulatory and wage-setting flexibility of the labour market can influence the gap between natives' and immigrants' employment outcomes. The empirical analysis also takes into account indicators previously found to condition the immigrant-native gap; strictness in employment protection legislation (EPL) for regular contracts and temporary contracts, and trade union density. Existing evidence suggests that more flexible labour markets are likely to reduce the immigrant-native gap in unemployment, but increase immigrant-native wage disparities (Causa and Jean 2007; Kogan 2006; Sa 2008). Previous studies comparing European countries have drawn evidence either from the European Community Household Panel (ECHP) between 1994-2001, or the EU Labour Force Surveys (EU LFS) after 1998. While the ECHP is arguably out of date and only included 12 countries, the EU LFS does not provide information on respondents' earnings. By using data from the EU Survey on Income and Living Conditions (EU SILC), this paper includes a larger number of countries and a more complete set of employment outcomes.

The third contribution of this analysis is to test new hypotheses by focusing on how the share of immigrants in the population may condition the immigrant-native gaps in the labour market. In the US context, Kahanec (2006) argues that while ethnic minority workers earn relatively less than non-ethnic minority workers, due to substitution effects within minority labour, the earnings gap is likely to be even larger in regions where the ethnic minority group is larger. The analysis here extends this hypothesis in relation to the immigrant-native gap in the European context with the expectation that a larger immigrant population in the resident country will be associated with larger immigrant-native gaps in employment outcomes.

2. Previous findings on immigrants' employment outcomes across Europe

Comparative studies concerned with immigrant labour market outcomes in Europe have shown persistent disparities between native and immigrant workers' employment success, with large variation across immigrant origins and destination countries (Adsera and Chiswick 2007; Causa and Jean 2007; Fleischmann and Dronkers 2010; Kahanec and Zaiceva 2009; Kogan 2006; Peracchi and Depalo 2006; Reyneri and Fullin 2011).

Peracchi and Depalo (2006) use data from the ECHP between 1994 and 2001 and show that differences in activity, employment and wages are more pronounced in non-EU immigrants in comparison to those born in other EU countries, although most differences

disappear after 20 years of residence. Also using the ECHP, Adsera and Chiswick (2007) find that 18 years after arrival, the initial immigrant-native gap in earnings has effectively disappeared. On the other hand, Kogan (2006) looks into the unemployment risk of recent immigrants to 15 EU countries using data from the EU Labour Force Surveys between 1992 and 2001 and finds that immigrants born in sub-Saharan Africa are more likely to be unemployed, compared to natives, whereas Asian immigrants have a lower unemployment risk compared to other non-European immigrants. Kahanec and Zaiceva (2009) use data from the 2005 EU-SILC to compare the role of foreign origin and citizenship on earnings and employment between EU15 and new EU8 member states and find significant variation between the two groups of countries, but also depending on gender, EU or non-EU origin (country of birth) and citizenship status. They find that foreign origin largely explains the earnings and employment gaps in EU15 countries, while both origin and citizenship are important drivers of the earnings and employment gaps in EU8 countries.

Existing studies that empirically try to explain cross-national differences in immigrants' employment, although limited, find evidence that the immigrant-native gap can be conditioned by the destination country's characteristics, such as the level of regulation in the labour market and the size of the low-skilled sector. However, the estimated direction of these contextual effects on the immigrant-native gap tends to vary largely across studies, depending on countries included, timeframe, measures used, and theoretical assumptions. Kogan (2006) finds that the risk of unemployment for immigrants is higher in countries with stricter regulation of work contracts and a smaller share of the labour force employed in the low-skilled sector. This study by Kogan (2006) uses the overall strictness index of employment protection legislation (EPL) and assumes that employers favour native workers over immigrants in more regulated labour markets, due to higher hiring and firing costs.

Causa and Jean (2007) also focus on policies that can affect the immigrant-native earnings and employment gaps and find evidence that immigrant men are less likely to be employed in countries with more generous unemployment benefits. They also find evidence that stricter EPL is associated with a lower risk of unemployment among immigrants but also a larger immigrant-native wage gap (Causa and Jean 2007). Their estimations include a measure of the level of EPL dualism, which accounts for the strictness of EPL for regular contracts *relative* to the strictness of EPL for temporary contracts. They argue that immigrant-native disparities are driven by employers' relative unwillingness to turn a temporary job into a permanent one, if regular contracts are more regulated than temporary contracts. This is likely to disadvantage immigrants disproportionately if employers evaluate

immigrants' productivity and human capital as lower than natives'. It is important to note that this theoretical expectation is based on the assumption that temporary jobs tend to be low skilled and low-paid and that permanent positions tend to have higher wages. Therefore, immigrants earn less than natives if they find it more difficult to secure a permanent position. To avoid making assumptions about the relationship between the different outcomes and legislation for regular and temporary contracts, this study tests the impact of the two EPL indices separately.

Finally, the most recent evidence comes from Fleischmann and Dronkers (2010), who use data from the European Social Survey and find that immigrants are more likely to be unemployed in countries with a higher unemployment rate among natives, a lower GDP per capita, lower immigration rates and a smaller segment of low-skilled jobs. Their sample, however, includes only immigrants, therefore their analysis does not address differences between natives' and immigrants' unemployment risk.

3. Theoretical framework

The persistent disparities observed in the labour market between immigrants and natives have been attributed to a wide range of factors. Existing literature has argued that immigrants' employment disadvantage mainly stems from their status in the labour market as outsiders (Reyneri and Fullin 2011). Their employment adjustment in the host country is hindered by, among other reasons, lack of language proficiency and lack of familiarity with the job market, visa limitations, and an overall insufficient transferability of skill and work experience across countries. Immigrants, therefore, may have a higher probability of being unemployed or earn lower wages in comparison to an otherwise similar native worker if employers view the hiring of immigrants as a riskier, more temporary choice and evaluate their level of productivity and supply in human capital to be lower than that of natives (Causa and Jean 2007; Chiswick and Miller 2009; Dustmann and Fabbri 2003; Ferrer et al. 2006; Hammarstedt and Palme 2012; Kahanec 2006; Kee 1995; Kogan 2006).

3.1 The impact of labour market conditions on immigrants' outcomes

It is likely that the structure of the labour market exerts a significant influence on all workers' employment chances. However, since native and immigrant workers differ in a range of observable and unobservable characteristics and tend to occupy different roles in the job market, it is also plausible that certain characteristics of a country's labour market can impact

natives and immigrants differently (Causa and Jean 2007; Kogan 2006). If this is the case, employment outcomes between immigrants and natives will diverge, thereby increasing the immigrant-native gap. The analysis here tests the expectation that, other things held constant, immigrant-native differences in employment outcomes will be larger or smaller, depending on the proportion of immigrants within the population, the strictness in employment protection legislation for regular and for temporary contracts, and the density in trade unions.

3.1.1 The relative size of the immigrant population

Studies concerned with the impact of immigration on wages and employment argue that immigration inflows affect the labour market outcomes of existing workers by increasing labour supply and changing the composition of available skill (Dustmann et al. 2005). If the supply of capital is relatively stable in the short-term, increases in the supply of available labour by incoming immigration are expected to lower average wages (Dustmann et al. 2013; Dustmann et al. 2008) and employment rates (Angrist and Kugler 2003). This approach, which mostly stems from research focusing on the impact of immigration on native workers, expects that immigrant labour can perfectly substitute native labour (Angrist and Kugler 2003; Dustmann et al. 2013; Dustmann et al. 2008). A logical inference under this framework is to expect that new immigrants compete with already resident workers, both native and foreign-born, equally. This, however, contradicts the literature that focuses on immigrant-native employment gaps, which posits that due to their outsider status, immigrants experience difficulties integrating in the job market and for years after arrival, they have worse outcomes than native workers (Causa and Jean 2007).

A possible reconciliation of the two approaches may be found in Kahanec (2006), who argues that being a minority hurts, but being a large minority hurts even more. In the US context, he posits, inter-ethnic distance between ethnic minorities and majorities impedes social interactions, which in turn disadvantages ethnic minority groups in human capital acquisition and leads to minority labour being evaluated at a relatively lower wage. In regions where the ethnic minority group is larger, substitution effects within the supply of minority labour lead to even lower relative wages and a larger wage gap between non-ethnic and ethnic minority workers (Kahanec 2006).

The analysis here adapts this approach to argue that, in the case of the European labour markets, immigrant-native disparities in human capital are likely related to the immigrants' unfamiliarity with the host country and limited transferability of pre-migration human capital, in addition to inter-ethnic distance and inter-group threat (Markaki and

Longhi 2013). On this basis, immigrants are more likely complements to native workers and closer substitutes to other immigrants. This posits that immigrant substitutability is generated, not by mere skill-level substitution (Altonji and Card 1991; Angrist and Kugler 2003) but by immigrants occupying distinct types of jobs and operating in specific sectors and social networks. Therefore, a larger supply of immigrant labour may have divergent effects on foreign-born and on native-born workers. To an extent, this is also supported by existing findings that an increase in immigration has larger negative effects on other immigrants' wages (Bauer 1998; De New and Zimmermann 1994; Dustmann et al. 2013; Manacorda et al. 2012; Ottaviano and Peri 2008; Schmidt et al. 1994; Zorlu and Hartog 2005).

Following this theoretical approach, this study expects that a larger relative size of immigrant population in the host country will be associated with lower earnings and job security, as well as higher unemployment and underemployment among immigrants. Additionally, a larger relative size of the immigrant population is expected to have divergent effects on natives and immigrants, therefore immigrant-native gaps are expected to be larger in countries with more immigrants.

3.1.2 Labour market flexibility and economic conditions

A country's institutional framework defines the rights and responsibilities of employers and employees operating in the labour market, mainly by regulating the procedures involved in regular and temporary contracts with employment protection legislation (EPL), and by setting minimum legal wage rates. Trade unions also act as wage setting institutions by providing protection for employees and negotiating the terms of salaried employment with employers (Antecol et al. 2003). Since trade unions and employment protection legislation aim at protecting workers, more regulated labour markets and those with higher unionisation rates are likely to suppress wage inequalities, especially at the lower end of the income distribution. However, since more regulated labour markets also increase the monetary and procedural costs of hiring and firing workers, they reduce labour mobility and wage setting flexibility, thus increasing the risk of unemployment for all workers (Antecol et al. 2003; Chiswick et al. 2008).

Existing theories find it difficult to arrive to concrete predictions when it comes to how labour market flexibility and employment protection is likely to affect immigrant workers, and whether this effect will differ from natives'. According to Kogan (2006), when employers face higher hiring and firing costs, they set higher productivity expectations and avoid employing foreign-born workers who are perceived as riskier or as supplying lower

productivity and human capital. Therefore, in stricter and more protective labour markets, the risk of unemployment-underemployment among immigrants will be higher than among natives (Chiswick et al. 2008). This assumes that these institutions protect immigrant and native workers equally, while the risk is higher for hiring immigrants. Oppositely, other theories suggest that immigrants are not protected by institutions to the same extent as natives, thus immigrant workers are posing lower or no firing costs for employers (Angrist and Kugler 2003). Under that premise, in stricter labour markets, employers are more likely to take advantage of the lower costs associated with limited institutional protection by employing immigrants over natives.

Finally, the current economic conditions in a country need to be taken into account as confounding factors. Countries with larger and growing economies will increase all workers' employment chances as well as attract larger immigration inflows (Fleischmann and Dronkers 2010; Kogan 2006). Therefore analysis includes GDP per inhabitant as a measure of the overall size of the country's economy, alongside annual growth in GDP as a measure of recent economic performance.

4. Data and measurement

Empirical analysis is based on cross-sectional survey data from the EU Statistics on Income and Living Conditions (EU-SILC) for the years 2005 and 2010.[1] The EU-SILC is an annual survey on income and living conditions of private households in the European Union member states. Areas covered include basic demographic characteristics, education and qualifications, employment, gross and net income on an individual and household level. This study uses the cross-sectional release of the EU SILC, since the panel release does not provide information on respondents' country of birth. Due to the rotational sampling design of the EU SILC, the years 2005 and 2010 are chosen to ensure that respondents are not included in the sample twice.

Empirical analysis here includes respondents between the ages of 23 and 65 for men and 23 and 60 for women, from 19 European countries. Respondents between 18 and 22 years old have been excluded, since very young adults are more likely to be enrolled in education or be supported by their family. Table 1 shows the sample sizes by origin group for each country.[2]

Table 1. Sample sizes by country and immigrant category

Country	Native-born	EU-born	EU-born and local citizen	Non EU-born	Non EU-born and local citizen
Austria	12,815	421	305	763	626
Belgium	12,364	757	276	496	709
Czech Republic	16,931	85	351	95	50
Denmark	15,396	257	55	485	171
Finland	29,737	171	259	368	213
France	23,361	536	355	890	1,241
Greece	15,458	165	186	867	385
Hungary	23,068	41	99	68	137
Iceland	8,519	142	141	125	146
Ireland	6,563	280	357	159	57
Italy	54,032	340	538	1,446	907
Netherlands	25,214	236	218	192	984
Norway	14,092	386	155	322	489
Poland	43,910	10	87	33	110
Portugal	12,951	63	121	175	275
Slovakia	17,891	46	202	16	31
Spain	37,116	536	246	1,658	808
Sweden	14,663	334	464	396	1,158
United Kingdom	19,946	305	147	995	1,257
Total	404,027	5,111	4,562	9,549	9,754

Sample includes working age respondents pooled from the 2005 and 2010 EU SILC

4.1 Dependent variables

This section describes the construction of the four dependent variables used in the empirical analysis.[3] Table 2 shows the mean across the four employment outcomes by origin group and gender. To match the standard ILO definition of unemployment, respondents are classified as unemployed if they stated being unemployed currently (self-defined economic current economic activity), in addition to actively looking for a job in the past four weeks and being available to start work in the next two weeks.

Log monthly earnings are calculated using gross cash or near cash income for employees in euros, over the income reference period. Each respondent's reported annual income is divided by the sum of months they spent in full-time work (months x 1) plus the number of months in part-time work (months x 0.5). Since information on usual hours worked per week is not available with regards to the income reference period, it is not possible to calculate hourly rates. Furthermore, reported earnings include bonuses, over-time and other allowances.

Underemployment is a variable that aims to identify respondents who are currently employees and work fewer hours than they would prefer because they cannot find work for more hours. It is constructed using a supplied variable asking respondents the reason why they currently work fewer than 30 hours a week. It intends to distinguish between those who work part-time because they cannot find full-time employment from those who are working part-time for other reasons. All other current employees are classified as not under-employed.

Lastly, a variable on the type of job contract for employees is used for precarious employment and identifies employees who currently work without a contract or whose contract is of a fixed-term limited duration.[4]

Table 2. Summary statistics for dependent variables - mean by immigrant origin and gender

Variable	Native-born	EU-born	EU-born and local citizen	Non EU-born	Non EU-born and local citizen
			Men		
Unemployed	0.056	0.062	0.065	0.130	0.080
Monthly earnings, €	2,592	3,242	2,761	2,169	2,952
Underemployed	0.007	0.016	0.011	0.034	0.019
On precarious contract	0.120	0.140	0.120	0.280	0.140
			Women		
Unemployed	0.061	0.063	0.071	0.110	0.093
Monthly earnings, €	2,121	2,533	2,414	1,932	2,534
Underemployed	0.029	0.053	0.047	0.100	0.064
On precarious contract	0.160	0.190	0.150	0.320	0.180

Sample includes working age respondents pooled from the 2005 and 2010 EU SILC

As shown in Table 2, native-born respondents and EU-born immigrants have the best average employment outcomes, followed by EU-born immigrants who have the local citizenship. Immigrants born outside the EU have the lowest average earnings, as well as the highest average unemployment, underemployment and precarious employment rates. However, within each origin group, women have worse average outcomes than men. Six per cent of native men and women are unemployed, while the average for non EU-born immigrants is 13 per cent for men and 11 per cent for women. Reported average monthly earnings are highest among EU-born men at €3,242 and native-born men at €2,592, and lowest among non EU-born women at €1,932. These differences are however only indicative, since there are large differences in monthly earnings across countries. About three per cent of native-born women and 0.7 per cent of native-born men report being underemployed, in comparison to ten per cent of non EU-born women. Incidence of working on a precarious contract is highest among non EU-born women and men, at 32 per cent and 28 per cent respectively, whereas the average among native-born respondents is 16 per cent for women and 12 per cent for men.

4.2 Explanatory variables

4.2.1 Immigrant origin variables

Immigrants are defined as respondents who are born outside the country of residence. Respondents who are foreign-born are further classified into one of four categories based on whether they were born within or outside the EU and whether they hold the citizenship of the country of residence. All native-born respondents are the reference category.

The distinction between foreign born with and without the local citizenship is used, in the absence of information on years since migration, as a proxy for earlier immigrants. Foreign-born persons who hold the local citizenship are more likely to have been resident in that country for enough years to qualify for a path to naturalisation, as well as not being subject to working and movement limitations of other immigrants, especially those born outside the EU. This classification cannot distinguish between immigrants who acquired the local citizenship by naturalisation from those who are foreign-born but to parents of the resident country and may hold the local citizenship since birth. However, these probably represent a small share of foreign-born respondents, thereby unlikely to affect the empirical results. Despite this and other limitations, this classification is deemed more appropriate for

this study. The distinction between EU-born immigrants with and without the local citizenship is chosen to retain consistency with the non EU-born categories.

4.2.2 Individual-level variables

The empirical analysis includes a number of demographic, individual and household level variables as controls. Following previous research, age in years and its square is included as a proxy for work experience. Education attained is included using four dummies for up to primary, lower secondary, upper secondary, and higher or tertiary education. Household type is measured using five dummy variables that classify respondents depending on the number of adults in the household and the presence of dependent children. Marital status is included using three dummies for respondents who have never been married, those who are currently married, and those who are widowed, separated or divorced. Summary statistics for all the individual and household level variables are shown in Appendix Table A1.

4.2.3 Country-level variables

A series of country-level aggregate variables are included in the empirical models, to test whether the country's socioeconomic and regulatory context is associated with a larger or smaller immigrant-native gap in employment outcomes. To reduce endogeneity, the aggregate variables are lagged by one year and correspond to 2004 and 2009. Statistics for the country-level variables are shown in Appendix Table A2.

The relative size of immigrant population in the country is computed using annual micro data from the EU Labour Force Surveys (EU LFS) for 2004 and 2009. The EU LFS is a large-scale survey of households in the EU that provides information on labour market activities of individuals and forms the basis for the calculation of a number of official EU-wide statistics.[5] In this case, the percentage of immigrants within the population is computed by country and year.[6] Across the 19 countries and two years included here, Belgium had the highest average percentage of foreign-born residents at 14.5 per cent, while Poland had the lowest at 0.4 per cent. Among the countries with a larger relative size of immigrant population are the Republic of Ireland, Sweden, France, Austria and the UK, with an average of above 10 per cent immigrant population. On the other hand, Finland, the Czech Republic and Slovakia have on average below 4 per cent immigrant population.

Measures that relate to employment conditions are taken from the OECD statistics website. The three indicators refer to union density, in addition to two indices that measure the country's strictness in Employment Protection Legislation (EPL) for regular and

temporary contracts.[7] Union density corresponds to the percentage of wage and salary earners who are trade union members.[8] Iceland, Sweden, Finland and Denmark have the highest union density rates compared to the other countries in this study, with an average of above 70 per cent of salary earners being union members. France, Spain, Hungary, Poland, the Czech Republic and the Netherlands have the lowest unionisation rates, with an average of below 20 per cent of salary earners being union members.

The two EPL indices, one for regular and one for temporary work, measure "the procedures and costs involved in dismissing individuals or groups of workers and the procedures involved in hiring workers on fixed-term or temporary work agency contracts".[9] The indices can vary between zero and five, with higher values denoting stricter regulation of procedures and higher costs. There is large variation across the 19 countries with regards to EPL strictness, although within each country there is limited variation across the two years. The United Kingdom, the Republic of Ireland and Iceland have the least strict EPL, for both regular and temporary contracts. France has a relatively average EPL strictness for regular contracts, at 2.4, while having the strictest EPL for temporary employment at 3.6. Portugal has the strictest EPL for regular contracts at 4.4, although comparatively average in terms of temporary contracts, at 2.3.

Two measures of economic conditions of the country are taken from Eurostat, gross domestic product (GDP) per inhabitant in purchasing power standards (PPS), and the national economic growth rate since the previous year.[10] The GDP per inhabitant means to account for the overall capacity of the country's economy, since there are very large differences across the 19 countries included in the analysis, which could bias the results. The percentage growth in GDP since the previous year serves as a measure of the recent performance of the economy. Norway, Ireland, the Netherlands and Austria have the highest average GDP per inhabitant among the countries included. Poland, Hungary, Slovakia and Portugal have the lowest. Due to the 2008 recession, for most countries the annual change in GDP was positive in 2004 but negative in 2009. Poland is the only country with positive growth in both 2004 and 2009.

5. Empirical models

To identify whether there are gaps between natives and immigrants in the labour market, which persist after controlling for individual, household and country-level characteristics, logit and linear regressions are estimated separately for men and women of working age.

Logit regressions are used to estimate models relating to unemployment, underemployment, and precarious contracts, while log monthly earnings are estimated using OLS. For all models in this study errors are clustered by country and year, to correct for the downward biased standard errors in models that test the impact of aggregate geographic variables on micro-units (Moulton 1990).

In specification (1), each person's log of gross monthly wages or the probability of being unemployed/underemployed/on precarious contract O_{ijk} is estimated as a function of individual *i*, household *j,* and country-level *k* predictors *X'* as in equation (1):

$$O_{ijk} = \alpha + X'_{ijk}\beta + \varepsilon \qquad (1)$$

Where *X'* correspond to the four dummies that identify foreign-born respondents by region of birth (EU/non EU) and citizenship, a range of individual and household level controls for age, education, household type, marital status and wave (year 2010), and all the country-level indicators. Although the individual and household level variables included are not exhaustive, their selection is a result of a number of trade-offs related to data availability and comparability across countries. To retain consistency with previous research, the individual and household-level controls are the same across all specifications and outcomes (Causa and Jean 2007; Kogan 2006).

In the second step, the analysis focuses on the interactive effects between immigrant identifying dummies and country-level measures, to establish whether certain characteristics of the host country condition immigrants' employment outcomes and influence immigrant-native disparities in the labour market. Measures that are expected to condition the immigrant-native gaps according to theoretical predictions are i) the relative size of immigrant population, ii) the strictness in EPL for regular work contracts, iii) the strictness in EPL for temporary work contracts, and iv) trade union density.

In specification (2), each person's log of gross monthly wages or probability of being unemployed/underemployed/on precarious contract O_{ijk} is estimated as a function of individual *i*, household *j,* and country-level *k* predictors *X',* identical to specification (1), but with the addition of the interaction between immigrant origin dummies and one of the four country-level measures. Since the country-level measures vary by 19 countries and two years (2004 and 2009), the estimations can only test one interactive hypothesis per specification. The standard errors are again clustered by country and year.

6. Results

Table 3 shows the predicted impact of immigrant origin on the four employment outcomes for men and women, following the estimations without interactions as in specification (1). The empirical results suggest that there are statistically significant differences in employment outcomes between natives and most of foreign-born workers. Controlling for individual characteristics and country conditions, the chances of being unemployed are two to six per cent higher for immigrant respondents, in comparison to those who are native-born. The immigrant-native unemployment gap appears larger for immigrants born outside the EU, while EU-born men are not statistically more or less likely than native men to be unemployed. With regards to gross monthly earnings, immigrant men and women earn between seven and 25 per cent less than their native counterparts. The immigrant-native earnings gap is found largest for non EU-born men, who are estimated as having up to 25 per cent lower monthly earnings than native men. The gap is second largest for non EU-born women, whose monthly earnings are estimated to be 18 per cent lower than native women's earnings. The gap appears smaller between native and non EU-born women with the local citizenship, at seven per cent, and between native and EU-born men, at nine per cent.

The results also indicate that most immigrants are more likely to be underemployed than their native counterparts. All respondents born outside the EU and EU-born women are found between one and three per cent more likely to be underemployed than natives. Finally, all immigrants have higher chances of working on a precarious contract than native respondents. EU-born immigrants are between three and six per cent more likely to be on a precarious contract than natives, while the chances are up to 12 per cent higher for non EU-born immigrants.

Overall, these results are in agreement with findings of previous studies (Adsera and Chiswick 2007; Kahanec and Zaiceva 2009; Peracchi and Depalo 2006). Although not sufficient to completely eliminate immigrant-native differences, immigrants who hold the local citizenship have a relative advantage in the job market, compared to immigrants without the citizenship of the resident country. If having the local citizenship is an indication of long-term residence, findings are in agreement with previous research that the immigrant-native gap is reduced significantly among older immigrants. However, the findings here also suggest that regardless of the reasons, immigrants who have freedom of movement and full working rights tend to have a smaller residual difference with natives' employment outcomes, compared to other immigrants. The likely advantage in the job-market deriving

from having full working rights is also supported by empirical findings about EU-born immigrants' outcomes, which consistently show smaller immigrant-native gaps compared to outcomes of immigrants born outside the EU.

Table 3. Estimated impact of immigrant origin on employment outcomes

Immigrant origin variables	**Unemployed**		**Log monthly earnings**		**Underemployed**		**On precarious contract**	
	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.013	0.020**	-0.089**	-0.120**	0.004	0.015*	0.058**	0.055**
	(0.008)	(0.008)	(0.020)	(0.033)	(0.002)	(0.006)	(0.016)	(0.012)
EU-born local citizen	0.015*	0.025**	-0.103**	-0.105**	0.004	0.010	0.026*	0.034**
	(0.006)	(0.007)	(0.024)	(0.024)	(0.003)	(0.005)	(0.011)	(0.010)
Non EU-born	0.058**	0.035**	-0.254**	-0.187**	0.017**	0.033**	0.124**	0.116**
	(0.016)	(0.009)	(0.027)	(0.040)	(0.002)	(0.006)	(0.024)	(0.016)
Non EU-born local citizen	0.043**	0.045**	-0.136**	-0.076*	0.009**	0.023**	0.059**	0.048**
	(0.007)	(0.005)	(0.029)	(0.028)	(0.002)	(0.004)	(0.012)	(0.009)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.695	0.659	0.066	0.070	0.135	0.115

Sample of male respondents 23-65 years old and female respondents 23-60 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01; All models include individual-level controls for age, education, household type, marital status and wave (2010) and country-level variables for % immigrants, EPL strictness indices for regular and temporary employment, union density, GDP per inhabitant in PPS, and annual GDP growth. For full estimation results see Appendix Table A3.

6.1 The impact of the relative size of immigrant population

The analysis next focuses on the interactions between immigrant origin and the relative size of the immigrant population, as in specification (2). Figures 1a for men and 1b for women show how the marginal impact of being foreign-born on each outcome varies across different percentages of immigrants over the population (for average marginal effects see Appendix Table A4).[11] For each figure, the graph in the top left plots the marginal impact of origin on

the likelihood of being unemployed, while the graph in the bottom left plots the impact of immigrant origin on the likelihood of being underemployed. On the right-hand side of each figure, the top graph shows the impact of origin on monthly earnings and the bottom graph, the impact of origin on the probability of working on a precarious contract. The estimation results are in agreement with theoretical expectations, with the exception of working on a precarious contract, which shows larger variation across genders and origin from within and outside the EU.

In the case of non EU-born men and women, the chances of being unemployed and underemployed increase in proportion to increases in the relative size of immigrant population in the country. An increase in the percentage of immigrant population is also associated with a decrease in monthly earnings among non EU-born men and women. However, for native-born workers of both genders a larger percentage of immigrant population is not found associated with better or worse employment outcomes. These findings support the theoretical expectation that immigrants are likely to fare worse in countries with more immigrants. They are also in agreement with the prediction that a larger immigrant population has divergent effects on immigrants and natives, thus increasing the immigrant-native gap in those outcomes. Similar to the models without interactions, evidence suggests that EU-born immigrants, and in particular those with the local citizenship, have the smallest difference from natives in employment outcomes.

The relationship between immigrants' chances of working on a precarious contract and the relative size of immigrant population in the host country appears to depend on origin and gender (bottom right plot in Figures 1a and 1b). For the majority of foreign-born women, the chances of working on a precarious contract decrease as the size of immigrant population increases. Among men, this is only found for the EU-born without the local citizenship. However, for foreign-born men with the local citizenship and those who are non EU-born, the size of immigrant population does not appear associated with a higher or lower probability of having a precarious contract, nor a larger or smaller immigrant-native gap.

Figure 1a. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes, men

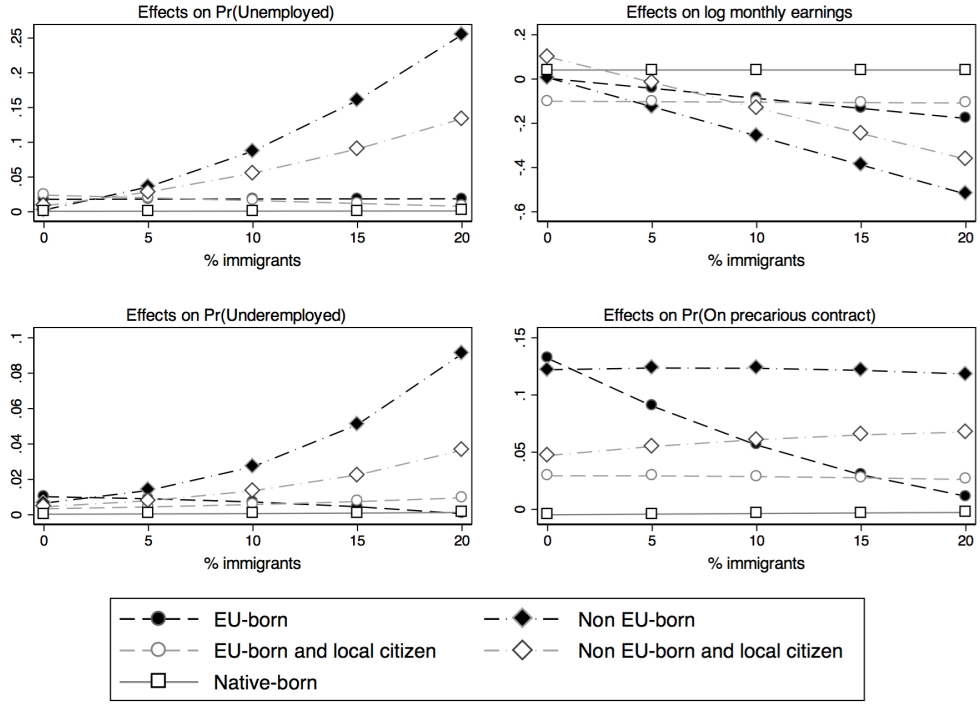
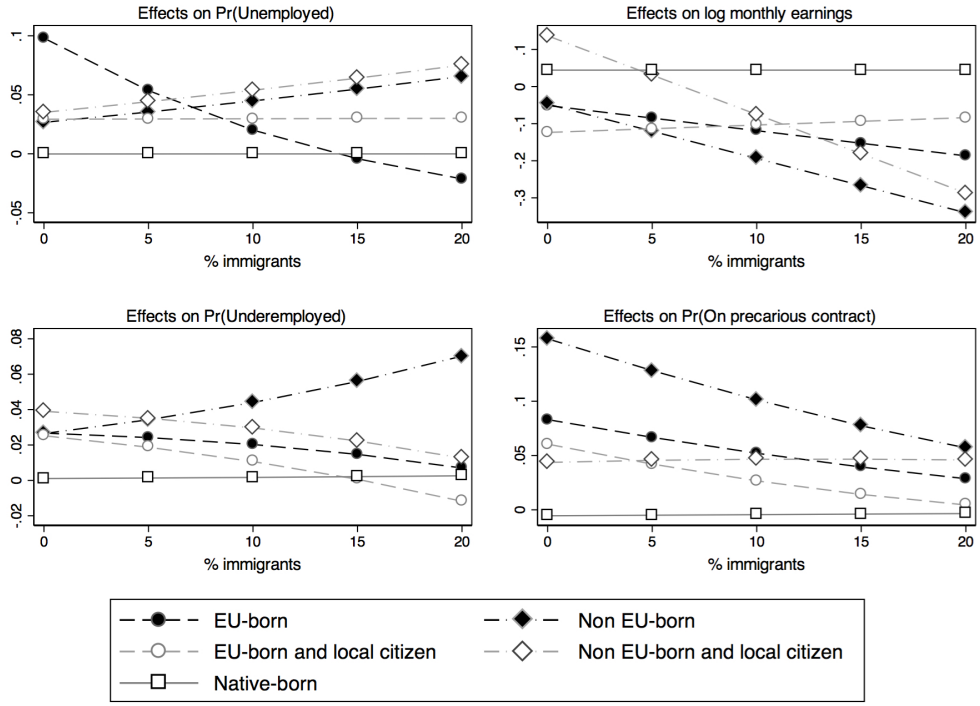


Figure 1b. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes, women



Despite the diversity of immigrant populations across Europe, estimations here do not distinguish between different groups of immigrants in the population. Effectively, the analysis here assumes that all immigrants likely act as substitutes to all immigrants. However, the different slopes for the five categories of origin and citizenship in Figures 1a and 1b suggest that a larger share of immigrants in the population does not have the same effect on all immigrants. A possible explanation is that immigrants whose origin and citizenship is closest to natives', i.e. EU-born immigrants who are local citizens, are more likely to experience the same impact from a larger share of immigrants as natives. Whereas third-country nationals, namely those who are non EU-born and without the local citizenship, are those who mostly occupy the 'outsider' status hypothesised by previous literature (Causa and Jean 2007; Kogan 2006). This evidence suggests that future research ought to take different types of immigrants into account in order to clarify these inter and within-group substitution relationships.

6.2 The impact of EPL strictness for regular work contracts

Figures 2a and 2b plot the predicted marginal impact of foreign origin on each employment outcome for different levels of strictness in EPL for regular contracts (for average marginal effects see Appendix Table A5). The empirical results show that a stricter employment protection legislation for regular contracts favours immigrants' chances of having a job, particularly men's, but is associated with a downward pressure on some immigrants' monthly earnings, especially those who are non EU-born. With regards to theoretical predictions, the findings appear in agreement with the expectation that a stricter EPL for regular contracts tends to protect immigrants and natives equally. However, it also appears that for every decrease in the unemployment/underemployment immigrant-native gap for a stricter EPL, there is an equivalent reduction in wages among non-naturalised immigrants of the same origin group and an increase in their chances of holding a precarious contract. This would appear to support the theory that employers respond to the increased risk of hiring foreign-born workers in countries with a stricter EPL by offering fixed-term contracts and lower earnings.

In more detail, immigrant men's chances of being unemployed (top left plot, Figure 2a) and underemployed (bottom left plot, Figure 2a) are lower in countries with a stricter EPL and higher in countries with a less strict EPL. The immigrant-native gap in those two outcomes is also larger in countries with less strict EPL for regular employment. This does not fully support the expectation that a stricter protection of regular contracts is likely to

increase the risk of unemployment and underemployment more among immigrants than among natives because employers prefer native workers (Kogan 2006). Also contrary to predictions about the role of employment protection for wage disparities, immigrant-native earnings differences are found larger in countries with a stricter protection of regular contracts, especially for foreign-born men and women who do not hold the local citizenship (top right plot, Figures 2a and 2b).

Women's chances of being unemployed and underemployed show larger variation depending on EU/non-EU origin and on having the local citizenship, although the immigrant-native unemployment-underemployment gaps remain relatively stable over different levels of EPL strictness (top left and top right plots, Figure 2b). In terms of job security, the estimations show that most immigrants are more likely to work on a precarious contract if they live in countries with a stricter EPL for regular employment. Other things held constant, for immigrants without the citizenship of the host country, the immigrant-native gap in precarious employment is larger in countries with a stricter EPL for regular contracts.

Figure 2a. Marginal effects of interactions between EPL strictness in regular contracts and immigrant origin on the four outcomes, men

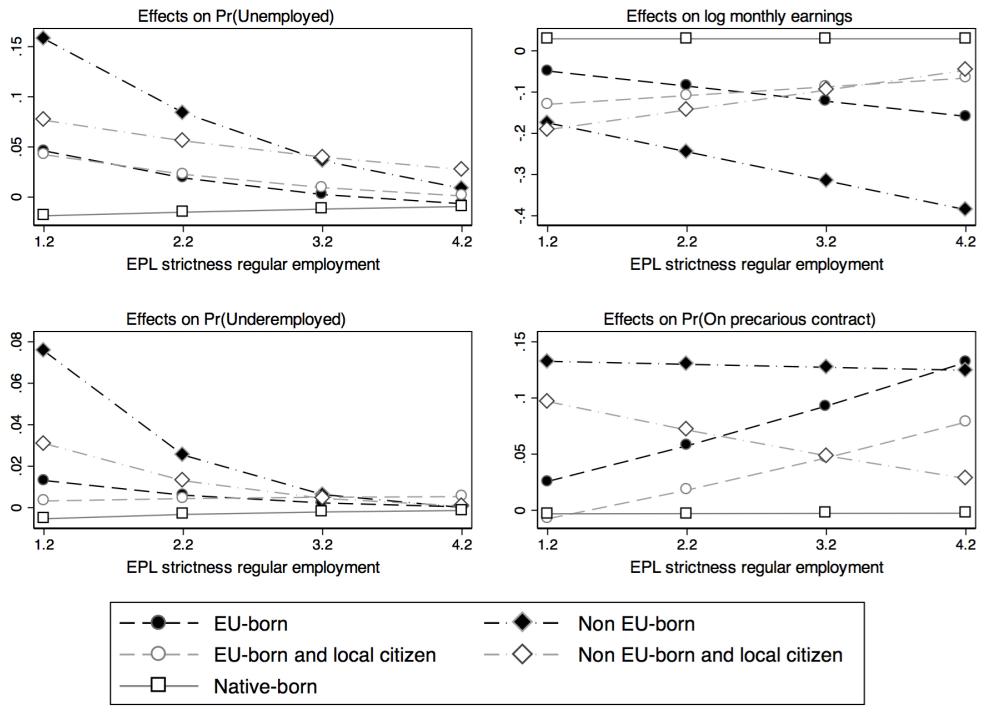
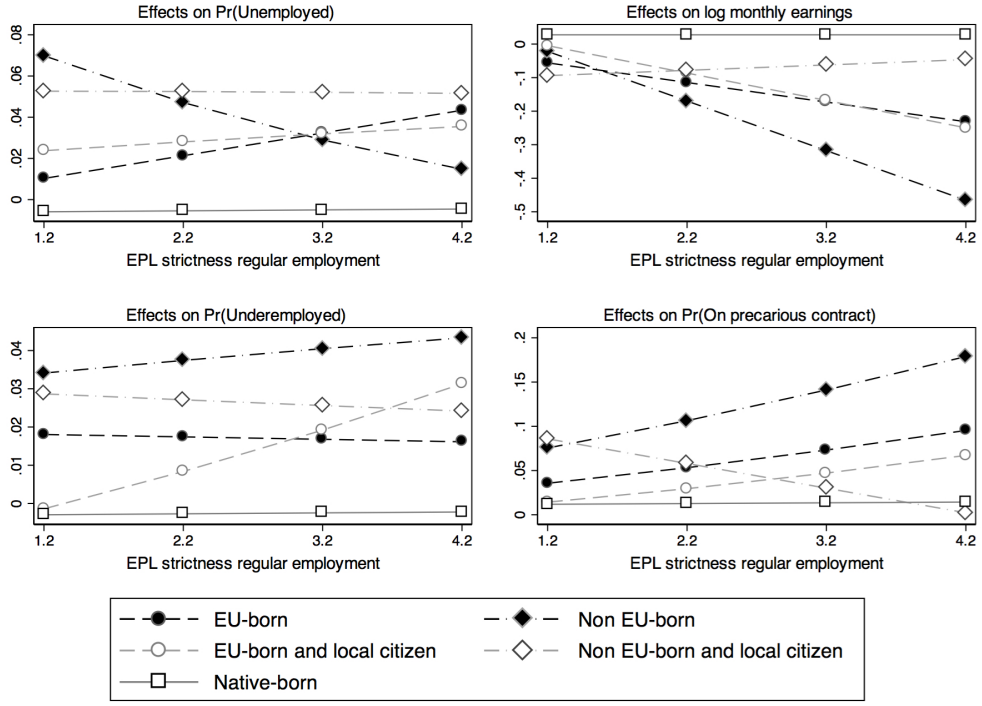


Figure 2b. Marginal effects of interactions between EPL strictness in regular contracts and immigrant origin on the four outcomes, women



Also identified by Adsera and Chiswick (2007), there is large gender variation in immigrant-native gaps. Findings show larger variation in slopes across origin groups among women, than among men. These differences may indicate that the female immigrant population across EU countries is more heterogeneous than the male immigrant population, which this analysis does not fully take into account. For example, in a family migration model, men are seen as seeking to maximise their personal job prospects, while immigrant women are seen as tied movers who aim at maximising, not personal, but family outcomes. Therefore, depending on origin and family status, immigrant women might be overrepresented in low-skilled, temporary, and part-time jobs, or be less likely to make post-migration human capital investments (Adsera and Chiswick 2007).

6.3 The impact of EPL strictness for temporary work contracts

Figures 3a and 3b show the predicted marginal impact of immigrant origin on the four employment outcomes for different levels of strictness in EPL for temporary contracts (for average marginal effects see Appendix Table A6). The empirical results partly support theoretical predictions and findings of previous studies. There is considerable variation depending on outcome and EU/non EU origin, but immigrant-native differences across the

four outcomes tend to be larger in countries with a stricter protection of temporary work contracts.

For non EU-born men the chances of being unemployed (top left plot, Figure 3a) and working on a precarious contract (bottom right plot, Figure 3a) are higher in countries with a stricter EPL for temporary contracts and diverging from natives' and most other immigrants' chances. Among non EU-born women shown in Figure 3b, this is also found in terms of underemployment. These findings support the expectation that a stricter EPL for temporary employment will increase all workers' chances of being unemployed-underemployed but even more among immigrants, since employers will prefer to hire native workers.

Moreover these results show a clear distinction in the impact of EPL strictness for regular employment and the influence of EPL strictness for temporary employment on shaping immigrant-native gaps. If employers are more likely to offer fixed-term contracts in response to a stricter EPL for regular employment, this flexibility is likely counterbalanced if paired with a stricter EPL for temporary employment. These findings lend support to Causa and Jean (2007) who focus on the contrast between strictness for regular contracts and strictness for temporary contracts. An alternative explanation could be that immigrants and women are overrepresented in certain types of job contracts. Nonetheless, these results are to be taken with a grain of salt, since there is significantly more variation across countries and years in EPL strictness for temporary contracts, than there is for regular contracts.

Figure 3a. Marginal effects of interactions between EPL strictness in temporary contracts and immigrant origin on the four outcomes, men

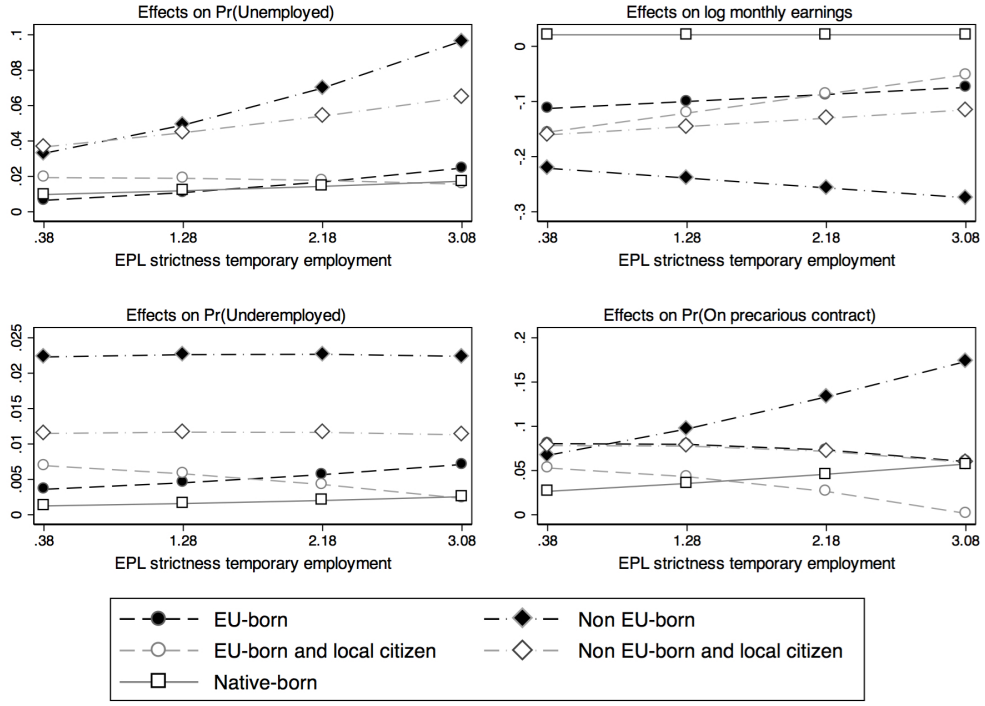
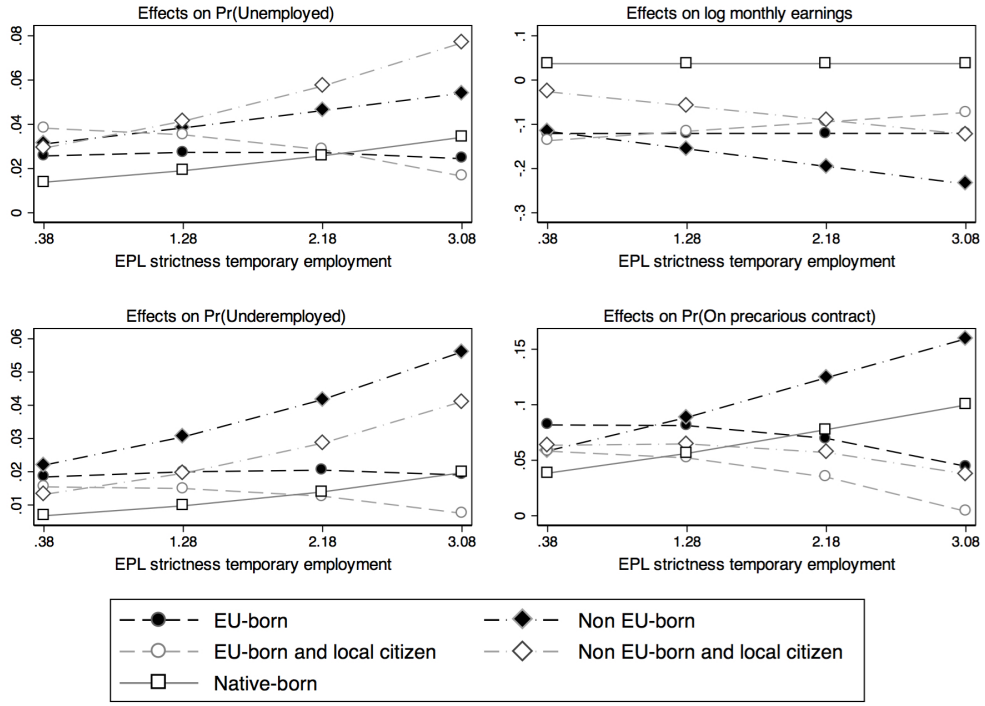


Figure 3b. Marginal effects of interactions between EPL strictness in temporary contracts and immigrant origin on the four outcomes, women



6.4 The impact of union density

Figures 4a and 4b show the predicted marginal impact of immigrant origin on the four employment outcomes for different levels of density in trade unions (for average marginal effects see Appendix Table A7). According to theoretical expectations, a smaller immigrant-native earnings gap but larger unemployment and underemployment gaps, are likely to be found in countries with higher union density, due to reduced wage-setting flexibility. For the most part, findings here do not agree with these predictions, while there is indication that a higher union density suppresses differences across some immigrant groups, rather than in comparison to natives.

The estimations show a higher probability of being unemployed and underemployed for most foreign-born men and women in countries with higher union density. This effect diverges from the impact of a higher union density on native-respondents, thereby increasing the immigrant-native gap in those employment outcomes. Lower monthly earnings and a larger immigrant-native gap are found for all foreign-born respondents in countries with a higher union density. Both in terms of earnings and likelihood of working on a precarious contract, the results suggest that differences across immigrants are smaller in countries with higher union density, despite the immigrant-native gap remaining largely the same.

These findings support the expectation that union density can condition immigrant-native gaps in the labour market. However, a higher union density does not appear associated with reduced disparities between immigrants and natives. Future research is likely to benefit from taking union coverage into account rather than union density, since it may better represent the share of the workforce whose contracts are covered by collective bargaining agreements.

Figure 4a. Marginal effects of interactions between union density and immigrant origin on the four outcomes, men

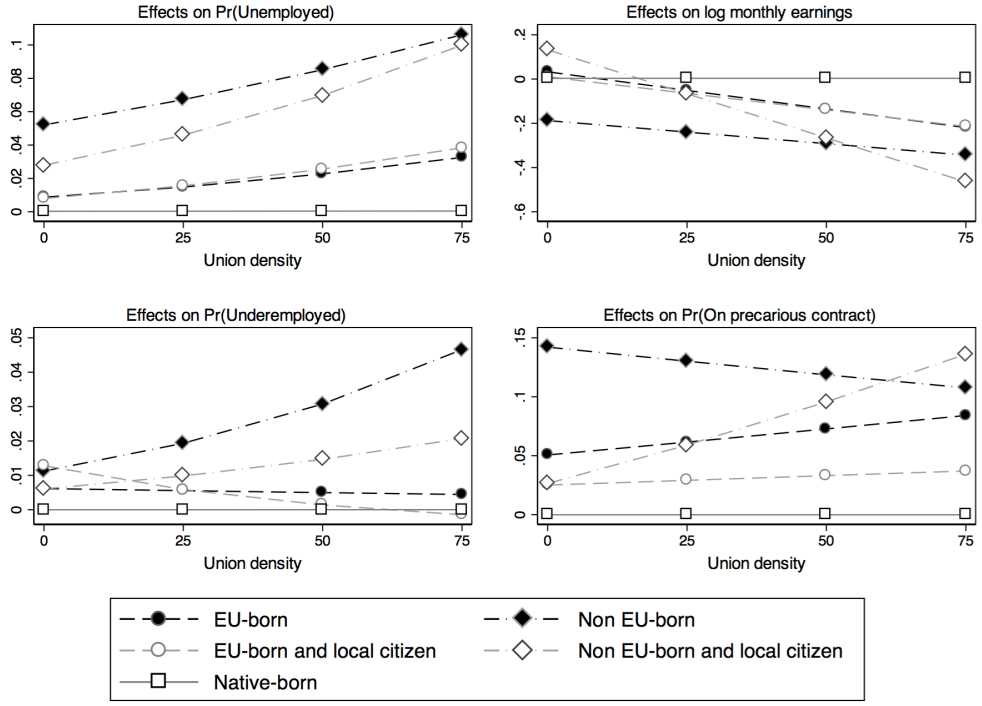
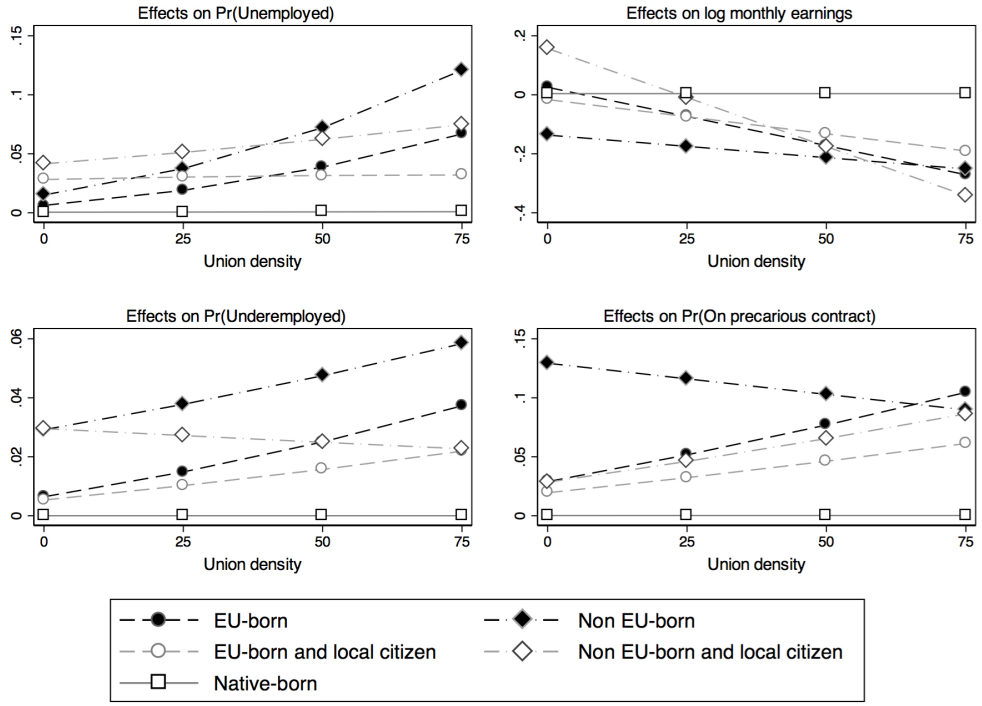


Figure 4b. Marginal effects of interactions between union density and immigrant origin on the four outcomes, women



6.1 Robustness analysis

Any inferences made on the basis of the discussed results need to take a series of limitations and possible sources of bias into account. Despite the number of advantages associated with the EU SILC data, it remains a cross-sectional survey with a limited number of years available for cross-sectional analysis, due to its rotational sampling design. This constrains the variation of the national-level indicators and may limit statistical confidence in the estimated results. Moreover, the EU SILC survey does not collect information on migrant specific characteristics such as years since migration, language proficiency, and country of origin. Consequently, the estimations are unable to include more exhaustive controls for individual heterogeneity. Notwithstanding, the evidence discussed here is consistent with the majority of previous research.

A number of labour market and country characteristics which fall beyond the scope of this study, such as union coverage, demand for the low-skilled sector, geographic size, and population density are also likely to affect immigrant-native gaps in employment outcomes. To ensure that the findings are not severely biased by these and other unaccounted country differences, all interactive models are also estimated with the addition of country dummies. As shown in Appendix Figures A5a to A8b, the majority of results remain robust to this change in the model specifications. Some predicted marginal effects, especially those closer to zero, are estimated slightly larger or smaller with country dummies, but overall patterns are in agreement with the main results.

7. Discussion

This study uses individual survey data from the EU Statistics on Income and Living Conditions for 2005 and 2010, alongside a set of country-level indicators to analyse disparities between immigrants' and natives' employment chances across 19 European countries. Four employment outcomes are taken into account; monthly earnings, unemployment, underemployment, and precarious employment. The empirical analysis focuses on the interactive effects between immigrant origin and the country's socioeconomic and regulatory context, to evaluate which characteristics of the host labour market are likely to favour immigrants' economic incorporation and reduce the immigrant-native gaps. Immigrants are found more likely to be unemployed, underemployed, and on a precarious job contract, compared to native respondents. Other things held constant, immigrants also have lower monthly earnings than natives. Across most outcomes, the largest immigrant-native

gap is found for immigrants born outside the EU without the local citizenship, while the smallest gap is found for EU-born immigrants who hold the local citizenship.

Lending support to the within-immigrant labour substitution hypothesis, immigrants seem to fare worse and experience larger immigrant-native gaps in countries with a larger share of immigrants (Kahanec 2006). Although not directly tested here, this may indicate that earlier immigrants are more likely to experience what studies predict as a short-term negative impact of immigration in the host labour force (Altonji and Card 1991; Dustmann et al. 2005; Dustmann et al. 2008). Immigrant-native gaps in unemployment and underemployment are found larger in countries with a higher union density. A plausible explanation for this finding may be found in Angrist and Kugler (2003) who argue that immigrants are more likely to work illegally or in non-union jobs and less likely to be covered by collective bargaining agreements and policy provisions to the same extent as native workers.

When it comes to regulation of temporary employment contracts, stricter and more protective labour markets are associated with higher chances of being unemployed, underemployed and on a precarious contract among immigrants, and a larger immigrant-native gap. This is in agreement with predictions by Kogan (2006), who argues that immigrants pose a riskier hiring choice in more protective labour markets and employers respond by preferring native workers instead. Contrary to theoretical expectations, however, labour markets with a stricter protection of regular employment tend to have a smaller immigrant-native gap in unemployment and underemployment, whereas gaps in earnings and precarious contracts are larger for non-naturalised immigrants and unchanged for those who have the local citizenship. These findings appear to support the theory that employers respond to a stricter EPL for regular contracts by offering some foreign-born workers fixed-term contracts and lower earnings instead.

In summary, this paper finds evidence that certain features of the labour market affect native and immigrant workers differently, and therefore can condition the immigrant-native gap across various employment outcomes. Evidence also supports the hypothesis that these disparities are partly driven by immigrants and natives occupying different roles in the job market. Immigrants' outsider status likely entails that their employment is less protected against, or more responsive to, certain labour market conditions than native workers' outcomes. Evidence, however, also indicates that labour market conditions do not impact all immigrants and both genders the same way. Employment protection for regular contracts appears important in shaping immigrant-native gaps among men, while protection for temporary contracts seems to play a more relevant role for immigrant-native gaps among

women. Immigrants who have freedom of movement and working rights, either because they hold the local citizenship, or because they are born in the EU, appear to not only, have a relative advantage in the job market compared to other immigrants, but are also more likely to respond to labour market conditions in a similar way to native workers.

Endnote

[1] See: http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/eu_silc

[2] A number of countries have been omitted from the analysis due to lack of information on respondents' country of birth, monthly earnings, and other data incompatibilities.

[3] Two particularities of the employment related variables in the EU-SILC should be noted. The timeframe that the question refers to varies depending on the variable and the country. All dependent variables here correspond to the current situation, with the exception of monthly earnings, which is based on the income reference period. Secondly, the variable on current economic status is self-defined and based on the respondents' own perception of their main activity. The use of the self-defined economic activity variable is necessary, since the supplied variable for type of employment refers to the current situation, for those who defined themselves as being in paid work at present, but also includes the last situation for those who stated other current activities.

[4] Denmark does not supply information on this variable due to differences in the legal definitions of duration in employment contracts. For more information see: EU-SILC User Database Target Variables Description.

[5] For further information on the EU LFS micro-data see: http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/lfs

[6] The percentages are calculated without sample weights.

[7] Data are freely available and were extracted on 02 Dec 2013 11:38 UTC (GMT) from http://stats.oecd.org. Due to unavailable information for union density in 2009 for Iceland and Hungary, values for 2008 are used instead. No information on EPL for Iceland in 2004.

[8] It should be noted that union density differs from union coverage, which measures the ratio of salary earners who are covered by collective bargaining agreements, regardless of whether they are themselves union members or not. Union coverage is likely a better measure compared to union density. However, the OECD labour force statistics do not provide this information.

[9] Definition drawn from: http://stats.oecd.org.

[10] Data are publicly available from http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/ and were extracted on 02 December 2013.

[11] It should be noted that to allow for better visibility, the plots in Figures 1a to 4b do not include confidence intervals for the marginal effects. For marginal effects with 95% confidence intervals see Appendix Figures A1a to A4b. For average marginal effects and standard errors see Appendix Tables A4 to A7.

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Appendix A

Table A1. Summary statistics for individual-level variables

Variable	N	Mean	Sd	Min	Max
Age	426,844	43	11	23	65
Age squared	426,844	2,006	980	529	4,225
Up to primary education completed	426,844	0.10	0.30	0	1
Lower secondary ed. completed	426,844	0.16	0.37	0	1
Upper secondary ed. completed	426,844	0.45	0.50	0	1
Higher or tertiary ed. completed	426,844	0.29	0.45	0	1
One person household	426,844	0.08	0.27	0	1
2 adults no dependent children	426,844	0.24	0.43	0	1
2 adults with dependent children	426,844	0.38	0.48	0	1
Other HH with dependent children	426,844	0.12	0.32	0	1
All other households	426,844	0.19	0.39	0	1
Married	426,844	0.65	0.48	0	1
Separated/widowed/divorced	426,844	0.10	0.30	0	1
Never married	426,844	0.25	0.43	0	1
Year - 2005	426,844	0.51	0.50	0	1
Year - 2010	426,844	0.49	0.50	0	1

Sample includes working age respondents pooled from the 2005 and 2010 EU SILC

Table A2. Statistics for country-level variables for 2004 and 2009

	% Immigrant population[a]		Strictness index of EPL for regular contracts[b]		Strictness index of EPL for temporary contracts[b]		Union density[b]		Annual growth % in GDP[c]		GDP per inhabitant in PPS[c] /100	
	2004	2009	2004	2009	2004	2009	2004	2009	2004	2009	2004	2009
Austria	8.9	13.9	2.4	2.4	1.3	1.3	34.1	28.7	2.6	-3.8	27.7	29.5
Belgium	13.5	15.6	1.8	1.8	2.4	2.4	53.1	51.5	3.3	-2.8	26.3	27.7
Czech R.	2.2	2.7	3.3	3.1	0.5	1.1	21.0	17.3	4.7	-4.5	16.9	19.4
Denmark	7.3	6.4	2.1	2.1	1.4	1.4	71.7	68.8	2.3	-5.7	27.2	29.0
Finland	2.7	3.8	2.2	2.2	1.6	1.6	73.3	69.2	4.1	-8.5	25.2	26.9
France	11.4	12.2	2.5	2.4	3.6	3.6	7.7	7.9	2.5	-3.1	23.7	25.6
Greece	7.0	9.9	2.8	2.8	2.8	2.8	24.5	24.5	4.4	-3.1	20.3	22.1
Hungary	1.7	1.7	2.0	2.0	1.1	1.1	16.9	16.8	4.8	-6.8	13.6	15.3
Iceland	5.0	8.0	.	1.7	0.6	0.6	99.1	79.3	7.8	-6.6	28.4	28.3
Ireland	9.8	16.0	1.4	1.3	.	0.6	35.5	33.1	4.2	-6.4	30.9	30.2
Italy	2.0	8.8	2.8	2.8	2.0	2.0	34.1	34.7	1.7	-5.5	23.2	24.4
Netherlands	9.4	9.0	2.9	2.8	0.9	0.9	20.8	19.1	2.2	-3.7	28.0	31.0
Norway	5.5	9.0	2.3	2.3	2.8	3.0	55.0	54.3	4.0	-1.6	35.8	41.5
Poland	0.4	0.4	2.2	2.2	1.8	1.8	19.0	15.1	5.3	1.6	10.9	14.2
Portugal	5.7	6.8	4.4	4.4	2.6	1.9	21.4	20.1	1.6	-2.9	16.7	18.8
Slovakia	1.1	0.8	2.2	2.2	0.6	1.6	23.6	17.0	5.1	-4.9	12.3	17.1
Spain	4.8	9.1	2.4	2.4	3.3	3.0	15.3	15.8	3.3	-3.8	21.9	24.2
Sweden	11.4	12.9	2.6	2.6	1.4	0.8	78.1	68.4	4.2	-5.0	27.4	28.2
United Kingdom	9.6	12.4	1.2	1.2	0.4	0.4	28.9	27.1	3.2	-5.2	27.0	26.3

Values are matched with respondents in the EU SILC with a one year lag; a. based on author's calculations using the EU LFS; b. source: OECD; c. source: Eurostat

Table A3. Full estimation results for models without interactions

	Unemployed		Log earnings		Underemployed		Precarious employment	
Variable	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.013	0.020**	-0.089**	-0.120**	0.004	0.015*	0.058**	0.055**
	(0.008)	(0.008)	(0.020)	(0.033)	(0.002)	(0.006)	(0.016)	(0.012)
EU-born and local citizen	0.015*	0.025**	-0.103**	-0.105**	0.004	0.010	0.026*	0.034**
	(0.006)	(0.007)	(0.024)	(0.024)	(0.003)	(0.005)	(0.011)	(0.010)
Non EU-born	0.058**	0.035**	-0.254**	-0.187**	0.017**	0.033**	0.124**	0.116**
	(0.016)	(0.009)	(0.027)	(0.040)	(0.002)	(0.006)	(0.024)	(0.016)
Non EU-born and local citizen	0.043**	0.045**	-0.136**	-0.076*	0.009**	0.023**	0.059**	0.048**
	(0.007)	(0.005)	(0.029)	(0.028)	(0.002)	(0.004)	(0.012)	(0.009)
Age	-0.001	-0.002**	0.035**	0.043**	-0.000**	-0.001	-0.006**	-0.013**
	(0.001)	(0.001)	(0.004)	(0.004)	(0.000)	(0.000)	(0.001)	(0.002)
Age squared	0.000	0.000	-0.000**	-0.000**	0.000**	0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Up to primary education completed	0.037**	0.033**	-0.159**	-0.236**	0.006**	0.029**	0.109**	0.132**
	(0.007)	(0.007)	(0.043)	(0.049)	(0.002)	(0.005)	(0.017)	(0.025)
Lower secondary ed. completed	0.029**	0.031**	-0.091**	-0.155**	0.004**	0.019**	0.051**	0.071**
	(0.005)	(0.005)	(0.025)	(0.027)	(0.001)	(0.004)	(0.010)	(0.012)
Higher or tertiary ed. completed	-0.017**	-0.025**	0.367**	0.349**	0.000	-0.014**	-0.007	-0.019*
	(0.003)	(0.004)	(0.020)	(0.024)	(0.001)	(0.001)	(0.006)	(0.008)
2 adults no dependent children	0.000	0.005	-0.028*	-0.041**	-0.002**	-0.003	-0.019*	-0.023*
	(0.004)	(0.004)	(0.014)	(0.009)	(0.001)	(0.002)	(0.008)	(0.010)
2 adults with dependent children	-0.010*	0.002	0.011	-0.075**	-0.004**	-0.005**	-0.029**	-0.022
	(0.004)	(0.005)	(0.017)	(0.015)	(0.001)	(0.002)	(0.009)	(0.012)
Other HH with dependent ch.	0.008	0.012	-0.107**	-0.177**	-0.001	0.002	-0.002	0.005
	(0.005)	(0.006)	(0.018)	(0.020)	(0.001)	(0.002)	(0.011)	(0.014)
All other households	0.009*	0.014**	-0.097**	-0.114**	-0.002**	0.005*	-0.008	0.002
	(0.005)	(0.004)	(0.012)	(0.016)	(0.000)	(0.002)	(0.010)	(0.011)
Married	-0.037**	-0.021**	0.139**	-0.002	-0.005**	-0.000	-0.043**	-0.009**
	(0.003)	(0.003)	(0.013)	(0.015)	(0.001)	(0.002)	(0.006)	(0.003)
Separated/widowed/divorced	-0.003	-0.000	0.033*	-0.034**	-0.001	0.002	-0.013**	0.005
	(0.002)	(0.002)	(0.012)	(0.012)	(0.001)	(0.001)	(0.003)	(0.004)
Year - 2010	0.011	0.004	-0.309	-0.340	-0.001	0.001	0.060**	0.074*
	(0.013)	(0.013)	(0.261)	(0.262)	(0.002)	(0.008)	(0.017)	(0.033)
% Immigrants	0.001	-0.000	0.041*	0.045**	0.000**	0.001*	-0.003*	-0.004
	(0.001)	(0.001)	(0.015)	(0.016)	(0.000)	(0.001)	(0.002)	(0.003)
EPL strictness regular work	-0.011**	-0.004	0.030	0.028	-0.002**	-0.002	-0.002	0.012
	(0.004)	(0.005)	(0.068)	(0.072)	(0.001)	(0.003)	(0.008)	(0.014)
EPL strictness temporary work	0.011**	0.019**	0.021	0.036	0.001**	0.010**	0.036**	0.064**
	(0.003)	(0.004)	(0.042)	(0.047)	(0.000)	(0.002)	(0.008)	(0.015)
Union density	0.000*	0.001**	0.003	0.004	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.001)
GDP per inhabitant in PPS/100	-0.004**	-0.005**	0.078**	0.073**	-0.000**	-0.001	-0.006**	-0.005**
	(0.001)	(0.001)	(0.014)	(0.015)	(0.000)	(0.000)	(0.001)	(0.002)
Annual GDP growth	-0.001	-0.001	-0.039	-0.041	-0.000	-0.000	0.003	0.004
	(0.001)	(0.001)	(0.031)	(0.030)	(0.000)	(0.001)	(0.002)	(0.003)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.695	0.659	0.066	0.070	0.135	0.115

Sample includes male respondents 23-65 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01

Table A4. Interactions between % immigrant population and immigrant origin

	Unemployed		Log monthly earnings		Underemployed		On precarious contract	
	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.015	0.086*	0.003	-0.051	0.013	0.031	0.111*	0.073
	(0.020)	(0.035)	(0.085)	(0.114)	(0.013)	(0.021)	(0.055)	(0.041)
EU-born* % immigrants	-0.008	-0.370*	-0.907	-0.678	-0.032	-0.088	-0.311	-0.131
	(0.130)	(0.147)	(0.850)	(1.115)	(0.037)	(0.097)	(0.264)	(0.266)
EU-born local citizen	0.021*	0.025	-0.100	-0.124	0.004	0.030	0.022	0.052*
	(0.010)	(0.017)	(0.050)	(0.066)	(0.006)	(0.016)	(0.021)	(0.024)
EU-born citizen* % immigrants	-0.059	0.005	-0.040	0.200	-0.003	-0.131	0.048	-0.197
	(0.069)	(0.115)	(0.587)	(0.675)	(0.040)	(0.101)	(0.196)	(0.201)
Non EU-born	0.002	0.022	0.006	-0.047	0.008*	0.031*	0.101	0.145*
	(0.013)	(0.021)	(0.103)	(0.127)	(0.004)	(0.014)	(0.071)	(0.060)
Non EU-born* % immigrants	0.420**	0.105	-2.63**	-1.465	0.030	0.009	0.141	-0.217
	(0.104)	(0.147)	(0.943)	(1.175)	(0.021)	(0.068)	(0.397)	(0.377)
Non EU-born local citizen	0.007	0.029**	0.100	0.137	0.006	0.046	0.036	0.037
	(0.011)	(0.011)	(0.108)	(0.114)	(0.005)	(0.027)	(0.029)	(0.026)
Non EU-born citizen* % immigrants	0.249**	0.101	-2.309*	-2.120	0.014	-0.107	0.172	0.092
	(0.095)	(0.073)	(1.074)	(1.041)	(0.023)	(0.098)	(0.233)	(0.236)
% Immigrants	0.000	-0.000	0.042*	0.045**	0.000*	0.001*	-0.003*	-0.004
	(0.001)	(0.001)	(0.015)	(0.016)	(0.000)	(0.001)	(0.002)	(0.003)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.696	0.659	0.067	0.070	0.135	0.115

Sample of male respondents 23-65 years old and female respondents 23-60 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01; All models include individual-level controls for age, education, household type, marital status and wave (2010) and country-level variables for EPL strictness for regular and temporary employment, union density, GDP per capita in PPS and GDP growth

Table A5. Interactions between EPL strictness for regular contracts and immigrant origin

	Unemployed		**Log monthly earnings**		**Underemployed**		**On precarious contract**	
	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.054	-0.002	-0.005	0.014	0.012	0.013	-0.006	0.019
	(0.056)	(0.024)	(0.162)	(0.163)	(0.015)	(0.022)	(0.038)	(0.060)
EU-born*EPL regular	-0.010	0.008	-0.037	-0.059	-0.001	0.000	0.022	0.012
	(0.011)	(0.009)	(0.069)	(0.073)	(0.002)	(0.006)	(0.018)	(0.024)
EU-born local citizen	0.042	0.013	-0.155	0.093	0.000	-0.008	-0.027	-0.001
	(0.035)	(0.029)	(0.123)	(0.119)	(0.005)	(0.011)	(0.018)	(0.033)
EU-born citizen*EPL regular	-0.007	0.004	0.021	-0.082	0.001	0.007	0.021*	0.012
	(0.007)	(0.010)	(0.047)	(0.047)	(0.002)	(0.006)	(0.009)	(0.013)
Non EU-born	0.189*	0.078	-0.090	0.156	0.106*	0.021	0.125	0.049
	(0.091)	(0.041)	(0.114)	(0.137)	(0.045)	(0.022)	(0.088)	(0.062)
Non EU-born*EPL regular	-0.017	-0.009	-0.070	-0.148*	-0.004**	0.002	-0.000	0.018
	(0.009)	(0.006)	(0.049)	(0.059)	(0.001)	(0.005)	(0.018)	(0.021)
Non EU-born local citizen	0.061**	0.038	-0.249	-0.113	0.032*	0.021	0.120*	0.135**
	(0.020)	(0.022)	(0.134)	(0.163)	(0.013)	(0.019)	(0.055)	(0.047)
Non EU-born citizen*EPL regular	-0.004	0.002	0.048	0.016	-0.002*	0.000	-0.014	-0.023*
	(0.004)	(0.005)	(0.058)	(0.069)	(0.001)	(0.005)	(0.011)	(0.011)
EPL strictness regular employment	-0.010**	-0.004	0.030	0.031	-0.002*	-0.002	-0.003	0.012
	(0.004)	(0.005)	(0.068)	(0.071)	(0.001)	(0.003)	(0.008)	(0.014)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.695	0.659	0.068	0.070	0.135	0.115

Sample of male respondents 23-65 years old and female respondents 23-60 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01; All models include individual-level controls for age, education, household type, marital status and wave (2010) and country-level variables for % immigrants, EPL strictness in temporary employment, union density, GDP per inhabitant in PPS and annual GDP growth

Table A6. Interactions between EPL strictness for temporary contracts and immigrant origin

	Unemployed		**Log monthly earnings**		**Underemployed**		**On precarious contract**	
	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.006	0.040	-0.118*	-0.121	0.004	0.033	0.129**	0.156**
	(0.015)	(0.021)	(0.046)	(0.077)	(0.005)	(0.019)	(0.045)	(0.052)
EU-born*EPL temporary	0.003	-0.006	0.014	0.000	-0.000	-0.004	-0.016	-0.027*
	(0.005)	(0.005)	(0.022)	(0.034)	(0.001)	(0.004)	(0.010)	(0.012)
EU-born local citizen	0.023	0.063*	-0.170**	-0.146**	0.010	0.029	0.090*	0.116**
	(0.013)	(0.028)	(0.051)	(0.053)	(0.011)	(0.016)	(0.036)	(0.033)
EU-born citizen*EPL temporary	-0.003	-0.011	0.039	0.024	-0.001	-0.005	-0.021*	-0.028**
	(0.004)	(0.006)	(0.026)	(0.021)	(0.002)	(0.003)	(0.008)	(0.010)
Non EU-born	0.034	0.046	-0.214**	-0.099	0.029**	0.036*	0.091	0.096*
	(0.025)	(0.024)	(0.068)	(0.096)	(0.007)	(0.016)	(0.049)	(0.041)
Non EU-born*EPL temporary	0.005	-0.003	-0.020	-0.044	-0.001	-0.001	0.007	0.005
	(0.005)	(0.006)	(0.026)	(0.038)	(0.001)	(0.003)	(0.011)	(0.011)
Non EU-born local citizen	0.041*	0.040**	-0.167**	-0.013	0.015**	0.021*	0.124**	0.121**
	(0.017)	(0.015)	(0.057)	(0.059)	(0.006)	(0.009)	(0.029)	(0.034)
Non EU-born citizen*EPL temporary	0.000	0.001	0.017	-0.036	-0.001	0.000	-0.016**	-0.022**
	(0.003)	(0.003)	(0.026)	(0.026)	(0.001)	(0.002)	(0.005)	(0.008)
EPL strictness temporary employment	0.010**	0.019**	0.020	0.038	0.002**	0.011**	0.036**	0.066**
	(0.003)	(0.004)	(0.042)	(0.047)	(0.000)	(0.002)	(0.008)	(0.015)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.695	0.659	0.067	0.070	0.135	0.116

Sample of male respondents 23-65 years old and female respondents 23-60 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01; All models include individual-level controls for age, education, household type, marital status and wave (2010) and country-level variables for % immigrants, EPL strictness in regular employment, union density, GDP per inhabitant in PPS and annual GDP growth

Table A7. Interactions between union density and immigrant origin

	Unemployed		**Log monthly earnings**		**Underemployed**		**On precarious contract**	
	Men	Women	Men	Women	Men	Women	Men	Women
EU-born	0.008	0.007	0.033	0.025	0.005	0.005	0.045	0.028
	(0.014)	(0.009)	(0.058)	(0.069)	(0.005)	(0.009)	(0.033)	(0.025)
EU-born*Union density	0.000	0.000	-0.003*	-0.004*	-0.000	0.000	0.000	0.001
	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)	(0.001)
EU-born local citizen	0.007	0.030*	0.010	-0.016	0.010	0.004	0.022	0.019
	(0.010)	(0.014)	(0.047)	(0.053)	(0.007)	(0.008)	(0.018)	(0.018)
EU-born citizen*Union density	0.000	-0.000	-0.003*	-0.002	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Non EU-born	0.050	0.016	-0.188**	-0.137	0.009**	0.025**	0.135**	0.134**
	(0.026)	(0.014)	(0.059)	(0.077)	(0.003)	(0.009)	(0.042)	(0.027)
Non EU-born*Union density	0.000	0.000	-0.002	-0.002	0.000**	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)	(0.000)
Non EU-born local citizen	0.026**	0.045**	0.132*	0.157*	0.005	0.025**	0.023*	0.028
	(0.009)	(0.008)	(0.065)	(0.075)	(0.003)	(0.007)	(0.010)	(0.015)
Non EU-born citizen*Union density	0.000	0.000	-0.008**	-0.007**	0.000	-0.000	0.001**	0.001
	(0.000)	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Union density	0.000*	0.000**	0.004	0.004	-0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.001)
Observations	173,873	146,324	111,581	105,104	125,122	114,186	163,201	160,425
R2	0.087	0.073	0.696	0.660	0.067	0.070	0.135	0.115

Sample of male respondents 23-65 years old and female respondents 23-60 years old; Average marginal effects for binary outcomes, OLS coefficients for log earnings; Standard errors in parentheses are clustered by country and year; * p<0.05, **p < 0.01; All models include individual-level controls for age, education, household type, marital status and wave (2010) and country-level variables for % immigrants, EPL strictness in temporary and regular employment, GDP per inhabitant in PPS and annual GDP growth

Figure A1a. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes with 95% CI, men

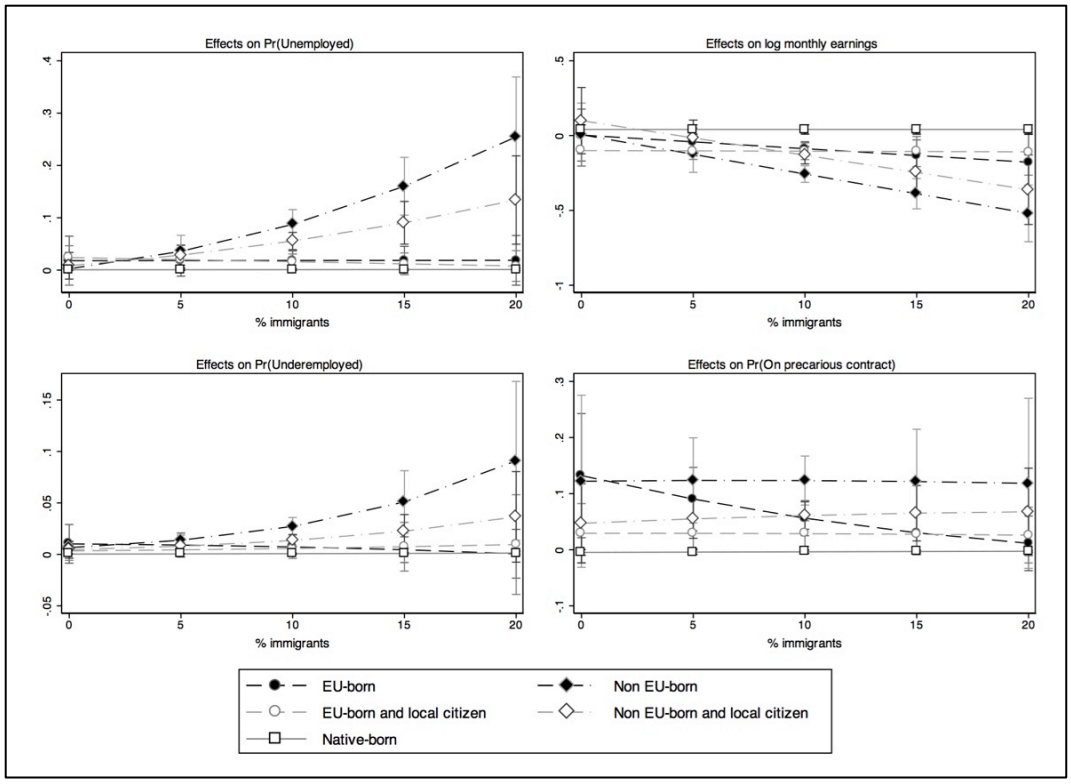

Figure A1b. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes with 95% CI, women

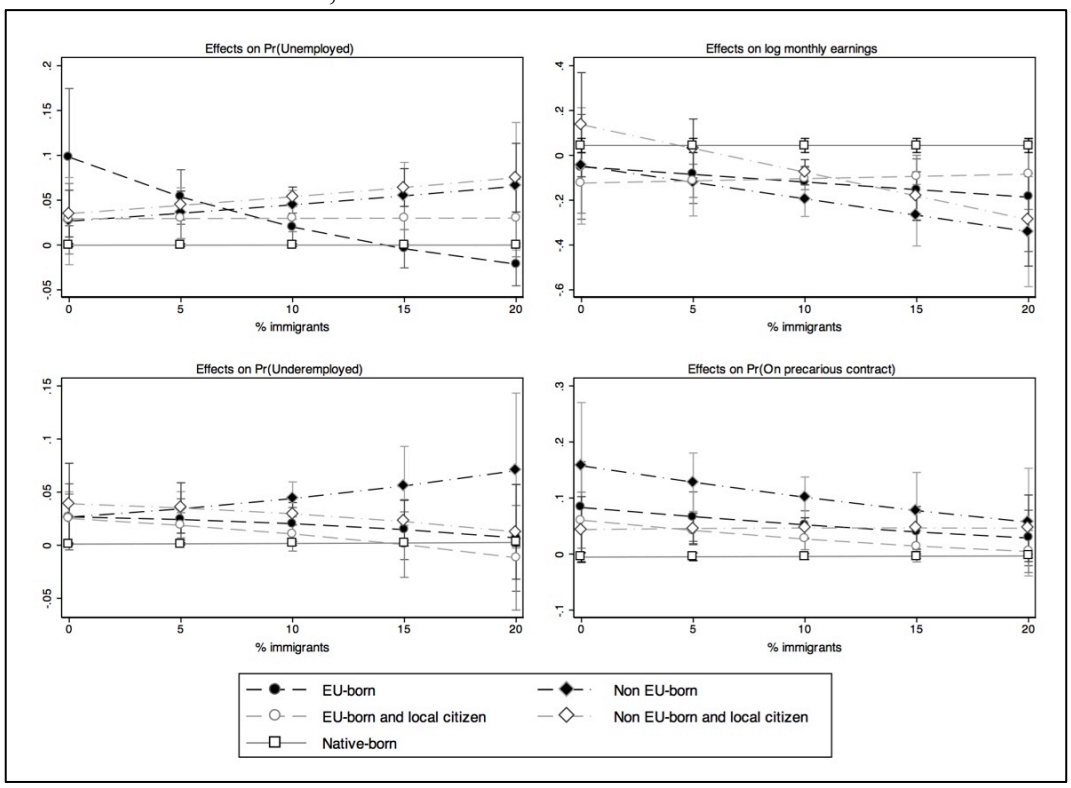

Figure A2a. Marginal effects of interactions between EPL in regular contracts and immigrant origin on the four outcomes with 95% CI, men

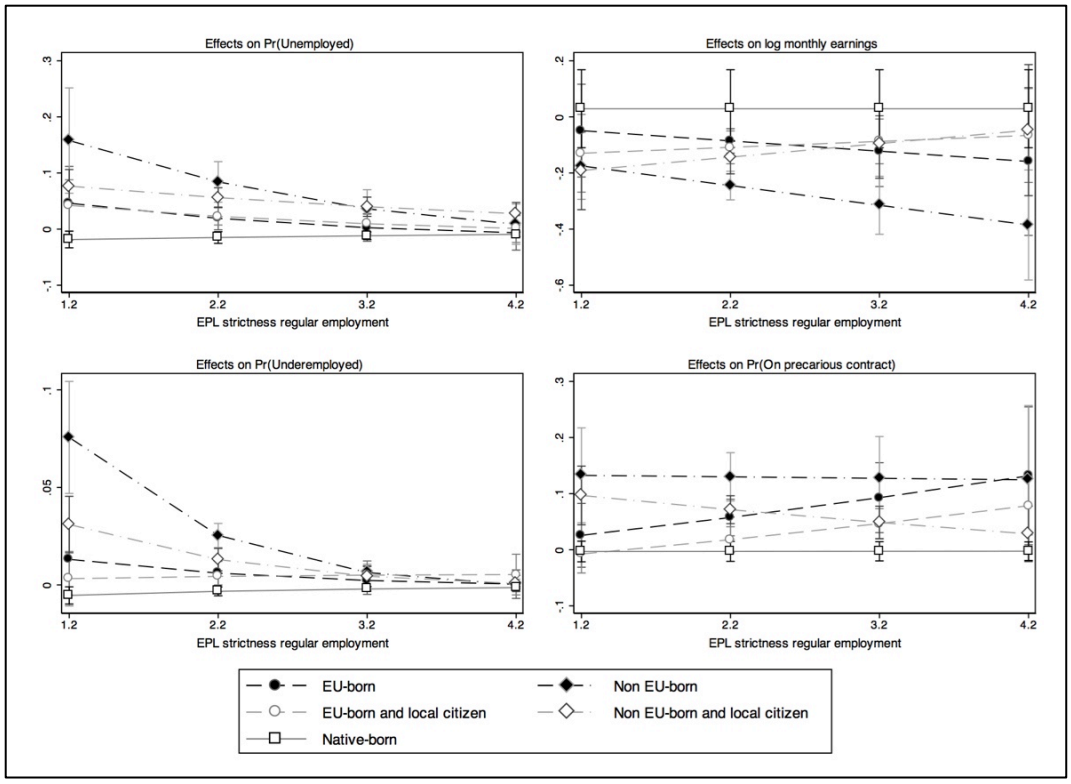

Figure A2b. Marginal effects of interactions between EPL in regular contracts and immigrant origin on the four outcomes with 95% CI, women

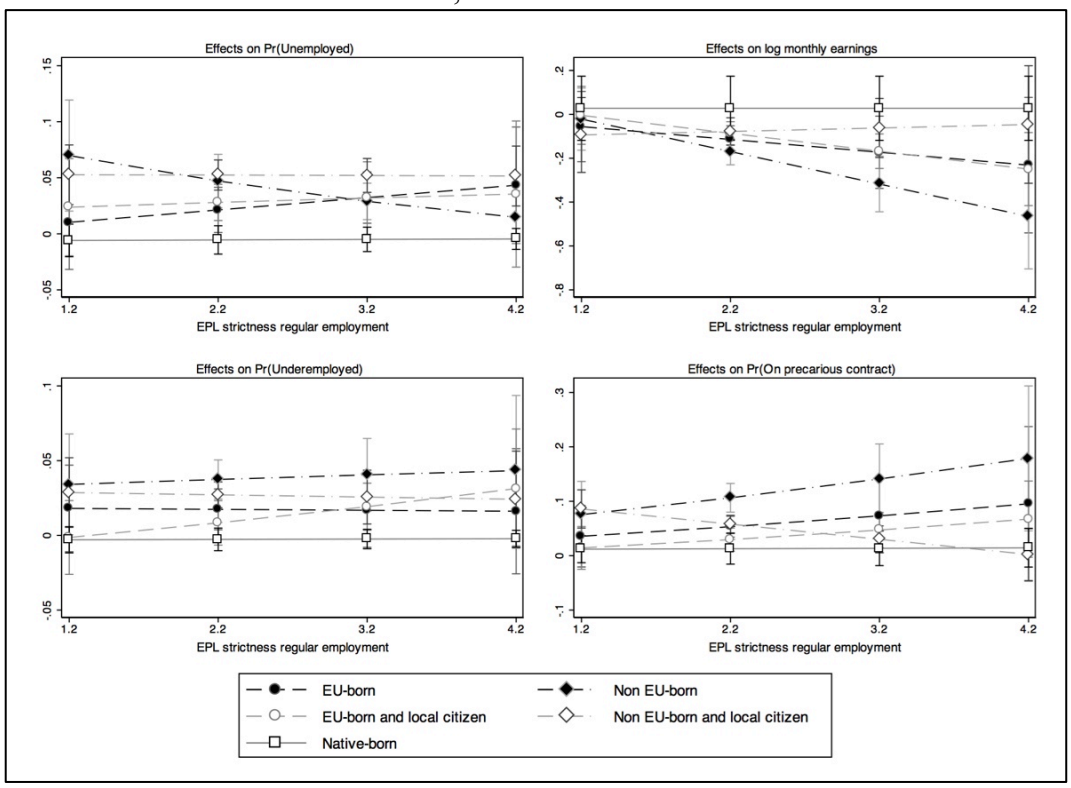

Figure A3a. Marginal effects of interactions between EPL in temporary contracts and immigrant origin on the four outcomes with 95% CI, men

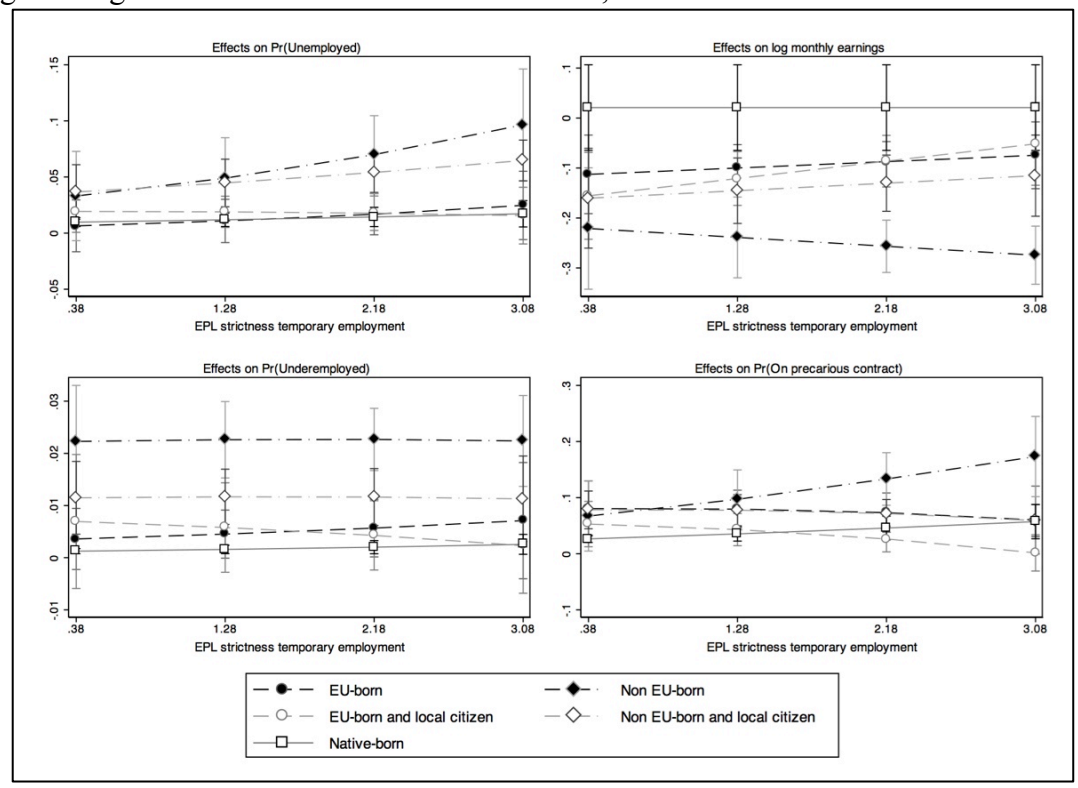

Figure A3b. Marginal effects of interactions between EPL in temporary contracts and immigrant origin on the four outcomes with 95% CI, women

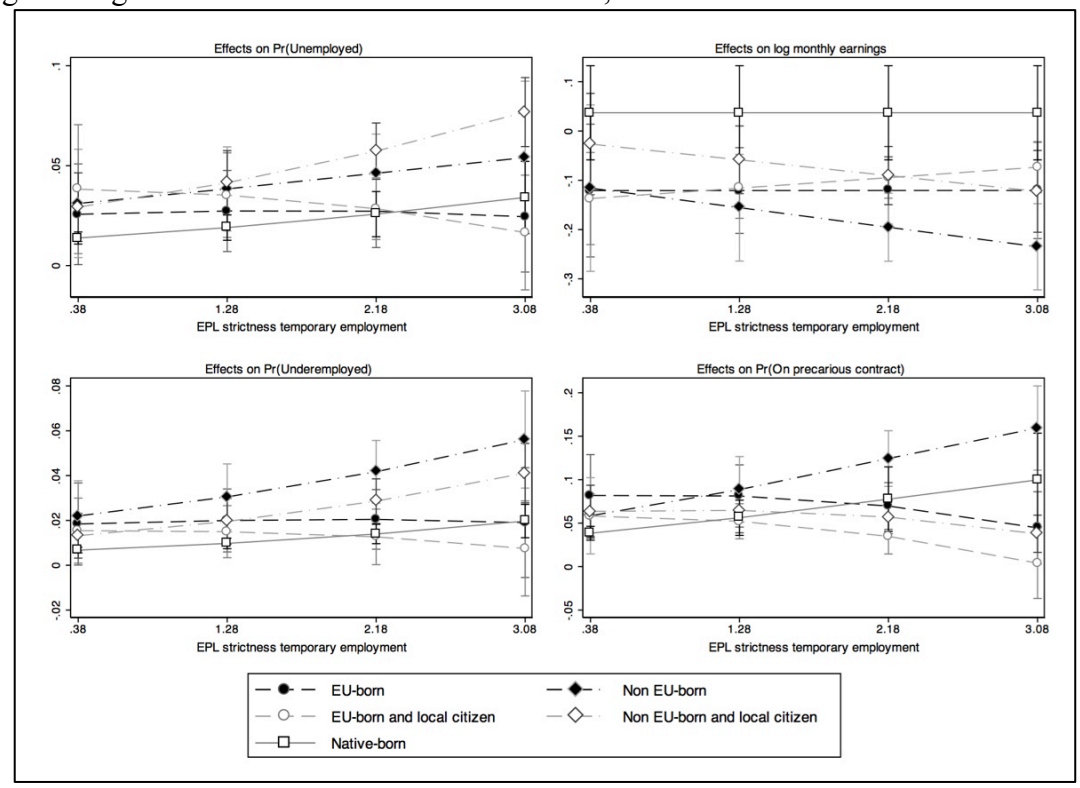

Figure A4a. Marginal effects of interactions between union density and immigrant origin on the four outcomes with 95% CI, men

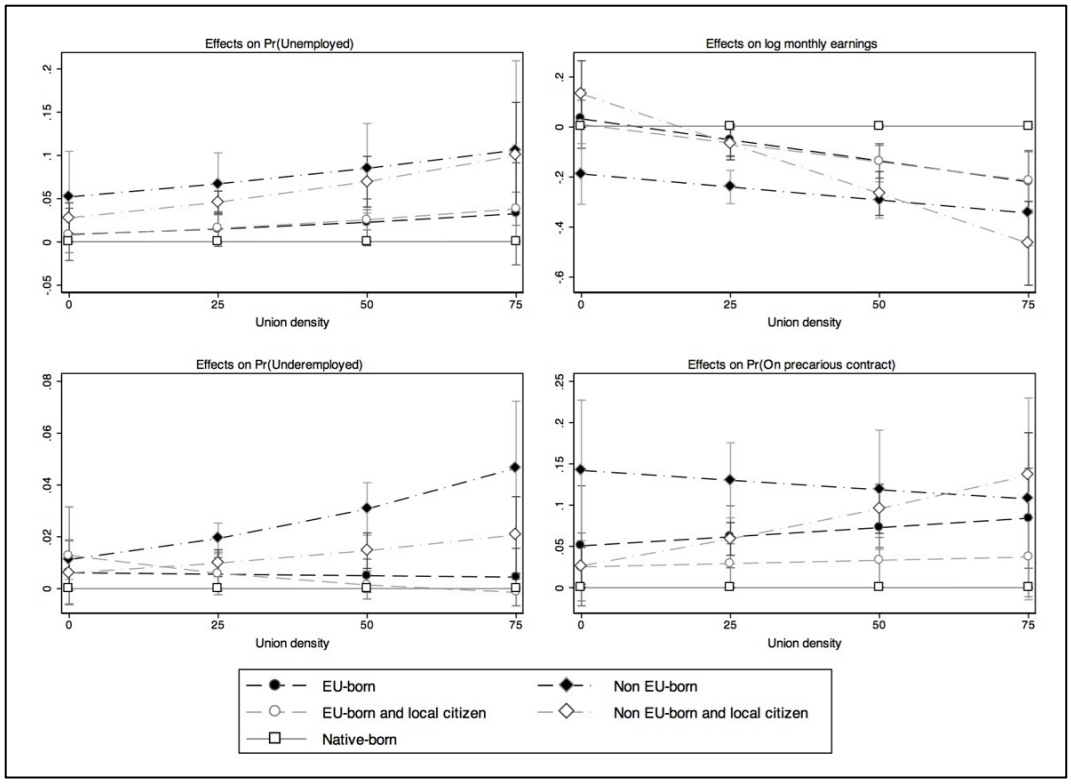

Figure A4b. Marginal effects of interactions between union density and immigrant origin on the four outcomes with 95% CI, women

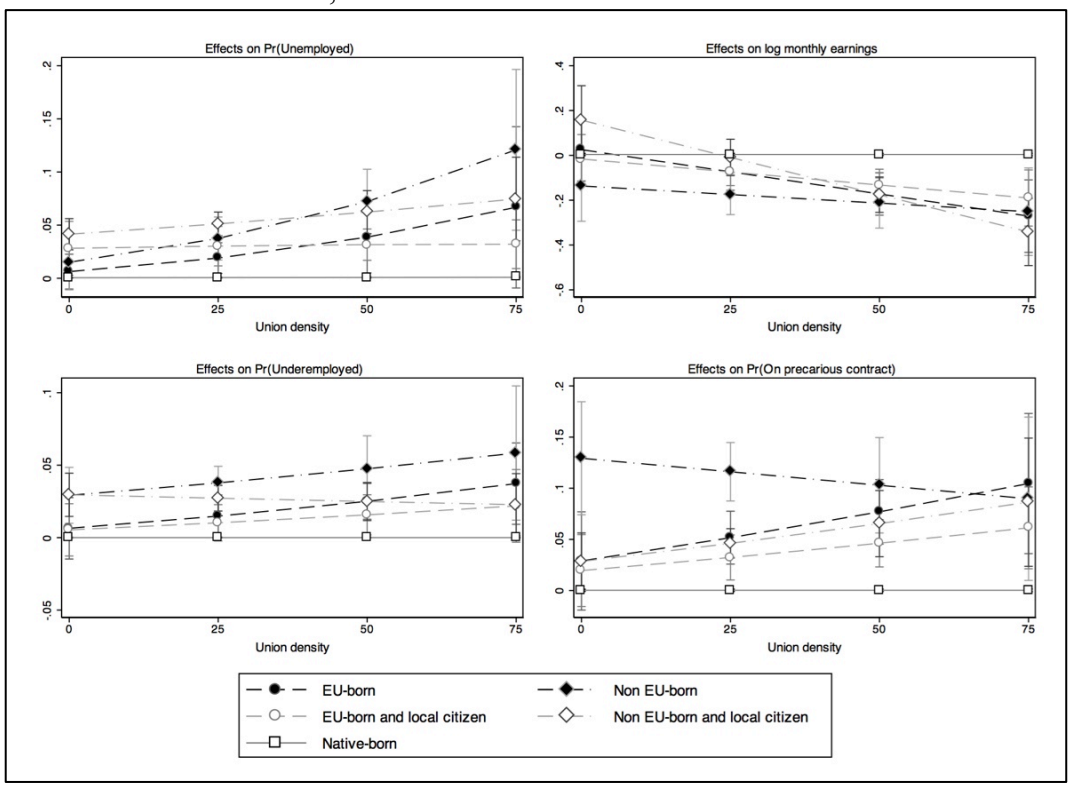

Figure A5a. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes with country dummies, men

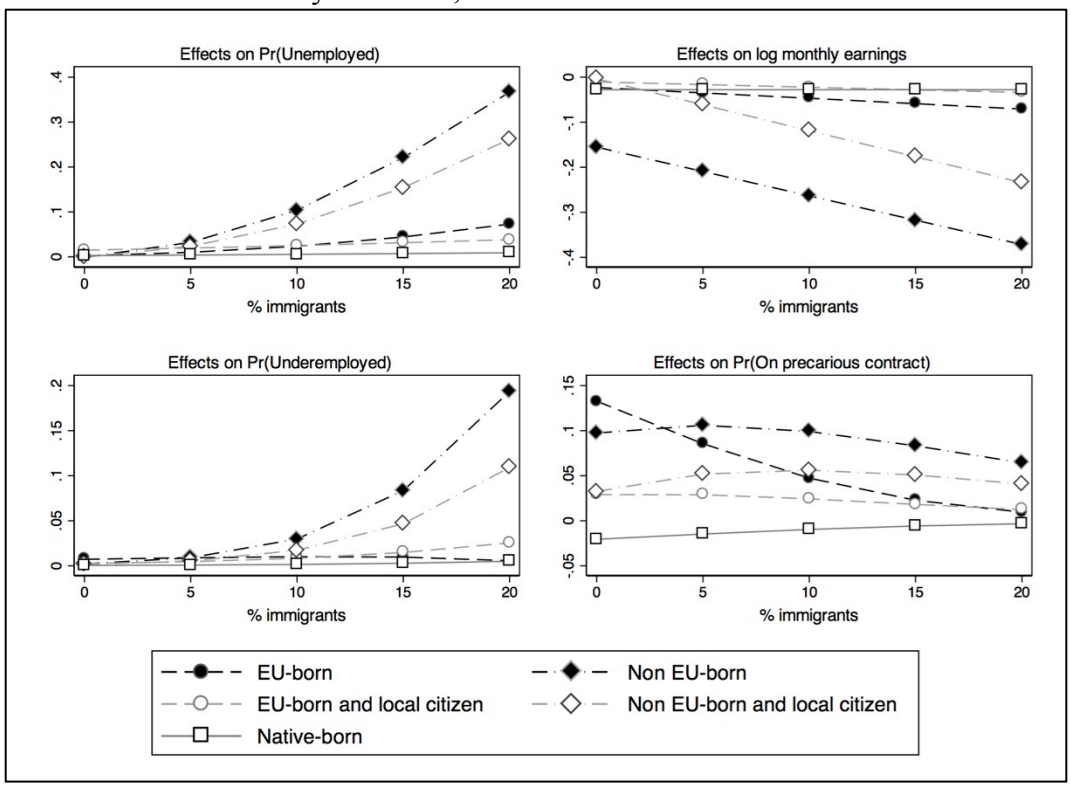

Figure A5b. Marginal effects of interactions between % immigrants and immigrant origin on the four outcomes with country dummies, women

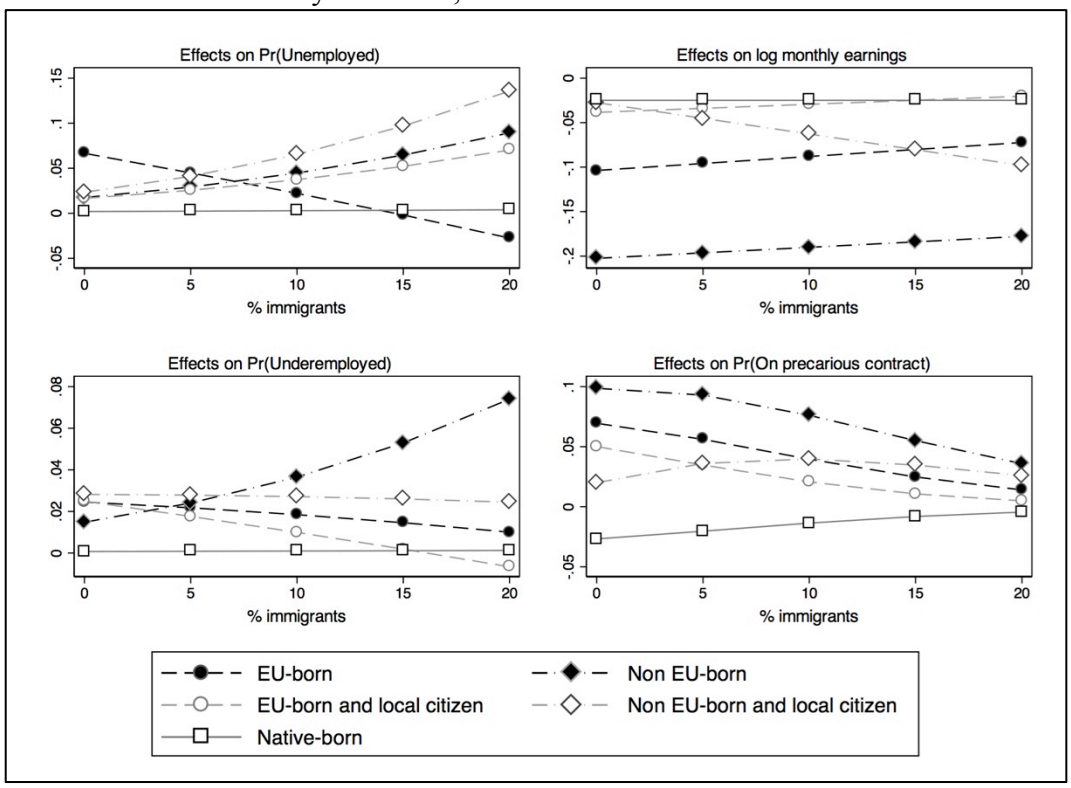

Figure A6a. Marginal effects of interactions between EPL strictness regular contracts and immigrant origin on the four outcomes with country dummies, men

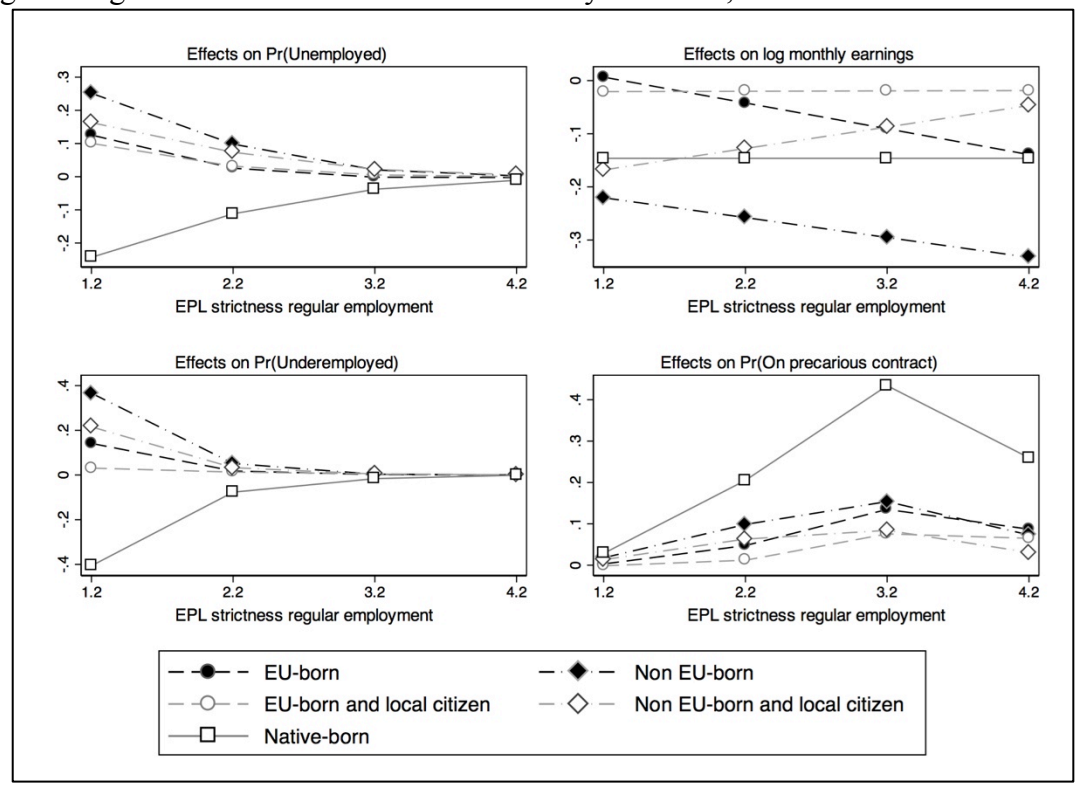

Figure A6b. Marginal effects of interactions between EPL strictness regular contracts and immigrant origin on the four outcomes with country dummies, women

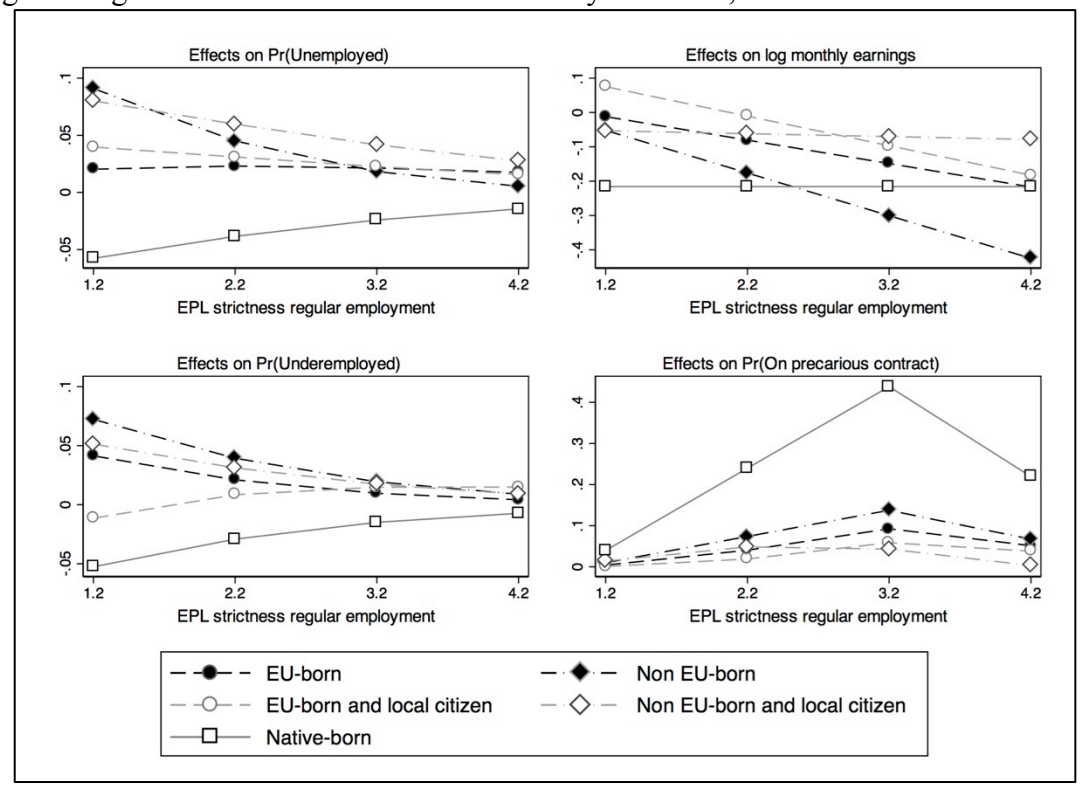

Figure A7a. Marginal effects of interactions between EPL strictness temporary contracts and immigrant origin on the four outcomes with country dummies, men

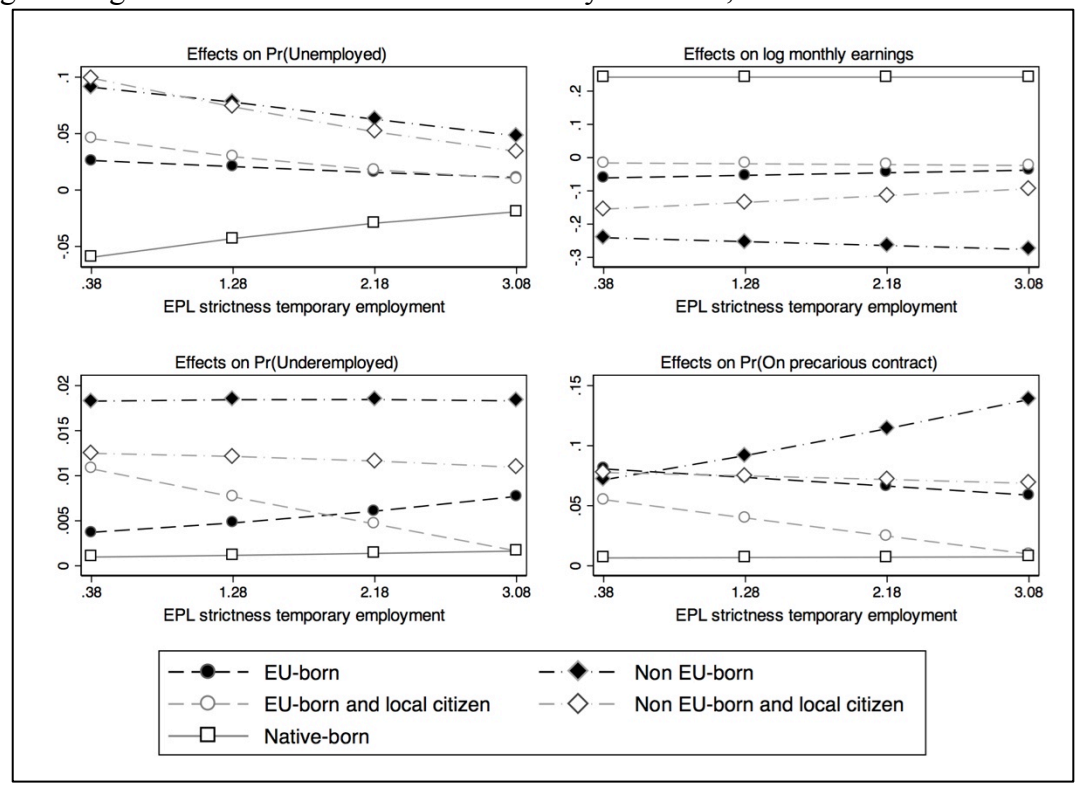

Figure A7b. Marginal effects of interactions between EPL strictness temporary contracts and immigrant origin on the four outcomes with country dummies, women

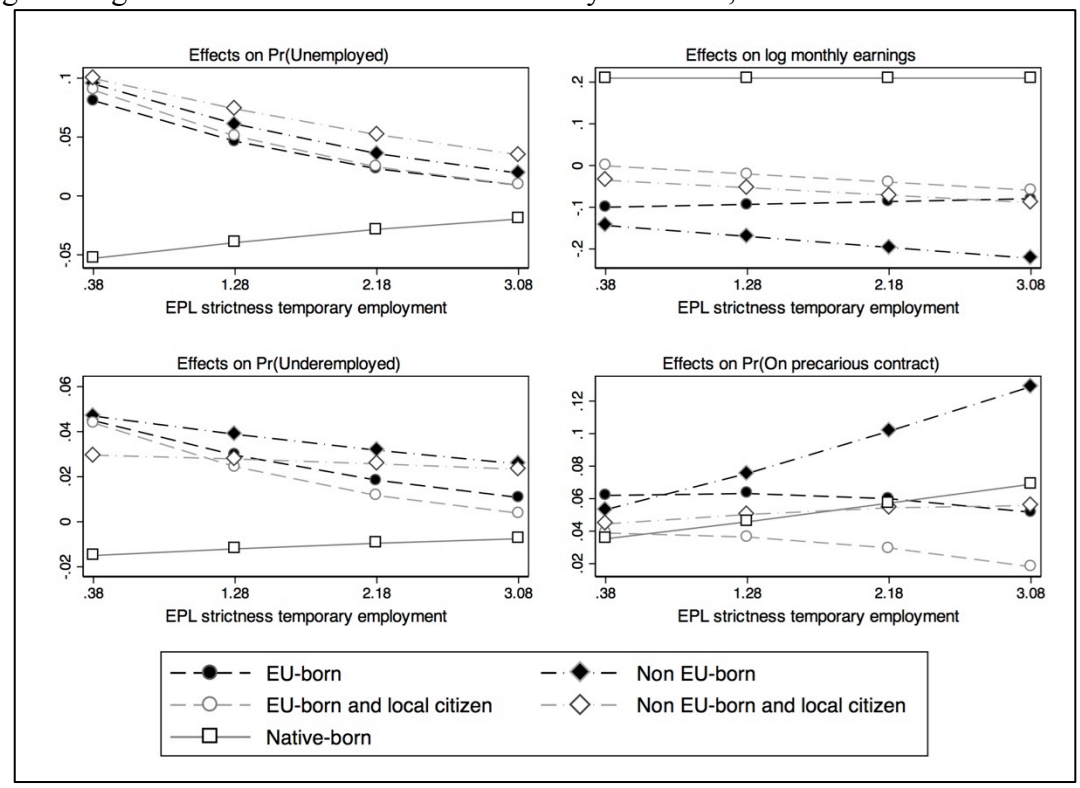

Figure A8a. Marginal effects of interactions between union density and immigrant origin on the four outcomes with country dummies, men

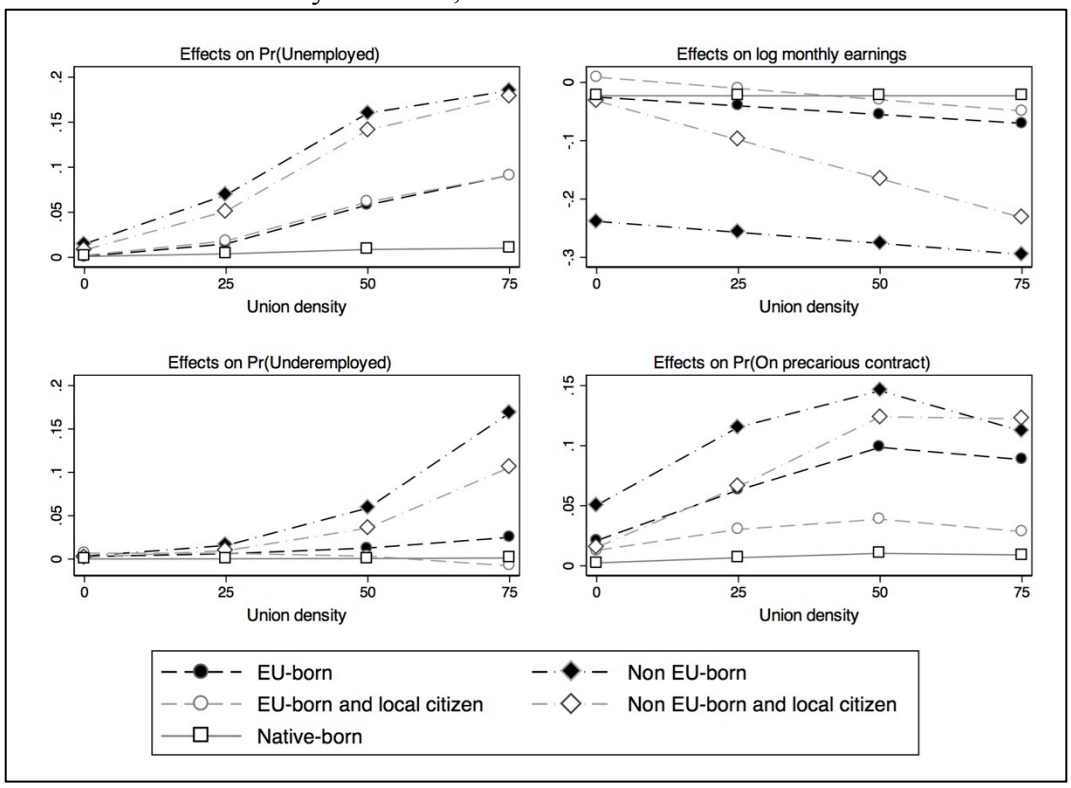

Figure A8b. Marginal effects of interactions between union density and immigrant origin on the four outcomes with country dummies, women