Immigrants' Responsiveness to Labor Market Conditions and Their Impact on Regional Employment Disparities: Evidence from Spain

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Abstract

Using data from the Spanish Labor Force Survey (*Encuesta de Población Activa*) from 1999 through 2007, we explore the role of employment opportunities in explaining the growing immigrant flows of recent years. Subsequently, we investigate whether immigrant inflows have helped reduce regional employment disparities. Our results indicate that immigrants choose to reside in regions with higher employment rates for their particular skills. However, perhaps owing to its recent nature or the ability of the production infrastructure to absorb the increase in immigrant labor, immigration does not seem to have significantly helped employment convergence across regions.

Keywords: International Migration, Immigrant Workers, Immigrant Location, Immigrant Responsiveness, Labor Market Conditions, Regional Disparities.

JEL codes: J61

1. Introduction

Since the 1990s, the Spanish economy has been characterized by a continuous growth in immigrant flows from African, Latin American, and European countries. By January 2007, a total of 4,48 millions of foreigners –the equivalent of 9.93 percent of the population– resided in Spain (Padrón Municipal, INE 2007). Most immigrants live in Catalonia, Madrid, Andalusia, Valencia, Murcia and the Canary or Balearic Islands. The continuous growth in immigrant flows of the late nineties coexisted with a decrease in net inter-regional flows despite significant unemployment rate differences across regions. We know through previous work by Bentolila and Blanchard (1990), Bentolila and Dolado (1991), Bentolila (1997, 2002) and Bover and Velilla (1999) that high unemployment rates are the main reason behind the observed decline in internal migration on the part of natives. However, why have immigrant flows increased? Are immigrants responding to labor market opportunities more than natives and, if so, have immigrant inflows significantly impacted regional labor market disparities?

In this paper, we use data from the Spanish Labor Force Survey (*Encuesta de Población Activa*) from 1999 through 2007 to first examine immigrants' responsiveness to employment opportunities relative to natives and, as such, better understand these new migratory patterns. Given immigrants' heterogeneity by country of origin, we distinguish among three major groups of Spanish immigrants in our analysis: Africans, Europeans, and Latinos. Subsequently, we analyze whether these immigrant flows have altered regional unemployment disparities.

Our work adds to previous work in the literature examining the location choices of immigrants (see, for instance, Bartel 1989 and Borjas 2001) and the local labor market implications of immigrant residential choices (e.g. Borjas, Freeman and Katz 1996, Borjas

2001, Card 2001 and more recently Borjas 2003). As noted by this second strand of literature, "area-approach" analyses relating regional immigration flows to regional employment opportunities via regression-based analyses are inappropriate because: (i) they fail to account for forces, other than immigrant flows, affecting immigrants' location decisions, and (ii) they do not take into account the fact that natives may also be "voting with their feet". Therefore, using skill groups defined for each year and region as our units of observation, we construct indexes capturing the relative supply of immigrants as compared to natives. We then use these indexes as dependent variables when examining immigrant location choices and their potential impacts on regional employment disparities.

Much of the earlier literature examining immigrant location choices has primarily focused on the role played by existing networks of countrymen (e.g. Bartel 1989, Chiswick and Miller 1996). If immigrants from a particular country have similar skills and occupational preferences, they will tend to locate in regions offering better employment choices and higher earnings. The clustering of these immigrants will, in turn, give birth to ethnic enclaves that further raise the marginal benefit of moving to that region via higher wages (e.g. Mouw 2003; Munshi 2003; Amuedo-Dorantes and Mundra 2006), while lowering the associated marginal costs via shorter job searches and lower psychic costs (e.g. Granovetter 1973, 1974; Bartel 1989; Fernandez et al. 2000; Munshi 2003). However, due to the recent nature of immigration in Spain and the relatively young age of immigrants in our sample,[1] we focus on the role of labor market conditions as a pull factor as networks are likely to develop thereafter.

In addition to networks, the literature examining immigrant location choices has also focused on the role played by wages (e.g. Borjas 2001). Due to the lack of adequate wage data

and in light of the traditionally high unemployment rates characteristic of some Spanish regions, we instead examine immigrant responsiveness to labor market prospects relative to natives. Employment opportunities may be particularly relevant in the case of immigrants, for whom accessibility to any type of employment may be crucial for their immediate economic survival upon arrival to the host country. We capture work prospects with regional employment rates for each skill group. We hypothesize that immigrants are more responsive than natives to regional employment opportunities given their lower migration costs across Spanish regions relative to natives. After all, natives have to break up family ties and withdraw from the safety net provided by these strong ties –a psychic costs already incurred by immigrants when deciding to emigrate.

Why should we care about immigrants' responsiveness to regional labor market conditions relative to their native counterparts? In Spain, relatively sticky wages and high costs of adjustment due to union contract provisions, social norms, and government legislation regarding job protection policies have reduced the rate at which new jobs are created and increased the duration of unemployment, leading to higher structural unemployment rates (Bentolila and Blanchard 1990, Bentolila and Dolado 1991, Bentolila and Jimeno 1998, 2003). As such, immigrants' greater responsiveness to better employment prospects could play a crucial role in correcting regional employment imbalances (e.g. Blanchard and Katz 1992).

Our results indicate that immigrants choose to reside in regions with larger employment rates and where their likelihood of finding a job is higher. This is particularly true for African and Latino immigrants, who have lesser educational attainment and exhibit higher unemployment rates. Non-15 European immigrants, perhaps owing to their greater skill

[1] As noted by Bartel (1989), young individuals are likely to face lower psychic costs to relocation. This is particularly true among immigrants, who are then less likely to need the emotional support offered by ethnic

transferability, do not seem to significantly differ from natives in their response to the employment outlook when choosing where to reside. The higher employment rates enjoyed by Latino and European immigrants relative to their African counterparts may explain how past Latino and European immigration could help reduce regional labor market disparities.

In what follows, we first describe some of the features of the Spanish labor market, such as its traditionally high unemployment rate and the recent receipt of large immigrant flows. Subsequently, we present our hypotheses and discuss the methodology we rely upon to examine immigrants' responsiveness to regional employment opportunities and its effect on regional employment disparities. Results and conclusions close the study.

2. Institutional Framework

2.1. Spanish Immigration and Migration Policy

Up to the mid 1970s, Spain had experienced more out-migration than immigration. As shown by Figure 1, immigration grew at a particular fast pace from the late 1990s onwards despite the restrictions that the 'Aliens' Law' of 1985 imposed on non-European Union foreigners in order to establish Spanish residency and citizenship.[2]

[Insert Figure 1]

Over the 12-year period shown in Figure 1, the number of foreign-born living in Spain grew from less than 1 percent of the population to approximately 10 percent. Various elements steered this trend, such as the country's democratization, the rapid economic growth in part fueled by Spain's incorporation to the European Common Market in 1986, the free-entrance of foreigners as tourists together with a lax implementation of immigration laws, and the close

enclaves.

[2] One of these restrictions include the need to acquire a work and a residency permit in order to become legal immigrants, along with the granting of 1-year permits to work in a particular activity and geographic location.

linguistic, cultural ties, and preferential treatment to Latin Americans due to colonial history (Escrivá 2000, Ribas-Mateos 2000).

As of today, in spite of augmented immigration restrictions consisting of limited work and residency permit renewals, as well as immigration quotas implemented during the 1990s,[3] Spain is considered the most popular port of entry for Latino immigrants (Millman and Vitzthum 2003). Additionally, Spain receives a significant immigrant flow from Africa, particularly Morocco, given its proximity to the Spanish peninsula. Immigrant flows from these two regions have been primarily propelled by the investment of Spanish companies in Latin America, as well as by the political and economic crises in Latin America and Africa during much of the 1990s. Based on our sample of immigrants from the Spanish Labour Force Survey (1999-2007) and according to the figures in Table 1A, the vast majority of immigrants in these regions are primarily Latinos (52.3 percent). The other two significant groups are immigrants from Africa (24.4 percent) and non-15 European countries (24.3 percent).[4] In some regions, as is the case with Catalonia and Murcia, African immigrants constitute the second largest immigrant group after Latinos. Additionally, the figures in Table 1B suggest that most immigrants choose to reside in either Madrid, Catalonia, Valencia or Andalucía.

[Insert Tables 1A and 1B]

What is the role played by regional labor market conditions in attracting these immigrant flows? In particular, do job opportunities serve as immigrant magnets to these regions? And, does the location choice of immigrants in turn help correct regional imbalances? Before

[3] Starting in 1993, the Spanish government has been implementing a quota system for agriculture and domestic services. See Escrivá (2000) for greater details.

[4] Immigrants from Asia, North America and Oceania represent, altogether, less than 5 percent of all immigrants. Therefore, we exclude them from the analysis. EU-15 citizens have not been considered under the category of immigrants given their differences with respect to the vast majority of immigrants in our sample.

addressing the aforementioned questions, it is important to highlight some key features of the Spanish labor market.

2.2. The Spanish Unemployment Rate

One of the crucial characteristics of the Spanish labor market has been its traditionally high unemployment rate, particularly during the eighties and early nineties. Still today, despite the impressive economic growth enjoyed by the Spanish economy, Spain continues to have one of the highest unemployment rates among other OECD countries. Table 2 displays average unemployment rates nationwide as well as by region for selected years: 1976, 1991, 2003, and 2005. Average unemployment rates remained well above 10 percent since the mid eighties for practically a decade. Moreover, there are very important unemployment rate differences across regions. In particular, while unemployment rates in Navarra, Baleares, Aragón, La Rioja or Madrid are below 7 percent, Extremadura, Andalucía, Canary Islands, Galicia and Asturias exhibit double-digit unemployment rates.

[Insert Table 2]

As noted by Bentolila (1997, 2002), Bentolila and Blanchard (1990), and Bentolila and Dolado (1991), among others, sticky wages accompanied by limited internal geographic mobility may have perpetuated regional imbalances between labor demand and supply and, therefore, structural unemployment. Consequently, a better understanding of the geographic mobility of immigrants is of great importance as their responsiveness to differences in employment rates across regions could help correct regional labor market imbalances (Blanchard and Katz 1992). Do immigrants locate in regions with better employment prospects? A joint look to the figures in Table 1A and Table 2 reveals that some of the regions with the highest incidence of immigration, such as Madrid or Catalonia, have relatively low

unemployment rates (approximately 7 percent) in 2005. Yet, other immigrant receiving regions, such as Andalucía or Valencia, display unemployment rates in the order of 14 percent and 9 percent, correspondingly. Therefore, at a descriptive level, it is unclear whether immigrants choose to reside in regions offering better employment prospects.

3. Conceptual Framework

The migration decision can be viewed as an investment decision where both natives and foreign-born individuals are income maximizers. As such, migration decisions are guided by the comparison of the present value of lifetime earnings in alternative employment opportunities net of migration costs. If migration costs primarily consist of large fixed costs, many individuals may not find it worth while to migrate. Specifically, if the potential earnings differential across regions is not large enough, many natives will choose to stay home as inter-regional wage differences will not compensate for incurred migration costs. In contrast, if most immigrants originate from countries with significantly lower wages (as it may be the case with migrants originating from many African and Latin American nations), the earnings differential between Spain and their home countries is likely to widely exceed any earnings differentials encountered by natives between Spanish regions. In this case, we may observe more international than internal native migration.

Furthermore, once in Spain, foreign-born individuals are likely to exhibit lower migration costs than natives with strong ties to their birth communities. After all, natives have to break up family ties when migrating from one region to another, whereas immigrants have already incurred this psychological cost by choosing to start anew in the host country. At the most, they may have to give up networks of countrymen they may have connected with.

Therefore, immigrants should be more likely to choose to reside in the region *r* where their labor earnings are expected to be larger.

Unfortunately, we know of no data set containing representative individual level information on earnings and immigrant status. Yet, due to traditionally high unemployment rates, workers may be particularly responsive to employment prospects. As such, we focus on the role played by the probability of finding employment (ϕ) in shaping individual level earnings and, therefore, any residential choice as follows:

(1) $\phi_{rs} w_{rs} = \max_j \left\{ \phi_{js} w_{js} \right\}$, where: $j = 1,...17$ for each of the seventeen Spanish regions.

Specifically, w_{rs} stands for the wage earned by a person with skills s in region r and ϕ_{rs} represents her/his employment likelihood.

In sum, the described framework has some interesting implications for understanding the high immigration rate and, yet, the low internal mobility of natives in Spain. First, immigrants should exhibit a greater responsiveness to employment opportunities than natives. Secondly, by being more responsive than their native counterparts, immigrants may promote employment convergence across regions. Why? As noted by the previous literature (Bentolila and Blanchard 1990, Bentolila and Dolado 1991, Bentolila and Jimeno 1998, 2003, the traditionally high Spanish unemployment can be characterized as structural unemployment arising from regional imbalances in labor demand and supply. This type of unemployment typically persists in the presence of sticky wages –typically resulting from union contract provisions, social norms or government legislation concerning (such as minimum wages and job protection policies)– and if internal mobility is low, as argued by Bentolila and Dolado (1991), Bentolila (1997, 2002) and Bover and Velilla (1999). Under such circumstances, the

higher responsiveness of immigrants to employment opportunities in specific regions could help erode regional imbalances in unemployment (e.g. Blanchard and Katz 1992).

4. Methodology

4.1. Are Immigrants More Responsive than Natives to Employment Opportunities?

Traditionally, a variety of studies have relied on regional correlations between immigration rates and labor market conditions to learn about the role of the latter in attracting immigrant flows. However, this "area approach" strategy has come under criticism, notably by Borjas, Freeman and Katz (1996), Borjas (2001), Card (2001) and more recently Borjas (2003) on two counts. First, labor market conditions in a particular region could be affected by native inflows and outflows regardless of immigrant flows. If so, how can we measure the impact of labor market conditions on the supply of immigrants relative to natives when labor market conditions themselves are a by-product of native migration flows? Second, cross-sectional analyses may fail to account for demand shocks affecting local labor market conditions and, as such, incite an erroneous interpretation of the correlation coefficients between immigrant flows and labor market conditions.

To lessen any omitted variable biases, we follow the methodology proposed by Borjas (2001) and used by Carrasco et al. (2004), among others, which consists in simply grouping the individual data in cells defined for different skill groups, regions, and years. This unit of observation recognizes that immigrants are a very heterogeneous group. As such, we assume that natives only compete with immigrants with similar skills. Each skill group is an age-education cell where both age and education are defined over three categories (age: 30 or less, 31-45, and 45 plus; education: primary education or less, secondary education, and university

degree). Therefore, we have nine skill groups.[5] We then measure the supply of immigrants (relative to natives) in a particular region at a point in time for each of the nine age-education groups with the following index:

$$(2) \qquad K_{rs}(t) = \frac{I_{rs}(t)/I_{s}(t)}{N_{rs}(t)/N_{s}(t)}$$

where $I_{rs}(t)$ represents the number of immigrants in region *r* and skill (age-education) group *s* at period *t*, and $N_{rs}(t)$ represents the number of natives in region *r* and skill group *s* at period *t*. Therefore, the index $K_{rs}(t)$ measures the relative supply of immigrants vis à vis natives in a particular skill group, region, and time period. The index equals 1 when immigrant and native workers of the same skill level have the same geographic distribution, and it is greater than 1 when immigrants in a particular skill group are overrepresented in a particular region at a specific point in time. Since we are working with 9 skill groups, 17 regions (or Autonomous Communities), and 9 years (1999-2007), the index in equation (2) is defined for 1377 groups (i.e. 9 skill groups*17 regions*9 years).

To the extent that regional employment opportunities and the relative supply of immigrants are likely to be simultaneously determined, instrumenting the former may be necessary. However, as recognized by others (e.g. Borjas 2001), finding a set of valid instruments, i.e. a set of variables that are highly correlated with regional employment opportunities, yet uncorrelated with any of the variables explaining the relative supply of immigrants to natives, is virtually impossible. As such, we instead lag our explanatory variable to at least guarantee its pre-determined character. This model specification is likely to

[5] These nine skill groups are defined as follows: (1) primary or less and 30 years or less, (2) primary or less and 31-45 years, (3) primary or less and 45 plus years, (4) secondary and 30 years or less, (5) secondary and 31-45

also best reflect how migrants behave. Since migration involves an important human capital investment decision, it is reasonable to observe a time lag between the time period to which the regional employment conditions are referred to and immigrant flows. Therefore, we estimate the following model:

$$(3) \qquad K_{rs} = \beta\left[E_{rs}(t-1)\right] + \nu_s + \eta_r + \theta_t + (\nu_s * \theta_t) + (\eta_r * \theta_t) + (\nu_s * \eta_r) + \varepsilon_{rs}(t)$$

where $E_{rs}(t-1)$ stands for past employment opportunities for individuals of skill s in region r at time $(t-1)$. Additionally, equation (3) includes a series of fixed-effects vectors, such as: ν_s stand for skill (age-education) fixed-effects, η_r for regional fixed-effects, and θ_t for time fixed-effects, and their interaction terms. In this manner, we are able to capture educational, regional and time characteristics possibly affecting the relative supply of immigrants to natives in a particular cell, such as differences in the educational system, regional cost-of-living differences or housing shortages, and macroeconomic trends. Equation (3) is estimated for all immigrants (relative to natives) as well as separately for our most prominent groups of immigrants: Latinos, Europeans (non-EU15), and Africans.

4.2. Does Immigration Help Reduce Regional Employment Disparities?

A second question of great interest to us is whether the increase in immigration has brought about regional convergence in employment rates by attracting migrants to regions with higher employment rates versus regions with lower employment rates. As discussed earlier in the paper, much of the Spanish unemployment can be classified as structural unemployment arising from regional imbalances in labor demand and supply. This type of unemployment could be significantly reduced via immigrants' greater responsiveness to employment

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years, (6) secondary and 45 years or more, (7) university and 30 years or less, (8) university and 31-45 years, (9)

opportunities in specific regions (e.g. Blanchard and Katz 1992). We examine this possibility by estimating the following model, inspired in the wage convergence models in the macroeconomics literature:[6]

$$(4) \qquad E_{rs}(t+1) - E_{rx}(t) = \alpha_s(t) + \beta_s(t) E_{rs}(t) + \varepsilon_{rs}(t)$$

where $E_{rs}(t)$ is the employment rate for skill group *s* in region *r* and year *t* and $\beta_s(t)$ is the so-called convergence coefficient for skill group *s* and period *t*. Equation (4) is estimated for each skill group –defined by age and educational attainment, and each year.

Once we have the employment convergence coefficients for each skill group and year, we use the immigrant penetration index used by Borjas (2001) to examine whether immigration helps regional convergence in employment rates or not. The immigrant penetration index is defined as:

$$(5) \qquad g_s(t) = \ln\left(\frac{I_s(t,t+1)}{N_s(t)}\right)$$

where $I_s(t,t+1)$ is the number of immigrants in skill group *s* entering Spain between *t* and *t+1* and $N_s(t)$ is the number of natives in skill group *s* at time period *t*. We then use the previously estimated employment convergence coefficients to regress them on the immigrant penetration index as follows:

$$(6) \qquad \beta_s(t) = a + b g_s(t) + \varepsilon(t)$$

Equation (6) is estimated using weighted OLS,[7] and for three different specifications: without fixed effects, with skill group fixed effects, and with skill group and year fixed effects. The

university and 45 years or more.

[6] See, in particular, Barro and Sala-i-Martin (1991, 1992) for wage convergence and Blanchard and Katz (1992) for employment convergence.

[7] As in Borjas (2001), we use the inverse of the square of the standard error to correct for any heteroscedasticity.

estimates from equation (6) will help gauge whether and, if so, to what extent, immigration helps attain regional employment convergence.

5. Data and Descriptive Evidence

5.1. Data

We use data from the Spanish Labor Force Survey for the period 1999 through 2007. This survey is administered to approximately 60,000 households on a quarterly basis. For the empirical analysis, we use a pooled cross-sectional database of all active immigrants included in the survey. We define immigrants as individuals with a foreign citizenship and exclude those from EU-15 countries as they are not representative of most immigrants in Spain. This definition thus includes individuals with a double nationality –a group that accounts for 3 percent of our sample. At any rate, we exclude naturalized citizens from our definition of immigrants since questions like the years of residence in the country are only asked to non-naturalized immigrants. As such, the small sample size of individuals with a double nationality from birth ends up not altering our findings. The survey collects detailed personal and job characteristics from every interviewed individual, native or immigrant, with the exception of wages. In addition, for immigrants, we have information on their country of origin and on the number of years residing in Spain.

It is worth noting that immigrants in the Labor Force Survey reside in registered households; otherwise, they would have never been interviewed by the survey. Therefore, immigrants in our sample are most likely authorized immigrants, restricting the validity of our inferences to this group. At any rate, to ensure the most representativeness of our data as far as immigrant concentration and distribution is concerned, we use the last release of the EPA, where observations are weighted according to the 2001 Population Census believed to better

account for the immigrant population.[8] Finally, given our focus on immigrant responsiveness to employment opportunities relative to natives, we restrict our sample to individuals in working age, i.e., 16-64 years of age.

5.2. Immigrant and Native Profiles According to Skill

The largest fraction of our immigrant sample, about 52.3 percent of all immigrants between 16 and 64 years of age comes from Central and South America. An additional 24.4 percent originates in Africa and 24.3 percent comes from Non-15 European countries.

What are some of the characteristics of natives and immigrants in our sample? Table 3 addresses this question. For instance, immigrants are approximately 6 years younger than natives and a slightly higher fraction are female relative to natives. Education-wise, natives display a higher educational attainment than the average immigrant in our sample although, as we shall discuss in what follows, there are important differences by immigrant origin.

Table 3 also shows the characteristics of immigrants by region of origin. As reflected by the figures, there are notable differences across the three major migrant groups in our sample: Africans, Non15-Europeans, and Latinos. For instance, only 38.3 percent of Africans are female relative to 57.7 percent of Latinos. Additionally, 24.2 percent of African migrants are household heads, compared with 19 percent of Latinos. Education-wise, we also find important divergences across immigrant groups depending on their origin. Forty-five percent of African migrants have no more than a primary education, whereas only 15 and 21 percent of Non15-Europeans and Latinos fall within that category. In contrast, only 18 percent of African immigrants have a university degree compared to 22 percent of Spanish natives or 27 percent

[8] For more information on the 2005 EPA methodology, please visit: http://www.ine.es

of Europeans. Lastly, African migrants endure the highest unemployment rate (approximately 14 percent) of all immigrants and natives.

[Insert Table 3]

6. Results

Before turning to the first question we want to address in this paper, i.e., whether immigrants are more responsive, in terms of their geographic location, to employment opportunities than natives, it is important to make a clarification regarding our units of observation. As noted in the methodology, the use of age-education cells implicitly assumes similar employment opportunities are within the reach of immigrants and natives with similar skills as captured by age and education. This is a restricting assumption. After all, immigrants may also take jobs typically occupied by natives with lower educational attainment if available. Therefore, we also carry the analysis using age as our skill measure. In this manner, we allow for immigrants to respond to employment rates for groups with other educational attainment.

Additionally, we allow immigrants and natives to respond not only to employment opportunities for individuals within their cell, but also to employment opportunities for workers in adjacent cells. Specifically, in addition to the lagged employment rate for individuals in their particular skill group (as captured by age-education), we also examine the responsiveness of immigrants to employment opportunities (as captured by the employment rate) for individuals in skill groups defined exclusively by age. Because these employment rate measures are highly correlated (the correlation coefficient is above 0.75), we carry out separate estimations for each set of employment rates.

6.1. Are Immigrants More Responsive than Natives to Employment Opportunities?

Table 4 displays the results from estimating equation (3) for all immigrants and for separate immigrant groups according to their region of origin, i.e. Africa, Non 15-EU, and Latin America. The figures in Panel A in Table 4 reveal that, when skill is defined in terms of age-education categories, immigrants as a whole are more responsive than similarly skilled natives to regional employment opportunities, particularly, those employment opportunities available for their own skill group.[9] By immigrant origin, Africans appear the most responsive to existing employment opportunities for their skill level, followed by Latinos. However, non-15EU immigrants do not seem to respond any differently than natives to existing employment opportunities. When we use a broader definition of skill in Panel B, we continue to find that immigrants are more responsive than natives to employment opportunities. Yet, by immigrant origin, only Latinos seem to be significantly more responsive than natives to existing employment conditions.[10]

[Insert Table 4]

Why would immigrants be more responsive than natives to employment conditions? Immigrants are, by definition, a mobile population. Once they have made the investment of breaking family and friendship ties in their home countries to migrate to another country and start anew, the difference in psychic and economic costs associated with residing in one region versus another in the host country should be significantly smaller than for natives. After all, relative to immigrants, natives still have to break the family and friendship ties and, thus incur, the psychic costs that immigrants have already faced when deciding to come to Spain.

[9] When the employment rate for their age-region-year category is used as the independent variable, the sign is also positive. However, the coefficient is never statistically different from zero due to the higher standard errors.

[10] At this juncture, it is worth noting that, although the number of cells without immigrants is negligible when examining all immigrants, the number of cells lacking immigrants when we distinguish immigrants according to their origin is non-negligible. This is particularly the case when skill is defined in terms of age and education. Consequently, we have also carried out the analysis excluding any immigrant-empty cells. The results, which are available from the authors upon request, prove robust to the alternative specification.

And, why would Africans and Latinos be more responsive than natives to employment opportunities? African and Latino immigrants, perhaps as a result of the lesser degree of their skill transferability as compared to other migrants from Europe where educational systems may be more alike owing to geopolitical aspects, may have lower reservation wages than natives. Consequently, both immigrant groups may be more responsive to employment opportunities that alike natives would not even consider.

6.2. Does Immigration Help Reduce Regional Employment Disparities?

To further assess whether immigration helps reduce regional employment imbalances or disparities, we first estimate equation (4) for each of the skill groups and years in our sample to derive the so-called regional employment converge coefficients displayed in Table 5.

[Insert Table 5]

When statistically different from zero, the convergence coefficient always displays a negative sign, which means that there is employment convergence across regions in Spain. The average value for the convergence coefficients in Table 5 turns out to be -0.03. Following the macroeconomics literature on convergence rates, this means that the time required to cut the initial employment gap in half can be calculated using the equation: $(1+\beta)^t = 0.5$ or 23 years.

We then estimate equation (6) to assess whether higher immigration inflows help attain employment convergence or not. The latter might occur if there is sufficient interregional native mobility. However, native interregional mobility in Spain is very low. A recent report from the Spanish Employment Institute (i.e. "INEM Employment Observatory" (2006)) shows that, as of 2006, seventy-eight percent of Spanish citizens live in the same province in which they were born. Since the province is a narrower geopolitical category than the autonomous community used in this paper, we can exclude native mobility across autonomous communities

(so-called regions in this paper) as a potential factor affecting regional employment convergence. Alternatively, it is also possible to not find any significant labor market impacts if changes in the industrial structure accommodate the increase in labor supply (e.g. Lewis (2003)).

Figure 2 illustrates the relationship between the convergence coefficient and the immigrant penetration index quantified in Table 6.

[Insert Figure 2 and Table 6]

There is a downward-sloping relationship between the convergence coefficient and immigrant penetration in each of the labor markets defined by skill group and year, thus suggesting that immigrant inflows help accelerate regional employment convergence. Therefore, we estimate equation (6) excluding, as well as including, a variety of skill group and year fixed-effects. According to the figures in Table 6, if we look at the change in the average immigrant penetration index between 2005 and 2006 in Table 5 (i.e. an increase of 0.51), the magnitude of the coefficient in Table 6 (i.e. -0.04) implies that the change in the immigrant penetration index would lower the convergence coefficient from -0.03 to -0.05. Therefore, the half-life of regional employment disparities would be cut from 23 years to approximately 14 years. In other words, immigration helps speed up the regional employment convergence process. However, as we control for skill group and year fixed-effects in equation (6), the statistical significance of the coefficient disappears. This is not surprising to the extent that we are left with a small number of degrees of freedom when including as many fixed-effects. In any event, the lack of a statistically significant relationship between the immigrant penetration index and the convergence coefficient in these alternative specifications suggests the need to

be cautious when discussing the role of immigration flows in significantly impacting regional employment convergence.

7. Conclusions

In this paper, we use data from the Spanish labor force survey (*Encuesta de Población Activa*) for the years 1999 through 2006 to assess the role of regional labor market opportunities in explaining the continuous growth in immigrant flows relative to internal migration on the part of natives during the 1990s. Specifically, we ask ourselves whether immigrants are more responsive than their native counterparts to regional labor market opportunities. Additionally, we explore whether the growing stock of immigrants has helped grease the wheels of the Spanish labor market and contributed to reducing labor market disparities across regions by accelerating regional employment convergence.

Following Borjas (2001, 2003) and Card (2003), we estimate the impact of employment opportunities on the relative supply of immigrants as compared to natives using skill cells as units of observations. Subsequently, we analyze whether the growing immigrant stock has helped reduce regional labor market disparities as accelerating regional employment convergence for each skill group.

Our findings indicate that, overall, immigrants choose to reside in regions with higher employment rates and where they also enjoy greater employment opportunities given their skills. When distinguishing according to immigrant origin, we further find that African and Latino immigrants appear more responsive than their native counterparts to higher employment rates as well as to a higher likelihood of employment. Yet, Non-15 Europeans do not seem to respond any different from their native counterparts to existing employment opportunities. As we note in the paper, our findings could be due to a variety of factors.

African and Latino immigrants, perhaps as a result of their limited skill transferability relative to immigrants originating from European countries with similar educational systems, in part owing to geopolitical aspects, may have lower reservation wages than natives.

Additionally, the increased immigrant penetration appears to have accelerated regional employment convergence at a descriptive level as well as in a simple OLS regression of convergence rates on the immigrant penetration index for each skill group. However, perhaps owing to the limited degrees of freedom, this link is no longer statistically different from zero once we include skill group and year fixed-effects. We can only hypothesize as for why. Perhaps, as noted by González and Ortega (2007), it is possible for the regional industry to change and absorb the higher immigrant penetration, in which case, immigration would have no significantly effect on the employment rates of workers in similar skill groups. Alternatively, the lack of a significant impact is partially due to the recent nature of immigration in Spain. In that case, it would be of interest to monitor this effect as immigration continues to grow in order to assess the suitability of a generalized amnesty for undocumented immigrants.

References

Amuedo-Dorantes, Catalina and Kusum Mundra. (2006). "Social Networks and Their Impact on the Employment and Earnings of Mexican Migrants" Forthcoming in *Demography*.

Barro, Robert, and Xavier Sala-i-Martin (1991), "Convergence across States and Regions", *Brookings Papers of Economic Activity, 1:1991, 107-58.*

_____. (1992), "Convergence*", Journal of Political Economy 100(2), 223-51.*

Bartel, Ann P. (1989). "Where Do the New U.S. Immigrants Live?" *Journal of Labor Economics*, 7(4): 371-91.

Bentolila, Samuel and Olivier Blanchard. (1990). "Spanish Unemployment" *Economic Policy: A European Forum*, 0(10): 233-81.

Bentolila, Samuel and Juan J. Dolado. (1991). "Mismatch and Internal Migration in Spain, 1962-86" in *Mismatch and Labour Mobility,* Cambridge; New York and Melbourne: Cambridge University Press.

Bentolila, Samuel and J.F. Jimeno (2003), "Spanish Unemployment: The End of the Wild Ride?" (with Juan F. Jimeno), in M. Werding (ed.), *Structural Unemployment in Western Europe: Reasons and Remedies*, Cambridge MA, London UK: MIT Press, 2006.

Bentolila, Samuel and J.F. Jimeno (1998), "Regional Unemployment Persistence (Spain, 1976-1994)" *Labour Economics* 5, 1998.

_____. (2002). "Las Migraciones Interiores en España", *Mercado de Trabajo, Inmigración y Estado del Bienestar*, Chapter 6, FEDEA (ftp://ftp.fedea.es/pub/inmigra/parte6.pdf).

Blanchard, Olivier J. and Lawrence F. Katz. (1992). "Regional Evolutions", *Brookings Papers on Economic Activity*, 1: 1-75.

Borjas, George J., Freeman, Richard B., and Lawrence Katz. (1996). "Searching for the Effects of Immigration on the Labor Market", *American Economic Review*, 86(2): 246-251.

Borjas, George J. (2001). "Does Immigration Grease the Wheels of the Labor Market?" *Brookings Papers on Economic Activity*, 0(1): 69-119.

_____. (2003). "The Labor Demand Curve is Downward Sloping: Re-examining the impact of immigration on the Labor Market" *The Quarterly Journal of Economics*, 118(4): 1335-1374.

Bover, Olympia and Pilar Velilla. (1999). "Migrations in Spain : Historical Background and Current Trends" Banco de España Servicio de Estudios, Documentos de Trabajo: 9909.

Card, David. (2001), "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration" *Journal of Labor Economics*, 19(1): 22-64.

Carrasco, Raquel, Juan F. Jimeno-Serrano, and Ana C. Ortega-Masague. (2004). "The Effect of Immigration on the Employment Opportunities of Native-Born Workers: Some Evidence for Spain" forthcoming in *Journal of Population Economics*.

Chiswick, Barry R. and Paul W. Miller. "Ethnic Networks and Language Proficiency Among Immigrants." *Journal of Population Economics*, 1996, 9(1), pp. 19-35.

Escrivá, Angeles. (2000). "The Position and Status of Migrant Women in Spain" in *Gender and Migration in Southern Europe: Women on the Move,* edited by Flova Anthias and Gabriella Lazaridis, Oxford and New York: Berg, pp. 199-225.

Fernandez, Roberto M., Emilio Castilla, and Paul Moore. "Social Capital at Work: Networks and Employment at a Phone Center." *American Journal of Sociology*, 2000, 105, pp.1288-1356.

González, Libertad and Francesc Ortega (2007), "How Do Very Open Economies Absorb Large Immigration Flows? Recent Evidence from Spanish Regions" Mimeo.

Granovetter, Mark S. "The Strength of Weak Ties." *American Journal of Sociology*, 1973, 78:1360-80.

_____. "Getting a Job: A Study of Contacts and Careers". Cambridge, MA: Harvard University Press, 1974.

_____. "The Strength of Weak Ties: A Network Theory Revisited." In *Social Structure and Network Analysis*, edited by P. V. Marsden and N. Lin. Beverly Hills, CA: Sage Publications, 1982, pp. 105-30.

_____. "Afterword 1994: Reconsiderations and a New Agenda" in *Getting a Job*, 2d ed., Chicago, IL: University of Chicago Press, 1995, pp. 139-82.

INEM Employment Observatory (2006), " DATOS BÁSICOS DE MOVILIDAD: Avance de resultados 2006", Report INEM Employment Observatory.

Lin, Nan. "Social Networks and Status Attainment." *Annual Review of Sociology*, 1999, 25, pp. 467-87.

Millman, Joel and Carlta Vitzthum. (2003). "Changing Tide: Europe Becomes New Destination for Latino Workers" *The Wall Street Journal*, September 12, 2003.

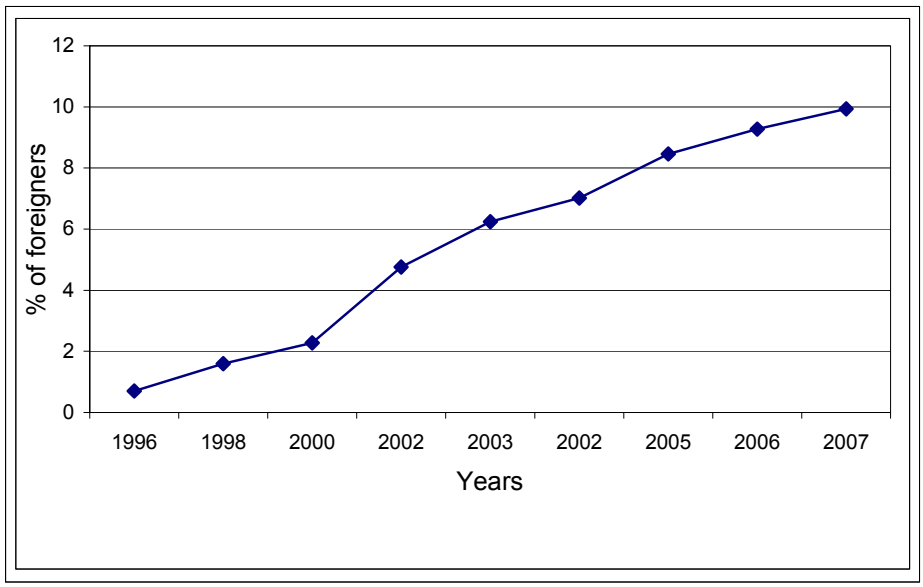
Ministerio de Trabajo y Asuntos Sociales. 2006. *Extranjeros con tarjeta o autorización de residencia en vigor a 31 de diciembre de 2005.* Madrid.

Mouw, Ted. "Social Capital and Finding a Job: Do Contact Matter?," *American Sociological Review*, 2003, 68(6), pp. 868-870.

Munshi, Kaivan. "Networks in the Modern Economy: Mexican Migrants in the U. S. Labor Market," *The Quarterly Journal of Economics*, 2003, May, 549-599.

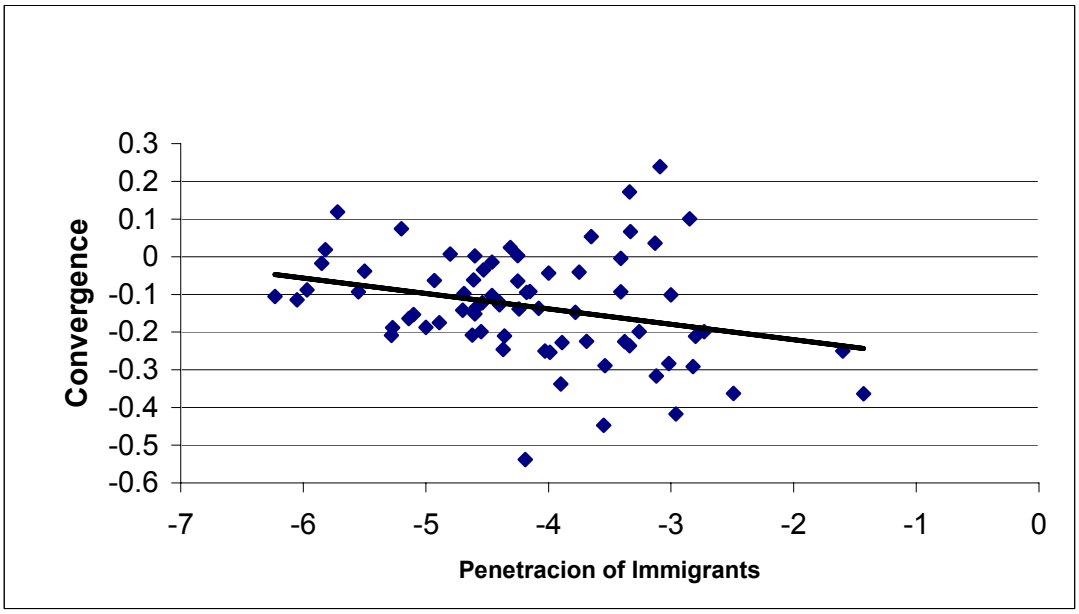
Ribas-Mateos, Natalia. (2000). "Female Birds of Passage: Leaving and Settling in Spain" in *Gender and Migration in Southern Europe: Women on the Move*, edited by Flova Anthias and Gabriella Lazaridis, Oxford and New York: Berg, pp. 173-197.

Figure 1
Evolution of Foreigners as a Percentage of the Spanish Population (1996-2007)



Source: Spanish Institute of Statistics – Padrón Municipal

Figure 2
Correlation between Convergence Rates and Immigrant Penetration Indexes



Note: Each point represents the penetration of immigrants and convergence coefficient for each of the skill groups (9 in total) and years (8 in total) specified in columns 1 and 3, Table 5.

Table 1A
Composition of Regional Immigrant Stocks by Place of Origin (%)

Distribution of Immigrants	Africa	Europe No 15	Latin America	Number of Immigrants
Andalucia (1)	22.1	26.8	51.1	1837
Aragón(2)	27.2	34.1	38.7	1178
Asturias (3)	10.5	20.4	69.1	181
Balears (4)	25.3	13.8	61.0	1266
Canary Islands (5)	17.4	9.2	73.4	1351
Cantabria (6)	3.0	24.3	72.7	301
Castilla-León (7)	17.2	35.2	47.6	1392
Castilla-La Mancha (8)	21.9	38.1	40.0	1466
Catalonia (9)	42.6	14.3	43.1	3868
Com. Valenciana (10)	20.5	35.7	43.9	3319
Extremadura (11)	47.0	15.7	37.3	236
Galicia (12)	13.0	11.3	75.7	462
Madrid (13)	13.0	24.1	63.0	2717
Murcia (14)	33.2	8.1	58.7	1659
Navarra (15)	11.1	21.0	67.9	539
País Vasco (16)	19.2	20.5	60.3	532
Rioja, La (17)	25.9	24.5	49.6	575

Source: Spanish Labor Force survey, 1999-2007. Individuals between 16-64 years. Immigrants from Asia, North-America and Other are excluded from the sample as they represent less than 5% of total immigrants. Individuals from EU-15 are not considered as immigrants either.

Table 1B
Immigrant Regional Distribution by Place of Origin

Immigrant Regional Distribution	Africa	Europe No 15	Latin America
Andalucia (1)	7.3	9.2	7.9
Aragón(2)	5.7	7.6	3.8
Asturias (3)	0.3	0.7	1.0
Balears (4)	5.7	3.3	6.4
Canary Islands (5)	4.3	2.3	8.4
Cantabria (6)	0.2	1.4	1.8
Castilla-León (7)	4.4	9.2	5.6
Castilla-La Mancha (8)	5.7	10.4	4.8
Catalonia (9)	30.0	10.4	13.9
Com. Valenciana (10)	12.3	22.3	12.2
Extremadura (11)	2.0	0.7	0.8
Galicia (12)	1.2	1.0	2.9
Madrid (13)	6.3	12.3	14.3
Murcia (14)	9.9	2.6	8.1
Navarra (15)	1.2	2.1	3.1
País Vasco (16)	1.8	2.0	2.7
Rioja, La (17)	2.7	2.5	2.4
Total	5579	5320	11960

Source: Spanish Labor Force survey, 1999-2007. Individuals between 16-64 years. Immigrants from Asia, North-America and Other are excluded from the sample as they represent less than 5% of total immigrants. Individuals from EU-15 are not considered as immigrants either.

Table 2
Regional Unemployment Rates for Selected Years

Regions	Years			
	1976	**1991**	**2003**	**2005**
Andalucia	9.35	24.47	18.17	13.78
Aragón	2.54	9.37	6.48	6.28
Asturias	3.08	15.69	10.74	10.82
Balears	3.32	8.5	9.18	6.03
Canary Islands	8.55	24.49	11.56	12.38
Cantabria	2.78	15.25	10.48	9.09
Castilla and León	2.69	14.5	11.19	8.64
Castilla-La Mancha	4.57	13.71	9.74	9.35
Catalonia	3.46	11.68	9.37	7.12
Valencia	3.23	15.78	10.94	9.24
Extremadura	4.27	24.32	16.51	15.15
Galicia	1.56	12.56	11.85	11.11
Madrid	4.66	11.26	7.01	6.87
Murcia	4.77	16.59	9.56	8.05
Navarra	3.94	10.24	5.15	5.12
País Vasco	3.45	18.7	9	7.57
Rioja	1.63	9.26	5.58	6.45
Country Average	**4.41**	**15.88**	**11.2**	**9.33**

Table 3
Means and Standard Deviations of Key Characteristics of Natives and Immigrants in the Sample (%)

Variables	Natives	Immigrants	Africans	Non-15 Europeans	Latinos
Female	50.5	51.7	38.3	52.3	57.7
	(0.49)	(0.49)	(0.48)	(0.49)	(0.49)
Age	38.7	32.6	32.19	32.5	32.8
	(13.68)	(10.20)	(9.76)	(10.28)	(10.35)
Head of household	27.4	20.5	24.2	19.6	19.23
	(0.44)	(0.40)	(0.43)	(0.40)	(0.39)
Married	57.0	54.13	59.5	59.13	49.4
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Education					
Primary or less	27.7	25.4	45.13	14.92	21.01
	(0.44)	(0.44)	(0.49)	(0.35)	(0.41)
Secondary	49.9	53.7	36.4	57.63	60.11
	(0.50)	(0.49)	(0.48)	(0.49)	(0.49)
University	22.35	20.76	18.46	27.44	18.9
	(0.41)	(0.40)	(0.39)	(0.44)	(0.39)
Work Status					
Employed	54.4	65.4	54.9	69.9	68.21
	(0.49)	(0.47)	(0.49)	(0.46)	(0.47)
Unemployed	8.06	11.2	14.4	9.62	10.3
	(0.27)	(0.31)	(0.35)	(0.29)	(0.30)
Observations	981693	225859	5579	5320	11960

Note: Individuals between 16-64 years. Immigrants from Asia, North-America and Other are excluded from the sample as they represent less than 5% of total immigrants. Individuals from EU-15 are not considered in the sample of immigrants either. Standard deviations in brackets. All statistics are weighted.

Table 4
Immigrant vs. Native Responsiveness to Employment Opportunities

PANEL A: Dependent Variable: $K_{rs_1}(t)$, (s_1=age-education), (Observations=1224)

Immigrant Groups	**All Immigrants**		**Africans**		**Non EU15 European**		**Latinos**	
Independent Variables	**Coeff.**	R^2	**Coeff.**	R^2	**Coeff.**	R^2	**Coeff.**	R^2
Lagged Employment Rate in skill1 (age-education)	1.18** (0.55)	0.86	2.22* (1.24)	0.75	-0.08 (0.55)	0.67	1.77** (0.75)	0.78
Lagged Employment Rate in Skill2 (age)	1.10 (1.15)	0.86	1.56 (2.29)	0.748	1.10 (1.15)	0.67	0.17 (1.76)	0.78

PANEL B: Dependent Variable: $K_{rs_2}(t)$, (s_2=age), (Observations=408)

Immigrant Groups	**All Immigrants**		**Africans**		**Non EU15 European**		**Latinos**	
Independent Variables	**Coeff.**	R^2	**Coeff.**	R^2	**Coeff.**	R^2	**Coeff.**	R^2
Lagged Employment Rate in skill2 (age)	2.33* (1.40)	0.96	0.38 (2.31)	0.94	-0.91 (2.64)	0.89	2.76* (1.76)	0.94

Notes: The unit of observation is the region-skill-year cell. In Panel A, skill is defined in terms of age and education (3 age groups and three education groups). The coefficients and R-squared shown in the table are the results of different regressions, each of them including as an independent variable the lagged employment rate defined at different levels of aggregation, i.e. skill 1 (defined by age and education) and skill 2 (defined by age). In Panel B, skill is defined in terms of age. All estimations are weighted by cell size. There are region, skill and year fixed-effect dummies. All regressions also include the skill, region, and year fixed-effects fully interacted. Standard errors (in parentheses) are robust to heterogeneity. ** Signifies statistically different from zero at the 5% level or better and *at the 10% level or better.

Table 5
Estimated Employment Convergence Rates

Year and Skill Group	Convergence Coefficient	Standard Errors.	Immigrant Penetration
Year 1999			
Skill 1 (Age<30 ; Education=primary)	-0.44***	0.15	-3.55
Skill 2 (Age<30 ; Education=secondary)	0.17	0.19	-3.341
Skill 3 (Age<30 ; Education=university)	-0.53***	0.19	-4.191
Skill 4 (30<Age<46 ; Education=primary)	0.23*	0.15	-3.094
Skill 5 (30<Age<46 ; Education=secondary)	-0.36***	0.12	-2.499
Skill 6 (30<Age<46 ; Education=university)	-0.29*	0.19	-2.826
Skill 7 (Age>45 ; Education=primary)	-0.19	0.14	-2.735
Skill 8 (Age>45 ; Education=secondary)	-0.36***	0.14	-1.436
Skill 9 (Age>45 ; Education=university)	-0.017	0.08	-5.854
Year 2000			
Skill 1 (Age<30 ; Education=primary)	-0.09**	0.04	-4.189
Skill 2 (Age<30 ; Education=secondary)	-0.14***	0.05	-4.707
Skill 3 (Age<30 ; Education=university)	-0.13***	0.05	-4.592
Skill 4 (30<Age<46 ; Education=primary)	0.07	0.06	-3.337
Skill 5 (30<Age<46 ; Education=secondary)	-0.06	0.06	-4.25
Skill 6 (30<Age<46 ; Education=university)	-0.10*	0.06	-3.009
Skill 7 (Age>45 ; Education=primary)	0.036	0.068	-3.13
Skill 8 (Age>45 ; Education=secondary)	-0.16***	0.07	-5.145
Skill 9 (Age>45 ; Education=university)	0.11	0.11	-5.726
Year 2001			
Skill 1 (Age<30 ; Education=primary)	-0.19***	0.04	-4.552
Skill 2 (Age<30 ; Education=secondary)	-0.09	0.08	-4.699
Skill 3 (Age<30 ; Education=university)	0.053	0.11	-3.656
Skill 4 (30<Age<46 ; Education=primary)	-0.28***	0.06	-3.023
Skill 5 (30<Age<46 ; Education=secondary)	-0.14*	0.08	-4.084
Skill 6 (30<Age<46 ; Education=university)	-0.25***	0.11	-4.031
Skill 7 (Age>45 ; Education=primary)	0.002	0.04	-4.606
Skill 8 (Age>45 ; Education=secondary)	-0.18***	0.04	-5.0
Skill 9 (Age>45 ; Education=university)	-0.09	0.11	-4.154
Year 2002			
Skill 1 (Age<30 ; Education=primary)	-0.21***	0.07	-4.625
Skill 2 (Age<30 ; Education=secondary)	0.10	0.09	-2.854
Skill 3 (Age<30 ; Education=university)	-0.21**	0.12	-2.85
Skill 4 (30<Age<46 ; Education=primary)	-0.31***	0.13	-3.129
Skill 5 (30<Age<46 ; Education=secondary)	-0.25***	0.11	-1.69
Skill 6 (30<Age<46 ; Education=university)	0.07	0.11	-5.27
Skill 7 (Age>45 ; Education=primary)	-0.15***	0.04	-5.18
Skill 8 (Age>45 ; Education=secondary)	-0.01	0.03	-4.465
Skill 9 (Age>45 ; Education=university)	-0.09***	0.04	-3.418
Year 2003			
Skill 1 (Age<30 ; Education=primary)	0.02	0.06	-4.313
Skill 2 (Age<30 ; Education=secondary)	-0.04	0.05	-3.757
Skill 3 (Age<30 ; Education=university)	-0.004	0.08	-3.413
Skill 4 (30<Age<46 ; Education=primary)	-0.22***	0.05	-3.699
Skill 5 (30<Age<46 ; Education=secondary)	-0.23	0.17	-3.898
Skill 6 (30<Age<46 ; Education=university)	-0.24	0.18	-4.377
Skill 7 (Age>45 ; Education=primary)	-0.25***	0.12	-3.993
Skill 8 (Age>45 ; Education=secondary)	-0.34***	0.16	-3.9
Skill 9 (Age>45 ; Education=university)	-0.21	0.15	-4.369

Table 5 (cont)
Estimated Employment Convergence Rates

Year and Skill Group	Convergence Coefficient	Standard Errors.	Immigrant Penetration
Year 2004			
Skill 1 (Age<30 ; Education=primary)	-0.24***	0.12	-3.346
Skill 2 (Age<30 ; Education=secondary)	-0.22***	0.11	-3.384
Skill 3 (Age<30 ; Education=university)	-0.42***	0.16	-2.966
Skill 4 (30<Age<46 ; Education=primary)	-0.04	0.04	-5.57
Skill 5 (30<Age<46 ; Education=secondary)	-0.11***	0.05	-6.23
Skill 6 (30<Age<46 ; Education=university)	-0.11*	0.07	-6.055
Skill 7 (Age>45 ; Education=primary)	0.02	0.11	-5.828
Skill 8 (Age>45 ; Education=secondary)	-0.08	0.06	-5.978
Skill 9 (Age>45 ; Education=university)	-0.06	0.08	-4.934
Year 2005			
Skill 1 (Age<30 ; Education=primary)	0.007	0.09	-4.86
Skill 2 (Age<30 ; Education=secondary)	-0.15***	0.06	-4.602
Skill 3 (Age<30 ; Education=university)	-0.09	0.07	-5.558
Skill 4 (30<Age<46 ; Education=primary)	-0.17	0.11	-4.899
Skill 5 (30<Age<46 ; Education=secondary)	-0.12	0.09	-4.548
Skill 6 (30<Age<46 ; Education=university)	-0.03	0.05	-4.531
Skill 7 (Age>45 ; Education=primary)	-0.04	0.13	-4.05
Skill 8 (Age>45 ; Education=secondary)	0.002	0.10	-4.256
Skill 9 (Age>45 ; Education=university)	-0.21***	0.14	-5.286
Year 2006			
Skill 1 (Age<30 ; Education=primary)	-0.06	0.08	-4.617
Skill 2 (Age<30 ; Education=secondary)	-0.12	0.55	-4.4
Skill 3 (Age<30 ; Education=university)	-0.11***	0.03	-4.469
Skill 4 (30<Age<46 ; Education=primary)	-0.13	0.08	-4.403
Skill 5 (30<Age<46 ; Education=secondary)	-0.18*	0.10	-5.271
Skill 6 (30<Age<46 ; Education=university)	-0.20***	0.05	-3.26
Skill 7 (Age>45 ; Education=primary)	-0.29***	0.09	-3.546
Skill 8 (Age>45 ; Education=secondary)	-0.14	0.11	-4.245
Skill 9 (Age>45 ; Education=university)	-0.15	0.13	-3.786

Note: The unit of observation is the region (i.e. 17 autonomous communities) for each skill and year. Standard errors (in parentheses) are robust to heterogeneity. *** Signifies statistically different from zero at the 1% level or better, **at the 5% level or better and *at the 10% level or better.

Table 6
The Impact of the Immigration Penetration Index on Regional Employment Convergence Rates

Specification	Coefficient	R-squared	Observations
Without fixed effects	-0.04***	0.08	72
	(0.01)		
With skill group fixed effects	-0.016	0.26	72
	(0.02)		
With skill group and year fixed effects	-0.01	0.36	72
	(0.02)		

Note: The unit of observation is the region-skill-year cell. All estimations are weighted using the inverse of the square of the standard error to correct for any potential heteroscedasticity in the error term. Standard errors are in parentheses. *** Signifies statistically different from zero at the 1% level or better.