DISCUSSION PAPER SERIES

IZA DP No. 7297

Immigration and Labor Productivity: New Empirical Evidence for Spain

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March 2013

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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Discussion Paper No. 7297
March 2013

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IZA Discussion Paper No. 7297
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ABSTRACT

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The purpose of this paper of this paper is to explore the immigration and productivity in Spain. We estimate the effect of immigration on labor productivity from 2004 until 2008 for Spain. Using firms (SABI) and individuals data (Social Security Records) we calculate the effect by sector and municipality for the two big Spanish provinces that have received most immigrants in the last decade: Barcelona and Madrid. After controlling for endogeneity of immigration, the results demonstrate that immigration have a negative effect on productivity. Education and occupation are both variables with a positive effect on productivity, while permanent, public or full time contracts do not have any effect. Type of immigration, Europeans 15 (more skill) versus no European, is not relevant in explain the negative productivity. This fact is due that firms are very heterogenous across them and use their employees under their real production potential.

JEL Classification: F22, J61, R11

Keywords: immigration, labor productivity, Spain, MCVL, SABI

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* Financial support from the Fundacion Ramon Areces (Ayuda Investigacion 2010) is gratefully acknowledged.

Introduction

In the last years some OECD countries such as Spain, Italy, Greece and UK, have experimented a huge flow of immigration with a strong impact on many different levels: aging, labor market, welfare, education, pension system .... In particular, the labor market (the supply side, the productivity and the skill composition) of the host country is the most affected, due to the immigration is composed of young people who leave their country in search of a job. In addition, most of the immigrants are low-skilled, a quite cheap factor of production, and in competition with native workers with some qualification. As a consequence, immigration has an effect on the composition of the workforce and on labor productivity.

Looking at the productivity, since the 90's in most European countries has fallen, especially in countries that have received the highest flow of immigrants, e.g. Italy or Spain (See Izquierdo et al, 2010). Most of these countries have received a low skill immigration that work in intensive labor sectors with below of average productivity, so of part of this decline in productivity is due to this transitory negative composition effect. More specifically, we observe that the lowest increase in productivity is experimented by the regions where more jobs are created and received more immigrants. A possible explanation is that the supply of immigrants can reduces the employment costs in that region, so the work factor becomes more intensive in such particular economy, and the productivity decreases accordingly.

Furthermore, immigration flows are unequally distributed among countries and cities. Usually, to build stronger networks and increase their chances of finding employment, immigrants concentrate in municipalities and places with high economic activity.

Several studies have analyzed how such differential in flows of immigrants have affected different aspects of state economies such as labor markets (recently Borjas 2006, Card 2001, 2007, 2009, Peri and Sparber 2009), industrial specialization (Card and Lewis 2007) and innovative capacity (Gauthier-Loiselle and Hunt 2008). Most of these studies conclude that immigrants are complementary to native workers, and that the increase in the available workforce has little effect on wages and income. However, the effects of immigration at the industry level are largely unexplored, as indeed is its impact on productivity.

This study sets out to identify the effect of immigration on labour productivity across Spanish municipalities. Specifically, we analyse the impact of immigration on the productivity of firms at municipality and sector levels for two big provinces of Spain: Barcelona and Madrid.

In absolute numbers of foreign population, Spain ranks third among OECD countries after USA and Germany. Spain has receive from 2000 until 2008 more than five millions of immigrants (see Figure 1). However, the distribution of immigrants is not homogeneous across cities and regions in Spain. As we can see in Figure 2, the immigration is concentrated along the East coast, and Madrid and Barcelona are the cities that more immigrants have hosted, exposing them not only a significant social transformation (language, culture, etc.), but also with a large effect to the labor workforce and so far to the firms that use immigrants as employees.

Literature on productivity and immigration in Spain is limited. Earlier research on immigration in Spain has focused on wages and inequality rather than on productivity, see for example Ortega and Gonzales (2010), Carrasco et al. (2008), Amuedo- Dorantes and De la Rica (2008). Using several sources of data, these studies try to estimate the shock of immigration on the wages of natives of Spain. Ortega and Gonzales (2010) study the labor market effects of the large immigration wave in Spain between 2001 and 2006, exploiting the large variation in the size of immigration flows across Spain's regions. They find that the relatively unskilled migration inflows did not affect the wages or employment rates of unskilled workers in the receiving regions. Regions that received a large inflow of unskilled immigrants increased the intensity of use of them, compared with other regions. Carrasco et al. (2008) use the skill correlations approach introduced by Borjas (2003), find that growth in the foreign-born share across skill cells is negatively correlated with growth in employment rates and wages. Their conclusion is that there is no robust evidence of negative labor market effects of immigration. Amuedo- Dorantes and De la Rica (2008) show that immigration led Spain-born workers to shift occupations, toward less exposed, more communication- intensive occupations.

There have been few investigation of productivity and immigration for Spain. Concretely, we can find the research of Blasco and Carrizosa (2009)) who look at the effect of immigration on firms activity using the Spanish Mercantile Registry of manufacturing firms for the years 2001 to 2005. They analyse the effect of immigration flows on the growth and the efficiency of firms in Spanish cities. They show that the increasing pressure caused by immigrants had a positive effect on the evolution of wages and labour productivity, and a negative effect on the job evolution on firms. Despite that, they concentrate their analysis only on manufacturing firms and do not control for other factors that have an influence on the workforce composition such as skills, occupation, immigration countries, etc. Kangasniemi et al (2009) explore the economic consequences of immigration on productivity performance at a sectoral level for Spain and the UK. They found that migration has had

very different implications for Spain and the UK, migrants being more productive than natives in the UK but less productive than natives in Spain from 2000 to 2005. Lacuesta et al. (2011) compute the measure of the labour quality of natives and immigrants, and find that immigration has a slight negative composition effect on labour productivity in Spain. Furthermore, Izquierdo et al. (2010) use a general equilibrium overlapping generations model to measure the aggregate effects of immigration on productivity in Spain, and conclude that immigration has a negative impact on it. This could be explained by the fact that immigrants are usually employed in labour intensive sectors with a low average productivity.

However, most of these studies look at the labour productivity at an aggregate region level and do not control for the endogeneity of immigrants. As we have told above, immigrants are not distributed homogeneously across regions, and prefer to live where the employment rate is high and where other similar immigrants live. This involves a source of endogeneity when the immigration is taken into account in the estimation of labor productivity.

With this study, we added an empirical evidence at studies before, considering information at individual and firm level, on labor productivity in Spain using two sources of data set: SABI and Social Security Records (Muestra continua de vidas laborales (MCVL) from 2004 until 2008. In the SABI dataset we can find information across firms in Spain, while the MCVL provides us with information across individuals. Both sources of data allow us to analyse the effects of immigration on Spanish firms, taking into account also the endogeneity of the localization of the immigration. This is the first study for Spain that use the an instrument to correct for the erogeneity of immigrants.

Using data in a longitudinal way we estimate the relation of sectoral gross value added (GVA) for each employee through a two stages least square (2SLS) model panel data, controlling for the local share of immigrant population in each municipality. To measure productivity at regional and sectoral levels, GVA is divided by the number of people employed, which is also referred to as labour productivity. In addition, we relate this output with wages across municipalities and sectors.

Our results find that labor productivity decreases across years while wages increase, immigration has a negative effect on the value added of Spanish firms. In conclusion, the arrival of new immigrants has increased the labour force and firms have modified their behavior in response to this new stock of workforce.

The study is divided into three sections. In the first section we offer a brief introduction about the immigration in Spain and the data we have used in our research. In the second

one we show the estimation strategy and present our findings. The final section concludes and discusses these results.

Immigration in Spain and Data description

Spain has achieved over six million foreign-born residents in these last ten years, that correspond to 14% of the total population as we can see in Figure 1. Four million come outside the European Union and 2.3 million (5.1%) are from another EU Member State (Ine 2011). Of these, well over one million and a half come from Latin America (Ecuador, Colombia, Bolivia, Argentina and Brazil), more 700,000 are Moroccan, while immigrants from European Union are especially from Romania, United Kingdom, Germany, Italy and Bulgaria. Most immigrants are concentrated in a few Spanish regions that absorb about 83.5 percent of the immigrant population. As we can observe in Figure 2 the immigration vary a lot across municipality in each region, Barcelona and Madrid are the province that more immigrants attracts in Spain.

To design our study, we use two sources of data: the SABI and the Social Security Records (Muestra Continua de Vidas Laborales; hereafter MCVL).

The SABI dataset is the Spanish branch of the AMADEUS database. This database contains accounts and useful information for over 1.2 million Spanish companies. The database contains 27 indicators related to: firm characteristics (number of firms, entry, exit and survival), employment (number of employees and hours worked), productivity (labour productivity, total factor productivity) and other characteristics like export ratio and concentration rates. In particular, we consider where firms are located, sector, number of employees, labour cost for employee and the GVA from 2004 to 2008. We have eliminated firms that report zero workers and negative or missing labour productivity. In total we have more that 200,000 firms per year. We avoid to analyse the period after 2008 because it is difficult to distinguish the effects of immigration from the effects of the strong economic crisis after 2008.

From the MCVL we consider data from 2000 until to 2008. The data come from the registry of the Social Security System (SSS) for active people in the labour market. This database provides information about all the historical relationships of 4% of totaly individuals within the Social Security System (in terms of work and unemployment benefits), and represents more than 1 million people in the Social Security System in Spain. The MCVL started in 2004, and workers are a random sample of those affiliated with the Social Security

System in the year when the survey was conducted and reproduces the labour history of the affiliated people starting with their first job.

The MCVL is an appropriate database to study the labour market in Spain and, in fact, has several advantages over the Labour Force Survey (LFS) and the Wage Structure Survey (WSS), because it provides more exhaustive information on the labour trajectories of workers. In addition, the MCVL has information regarding the type of contract, sector of activity, qualification, earnings, date when entering or leaving the job market, part-time or full-time status and firm size. Moreover, the database contains information on nationality, country of birth, residence, date of birth, and level of education. The MCVL also gives details about the establishment (location, number of workers and industry) in which a worker is hired. By arranging the available items we may easily detect the labor force composition, in particular, we may extract information about qualified and non-qualified employees, like immigration, type of job, part-time or full time contract, and permanent and public contract at municipality and sector level. We adopt a definition of "qualified" employee for any employee who is hired at the highest professional categories.

To build our sample we have merged the wave of 2010 with the wave from 2009 until 2005, and since we know all the work history of workers we go back until 2000. Consider years before to 2000 increase the risk of attrition, due that the database is not representative at these years but only for the years where extraction is done.

We have deleted people that not report a labor relation with the SSS (3023 observations deleted). We have kept people who report a wage in the month of May and, if the individual reported more than one job, we have taken the greatest earn. We only consider people from 15 to 65 years old out of a total of more than 300,000 individuals. From MCVL we consider the average at municipality and sector levels of the following variables: monthly wage, age, level of education (primary, secondary and tertiary), high, middle high, middle and low skills, permanent contract, public service and fulltime contract. We consider the sum of immigrants, taking into account the immigration from the European Union (EU15) and from the Rest of the Countries at industry and municipality level. After that, we merge this sample with the SABI sample at firm level by municipality and sector. The municipalities account around 40,000 individuals and the sectors are regrouped in the main specification(agriculture, industry, building...). In total we have more than 30 municipalities and 13 sectors for Madrid and Barcelona.

In Table 1 we report the summary statistics of the years considered in our sample. Real labour productivity increased a little bit from 2004 to 2006 to decrease again later. Labour

productivity grew significantly less in the Spanish economy than in other OECD economies in the period 1996-2007. In recent years, labour productivity growth has accelerated, but this recovery is likely due to cyclical and temporary factors. This could be explained by the fact that Spain has invested more on labour intensive sectors, such as construction or tourism, where productivity is below the average. As we report in Figure 3, the labour productivity across sectors is very low with not much difference among them, however the service and industry sectors created more value added per unit of labour with respect to the other sectors.

The economic theory holds that at the aggregate level the growth of real wages are determined by labor productivity growth. Typically it is assumed that the firm's capital stock is constant in the short run, such that the profit-maximising behaviour determines the optimal level of production at which a marginal worker's contribution to profit is equal to his wage. If we look at the monthly real wage in Table 1 we can see how it increased while productivity decreased across years. In addition, looking at Figure 4, the difference across sectors and qualifications in Spanish wages are quite low and the wage has increased for all qualifications and sectors. Furthermore, another evidence is added: the cost of employees has increased a lot in Spain in this period, especially in sectors with low productivity such as reported in Figure 5. This increase is in part due to the employment created in this period (see Figure 6). Annual employment growth in Spain averaged 3.15 percentage points from 1994 to 2007, with a productivity stagnation. Several studies have documented the negative trade-off between employment and productivity growth (see Gordon, 2008). One possible explanation for this negative relationship between productivity and employment can be attributed to a positive shock in the labour force participation that Spain has experienced in this period: immigration.

In the rest of Table 1 we present the summary of the rest of the variables considered for the study. Industry, building and hotels, are the main sectors, half of individuals have middle or low skills, while the age of worker is reduced across years due to the entry of young people in the labor market. As we can see also 90% of the firms in Spain a very small, this is another problem to face to increase the competitive and the productivity in this country.

This is a first picture of labor productivity and immigration in Spain. Productivity decreases while the cost of labour force increase.

Theoretical model

We follow the method designed by Quispe and Agnoli (2002), to estimate the change in the productivity considering the effect of immigration. Use a two-sector model in a small open economy where both sectors use capital and one sector uses skilled labor while the other one unskilled labor. In the production function the output (denoted by Y) is produced with a constant-returns-to-scale Cobb-Douglas production function with the two factors: capital (K), and labor input (L):

$$Y = f_i(K_i L_i) \tag{1}$$

Where i indicate skilled or unskilled workers. Labor L in each sector is composed of two types of workers, natives and immigrants, who are perfectly substitutable within sector. The total number of workers in sector i is given by the sum of native (N) and immigrants (I):

$$L_i = Ni + I_i \tag{2}$$

They earn the same wage w_i in each sector, due to that are perfect substitutes . With this assumption that native labour is fixed within sectors, changes in the number of immigrants within a sector are equivalent to changes in total labor in that sector.

Capital is assumed perfectly mobile across sectors and the total amount is fixed, so an increase in capital in one sector implies an equal reduction in capital in the other sector. The return to capital is equalized across sectors and is given by r, which is equal to the value of the marginal product of capital. Indicate by p_i the prices of the two output goods we can differentiating equation (1) the determinants of changes in capital in sector i is equal at:

To determine which factors affect labor productivity, or output per worker we can differentiate the equation 3. Changes in labor productivity are given by:

$$dK^i = \Big(\frac{f^i_{KL} f^j_K}{z}\Big) dI^i - \Big(\frac{f^j_{KL} f^i_K}{z}\Big) dI^j + \Big(\frac{f^i_K f^j_K}{z}\Big) \Big[\frac{dp^i}{p_i} - \frac{dp^j}{p_j}\Big] \tag{3}$$

where $i \neq j$ and $z = (f^i_{KK} f^j_K f^j_{KK} f^i_K)$, which is positive. An increase in immigrant workers in a given sector will raise the amount of capital in that sector. That model can use to determine changes in labor productivity are given by:

$$d\Big(\frac{Y^i}{L^i}\Big) = \frac{1}{L^i}\Big[\frac{(f_K^i)^2 f_K^i}{z}\Big(\frac{dp^i}{p_i} - \frac{dp^j}{p_j}\Big) + \Big(f_L^i \frac{(f_{KL}^i) f_K^j f_K^i}{z}\Big)\frac{Y}{L_i} dI^i - \Big(\frac{(f_K^i)^2 f_{KL}^j}{z}\Big) dI^j\Big] \quad (4)$$

The first term shows that an increase in the relative output price increase the productivity. The second term instead indicates the effect that immigration inflows in a sector have on productivity in that sector. The sign of the effect is ambiguous and depends on the relationship between output, labor, and capital. The last term gives the effect of immigration inflows to sector j. An increases of these inflows reduce the labor productivity in sector i. Changes in labor productivity in a sector depend by changes in relative prices and by immigration inflows to each sector. However the model has some limitations such as treating the number of natives within skill groups as fixed , see Quispe and Agnoli (2002) for more details.

Empirical Methodology and Results

The focus of this paper is on the change of labour market productivity when a great inflow of immigrants enter in the Spanish sectors. To simply the model we use a reduce form to estimate it following the empirical strategy:

$$ln(L_{imjt}) = X_{imjt}\beta + lnImm_{imjt}^N \lambda + \varphi_t + \varphi i + \varphi_{j*m} \quad (5)$$

This empirical strategy examines the impact caused by the inflow of immigration on the labour productivity in Spain in a longitudinal way. Our analysis is the estimation of a series of regression models that share the same left side variables but differ in the controls variable that we have used. For our empirical analysis we consider the Gross value added (GVA) divide by the number of workers. Gross value added (GVA) is the output minus intermediate consumption. A common definition of productivity is a ratio of a volume measure of output to a volume measure of input use (OECD, 2001). A volume measure GVA is the preferred measure for output. GVA is preferable to GDP at the regional level because it excludes taxes or subsidies on products that are difficult to attribute to local units. To measure productivity at municipality and sectoral levels, GVA is divided by the number of people employed, which is also referred to as labor productivity. Where L is the the labor productivity of Spanish firm i in the municipality m andd sector j, in time t. While X is a set of covariates such as age, size of firm , education, occupation. We account for time dummies (φ_t) to control business cycle effect, firm fixed effects φi and

municipality interacted with sector φ_{j*m} fixed effects. To check the effects of immigration on productivity($lnImm^N_{tjr}$) we consider the log of total immigration in time t, municipality m and industry j by nationality. We dived the immigration in two big groups: European (EU) and No European (No EU) as describe in previous section.

Moreover, to estimate the effect of immigration on productivity, we need to control for the endogeneity represented by this variable $lnImm^N_{tjr}$. In order to provide a causal interpretation of immigration we adopt an instrumental variables approach. We build a Card-type instrument for regional and industrial immigration flows based on migration networks by country of origin (Card, 2001). This is the first work that uses this instrument to control the endogeneity on labor productivity of immigrants in Spain. We need to build an instrumental variables approach because the stock of immigrants in a determinate year could be endogenous, due to the fact that immigrants tend to locate in areas with existing clusters of immigrants from their same country of origin. We want a variable that is correlated with changes in a municipality and industry composition over the period 2004-2008, but is uncorrelated with current shock to the municipality and industry demand for that type of labor. Looking at Figure 2 we can see how the number of immigrants started to grow after 2002 very fast. Due to this picture we construct our instrument from the stock of immigrants by nationality, municipality and industry in 2000[1]. More specifically, let denote Imm^N_{2000mj} the share of immigrants by country N, municipality (m) and industry (j) in the year 2000. This inflow is given by immigrants of country of birth N in area m and industry j in 2000, divided by the total of immigrants of nationality N in the year 2000.

$$Imm^N_{2000mj} = \frac{Imm^N_{2000mj}}{\sum Imm^N_{2000}}$$

We build the imputed inflow of immigrants from country N as the sum of total immigrants by country N in year t multiplied by the flow of immigrants in 2000 (Imm^N_{2000mj}):

$$\widehat{Imm}^N_{tmj} = \sum Imm^N_{tmj} * Imm^N_{2000mj}$$

The logarithm of $\widehat{Imm}^N_{trmj}$ is used as instrument for the explanatory variable $lnImm^N_{tjm}$ in the labor productivity equation (3), where N represents EU and No EU immigrants respectively.

Our analysis is performed by a two stage least square model (2SLS). We correct and cluster the standard errors in order to control for heteroscedasticity.

[1]Before this period the number of immigrants in Spain was very low.

We report the instrumental regression analysis (first step (OLS) and second step (IV)) in Table 2. We have considered two kinds of specification: M1 (firm fixed effects) and M2 (municipality times industry fixed effects). We can observe that the instrument variable ($\widehat{Imm}^{N}_{trj}$) in the first step of regression is positive and significant, that means which our instrument is quite appropriate to control the endogeneity of our independent variable: the sum of immigrants ($lnImm^{N}_{tjr}$). In the second step, the coefficient of the logarithm of immigration is negative and significant for M1 where we control not only for firm fixed effects but also for municipality and industry. Whereas when we control for the intersection between municipality and industry and do not use the firm fixed effect, the significance disappears and the coefficient becomes positive. This means that firms are quite heterogeneous across them in the use immigration and the control for the heterogeneity about firm is necessary. These results agree with those of the aforementioned studies. Regarding the rest of workers' characteristics we found that high skills and a high education increase productivity, while the rest of variables (have a public, full time or permanent contract) do not have any effect on labour productivity.

In the next Tables, 3 and 4, we estimate the 2SLS analysis dividing immigrant workers into two groups: Europeans versus non European. In the Europeans group we include the EU15 countries, while the rest are considered as non European. In the "Europeans" enter all the EU15 countries, while the rest of countries are in "non European". We do so because while immigrants from the EU15 zone usually have no economic reasons, this is indeed the case of Latin, Moroccan or East European people. In Spain there is a small proportion of immigrant workers who have attained tertiary education. We have constructed the instrument differentiating European and not European to control for the endogeneity.

Table 3 shows the model for non European immigration, which is usually very low skilled. Again, we control for firm fixed effect and we find that immigration have a negative and significant impact on productivity for M1: Instead not use the firm fixed effects (M2) no not capture any effect of immigration on productivity. We can see how the instrument is positive and significant in the first step, that control for endogeneity is needed. The rest of variables seem not to affect labor productivity except occupation and a little bit the size of the firm in a positive sense.

Table 4 reports the estimation considering the European immigration. In the specification M1, when we control for firm fixed effects, we can find that the impact is very high and negative on labor productivity. One possible explanation is that EU immigrants are quite

high skilled but they work in occupation low than their productivity level. This is also found by Lacuesta et all (2011), the quality of workers and their occupation seems essential for increasing labor productivity.

Conclusion

This paper has brought a new evidence about the immigration on the Spanish labour market. In particular it has attempted to broaden the understanding the role of immigrants and other variable on firms output. The results show that migration is playing an increasingly important role in the economic performance of Spain, but, at the same time, it explains a great part of the poor evolution of labor productivity. Using a new data source to the most frequently used, we find that immigration has a negative impact on labour productivity. The type of immigration (EU versus no EU) into Spain are not the question due to that there is no difference across these two groups on labor productivity. What is really matter is the way in which firms employ these workers. Spain needs to regain its lost productivity in recent years compared to other European countries such as France or Germany. Immigration has been the main contributor to the growth of the labour force during the last decade in Spain, and it can alleviate the consequences of aging and shortages in some types of job, although they have a negative effect on productivity and growth. However, the results show that firms are quite heterogeneous among them in the use of workers, which is also reflected in labor productivity.

Increasing innovation, restoring the industry sector, improving education and skills are duties that Spain needs to implement in order to maintain a rapid overall productivity growth.

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Figure 1: Immigration Distribution across years

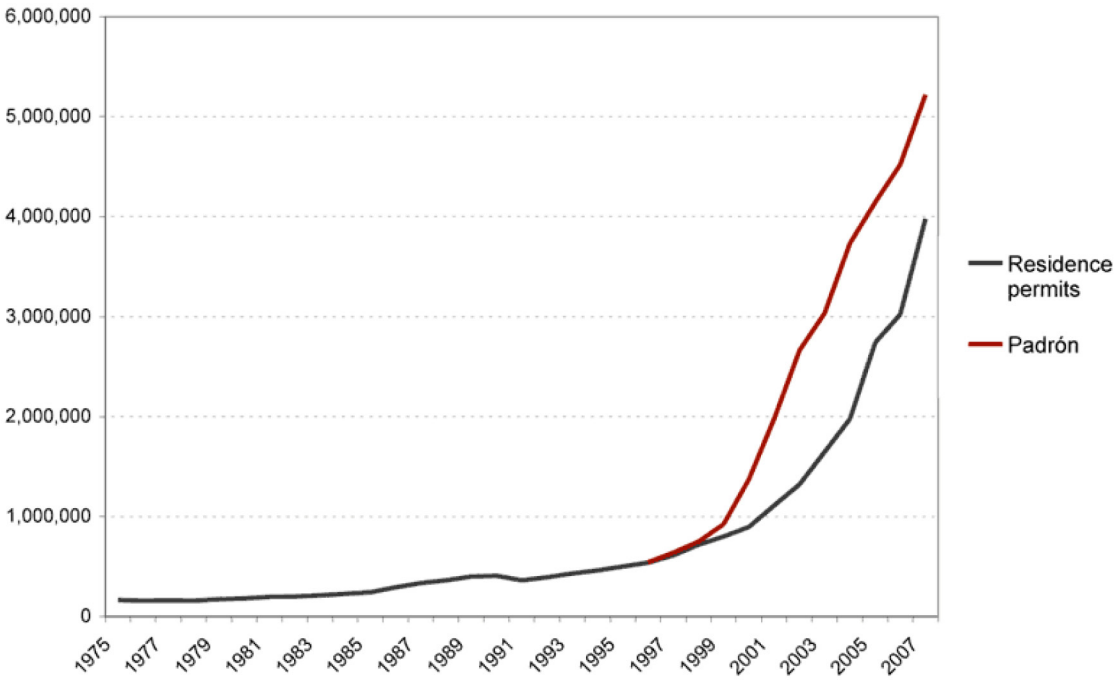
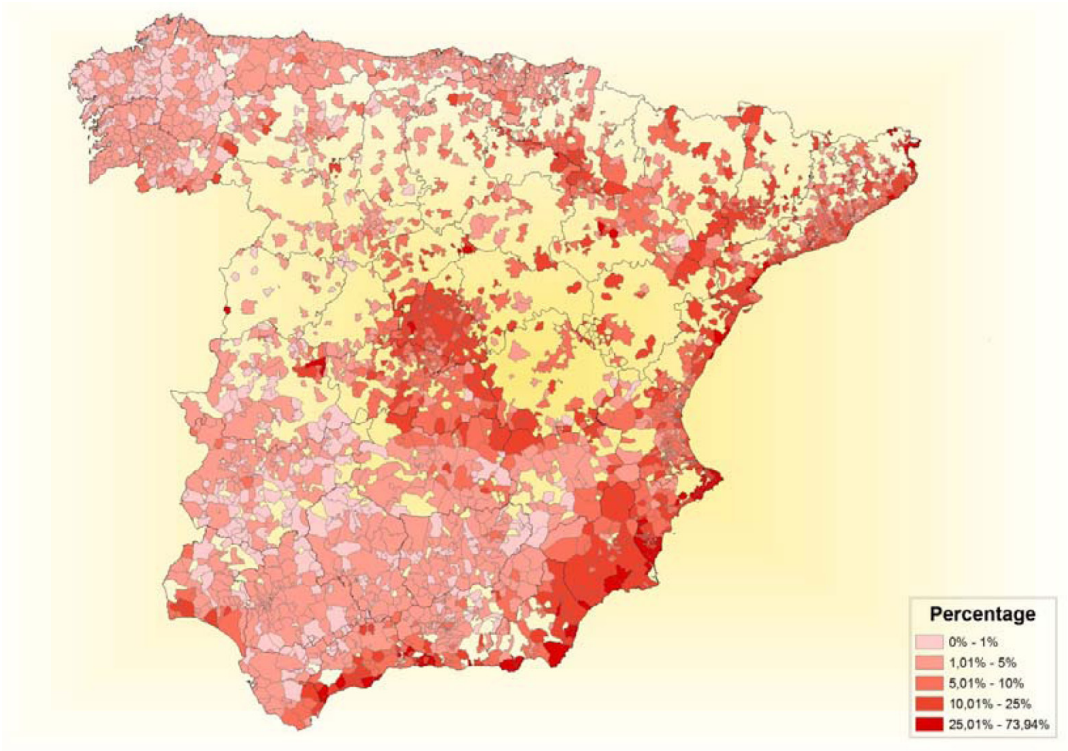
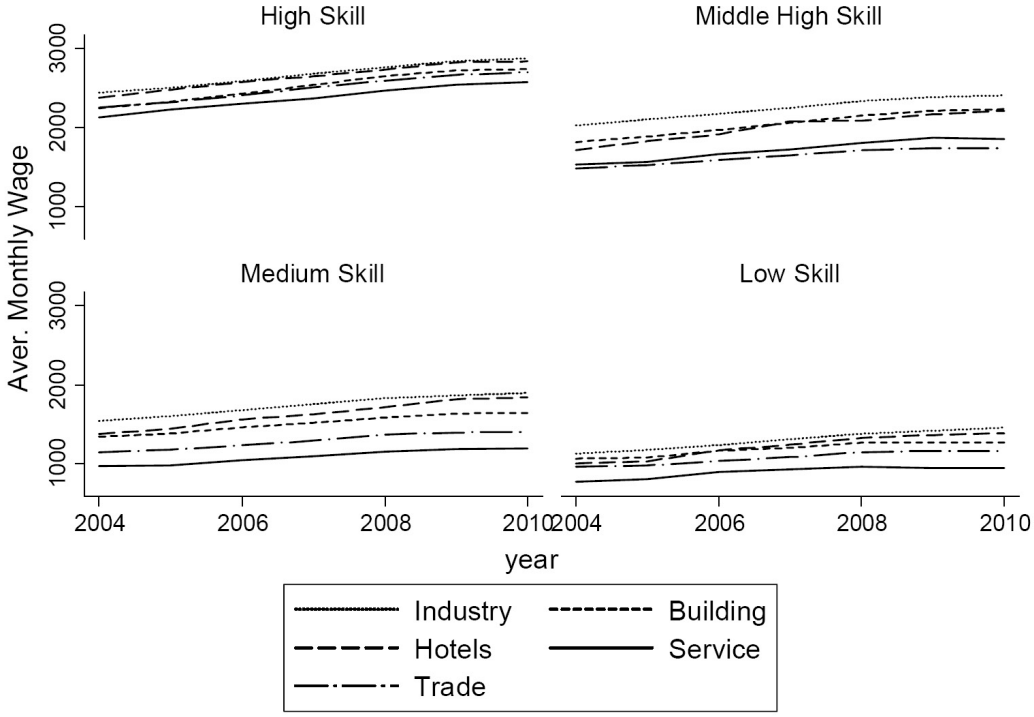


Figure 2: Immigration Distribution across Spanish cities



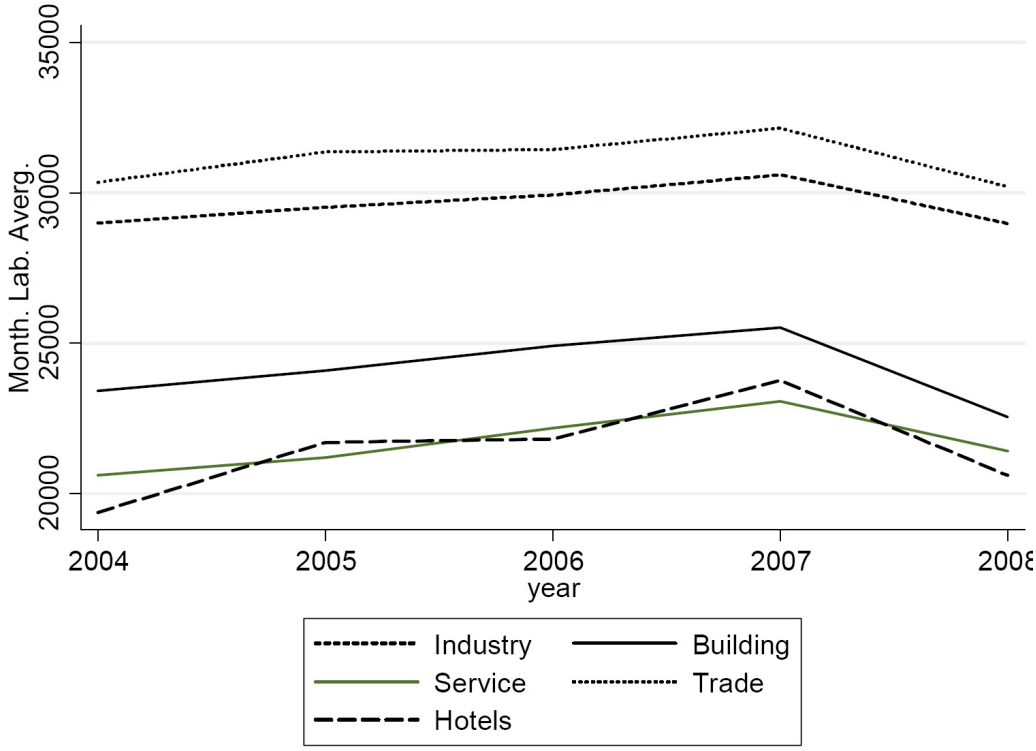
Source: Ine 2011

Figure 3: Real Monthly Wage average across Sector by year



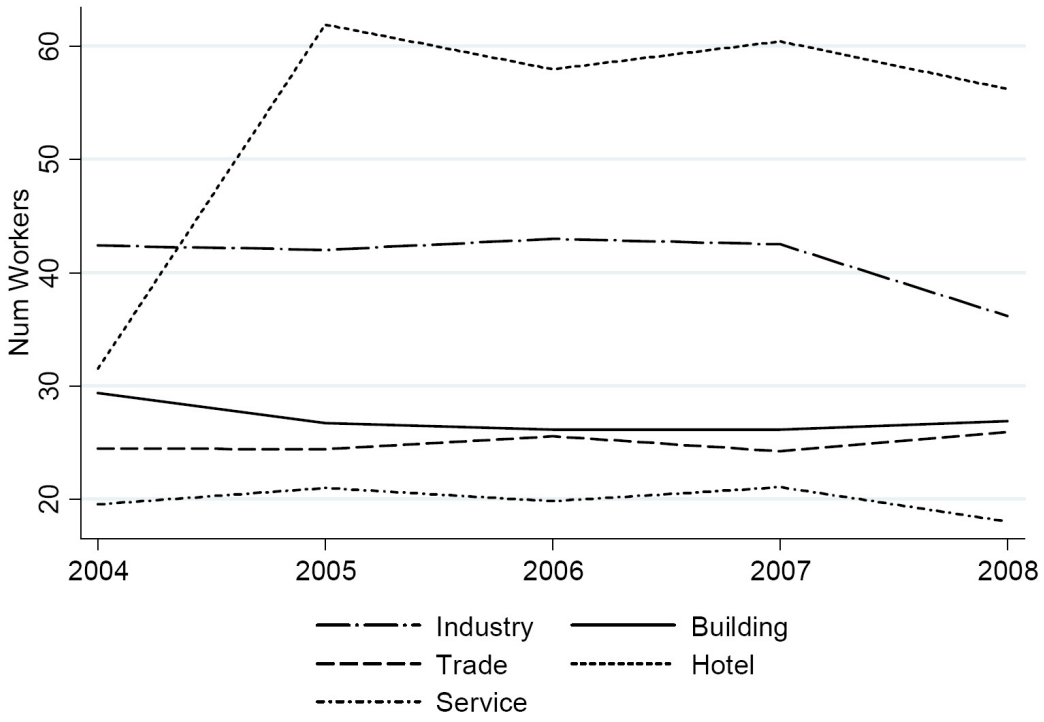
Source: MCVL 2010

Figure 4: Real Monthly Labor Productivity average among sectors by year



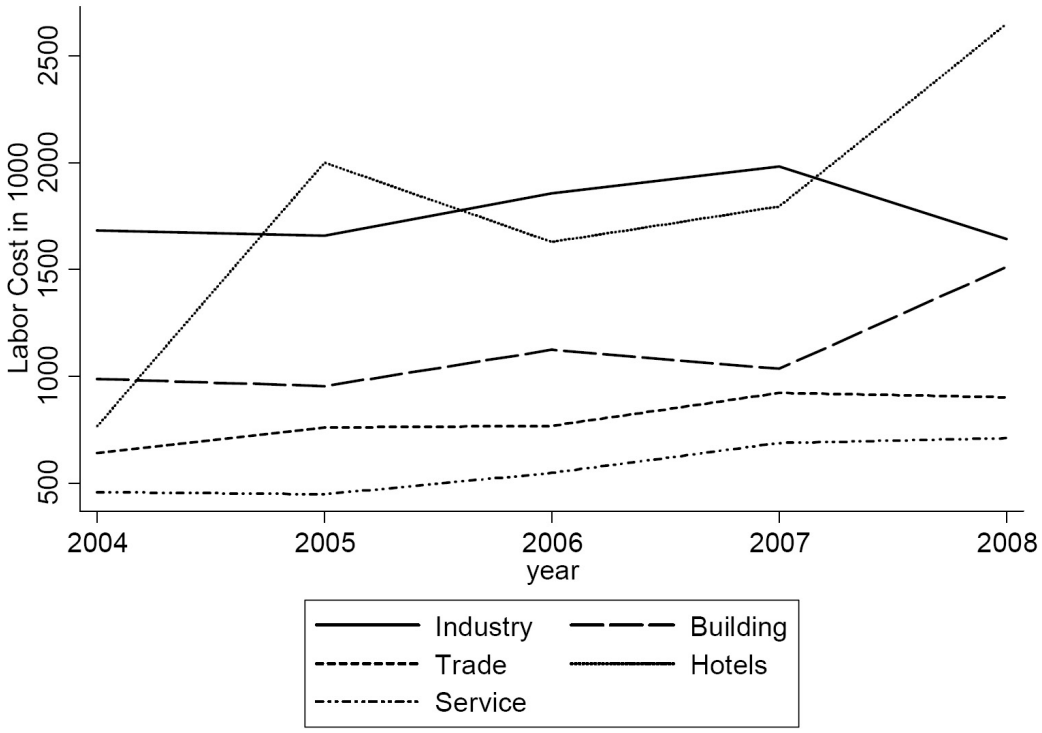
Source: SABI 2010

Figure 5: Real Monthly Labor Productivity average among sectors by year



Source: SABI 2010

Figure 6: Real Monthly Labor Productivity average among sectors by year



Source: SABI 2010

Table 1: **Summary Statistics by year**

	2004	**2005**	**2006**	**2007**	**2008**
Lab. Prod.	22488.04	24296.96	24624.92	24981.24	22234.89
Sd	*36011.05*	*38107.46*	*38594.82*	*38309.51*	*36411.43*
Month. Wage	1388.64	1305.56	1355.41	1506.17	1581.21
Sd	*707.14*	*611.90*	*606.62*	*662.53*	*751.38*
Sector					
Agriculture	0.01	0.00	0.01	0.01	0.00
Industry	0.10	0.10	0.09	0.10	0.06
Building	0.12	0.11	0.10	0.12	0.10
Trade	0.25	0.23	0.22	0.25	0.22
Hotel	0.03	0.04	0.03	0.03	0.04
Transport	0.05	0.02	0.04	0.05	0.02
Telecomm.	0.07	0.07	0.06	0.07	0.06
Finance	0.04	0.21	0.15	0.04	0.19
Service	0.19	0.09	0.17	0.19	0.18
Publ. Admin.	0.00	0.00	0.00	0.00	0.00
Education	0.00	0.01	0.01	0.00	0.01
Health	0.02	0.03	0.02	0.02	0.02
Others	0.13	0.08	0.09	0.13	0.10
Firm Size					
Less 9	0.69	0.70	0.70	0.69	0.73
Between 10-49	0.25	0.24	0.24	0.25	0.21
Between 50-250	0.05	0.05	0.05	0.05	0.05
More than 250	0.01	0.01	0.01	0.01	0.01
Tot Immi EU	3.16	4.72	5.15	4.79	5.31
Tot Immi.No EU	4.58	3.29	3.44	3.16	3.60
Tot. Imm.	4.79	4.42	4.92	4.58	5.09
Occupation					
High Skill	0.29	0.18	0.14	0.29	0.25
Medium High Skill	0.37	0.12	0.34	0.37	0.18
Medium Skill	0.13	0.50	0.40	0.13	0.40
Low Skill	0.22	0.20	0.11	0.22	0.18
Education					
Tertiary	0.13	0.33	0.25	0.13	0.17
Secondary	0.73	0.53	0.45	0.73	0.38
Primary	0.14	0.14	0.30	0.14	0.45
Age	40.57	40.62	38.35	39.57	37.40
Type Contract					
Full time	0.21	0.30	0.35	0.21	0.25
Permanent	0.60	0.44	0.48	0.60	0.60
Public	0.15	0.10	0.21	0.15	0.05
N	**168408**	**168716**	**191925**	**200704**	**175426**

Table 2: **Real labor productivity: 2SLS estimation**

	M1		M2	
	I step	II step	I step	II step
Age	0.001***	0.002	0	-0.001*
	0	-0.002	-0.002	-0.001
Primary	-0.033***	-0.021	-0.026	0.014
	-0.002	-0.023	-0.046	-0.021
Secondary	-0.026***	-0.024	-0.069*	0.002
	-0.002	-0.017	-0.035	-0.018
Medium High Skill	-0.020***	-0.01	-0.044	-0.030*
	-0.002	-0.047	-0.034	-0.018
Medium Skill	0.00	-0.012	-0.033	-0.029
	-0.002	-0.042	-0.039	-0.019
Low Skill	-0.057***	-0.044	-0.069	-0.027
	-0.002	-0.034	-0.048	-0.023
Permanent Cont.	0.041***	-0.007	0.03	-0.008
	-0.001	-0.02	-0.033	-0.015
Full time Con	0.237*	0.093	0.247**	0.039
	(0.011)	(0.087)	(0.122)	(0.091)
Public. Cont.	0.047***	-0.043	0.015	-0.028
	-0.003	-0.058	-0.098	-0.032
Less 9	-0.019	8.183***	-0.002	1.416***
	-0.013	-0.115	-0.001	-0.104
Between 10-49	-0.018	3.789***	-0.004**	0.322***
	-0.013	-0.159	-0.002	-0.092
Between 50-250	-0.017	0.017	-0.002	-0.077
	-0.012	-0.047	-0.002	-0.062
Log Imm Imputed	0.312***		0.617***	
	-0.004		-0.074	
Log Sum Imm.		-0.303***		0.138
		-0.054		-0.099
N	180165	228951	228951	180165
Year	Y		Y	
Municipality	Y		N	
Industry	Y		N	
MunicpalityxIndustry	N		Y	
Firm Fixed Effects	Y		N	
R2	0.616	0.36	0.509	0.018
Ander. Lm Test		24.27		2538.545
F	7093999.98	2510.594	18.976	44867.166
Cragg-Donald F		69.307		6449.33

Table 3: **Real labor productivity by No EU Immigration : 2SLS estimation**

	M1		M2	
	I step	II step	I step	II step
Age	0.002	0.002	0.003***	-0.002*
	-0.002	-0.002	0	-0.001
Primary	-0.083	-0.021	-0.071***	0.021
	-0.06	-0.023	-0.002	-0.022
Secondary	-0.085*	-0.028	-0.039***	0.006
	-0.046	-0.017	-0.002	-0.019
Medium High Skill	-0.022	-0.006	0.009***	-0.035*
	-0.042	-0.051	-0.002	-0.018
Medium Skill	0.002	-0.006	0.037***	-0.037*
	-0.051	-0.044	-0.002	-0.02
Low Skill	-0.039	-0.033	-0.016***	-0.034
	-0.054	-0.038	-0.003	-0.024
Permanent Cont.	0.053	0.001	0.069***	-0.015
	-0.037	-0.02	-0.001	-0.017
Full time Con	0.134*	0.073	0.127***	0.018
	(0.021)	(0.063)	(0.089)	(0.075)
Public. Cont.	-0.058	-0.062	-0.009***	-0.022
	-0.13	-0.056	-0.003	-0.031
Less 9	0.001	8.183***	0.017	1.382***
	-0.002	-0.116	-0.015	-0.104
Between 10-49	-0.002	3.782***	0.017	0.300***
	-0.002	-0.161	-0.015	-0.093
Between 50-250	-0.002	0.014	0.011	-0.08
	-0.002	-0.047	-0.014	-0.063
Log Imm Imputed	0.660***		0.302***	
	-0.081		-0.004	
Log Sum Imm.		-0.273***		0.157
		(0.062)		(0.104)
N	223856	223856	175523	175523
Year		Y		Y
Municipality		Y		N
Industry		Y		N
MunicpalityxIndustry		N		Y
Firm Fixed Effects		Y		N
R2	0.49	0.36	0.627	0.018
Ander. Lm Test		22.209		3437.222
F	15.101	2460.397	4884194.96	43533.12
Cragg-Donald F		66.198		5915.324

Table 4: **Real labor market probability by EU Immigration : 2SLS estimation**

	M1		M2	
	I step	II step	I step	II step
Age	-0.001	0.001	-0.001	0
	-0.002	-0.002	-0.002	-0.002
Primary	0.018	-0.016	0.018	0.01
	-0.053	-0.04	-0.053	-0.024
Secondary	0.034	-0.019	0.034	-0.026
	-0.048	-0.033	-0.048	-0.044
Medium High Skill	0	-0.035	0	-0.027
	-0.037	-0.047	-0.037	-0.028
Medium Skill	-0.011	-0.048	-0.011	-0.011
	-0.034	-0.05	-0.034	-0.04
Low Skill	-0.061	-0.090**	-0.061	0.035
	-0.039	-0.043	-0.039	-0.125
Permanent Cont.	0	-0.015	0	0.011
	-0.025	-0.028	-0.025	-0.017
Full time Con	0.154	0.023	0.215*	0.085
	(0.071)	(0.043)	(0.049)	(0.035)
Public. Cont.	0.005	-0.064	0.005	-0.011
	-0.038	-0.085	-0.038	-0.034
Less 9	-0.003*	8.183***	-0.003*	1.424***
	-0.002	-0.119	-0.002	-0.126
Between 10-49	-0.003**	3.748***	-0.003**	0.316***
	-0.002	-0.165	-0.002	-0.113
Between 50-250	-0.003*	0.005	-0.003*	-0.064
	-0.002	-0.046	-0.002	-0.083
Log Imm Imputed	0.847***		0.847***	
	-0.105		-0.105	
Log Sum Imm.		-0.778***		0.73
		-0.15		-1.346
N	212652	212652	212652	165549
Year		Y		Y
Municipality		Y		N
Industry		Y		N
MunicpalityxIndustry		N		Y
Firm Fixed Effects		Y		N
R2	0.318	0.362	0.318	0.015
Ander. Lm Test		18.644		73.95
F	16.684	3354.43	16.684	41623.01
Cragg-Donald F		66.198		5915.324