

# Do regularization programs for illegal immigrants have a magnet effect? Evidence from Spain\*

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**January 2015**

## **Abstract**

This paper attempts to determine whether regularization programs of illegal immigrants have a magnet effect. Using a comparative case study approach, we analyze the most recent amnesty implemented in Spain. More specifically, we apply a synthetic control method that is suitable for the evaluation of policies at the country level. Our results suggest that the increasing trend followed by the foreign population in the period analyzed is not a consequence of the amnesty under scrutiny. Rather, it corresponds to the path for a counterfactual country with similar socio-economic characteristics.

**Keywords:** Illegal immigration, regularization programs, magnet effect, comparative case study, policy evaluation

**JEL codes:** C49, F22, J08, J61

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\*The authors have benefited from the valuable comments of two anonymous referees and Jesús Clemente. Financial support from Ministerio de Ciencia e Innovación (ECO2009-13675 project) and the Regional Government of Aragón (ADETRE Research Group) is also acknowledged.

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# 1 Introduction

There is a consensus in the literature that migrants tend to move from low- to high-income countries, and that the greater the income differential, the greater the number of migrants. This not only reflects the desire of individuals to leave their home countries, but also requires the host country to accept immigration. The latter may lead countries to restrict the number and types of immigrants allowed to enter, through immigration policies such as border controls, selection of immigrants and/or international enforcement (Ethier, 1986).

Despite the efforts to limit migratory inflows, many individuals enter countries illegally with the hope of an eventual legalization. Coppel et al. (2001) have estimated that around 500,000 illegal immigrants enter Europe each year. This figure is 400,000 for the United States (Hoefer et al., 2006). Due to the high number of illegal immigrants in their territories during the last 25 years, certain developed countries have chosen to use regularization programs<sup>1</sup>. In these amnesties, workers follow a procedure, at the end of which some are regularized and, hence, allowed to remain in the host country for a certain period. The main reason why these immigrants are not legalized immediately is that this would encourage foreigners to attempt to enter the country illegally. This incentive is commonly known as the magnet effect and leads to an increase in immigration.

The more widespread use of regularization has emphasised the need for further research. Levinson (2005) reviews the literature on amnesties and describes the main characteristics of the programs introduced in the European Union (EU) and the United States (US), without providing any information about their effects. Epstein and Weiss (2011) study the effects of government actions on migration flows and propose an optimal amnesty policy. Also adopting a theoretical approach, Myers and Papageorgiou (1999) set out to determine the optimal quota of legal migrants in a model with a redistributive public sector facing costly immigration controls. Thus, it can be stated that little attention has been paid to empirically establishing the effects of regularization programs for illegal immigrants. The exceptions are studies of the Immigration Reform and Control Act (I.R.C.A) of 1986 in the US. This amnesty is the most significant regularization program since it led to the legalization of more than 2.5 million illegal immigrants. The consequences of this program were analyzed by Donato et al. (1992) who, using a descriptive analysis, concluded that it had no effect on the illegal mi-

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<sup>1</sup>Nevertheless, rich countries with income maintenance and welfare programs may be interested in allowing some illegal immigrants into their low-productivity sector (Karlson and Katz, 2003).

gration received from Mexico. Gang and Yun (2006) developed a theoretical model to determine the effects that amnesties have on the quantity of migration received by the host country, and also studied the effects of the I.R.C.A. on the salaries of immigrants.

Regularization programs have frequently been used on the southern frontier of Europe. Proof of this is that Greece, Italy, Portugal and Spain account for 15 of the 40 amnesties applied around the world in the last three decades. Of particular interest is the case of Spain, a country that has implemented the largest number of these exceptional measures. The last amnesty in Spain took place in 2005 and, as a result, almost 600,000 illegal immigrants were legalized. Kostova (2006) analyzes this amnesty and concludes that it generated a magnet effect. Nonetheless, this conclusion is drawn without relying on any empirical analysis, and thus our paper is intended to empirically determine the effects that this regularization program has had on the foreign percentage of the population in Spain.

Our analysis consists of the application of a synthetic control method (Abadie and Gardeazábal, 2003; Abadie et al., 2010) that allows the evaluation of policies implemented at a country level, through a comparison of the observed situation with a counterfactual constructed from several potential controls. Our results suggest that, contrary to the common wisdom, the most recent regularization program in Spain had no significant effect on the foreign percentage of the population in this country. The increase in the foreign population during the analyzed period is the result of a catching-up process. Hence, the evolution of the foreign population in Spain after 2005 corresponds to that of a country with similar socio-economic characteristics.

The rest of the paper is structured as follows. Section 2 presents migratory trends in certain selected EU countries, and an overview of the regularization programs implemented in Spain. Section 3 describes the main characteristics of the applied synthetic control method. Section 4 presents the empirical analyses of the effects of the 2005 amnesty. Finally, Section 5 presents our conclusions.

## **2 The migratory phenomenon and regularization programs in Spain**

### **2.1 Immigration data**

One difficulty when analyzing data on immigration is its reliability. This has to do with the definition of ‘immigrant’, its consistency across countries and its measurement.

In the present paper, data comparison problems across European countries have been avoided by the use of the information compiled in the EU Labour Force Survey (EU-LFS). It is the largest European household sample survey providing quarterly and annual data on individuals aged 15 and over. This database contains information on labour market participation, and it also covers those who reside in private households but are outside the labour force as well as other socio-economic factors.

Although the national statistical institutes of EU member countries are responsible for designing their own national questionnaires, drawing the sample and conducting the interviews, the information is centrally processed by the European Commission through its statistical office: Eurostat<sup>2</sup>. Among other functions, Eurostat provides assistance to national statistical institutes, promotes harmonised concepts and methods, and disseminates comparable national and European labour market statistics.

As noted earlier, the scope of the EU-LFS is the resident population defined, for a given country, as those who stay, or intend to stay, within the economic territory for a period of one year or longer. Therefore, the survey does not capture temporal migration and includes both legal and illegal immigrants. In addition, migrants who do not intend to reside for more than one year are removed from the sample, even if they eventually do stay for a longer period.

The main variable of interest in the present study is the foreign percentage of the total population<sup>3</sup>, considering as ‘foreigners’ those individuals with nationality other than their country of residence. Nationality will be interpreted as citizenship, which corresponds to the country issuing the passport and, according to the European System of Accounts (ESA95), is defined as *“the particular legal bond between an individual and his/her State acquired by birth or naturalisation, whether by declaration, option, marriage or other means according to national legislation”*.

This definition of nationality can be considered to be a limitation of the database since the requirements for acquiring citizenship differ from country to country. Among other consequences, those countries where it is easier to obtain the dual nationality will report a lower foreign percentage of total population.

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<sup>2</sup><http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

<sup>3</sup>The main reason for not analyzing migration flows into Spain, in levels or as a percentage of the total population, is that they are of such a magnitude that it is not possible to construct an appropriate counterfactual. In addition, the possible role of Spain as a ‘gateway’ to the EU would make the estimated effects from this variable misleading.

## 2.2 Descriptive analysis

The migratory phenomenon has become extremely important in Spain during the last two decades. While the foreign population was less than 2% of Spain's total in the 1990s, this figure rose to almost 11% by 2008. Nevertheless, not all immigrants have the documents required for residence in Spain. Although there are no official data about the number of irregular immigrants, 700,000 individuals who arrived in the country between 2002 and 2004 applied for regularization in 2005. The main objective of this amnesty was to incorporate the underground economy into the formal labor market.

Those immigrants who could apply for regularization were workers who had resided in Spain for more than six months, without criminal records, and with a work contract longer than six months (three months for workers in the agricultural sector). The number of applications implied that at least 280,000 foreign workers arrived in Spain every year from 2002 to 2004. As the official number is 30,000, this is equivalent to saying that more than 250,000 immigrant workers were irregular. This number is significant enough to try to establish mechanisms to reduce the related underground economy.

Migratory policies in Spain underwent changes in 1986, 1991, 1996, 2000, 2001 and 2005. The regularization programs implemented until 2001 were unable to cope with the irregular immigration flows, but that of 2005 legalized 575,000 foreign workers, more than all the preceding programs put together. After such a massive regularization, the question that arises is whether or not it produced the so-called magnet effect (Gang and Yun, 2006; Epstein and Weis, 2009). This should be taken into account when considering the implementation of further regularization programs.

A tentative answer to this question can be derived through a descriptive analysis, that is, to examine the effect of the policy through the evolution of the foreign percentage of the population before and after the amnesty.

[Insert Figure 1 here]

The foreign percentage of the total population in Spain, and some selected EU countries, during the period **2001-2008** is plotted in Figure 1. It can be observed that the percentage of foreigners residing in Spain increased during this period. This stable evolution can be interpreted as evidence that the effect of the regularization was of a limited magnitude. Nevertheless, the foreign percentage in the majority of the other European countries considered suffered a stagnation over this same period (see France,

Belgium, Germany and Finland), or even a decrease as in the case of the Netherlands and Sweden. In other countries - Portugal, Luxembourg<sup>4</sup>, Ireland, Greece and the United Kingdom (UK) - the increase in the foreign percentage is not so prominent. These findings lead us to consider a deeper analysis of the effects of the amnesty, through the application of a policy evaluation statistical method.

The technique used in this paper consists of the construction of a synthetic control that is suitable for the evaluation of policies implemented at country level. This will allow us to determine whether the increase in the received migration is due to the regularization program or to socio-economic factors. The estimation technique applied is described in the next section.

### 3 Policy evaluation using synthetic controls

Comparative case studies are commonly used to estimate the effects of policy interventions. They consist of comparing the evolution of the variables under scrutiny in the case of one agent affected by the policy ('treated') with the evolution of the same variables in one or more unaffected agents ('controls'). The idea is to use the latter to proxy for the outcome that would have taken place for the treated unit in the absence of the treatment. The main difficulties when applying this approach are: (i) how to choose the units of comparison, and (ii) uncertainty about the ability of the controls to reproduce the counterfactual situation of interest.

Abadie and Gardeazábal (2003) propose an appealing data-driven procedure to build a control group for the study of policies implemented at country level. Their main idea is that a combination of countries is expected to provide a better counterfactual for the treated country than a single one. This synthetic control is constructed as the weighted average of the available control units that best approximate the relevant characteristics of the treated unit before the intervention. Post-intervention outcomes are then used to estimate the counterfactual situation. In the rest of this section, the model used by Abadie et al. (2010) to explain the applicability of synthetic controls in comparative case studies is briefly described, along with its empirical implementation.

Assume that we have information about  $J + 1$  ( $i = 1, \dots, J + 1$ ) countries during  $T$  time periods. The first ( $i = 1$ ) is the one to which the intervention analyzed has been applied at a certain date  $T_0$  ( $1 \leq T_0 < T$ ). Thus, we have  $J$  countries that can be labelled as potential controls and comprise the 'donor pool'.

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<sup>4</sup>The scale for Luxembourg is on the secondary (right) y-axis.

Let  $Y_{it}^N$  be the variable of interest observed in the absence of the policy intervention for country  $i$  at period  $t$  and  $Y_{1t}^I$  its corresponding values for the treated country during the implementation period ( $t \in \{T_0 + 1, \dots, T\}$ ). Assuming that the intervention has no effect before its implementation,  $\alpha_{1t} = Y_{1t}^I - Y_{1t}^N$  is the effect of the policy in the treated country. This allows us to express the observed outcome  $Y_{it}$  for country  $i$  in period  $t$  as:

$$Y_{it} = Y_{it}^N + \alpha_{it}D_{it} \quad (1)$$

$$D_{it} = \begin{cases} 1 & \text{if } i = 1 \text{ and } t > T_0 \\ 0 & \text{otherwise} \end{cases}$$

We want to estimate  $\alpha_{1t} = Y_{1t} - Y_{1t}^N$ , which is equivalent to estimating  $Y_{1t}^N$ . Abadie et al. (2010) specify a factor model to propose  $\hat{\alpha}_{1t} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}$  as an estimator for  $\alpha_{1t}$  ( $t \in \{T_0 + 1, \dots, T\}$ ), where  $w_j^*$  denotes the  $j$ -th element of a  $(J \times 1)$  vector  $W^*$  of weights. Therefore, an estimation of the counterfactual situation for the treated country in the post-intervention period is obtained as a linear combination of the outcomes in the potential controls:

$$\hat{Y}_{1t}^N = \sum_{j=2}^{J+1} w_j^* Y_{jt}; \quad t \in \{T_0 + 1, \dots, T\} \quad (2)$$

This estimator will be unbiased if  $W^*$  is obtained by solving the following optimization problem:

$$\min_W \|X_1 - \chi_0 W\|_V = \sqrt{(X_1 - \chi_0 W)' V (X_1 - \chi_0 W)} \quad (3)$$

subject to the following constraints on the weights:

$$\begin{aligned} w_j^* &\geq 0; \quad \text{for } j = 2, \dots, J + 1 \\ w_2^* + \dots + w_{J+1}^* &= 1 \end{aligned} \quad (4)$$

where:

$$\begin{aligned}
X_1 &= (Z_1, \bar{Y}_1^1, \dots, \bar{Y}_1^M)' & (5) \\
\chi_0 &= (X_2, X_3, \dots, X_{J+1}); \quad X_i = (Z_i, \bar{Y}_i^1, \dots, \bar{Y}_i^M)'; \quad i = 2, \dots, J+1 \\
\sum_{j=2}^{J+1} w_j^* \bar{Y}_j^1 &= \bar{Y}_1^1, \quad \dots, \quad \sum_{j=2}^{J+1} w_j^* \bar{Y}_j^M = \bar{Y}_1^M \quad \text{and} \quad \sum_{j=2}^{J+1} w_j^* Z_j = Z_1
\end{aligned}$$

For a given country  $i$ ,  $Z_i$  is a  $(1 \times r)$  vector of observed explanatory factors.  $X_1$  is a  $(k \times 1)$  vector of pre-intervention ( $\mathbf{t} < \mathbf{T}_0$ ) characteristics in the treated country,  $\chi_0$  its equivalent  $(k \times J)$  matrix for the potential controls and  $\bar{Y}_i^1, \dots, \bar{Y}_i^M$  are  $M$  linear functions of the outcomes before the policy was implemented in a given country  $i$  satisfying  $M \geq F$  in expression (3).

$V$  is a diagonal, positive and semidefinite  $(k \times k)$  matrix determined by the predictive power of the explanatory variables during the pre-intervention period. In the application below<sup>5</sup>, we assume the presence of a single unobserved common factor with different effects in each country and that the linear function of the pre-intervention outcomes in (5) is the simple average ( $M = F = 1$ ).

In other words,  $W^*$  is chosen such that the resulting synthetic control is the best approximation to the unit exposed to the policy under evaluation with respect to the explanatory variables and outcomes before the intervention.  $V$  is introduced to allow for different weights for the characteristics. This matrix has been chosen through the minimization of the mean squared prediction error in the two years previous to the policy intervention. Proceeding in this way, we will obtain a more feasible magnitude for its effect. Conditional on  $V$ , the matrix  $W$  has been chosen using a fully-nested optimization procedure that searches among all (diagonal) positive semidefinite  $V$ -matrices and sets of  $W$ -weights for the best fit convex combination of the control units. Three different starting points for  $V$  have been considered in order to avoid local minima in the parameter space: equal-weighted, regression-based and determined by maximum likelihood.

A justification of the variables included in the vector of observed explanatory factors ( $Z_i$ ) for the foreign population as a percentage of the total population in a given country ( $Y_i$ ) will be introduced in the following section.

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<sup>5</sup>This methodology has been applied in the subsequent analysis using the Stata version of the related software provided by Jens Hainmueller on his homepage.

## 4 The effects of the Spanish regularization program of 2005 on the stock of immigrants

### 4.1 The determinants of immigration

The data used in this paper have been primarily extracted from Eurostat, in particular, from the national accounts, population and social conditions indicators and, as mentioned in Section 2, the EU-LFS. The variable to be studied in our empirical analysis is the foreign population as a percentage of the total population of a given country during the period **2001-2008**. In principle, the potential controls are those EU member countries that did not carry out a regularization program after 2001. For this reason, Italy does not enter our donor **pool**. **There** is a missing value in the information regarding the number of foreigners in Ireland. Nonetheless, its time series allows us to interpolate the missing observation. As a result, there are thirteen potential control countries that could build the synthetic counterfactual.

In the pioneering model for the economic analysis of migration proposed by Harris and Todaro (1970), expected wage was the determinant of migration. In addition, Hooghe et al. (2008) conclude that migration reacts to economic incentives, especially those related to the labor market. Following these studies, the compensation of employees as a percentage of GDP has been introduced as an explanatory variable in order to proxy for the wage level in a given country. The employment rate for the population between 15 and 64 years has also been introduced as a measure of labour market size (Juárez, 2000). Furthermore, real GDP per capita and expenditure on social protection per inhabitant have been included in order to reflect the standard of living in a given country. Both variables are expressed in PPP and in real terms. The economic structure is reflected by the consideration of the shares of Gross Value Added in agriculture, industry, and construction over all branches (He and Gober, 2003). The population density (McConnell, 2008) and **the values** of the foreign percentage of population **in the pre-intervention period** have been introduced to control for demography and to consider networks (Zavodny, 1997). Finally, the shortest estimated travel distance<sup>6</sup> of the capital of a given country from the capital of a country on the southern border has also been included as a determinant of the foreign percentage of the population.

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<sup>6</sup><http://www.mapcrow.info>

## 4.2 Results from the synthetic control method

An estimation of the foreign population as a percentage of the total population that would have existed in Spain, if the regularization program of 2005 had not been implemented, can be obtained through the application of the synthetic control method described in Section 3. The results obtained are presented below.

Weights assigned to each country in the EU donor pool when constructing the synthetic foreign percentage of the population in Spain are shown in Table 1. The counterfactual situation that best resembles the observed evolution of this variable before 2005 is built as a linear combination of the percentages in **three** countries. The highest weight corresponds to Ireland (**0.71**), with the other **two** countries from which the synthetic Spanish foreign percentage has been constructed being Greece (**0.28**) and Luxembourg (0.01).

[Insert Table 1 here]

The intuition of these weights can be inferred from Table 2, where the mean values of both the foreign population and its determinants in Spain and the countries that comprise its synthetic control are reported. The high percentage assigned to Ireland is due to its similarity in terms of the average foreign percentage of population. This is also determined by the similar evolutions followed (see Figure 1). Another relevant analogy between these two countries is the high weight of the construction sector in the economy during this period. In comparison with Spain, Greece is also a southern country that has a similar economic structure, employment rate and population density. Moreover, its social protection expenditures and geographical conditions favouring migrations are also **comparable**. **The** case of Luxembourg seems paradoxical, due to the fact that neither real GDP per capita, nor economic structure are similar. Although with a low weight, this country forms part of the synthetic control due to its high foreign percentage of population.

[Insert Table 2 here]

The rest of the countries in the donor pool have a zero weight, since the paths followed by their foreign percentages of population are very different from those experienced by Spain. In particular, there was a stagnation of the foreign percentage of

population, or a decrease, in the case of the Netherlands or Sweden. The UK also experienced an increase in the foreign percentage of population, but the rest of the variables are dramatically different: much higher GDP per capita and employment rate, and lower weight of the agriculture and construction sectors.

The suitability of the applied technique in this context can be inferred from Table 3, where average values of the determinants of immigration in the pre-treatment period in Spain, and its synthetic EU counterpart, are shown in the second and third columns, respectively. It can be observed that the synthetic control has mean values for the explanatory variables relatively close to those in Spain. This is especially true with regard to the sectoral structure of the economy and the rate of employment.

[Insert Table 3 here]

The main results obtained from the synthetic control approach are shown in Figure 2, where the evolution of the observed values for the foreign percentage of population in Spain and those corresponding to its synthetic counterpart are plotted. The percentage experienced a clear upward trend in the period **analysed with a steady slope during the whole sample period**. The estimated values for the synthetic Spain have also followed an upward trend, although less pronounced before 2004.

[Insert Figure 2 here]

The greatest negative difference between the observed number of foreigners as a percentage of the total population in Spain, and that percentage for the synthetic control, is in the years **2001 and 2004**. Nevertheless, and in order for our analysis to be valid, it must be assumed that this difference is not a consequence of the regularization carried out in 2001, which affected 240,000 immigrants. This assumption is reasonable since the 2001 regularization had no significant effect on the trend that began in 1999 and led the foreign population in Spain to a level and pattern corresponding to a country with similar socio-economic characteristics<sup>7</sup>. **In addition, there** are no significant differences between the evolution of Spain and its synthetic control **after 2004**, leading us to conclude that the regularization program of 2005 did not generate a magnet effect after its implementation.

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<sup>7</sup>These results are available from the authors upon request.

### 4.3 Assessing the significance of the estimated effect

When working with aggregate data, comparative case studies do not always ensure that the control group is able to reproduce the counterfactual situation, although there are several alternatives for assessing the significance of the estimated effect in the previous subsection.

The first was proposed by Abadie et al. (2010) to make exact inferences about the estimated policy effects. Its main virtue is that it does not depend on the number of potential controls and time periods, nor on the type of data analyzed. Instead, the method relies on classical permutation tests and consists of applying the synthetic control method to each of the potential controls as if they were exposed to the policy intervention; these were denoted ‘placebo’ exercises by Abadie and Gardeazábal (2003). The idea is to compare the estimated effect for the treated unit with those of each of the potential controls. This comparison tells us the magnitude (great or small) of the estimated effect for the treated unit, and it allows us to assess the size of the estimated effect for the policy intervention, relative to the effects estimated for a non-treated unit chosen at random.

Following this suggestion, the synthetic control method has been applied to the thirteen EU countries in our donor pool<sup>8</sup>. The evolution of the gaps between the observed foreign percentage of the population in all the countries analyzed and their synthetic counterparts during the whole sample period are plotted in Figure 3. It can be seen that the difference between the observed and the counterfactual situations for Spain is negative during the **first year** of the pre-intervention period. **Although the gap is positive in 2004, it dramatically decreases toward zero in the following year and it is maintained in most of the post-intervention period.**

[Insert Figure 3 here]

In addition to the placebo exercises carried out above, the significance of the differences between the observed series for the country studied and its synthetic control can be statistically tested, following the proposal in Sanso-Navarro (2011), using the Matched-Pairs Signed-Ranks test of Wilcoxon (1945). This non-parametric test, which is applied to two related samples, is often used to compare the data collected before and after an experimental manipulation. It is an alternative to the paired Student’s

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<sup>8</sup>Details of the results derived from this analysis, similar to those reported in Tables 1 and 3, are available from the authors upon request.

t-test when the data cannot be assumed to be normally distributed. Under the null hypothesis, the median of the differences is expected to be zero. In our context, rather than comparing individuals, the observational units will be time periods.

Results obtained from the comparison of the observed values for foreigners as a percentage of the total population in Spain, and those predicted by the synthetic control method, are shown in Table 4. Considering the whole post-intervention period, the null hypothesis cannot be rejected at **the 5% significance level even when the differences are of the same sign, due to their low magnitude**. Jointly with the previous analysis, this result reinforces the estimated effect obtained in the previous subsection from a statistical point of view. Thus, it could be stated that the values predicted by the synthetic control for the foreign percentage of the population in Spain are no different from those actually observed after the regularization program in 2005.

[Insert Table 4 here]

Another alternative for analyzing the statistical (lack of) significance of the estimated effect of the policy under scrutiny is to compare the observed values of the foreign percentage of the population with those estimated for a linear trend of the synthetic control. These results are plotted in Figure 4 with two bands, representing the 95% confidence interval for the fitted **trend**. **The** observed flows are systematically within the confidence bands for the years 2001-2008 **and, hence, we can conclude that** the observed values do not diverge from the estimated trend **and that they fall within the** confidence bands.

[Insert Figure 4 here]

**Summarizing, the** results presented throughout this subsection corroborate the robustness and significance of our results, regarding the absence of an effect of the regularization program of 2005 on the foreign percentage of the population in Spain in the following years.

## 5 Concluding remarks

The effects that regularization programs have on the stock of immigrants have been theoretically established in the literature. Nonetheless, little effort has been made to

empirically establish this link. We have set out to contribute further to this strand of the literature by analyzing the case of Spain, an important country in this respect because it has implemented the largest number of such exceptional measures. We have focused on the amnesty that took place in 2005 and legalized more irregular workers than any of the preceding programs.

Our analysis has been carried out through a comparative case study and the use of a synthetic control method that is suitable for policy evaluations at the country level. Our results suggest that the pre-intervention period presents a significant growth in the foreign percentage of the **population. In the post-intervention period**, there are no significant differences **with this past trend and, more importantly**, between the observed data and the estimated value for the synthetic control. Hence, the increase of the foreign population in Spain in the period analyzed is the result of a catching-up process, rather than of a magnet effect arising from the 2005 regularization program.

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## Tables and Figures

Table 1: Weights assigned to selected EU countries in order to construct the Spanish synthetic foreign percentage of population.

Belgium	Denmark	Germany	Greece	Ireland	France	Luxembourg
0.00	0.00	0.00	<b>0.28</b>	<b>0.71</b>	0.00	<b>0.01</b>
Netherlands	Austria	Portugal	Finland	Sweden	UK	RMSPE
0.00	0.00	<b>0.00</b>	0.00	0.00	0.00	<b>0.67</b>

Note: RMSPE is the root mean squared prediction error in **2001-2004**.

Table 2: Mean values for the foreign percentage of population and its determinants in Spain and the countries that conform to its synthetic control, **2001-2008**.

	Spain	Greece	Ireland	Luxembourg
Foreign population	<b>7.14</b>	<b>4.92</b>	<b>7.65</b>	<b>39.43</b>
Real GDP per capita	<b>22,825</b>	<b>20,712.50</b>	<b>31,725</b>	<b>56,500</b>
GDP share of agriculture	<b>3.46</b>	<b>4.92</b>	<b>2.25</b>	<b>0.52</b>
GDP share of industry	<b>18.51</b>	<b>13.29</b>	<b>27.62</b>	<b>10.79</b>
GDP share of construction	<b>10.80</b>	<b>7.01</b>	<b>8.87</b>	<b>6.20</b>
Compensation of employees	<b>47.92</b>	<b>34.41</b>	<b>40.45</b>	<b>46.82</b>
Social protection expenditure	<b>4,214.19</b>	<b>4,143.53</b>	<b>6,555.32</b>	<b>13,648.28</b>
Employment rate	<b>61.90</b>	<b>59.54</b>	<b>67.00</b>	<b>63.25</b>
Population density	<b>85.79</b>	<b>84.69</b>	<b>60.64</b>	<b>179.02</b>
Distance to southern border	<b>0</b>	<b>0</b>	<b>1,452</b>	<b>989</b>

Data source: Eurostat.

Table 3: Mean values for the determinants of the foreign percentage of population in Spain and its synthetic control in the pre-intervention period, **2001-2004**.

	Spain	Synthetic Spain from EU countries
<b>Foreign population (2001)</b>	<b>2.86</b>	<b>3.79</b>
<b>Foreign population (2002)</b>	<b>4.32</b>	<b>4.42</b>
<b>Foreign population (2003)</b>	<b>5.53</b>	<b>5.42</b>
<b>Foreign population (2004)</b>	<b>6.51</b>	<b>5.56</b>
Real GDP per capita	<b>20,700</b>	<b>25,789.65</b>
GDP share of agriculture	<b>3.98</b>	<b>3.55</b>
GDP share of industry	<b>19.32</b>	<b>25.55</b>
GDP share of construction	<b>9.70</b>	<b>7.82</b>
Compensation of employees	<b>48.50</b>	<b>37.72</b>
Social protection expenditure	<b>3,951.17</b>	<b>5,238.47</b>
Employment rate	<b>59.30</b>	<b>63.36</b>
Population density	<b>82.65</b>	<b>65.93</b>
Distance to southern border	<b>0</b>	<b>1,031.58</b>

Data source: Eurostat.

Table 4: Wilcoxon Matched-Pairs Signed-Rank test. Differences between the observed foreign percentage of population in Spain and its synthetic control.

Number of observations			W <sup>+</sup>	W <sup>-</sup>	Test statistic	(p-value)
Positive	Negative	Total				
<b>4</b>	<b>0</b>	<b>4</b>	<b>10</b>	<b>0</b>	<b>1.83</b>	<b>(0.07)</b>

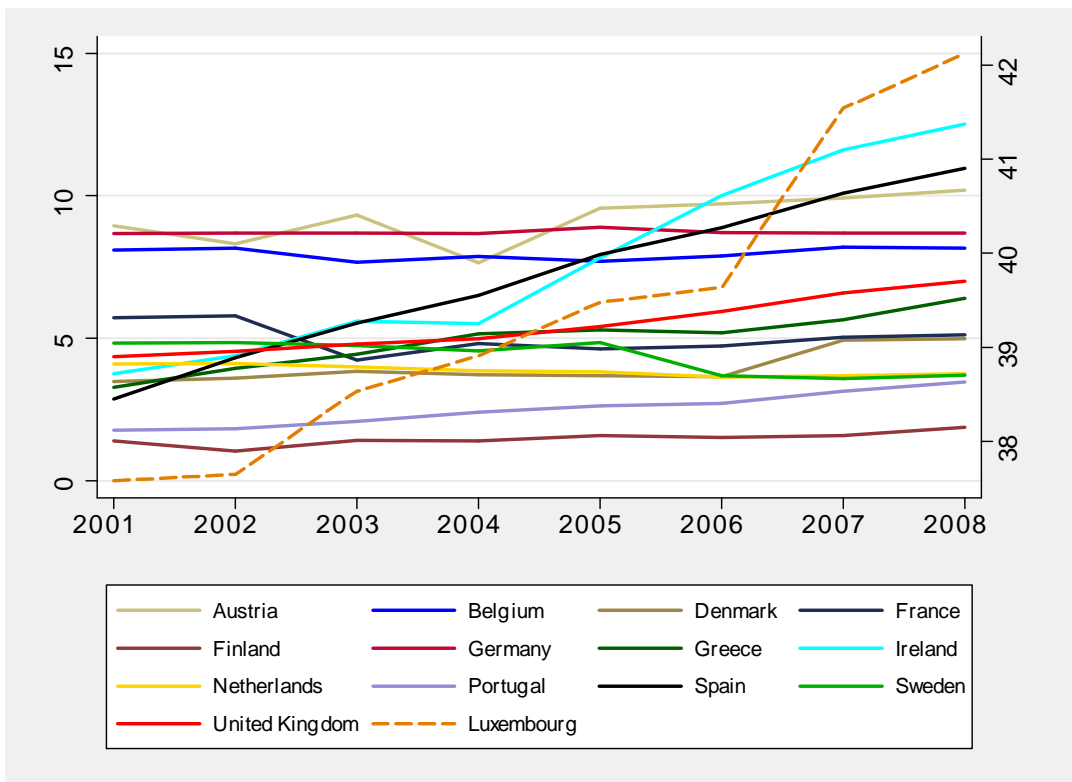


Figure 1: Foreign percentage of population. Selected EU countries, 2001-2008. Data source: Eurostat.

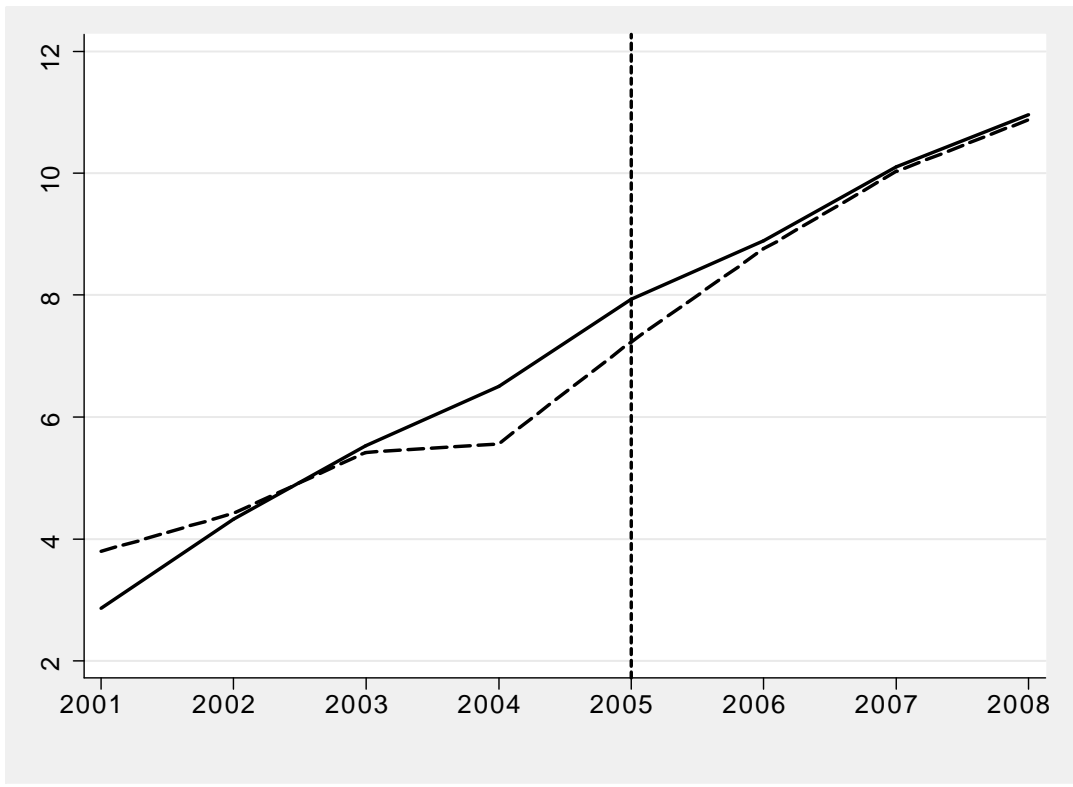


Figure 2: Foreign percentage of population in Spain (solid) and synthetic control constructed from selected EU countries (dashed).

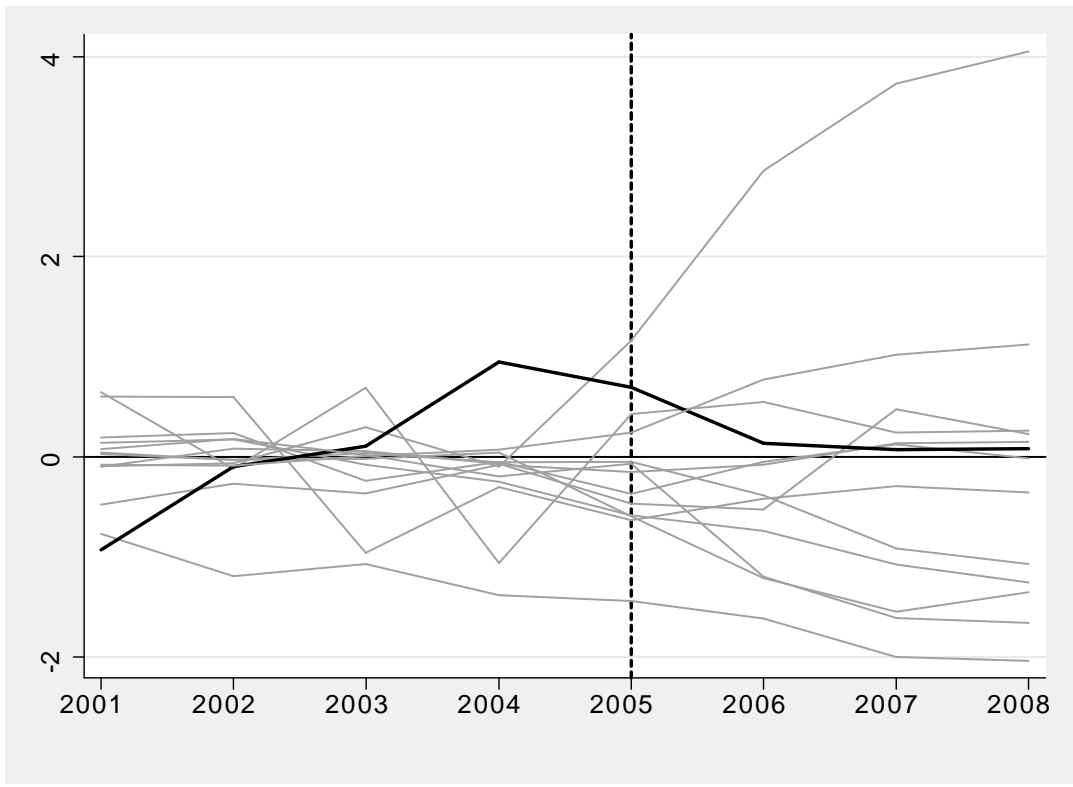


Figure 3: Foreign percentage of population. Observed minus synthetic gaps. Spain (black) and selected EU countries (light grey).

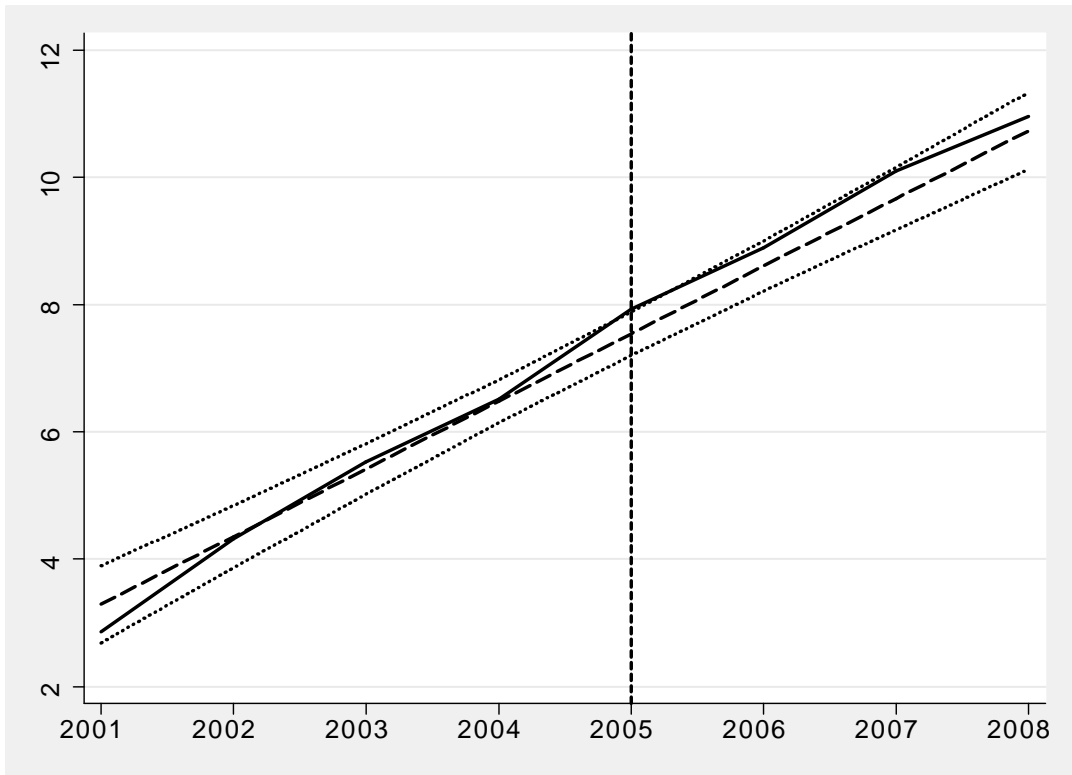


Figure 4: Foreign percentage of population in Spain and fitted trend for the synthetic control constructed from selected EU countries (dashed, 95% confidence bands reported).