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WELFARE SPENDING AND ETHNIC HETEROGENEITY: EVIDENCE FROM A  
MASSIVE IMMIGRATION WAVE

**Jordi Jofre-Monseny, Pilar Sorribas-Navarro, Javier Vázquez-Grenno**

**Cities and Innovation**

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**WELFARE SPENDING AND ETHNIC HETEROGENEITY:  
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**ABSTRACT:** The aim of this paper is to examine the relationship between ethnic heterogeneity and redistribution, by using the recent and massive arrival of immigrants in Spain. Specifically, we focus on the effect of changes in immigrant density, recorded between 1998 and 2006, on contemporaneous changes in municipal welfare spending. We instrument for immigrant density using established settlement patterns per country of origin so as to assign predicted flows of immigrants to municipalities. We find that welfare spending increased less in those municipalities that recorded the largest increases in immigrant density. We also provide evidence of a positive relationship between immigrant density and the vote share accruing to right-wing parties. Hence, our results are consistent with theories that predict a negative relationship between ethnic heterogeneity and redistribution.

JEL Codes: D64, I3, J61, H7

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## 1. Introduction

Ethnic heterogeneity may affect individual preferences for income redistribution if there is a tendency to favor redistributive policies among beneficiaries belonging to one's same ethnic group (Alesina and La Ferrara, 2000). Indeed, Alesina et al. (2001) and Alesina and Glaeser (2004) argue that ethnic heterogeneity may be an important factor in accounting for the marked difference in size between the US and European public sectors. Most European countries, however, are becoming increasingly ethnically heterogeneous as a result of immigration with the foreign-born tending to differ from the native population in terms of their culture, race and religion. A natural implication, therefore, of the conclusion that ethnic heterogeneity reduces redistribution is that immigration represents a challenge to the more generous European welfare states (Alesina and Glaeser, 2004).

Although Spain has traditionally been a country of emigration, it has received massive inflows of immigrants in recent times. Between 1998 and 2008, the proportion of foreign-born within the total population increased from 2.9 to 13.1 percent. This large immigration wave transformed Spain into an ethnically heterogeneous country in a remarkably short period of time, making it an appropriate testing ground for examining the effects of ethnic heterogeneity on redistribution. We aim to shed light on this question by estimating the effect of local immigrant density on municipal welfare expenditure (defined as spending on social services and benefits), exploiting the highly uneven geographical distribution of immigrant inflows within Spain.

We resort to an instrumental variables approach to identify the effect of immigrant density on municipal welfare spending. The instrument that we use is based on the existence of network effects and has been recently used by Saiz (2007), Cortes (2008), Card (2009), González and Ortega (2010) and Peri (2011). Network effects imply that the location decisions of new immigrants from a given country are largely determined by the past location decisions of immigrants from the same country. Hence, we instrument for immigrant density by using established settlement patterns per country of origin to assign predicted flows of immigrants to municipalities.

We first estimate the effect of immigrant density on welfare spending using cross-sectional data for 2006. In a second exercise, we focus on the effect of changes recorded in immigrant density between 1998 and 2006 on contemporaneous changes in municipal welfare spending. Our results support the hypothesis that ethnic heterogeneity reduces income redistribution. Specifically, the results of our preferred instrumental variables changes specification imply that the 1998-2006 average immigrant density increase (5.84 percentage

points) decreased the percentage of the municipal budget allocated to welfare by 26 percent of the 2006 level. Consistent with these results, we also find a sizable positive impact of immigrant density on the vote share accruing to right-wing parties.

Several empirical studies have examined the link between ethnic heterogeneity and redistribution with mixed results<sup>1</sup>. One strand of the US literature has examined self-reported measures of support for redistribution using the General Social Survey. Luttmer (2001) shows that people in the US are more likely to express support for welfare spending if they live in a neighborhood where their own ethnic group is highly represented among welfare recipients. By contrast, Alesina et al. (2001) find no evidence that whites living in more heterogeneous states are less likely to support welfare. Finally, Lind (2007) computes indices of income inequality within and between ethnic groups at the US state level, concluding that while income inequality between groups tends to reduce support for redistribution, income inequality within groups tends to increase it.

Non-US studies examining self-reported measures of support for redistribution include Senik et al. (2009) and Dahlberg et al. (2011). Senik et al. (2009) use data from the European Social Survey (2002/2003) and find weak evidence of a negative relationship between the perceived presence of immigrants and natives' support for redistribution. Dahlberg et al. (2011) estimate the effect of immigrant density on individual preferences for redistribution in Swedish municipalities. These authors exploit an exogenous variation in municipal immigrant density induced by a refugee placement program, finding that ethnic heterogeneity results in less support for redistribution.

Other US studies have examined the effect of ethnic heterogeneity on observed levels of spending on welfare programs. Ribar and Wilhelm (1999) and Alesina and Glaeser (2004) examine variation in the generosity of the Aid to Families with Dependent Children (AFDC) programs across the US states. Their results indicate that an increase in the share of African-Americans decreases the average AFDC monthly payment.

Our paper contributes to the literature in the following ways. First, given that Spain is a country whose ethnic heterogeneity has increased rapidly in recent years, we analyze the change in welfare spending in a society that has undergone a transition from a largely homogeneous ethnic community to one that is considerably more heterogeneous. Second, the fact that Spain's municipalities are relatively small (see Section 2) means that municipal immigrant density

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<sup>1</sup> See Alesina and Glaeser (2004), Alesina and La Ferrara (2005) and Stichnoth and Van der Straeten (2009) for surveys on this topic.

measures provide a better proxy of ethnic background than those used in studies conducted at broader geographical levels (e.g. the US states). Third, to deal with the non-randomness of municipal immigrant density we adopt an instrumental variables approach. In relation to the existing literature, our paper is most closely in line with: (i) Ribar and Wilhelm (1999) and Alesina and Glaeser (2004) in that we look at actual welfare spending and (ii) Dahlberg et al. (2011) in that we use municipal data and an exogenous change in immigrant density to identify the effect of ethnic heterogeneity on welfare spending.

The remainder of the paper is organized as follows. Section 2 introduces the data and summarizes the variables used in the analysis. Section 3 describes the econometric specifications and the paper's identification strategy. In section 4 we present and discuss the results. Section 5 concludes.

## 2. Data and variables

Data: Spain is a fiscally decentralized country with three layers of government: central government, 17 regional governments (*Comunidades Autónomas*) and more than 8,000 municipalities<sup>2</sup>. Unfortunately, we are unable to consider the whole universe of Spain's local government as detailed fiscal data is unavailable for some (mostly small) municipalities. Moreover, we have to exclude the municipalities in the Basque Country and Navarra since, for historical reasons, these regions have their own fiscal regimes. Thus, for our 2006 cross-sectional analysis, we are able to include 1,293 municipalities in our sample<sup>3</sup>. The population size distribution of the sample of municipalities that we use is summarized in Table A1, which is deferred to the Annex. Despite excluding a large number of municipalities, our sample accounts for 78% of the Spanish population (not including that part residing in the Basque Country or Navarra). Moreover, it includes 93% of the municipalities with more than 100 thousand inhabitants, 81% of the municipalities with a population between 20 and 100 thousand inhabitants and 65% of the municipalities with a population between 5 and 20 thousand inhabitants.

Municipal welfare spending: The public spending of Spanish municipalities represents around 13% of total public spending and municipal governments enjoy a large degree of

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<sup>2</sup> These coexist with *Diputaciones*, *Comarques*, *Consells Insulars* and *Cabildos*. See Solé-Ollé and Sorribas-Navarro (2008) for more information on these upper-layers local governments. These governments play an important role in financing municipal investment through capital grants.

<sup>3</sup> Although data for 2007 are available, we use 2006 data because municipal elections were held in May 2007. This would have meant that the fiscal data for 2007 would have been generated in two different legislatures.

autonomy in decisions regarding taxation and spending. We assume that municipal fiscal policies are, by and large, shaped by the preferences of the native population. Two considerations substantiate this assumption: first, only Spanish, EU and Norwegian citizens can vote in municipal elections<sup>4</sup>; and, second, foreign-born individuals who can vote (foreign-born Spanish citizens) have a markedly lower voter turnout (around 20 percent, see Duran-Muñoz, 2011 for details)<sup>5</sup>.

In 2006, local taxes represented 40% of the (aggregate) current revenue of municipal governments, user charges accounted for a further 25% and the remainder comprised inter-governmental grants. Several taxes are levied at the municipal level: a property tax, a local business tax, a tax on vehicles, a tax on building activities, and a tax on the sale of land and buildings. Within limits that vary by population size, municipalities are free to set their own tax rates. Inter-governmental grants are, by and large, formula-based block grants. They are (virtually) fully distributed on a population basis that establishes different per capita amounts for different population size intervals. These intervals coincide with those defined by the Spanish tax law in relation to maximum tax rates.

As for expenditure, municipalities are multi-purpose governments with major spending categories corresponding to the traditional responsibilities of local governments excluding education. These spending categories include police and fire protection (on average, 8% of total spending), housing, street lighting and cleaning (15%), water supply and waste treatment (13%), culture and sports (14%), local roads and economic development programs (15%), and general services (20%). Health care and education are primarily the responsibility of regional governments and, as a result, municipalities only spend 1 and 4% of their budgets on these items.

In 2006, 11% of aggregate municipal spending was devoted to welfare<sup>6</sup>. Occupational training courses and programs providing assistance in job finding represent the largest share of this spending category. It also includes welfare programs to help individuals (and households) experiencing economic and/or social problems<sup>7</sup>. In this respect, some municipalities provide in-

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<sup>4</sup> However, only Spanish citizens can vote in regional and national elections.

<sup>5</sup> Municipal elections are held every four years. In the period we examine, these took place in 1999, 2003 and 2007. Parties present closed lists and the d'Hondt formula is used to translate number of votes into representatives.

<sup>6</sup> Welfare spending is defined as total spending in chapter 3 (*Seguridad, Protección y Promoción Social*) of *Clasificación Funcional del Gasto*. As for the other items of expenditure, Police -and fire protection- corresponds to chapter 2, Health 4.1; Education 4.2; Housing, street lighting and cleaning 4.3; Water supply and waste treatment 4.4, Culture and sports 4.5; and Local roads and economic development is the sum of chapters 5, 6 and 7.

<sup>7</sup> These programs do not include the unemployment insurance, which is a responsibility of the central government.

kind transfers, which might include soup kitchens, supervised flats or residences<sup>8</sup>. Notice that these programs are clearly among the most redistributive municipal expenditures. This is the reason why we focus on this particular spending category. It is important to emphasize that, in Spain, natives and immigrants (regardless of their legal status) have equal access to these municipal services (see below).

Table 1 presents summary statistics and the top panel of Figure 1a summarizes the distribution of municipal welfare spending in 2006. The average expenditure in welfare programs was 112€ per capita with a coefficient of variation of 63%, indicating substantial variation in this expenditure across municipalities<sup>9</sup>. In the bottom panel of Figure 1a, we summarize the changes in welfare spending (in € per capita) between 1998 and 2006. There has been an increase in the municipal resources devoted to welfare programs during this period (the average increase in our sample is 56€ per capita in nominal terms). This increase coincided with a long period of economic expansion in which the average annual real growth of the Spanish economy was 3.8%.

Figure 1b shows that welfare spending as a percentage of total spending also exhibited substantial variation across the municipalities - both in its 2006 level and in the changes recorded between 1998 and 2006. This variation in the resources devoted to welfare reflects the high degree of autonomy enjoyed by Spain's municipalities in their spending decisions. On the one hand, upper-level governments do not set any minimum standards as regards specific spending programs; on the other hand, the vast majority of grants received by municipal governments are not ear-marked.

[Insert Table 1 and Figures 1a and 1b here]

Spain's immigration wave and immigrant density: During the period we study, Spain experienced a massive increase in its foreign-born population. This wave of immigration is illustrated in Figure 2. The immigration inflows accounts for roughly 80% of total population growth between 1998 and 2006 (almost 5 million inhabitants). The percentage of foreign-born individuals nationwide increased from 2.9 to 10.8 between 1998 and 2006, the period we study. If

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<sup>8</sup> Some (small) municipalities do not provide all of these services directly but rather buy them from upper-levels of government. Our spending measure includes the costs of these indirect forms of provision.

<sup>9</sup> The Local Government Act assigns different responsibilities to municipalities of different sizes (see Solé-Ollé and Bosch-Roca, 2005, for a more complete description of this). The Act establishes that municipalities with less than 20 thousand inhabitants are not obliged to provide welfare services. Despite this, many municipalities below this population threshold do provide welfare services (Mas and Vilalta, 2006). In fact, regressing welfare spending per capita on a variable that indicates if it is mandatory for the municipality to provide welfare services yields an R-squared value that is as low as 0.2%.



we focus our attention solely on individuals born outside the EU-15 countries, this percentage rose from 1.7 to 8.6. In Table A2, we list the 1998 and 2006 figures for the number of foreign-born individuals by their country of origin, together with the inflow recorded between these two years. The table shows that the highest inflows originated from Morocco, South America (above all Ecuador and Colombia), and Eastern Europe (especially Romania). The result of this immigration was the increased ethnic heterogeneity of Spain, a trait that is commonly measured in the literature using the fractionalization index (see Alesina and La Ferrara, 2000, for details). We computed this index using the country of origin as the source of ethnic heterogeneity and found that it almost quadrupled between 1998 and 2006 rising from 0.06 to 0.2. The index can be interpreted as the probability that two randomly drawn individuals from the overall population belong to different ethnic groups. Since this paper focuses on the behavior of the native population, we will use immigrant density as a proxy of ethnic heterogeneity. Notice that the proportion of immigrants in the overall population reflects the probability of a member of the native population meeting a foreign-born individual.

A significant fraction of immigrants do not hold residence permits (roughly a third of non EU-15 immigrants in 2006). However, in Spain, all immigrants enjoy access to municipal services as well as education and health care (provided by regional governments). To have access to these services, immigrants only need to be enrolled in the municipal register (*Padrón Municipal*). To do so, immigrants do not need to provide proof of their legal status. Thus, immigrants have the incentive to enroll in the municipal register in order to have access to the described public services. At the same time, the main inter-governmental grant received by municipalities is determined by its population level as it appears in this register.

[Insert Figure 2 here]

In the empirical analysis we adopt a restrictive definition of immigrant by excluding those individuals born in the EU-15 countries. Figure 3 and Table 1 describe the distribution of immigrant density, defined as the percentage of non EU-15 individuals in the municipality. The top panel of Figure 3 shows the distribution in 2006 while the bottom panel describes the change in this distribution between 1998 and 2006. The average immigrant density in 2006 was 6.78, there being an average increase of 5.84, which reflects the size of the average immigrant influx in the period of interest. In addition, Figure 3 and Table 1 highlight a substantial variation in municipal immigrant densities, which is a feature we exploit in the empirical analysis.

[Insert Figure 3 here]

### 3. Econometric specification and identification issues

The baseline cross-sectional specification is:

$$welfare_{i06} = \beta \cdot immigrant\ density_{i06} + x'_{i06}\varphi + \varepsilon_{i06} \quad (1)$$

where  $welfare_{i06}$  is the welfare spending in municipality  $i$  in 2006<sup>10</sup>,  $immigrant\ density_{i06}$  is the percentage of individuals born outside EU-15 countries in the municipality in 2006, and  $\varepsilon_{i06}$  is an error term. The term  $x'_{i06}$  is a vector of control variables accounting for differences in fiscal capacity and expenditure needs across municipalities measured in 2006. This vector contains the current grants per capita, the municipal property tax base per capita, the debt service of the municipal government, and dummies for population size intervals that identify homogenous municipalities in terms of common maximum tax rates and spending responsibilities. It also includes the size of population groups with specific expenditure needs: the percentage of young (under 16 years of age) and old (over 64) individuals and the percentage of unemployed. The definitions, summary statistics and sources of these variables are provided in Table 1.

As shown above, the foreign-born population increased substantially in the period we study. At the same time, the overall increase hides a considerable degree of heterogeneity across municipalities. To exploit this interesting feature of our data, we use a changes specification where the change in welfare spending recorded between 1998 and 2006 is regressed on the change in immigrant density over the same time window. This specification in changes is:

$$\Delta welfare_{i98-06} = \beta \cdot \Delta immigrant\ density_{i98-06} + \delta \cdot welfare_{i98} + \Delta x'_{i98-06}\varphi + u_{i98-06} \quad (2)$$

where  $\Delta x'_{i98-06}$  is a vector containing the changes in the control variables defined above and  $u_{i98-06}$  is an error term reflecting shocks in the change of welfare spending. To control for mean reversion in welfare spending, we introduce the level of welfare spending at the base year (i.e. 1998).

Despite controlling for observable spending determinants by proxying the fiscal capacity and the expenditure needs of municipalities and time-invariant spending determinants – in the changes specification, there is the risk that shocks in unobserved spending determinants will confound our estimates. Hence, we adopt an instrumental variables approach.

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<sup>10</sup> Throughout the paper, we use two different measures of welfare, in per capita terms and as a percentage of total spending.

The instrument we use is based on a ‘shift-share’ of national levels of immigration by country of origin into municipalities. In the cross-sectional exercise (equation 1), the instrument we use is the immigrant density that would have been observed if, for each country of origin, the geographical distribution of immigrants across municipalities in 2006 had perfectly mimicked its distribution in 1998. The predicted immigrant density for 2006 is constructed as:

$$\overline{immigrant\ density}_{i,06} = \frac{\overline{immigrants}_{i,06}}{\overline{population}_{i,98}} = \sum_c \gamma_{ic,1998} \cdot \frac{immigrants_{c,06}}{population_{i,98}} \quad (3)$$

where  $\gamma_{ic,1998}$  is the (nationwide) share of foreign-born individuals that were living in municipality  $i$  from country  $c$  in 1998 whereas  $immigrants_{c,06}$  is the number of foreign-born from country  $c$  living in Spain in 2006, and  $population_{i,98}$  is the total population in municipality  $i$  in 1998. The rationale for this instrument can be explained as follows. Prior to 1998, municipality  $i$  attracted a large community of immigrants from country  $c$ , say Morocco. Due to network effects, more recent immigrants from Morocco also located in municipality  $i$ , perhaps to avoid discrimination in the housing and labor markets. Hence, if there is a large influx of immigrants from Morocco to Spain in a given period, the population of immigrants in municipality  $i$  will increase disproportionately because Moroccans had settled in this municipality in the past. In the changes specification (equation 2), we instrument the 1998-2006 increase in immigrant density with its predicted increase, which is defined as follows:

$$\overline{\Delta immigrant\ density}_{i,98-06} = \overline{immigrant\ density}_{i,06} - immigrant\ density_{i,98} \quad (4)$$

Since Altonji and Card’s (1991) study, there has been a long tradition in the literature of using the early settlement patterns of immigrants to construct instruments to estimate the effect of immigration on a range of economic outcomes. More recent examples include Saiz (2007), Cortes (2008), Card (2009), González and Ortega (2010) and Peri (2011). Any variation in the predicted immigrant density depends only on the initial presence of immigrants and their country-of-origin and it is independent of any subsequent municipality-specific shocks that determine municipal public spending.

Some US (Borjas, 1999; and McKinnish, 2005) and non-US studies (Fiva, 2009) have found empirical support for the welfare magnets hypothesis which states that welfare generosity attracts welfare-prone individuals (and welfare-prone immigrants). The welfare magnets hypothesis raises simultaneity concerns since immigrant density would then be the consequence and not the cause of welfare spending. However, given the moderate size of welfare spending in

Spanish municipalities, we are not particularly concerned by the welfare magnets hypothesis. In any case, note that the estimates obtained from the instrumental variables approach described here should be robust to welfare-induced location decisions.

## 4. Results

### 4.1 The effect of immigrant density on welfare spending.

Baseline results: Tables 2 and 3 present the results of the cross-sectional and changes specifications outlined above, respectively. Both specifications are estimated using two alternative outcome definitions: welfare spending as a percentage of total spending (Panels 2A and 3A) and welfare spending per capita (Panels 2B and 3B). All tables share the same structure. The first two columns present Ordinary Least Squares (OLS) estimates while columns three and four report their 2 Stage Least Squares (2SLS) counterparts. In the first and third columns, besides immigration density, we include the fiscal characteristics of municipal governments (grants per capita, property tax base, debt service and a set of population size dummies identifying homogenous municipalities in terms of expenditure responsibilities and maximum tax rates). In the second and fourth columns, we further include controls that reflect the presence of residents with specific expenditure needs (young, old and unemployed individuals). Tables A3 and A4, deferred to the Annex, contain the 2SLS first-stage and reduced-form estimates.

[Insert Table 2]

Starting with the cross-sectional specifications of Panel A in Table 2, the estimates imply a negative effect of immigrant density on welfare spending, measured as a percentage of total spending. This result is robust across the model specifications and estimation techniques, although the 2SLS estimates are larger - in absolute value - than their OLS counterparts. Taken at face value, the 2SLS estimates of column four imply that a one percentage point increase in immigrant density reduces welfare spending as a percentage of total spending by 0.37 percentage points (3.1 percent of its level). The results reported in Panel B of Table 2 correspond to the specifications whereby welfare spending is measured in per capita terms. The qualitative results remain unaltered. The most complete 2SLS specification (column four) implies that a one percentage point increase in immigrant density reduces welfare spending per capita by 3.3 € (3 percent of its level).

As for the control variables, welfare spending, measured as a percentage of the budget, increases with current grants, the percentage of young and old individuals and the rate of

unemployment. By contrast, it decreases with the property tax base and the debt service. When welfare spending is measured in per capita terms, it increases with grants, the property tax base, and the percentages of old and young individuals.

Table 3 presents the changes specifications in which we exploit the within-municipality data variation recorded between 1998 and 2006. Welfare spending is measured as a percentage of total spending in panel A and in per capita terms in panel B. In all the changes specifications, we further include welfare spending in the base year (i.e. 1998) given that mean reversion is a salient feature of the spending data we use<sup>11</sup>.

[Insert Table 3]

The estimates indicate that the increase in welfare spending between 1998 and 2006 was lower in those municipalities experiencing the greatest increases in immigrant density during the same time window. For both outcomes, the effect is larger (in absolute value) in the 2SLS specifications. In fact, the effect is negative but statistically insignificant in the OLS specifications in which welfare spending is measured in per capita terms. In the most complete 2SLS specifications, the estimates imply that the average increase in immigrant density for the 1998-2006 period (5.84 percentage points): (i) decreased the percentage of the budget that was allocated to welfare by 3.10 points (26 percent of the 2006 level); and (ii) decreased municipal welfare spending per capita by 18.40€ (16 percent of the 2006 level). Hence, we can conclude that immigrant density exerts a significant – and negative – effect on welfare spending both in statistical and economic terms.

The question as to whether or not the instrument used is a relevant one is addressed in Tables A3 and A4. The first-stage results of the cross-sectional specification in Table A3 indicate that a one percentage point increase in the predicted immigrant density increased its observed counterpart by 0.16 percentage points. The partial R-squared and F-test values of excluded instruments are 0.155 and 60.71, indicating that the instrument is relevant. The corresponding first-stage results, for the most complete specification in changes, are reported in Table A4. The results suggest that an extra percentage point in the predicted 1998-2006 change in immigrant density is associated with a 0.10 percentage point increase in the observed change in immigrant density for the period 1998-2006. The partial R-squared and F-test values in this changes

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<sup>11</sup> Notice that including spending in the base year as a control variable induces a mechanical correlation between this variable and the error term. In unreported results, we have instrumented welfare spending in 1998 with its lagged 1996 value. The results remain virtually unchanged.

specification are 0.085 and 35.79<sup>12</sup>. These statistics indicate that the instrument is also relevant in the changes specifications.

Robustness checks: One concern is that immigration changes overall spending, which in turn, changes the municipalities' spending patterns. We estimate the effect of immigrant density on total spending per capita. Specifically, we estimate the effect of the 1998-2006 change in immigrant density on the contemporaneous change in total spending per capita. The 2SLS estimates, which correspond to a specification that includes all the control variables, are reported in the first column of Table 4. The estimates indicate that immigrant density has no effect on overall spending per capita. This result may reflect the fact that immigration has little impact on the per capita resources of municipal governments. On the one hand, grants are distributed on a population basis and do not respond to the income level of the municipality. On the other hand, the property tax base is based on cadastral values which are updated only very infrequently and, therefore, we do not expect immigration inflows to have a great impact on property tax bases. In the case of the remaining local taxes (a local business tax, a tax on vehicles, a tax on building activities, and a tax on the sale of land and buildings), it is not obvious that per capita tax bases would be significantly affected by immigration, either.

[Insert Table 4]

The result that immigration did not increase total spending per capita, coupled with a contemporaneous decrease in welfare spending, implies that the percentage of spending assigned to other spending categories must have increased. To analyze this issue further, we estimate the effect of immigration on the percentage of the budget allocated to eight different spending categories<sup>13</sup>. The 2SLS results, which correspond to a specification that includes all the control variables, are reported in columns two to nine in Table 4. We find that immigrant density has no statistically significant effect on six of the eight spending items considered. We find a weak, statistically significant effect on spending in water supply and waste treatment. Perhaps, it is more interesting the finding of a positive effect of immigrant density on expenditure dedicated to police. Specifically, our estimates imply that the average increase in immigrant density for the 1998-2006 period increased the percentage of the budget allocated to police by 1.62 percentage points (13 percent of the 2006 level).

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<sup>12</sup> Since the changes specifications include the spending in welfare at the base year, the first-stage results are not identical with the two alternative measures of welfare spending.

<sup>13</sup> The addition of welfare spending to these eight categories amounts to total municipal spending.

#### 4.2. Further results: The effect of immigrant density on voting behavior.

Immigrants typically differ from the native population in terms of their level of education, earnings, unemployment status and welfare use. Despite that all immigrants (legal and illegal) have access to welfare programs provided by the local governments, if natives and immigrants are not equally represented in the population of welfare users, a change in immigrant density will change the fraction of welfare users in the municipality's population. If spending in welfare adjusts to accommodate a higher (or lower) number of welfare users, immigrant density will have a 'mechanical' effect on the measures of welfare spending we use. More specifically, if immigrants are over (or under) represented in the population of welfare users, the negative effect of immigrant density on welfare spending will tend to be underestimated (or overestimated). Of course, it would be informative to know the extent to which immigrants are over (or under) represented in the population of municipal welfare users. Unfortunately, there are no studies examining individual municipal welfare use by ethnic status.

To address this issue, and to provide more evidence on the link between ethnic heterogeneity and redistribution, we examine the municipal vote share of right-wing parties. A recent social survey conducted in Spain revealed that 47 percent of the individuals who describe themselves as right-wing would be willing to increase taxes in order to raise spending on education, health and welfare programs. This figure rises to 62 percent among left-wing individuals (*Centro de investigaciones Sociológicas*, 2010). Thus, we specifically estimate the effect of immigrant density on voting behavior regressing the between-elections change in the right-wing vote share on the contemporaneous change in immigrant density:

$$\Delta right\ wing\ vote_{it} = \eta \cdot \Delta immigrant\ density_{it} + \rho \cdot right\ wing\ vote_{it-4} + \Delta s'_{it} \lambda + \zeta_{it} \quad (5)$$

where  $\Delta right\ wing\ vote_{it}$  is the increase in the percentage of the vote accruing to right-wing parties between two consecutive local elections (held at  $t$  and at  $t-4$ )<sup>14</sup>. Since municipal elections took place in 1999, 2003 and 2007, observations corresponding to 1999-2003 and 2003-2007 changes are pooled. The term  $\Delta s'_{it}$  is a vector of control variables and includes time dummies, the change in the local unemployment rate and changes in the proportion of natives in the following age

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<sup>14</sup> The sample used here is larger than that used in the expenditure analysis (1,901 vs 895 municipalities). Following their political ideology, we have classified as right-wing parties the main conservative party (*Partido Popular*) and some right-wing regionalist parties (e.g., *Convergencia i Unió*, *Unió Valenciana*). As left-wing parties, we consider the Social Democrats (*Partido Socialista Obrero Español*), the former communist party (*Izquierda Unida*) and other green and/or left-wing regionalist parties (e.g. *Iniciativa per Catalunya-Els Verds*, *Bloque Nacionalista Galego*, *Esquerra Republicana de Catalunya*).

groups: 18-27, 28-37, 38-47, 48-57, 58-67 and >68 years-old. Thus, we are controlling for changes on the demographical structure that may correlate with political preferences and thus, election results. We also include the initial right-wing vote share to control for mean reversion in voting behavior,

[Insert Table 5]

The first and second columns of Table 5 present the OLS and the 2SLS results, respectively. These results indicate that a rise in immigrant density increases the vote share accruing to right-wing parties. In other words, the support for right-wing parties increased more in those municipalities experiencing relatively large increases in immigrant density. Taken at face value, our 2SLS estimates imply that the average increase in immigrant density between 1998 and 2006 (5.8 percentage points) would increase the vote share for right-wing parties by 4.9 percentage points. To the extent that a higher share of the vote being won by right-wing parties reflects less support for redistribution, these voting behavior results support the hypothesis that ethnic heterogeneity reduces redistribution. Moreover, these results suggest that the negative effect of immigrant density on welfare spending is not completely driven by an under-representation of immigrants in the population of municipal welfare users.

Our results are in line with the evidence documented by Roemer et al. (2007) for USA, UK and France pointing to a positive relationship between the rise of right-wing parties and immigration. They are also congruent with the findings of Cebolla-Boado and Jiménez-Buedo (2011). This case study shows a positive correlation between immigrant density and the right-wing vote share across the electoral districts of the city of Madrid.

## **5. Concluding remarks**

Spain has recently received a massive immigration wave which, in a short period of time, has transformed the country into an ethnically heterogeneous society. Moreover, this inflow of immigration has been distributed very unevenly across Spain. We use these demographic changes to study the effect of ethnic heterogeneity on redistribution and provide empirical evidence that this heterogeneity (proxied by municipal immigrant density) reduces redistribution (proxied by municipal welfare spending).

Our preferred estimates indicate that the average increase in immigrant density for the period 1998 to 2006 (5.8 percentage points) led to a fall in the amount of the municipal budget allocated to welfare of between 16 and 26 percentage points. We show that these results are not



driven by changes in the overall budget attributable to immigrants (finding no effect on total spending). Moreover, having conducted a comprehensive analysis of the impact of immigrant density on different spending categories, we find that immigrant density increases the share of municipal spending allocated to the police.

Consistent with these results on welfare expenditure, we also find a sizable positive impact of immigrant density on the vote share accruing to right-wing parties. Given that right-wing parties are, in general, less pro-redistribution, these results also point to a negative relationship between ethnic heterogeneity and the taste for redistribution (Alesina and La Ferrara, 2000). However, it should be borne in mind that, besides less redistributive policies, right-wing parties also tend to support more restrictive immigration policies. We cannot, therefore, rule out the possibility that increased immigrant density strengthened support for the restrictive immigration policies favored by right-wing parties that also support less redistributive policies (see Lee et al. (2006) and Roemer et al. (2007) for discussions on policy bundling in this context).

In any case, our findings support the observation made in Alesina and Glaeser (2004) that future immigrant inflows to Europe will challenge the current generous welfare state as European societies will become more diverse. Furthermore, these same authors claim that as Europe has increased in diversity, Europeans have grown increasingly susceptible to racist, anti-welfare demagoguery. In Spain, the native population's perception of the use made by immigrants of the country's welfare services supports this argument. According to a survey conducted by the *Centro de Investigaciones Sociológicas* in 2008, around 50 percent of natives believe that immigrants misuse the public health care system. Moreover, almost 50 percent of natives believe that immigrants receive more school subsidies and health services than they do, despite both groups having the same income. The results of this survey may shed light on the political mechanisms through which ethnic heterogeneity may affect redistribution. We consider that a better understanding of the workings of these political mechanisms is of paramount importance in future research studies.

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**Table 1.** Descriptive statistics

<b>Cross section (N=1,293)</b>				
	<b>Mean</b>	<b>St. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>Welfare spending</b>				
<i>Welfare spending</i> <sub>06</sub> (€ per capita)	112	71	0.09	646
<i>Welfare spending</i> <sub>06</sub> (percentage of total spending)	12.03	7.46	0.01	57.13
<i>Total spending</i> <sub>06</sub> (€ per capita)	1,005	432	341	4,880
<i>Welfare spending</i> <sub>98</sub> (€ per capita)	55	40	0	286
<i>Welfare spending</i> <sub>98</sub> (percentage of total spending)	10.09	6.78	0	42.03
<i>Total spending</i> <sub>98</sub> (€ per capita)	577	276	183	3,238
<b>Demographic</b>				
<i>Immigrant density</i> <sub>06</sub> (percentage)	6.78	5.31	0.05	35.77
<i>Population</i> <sub>06</sub>	25,277	111,233	1,863	3,128,600
<b>Control variables</b>				
<i>Current grants</i> <sub>06</sub> (€ per capita)	273.36	92.98	83.68	1080.15
<i>Property tax base</i> <sub>06</sub> (€ per capita)	19,810	13,219	2,472	222,242
<i>Debt service</i> <sub>06</sub> (percentage)	6.58	7.87	0	94.74
<i>Percentage young</i> <sub>06</sub> (<16 years old)	14.49	3.06	3.35	23.76
<i>Percentage old</i> <sub>06</sub> (>64 years old)	18.45	6.23	3.98	48.25
<i>Unemployment rate</i> <sub>06</sub>	4.22	1.86	1.10	14.10
<b>1998-2006 change (N=895)</b>				
<b>Welfare spending</b>				
$\Delta$ <i>Welfare spending</i> <sub>98-06</sub> (€ per capita)	56	59	-169	646
$\Delta$ <i>Welfare spending</i> <sub>98-06</sub> (percentage of total spending)	1.72	6.27	-27.75	36.44
$\Delta$ <i>Total spending</i> <sub>98-06</sub> (€ per capita)	419	329	-986	4033
<b>Demographic</b>				
$\Delta$ <i>Immigrant share</i> <sub>98-06</sub>	5.84	4.63	-1.28	31.82
<b>Control variables</b>				
$\Delta$ <i>Current grants per capita</i> <sub>98-06</sub>	123	65	-189	740
$\Delta$ <i>Property tax base</i> <sub>98-06</sub> (€ per capita)	4,495	5,900	-55,367	68,131
$\Delta$ <i>Debt service</i> <sub>98-06</sub> (percentage)	-2.59	9.74	-66.84	53.47
$\Delta$ <i>Percentage young</i> <sub>98-06</sub> (<16 years old)	-2.53	2.50	-27.62	6.29
$\Delta$ <i>Percentage old</i> <sub>98-06</sub> (>64 years old)	1.21	2.07	-9.95	7.62
$\Delta$ <i>Unemployment rate</i> <sub>98-06</sub>	0.19	1.21	-4.50	6.20

Sources: 1) Spending, grants and debt service (interests plus principal payments over current revenues) data from Spanish Ministry of Finance; 2) Welfare spending corresponds to chapter 3 of the *Clasificación funcional del gasto* labelled *Seguridad, Protección y Promoción Social*; 3) Demographic variables are from Statistics Spain (*Padrón Municipal*); 3) Property tax base from the Cadastre register; 4) Unemployment rate (percentage of registered unemployed among individuals aged 16-64) from *Anuario Económico de España*.

**Table 2.** The determinants of municipal welfare spending in 2006 (N=1,293)

<b>A) Welfare spending as a percentage of total spending in 2006</b>				
	<b>OLS</b>		<b>2SLS</b>	
<i>Immigrant density</i> <sub>106</sub>	-0.288*** (0.039)	-0.181*** (0.041)	-0.435*** (0.090)	-0.371*** (0.097)
<b>Control variables</b>				
<i>Current grants per capita</i> <sub>106</sub>	0.016*** (0.003)	0.014*** (0.003)	0.016*** (0.003)	0.015*** (0.003)
<i>Per capita property tax base</i> <sub>106</sub> (in millions of €)	-90.589*** (18.151)	-51.275*** (15.319)	-70.236*** (19.467)	-39.299*** (14.430)
<i>Debt service</i> <sub>106</sub>	-0.089*** (0.015)	-0.094*** (0.015)	-0.089*** (0.015)	-0.094*** (0.015)
<i>Municipality size dummies</i>	Yes	Yes	Yes	Yes
<i>Share young</i> <sub>106</sub> (<16 years old)		0.502*** (0.127)		0.454*** (0.129)
<i>Share old</i> <sub>106</sub> (>64 years old)		0.349*** (0.069)		0.300*** (0.073)
<i>Unemployment rate</i> <sub>106</sub>		0.518*** (0.135)		0.305* (0.170)
<b>B) Welfare spending per capita in 2006</b>				
	<b>OLS</b>		<b>2SLS</b>	
<i>Immigrant density</i> <sub>106</sub>	-1.332*** (0.356)	-1.033** (0.409)	-3.393*** (0.924)	-3.308*** (1.063)
<b>Control variables</b>				
<i>Current grants per capita</i> <sub>106</sub>	0.291*** (0.038)	0.296*** (0.039)	0.292*** (0.038)	0.309*** (0.040)
<i>Per capita property tax base</i> <sub>106</sub> (in millions of €)	553.663*** (125.698)	730.801*** (136.638)	839.975*** (193.011)	874.132*** (173.007)
<i>Debt service</i> <sub>106</sub>	-0.079 (0.161)	-0.208 (0.157)	-0.078 (0.167)	-0.212 (0.166)
<i>Municipality size dummies</i>	Yes	Yes	Yes	Yes
<i>Percentage young</i> <sub>106</sub> (<16 years old)		6.456*** (1.129)		5.875*** (1.184)
<i>Percentage old</i> <sub>106</sub> (>64 years old)		2.591*** (0.610)		2.014*** (0.674)
<i>Unemployment rate</i> <sub>106</sub>		1.236 (1.348)		-1.317 (1.740)

Notes: 1) Robust standard errors in parenthesis; 2) \*\*\* denotes statistical significance at the 1% level, \*\* at the 5% level, and \* at the 10% level; 3) Municipality size dummies for the following size intervals: <5, 5-20, 20-50, 50-100 and >100 thousand inhabitants.

**Table 3.** The determinants of municipal welfare spending, 1998-2006 changes (N=895)

<b>A) Change in welfare spending as a percentage of total spending (1998-2006)</b>				
	<b>OLS</b>		<b>2SLS</b>	
<i>ΔImmigrant share</i> <sub>198-06</sub>	-0.183*** (0.040)	-0.137*** (0.043)	-0.548*** (0.149)	-0.531*** (0.159)
<b>Control variables</b>				
<i>Welfare spending</i> <sub>198</sub>	-0.377*** (0.039)	-0.381*** (0.039)	-0.421*** (0.044)	-0.414*** (0.042)
<i>ΔCurrent grants per capita</i> <sub>198-06</sub>	0.020*** (0.005)	0.018*** (0.005)	0.017*** (0.005)	0.017*** (0.005)
<i>ΔPer capita property tax base</i> <sub>198-06</sub> (in millions of €)	-15.113 (21.702)	-9.976 (21.901)	-47.099 (28.801)	-41.111 (28.378)
<i>ΔDebt service</i> <sub>198-06</sub>	-0.054*** (0.019)	-0.055*** (0.018)	-0.063*** (0.021)	-0.064*** (0.021)
<i>ΔMunicipality size dummies</i>	Yes	Yes	Yes	Yes
<i>ΔShare young</i> <sub>198-06</sub> (<16 years old)		-0.060 (0.098)		-0.132 (0.111)
<i>ΔShare old</i> <sub>198-06</sub> (>64 years old)		0.147 (0.118)		-0.263 (0.193)
<i>ΔUnemployment rate</i> <sub>198-06</sub>		0.443** (0.172)		0.254 (0.187)
<b>B) Change in welfare spending per capita (1998-2006)</b>				
	<b>OLS</b>		<b>2SLS</b>	
<i>ΔImmigrant density</i> <sub>198-06</sub>	-0.567 (0.383)	-0.499 (0.432)	-3.079** (1.456)	-3.146* (1.626)
<b>Control variables</b>				
<i>Welfare spending</i> <sub>198</sub>	-0.066 (0.068)	-0.068 (0.069)	-0.073 (0.068)	-0.073 (0.069)
<i>ΔCurrent grants per capita</i> <sub>198-06</sub>	0.351*** (0.073)	0.347*** (0.074)	0.329*** (0.073)	0.339*** (0.073)
<i>ΔPer capita property tax base</i> <sub>198-06</sub> (in millions of €)	371.732 (353.934)	377.958 (353.813)	137.299 (358.021)	160.615 (363.894)
<i>ΔMunicipality size dummies</i>	Yes	Yes	Yes	Yes
<i>ΔDebt service</i> <sub>198-06</sub>	-0.114 (0.182)	-0.117 (0.181)	-0.187 (0.199)	-0.192 (0.197)
<i>ΔPercentage young</i> <sub>198-06</sub> (<16 years old)		-1.144 (0.870)		-1.593* (0.950)
<i>ΔPercentage old</i> <sub>198-06</sub> (>64 years old)		-0.376 (1.053)		-3.202 (1.983)
<i>ΔUnemployment rate</i> <sub>198-06</sub>		1.678 (1.627)		0.401 (1.759)

Notes: 1) Robust standard errors in parenthesis; 2) \*\*\* denotes statistical significance at the 1% level, \*\* at the 5% level, and \* at the 10% level; 3) ΔMunicipality size dummies indicate changes in population size crossing the following size intervals: <5, 5-20, 20-50, 50-100 and >100 thousand inhabitants.

**Table 4.** The determinants of the 1998-2006 change in municipal spending, 2SLS estimates (N=895)

	Total spending (€ per capita)	Percentage of total spending in:							
		General services	Police	Health	Education	Housing, street lighting & parks	Water supply & waste treatment	Culture and sports	Local roads & economic development
$\Delta$ Immigrant density <sub>198-06</sub>	24.520 (17.150)	-0.124 (0.159)	0.278*** (0.087)	0.055 (0.061)	-0.019 (0.112)	-0.121 (0.434)	0.421* (0.226)	-0.222 (0.231)	0.048 (0.199)
<b>Control variables</b>									
Spending item <sub>198</sub>	-0.133** (0.066)	-0.424*** (0.044)	-0.308*** (0.038)	-0.864*** (0.060)	-0.710*** (0.067)	-0.748*** (0.037)	-0.798*** (0.036)	-0.747*** (0.035)	-0.004*** (0.000)
$\Delta$ Current grants per capita <sub>198-06</sub>	1.326*** (0.195)	-0.006 (0.004)	-0.003** (0.001)	0.002 (0.002)	0.001 (0.002)	-0.003 (0.005)	-0.005* (0.003)	0.002 (0.004)	0.003 (0.005)
$\Delta$ Per capita property tax base <sub>198-06</sub> (in millions of €)	5,206.979 (4,892.431)	25.448 (30.365)	41.394** (18.373)	2.409 (16.652)	-15.265 (19.149)	-31.887 (61.740)	-80.331* (46.208)	25.947 (49.988)	58.706 (62.839)
$\Delta$ Debt service <sub>198-06</sub>	4.338*** (1.232)	-0.046** (0.023)	-0.020** (0.009)	-0.012 (0.009)	-0.013 (0.010)	-0.083*** (0.032)	-0.034* (0.019)	-0.023 (0.022)	-0.021 (0.027)
$\Delta$ Municipality size dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$\Delta$ Share young <sub>198-06</sub> (<16 years old)	-14.805 (14.264)	-0.024 (0.112)	0.030 (0.037)	-0.016 (0.039)	0.197* (0.112)	-0.393* (0.203)	0.141 (0.113)	0.144 (0.107)	0.152 (0.128)
$\Delta$ Share old <sub>198-06</sub> (>64 years old)	-4.718 (17.735)	-0.084 (0.216)	0.282*** (0.102)	-0.104 (0.085)	-0.248 (0.154)	-0.171 (0.510)	0.397 (0.312)	-0.378 (0.261)	0.198 (0.272)
$\Delta$ Unemployment rate <sub>198-06</sub>	-16.877 (13.791)	0.366* (0.189)	0.048 (0.071)	0.192** (0.091)	0.129 (0.123)	-0.044 (0.329)	-0.365* (0.217)	-0.798*** (0.267)	0.210 (0.262)

Notes: 1) Robust standard errors in parenthesis; 2) \*\*\* denotes statistical significance at the 1% level, \*\* at the 5% level, and \* at the 10% level; 3)  $Spending\ item_{198}$  is total spending per capita in column 1 and the percentage of spending devoted to the appropriate spending item in columns 2 to 9.

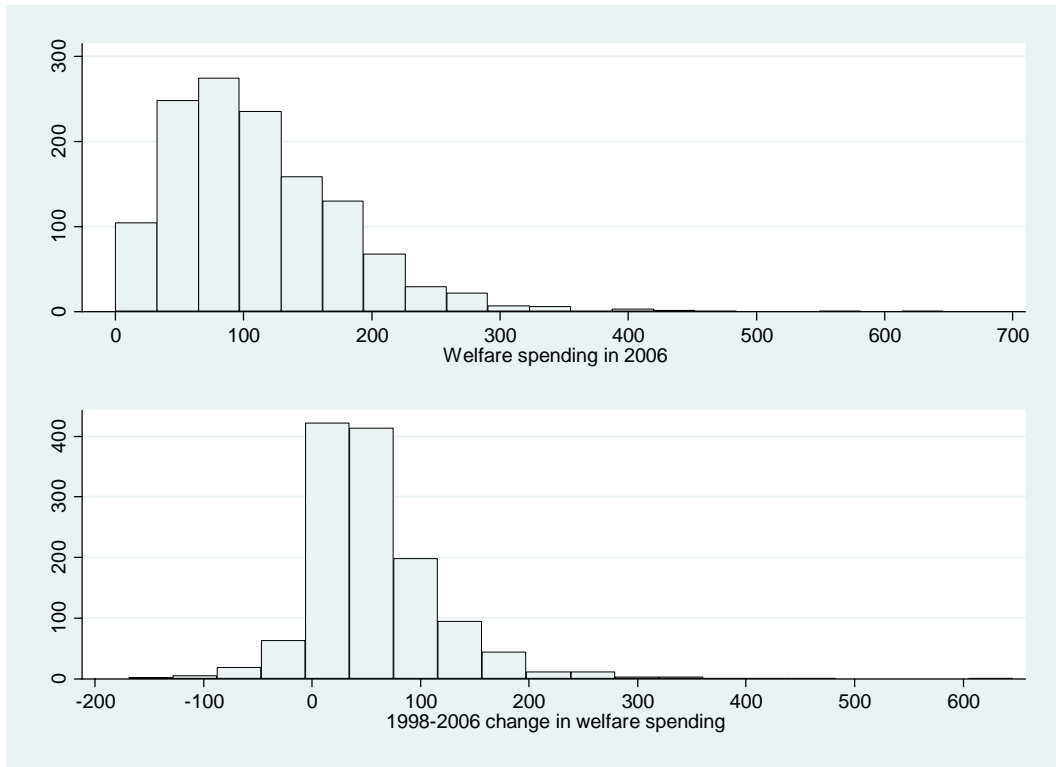
**Table 5.** The determinants of the right-wing vote share (N=3,802).

	<b>OLS</b>	<b>2SLS</b>
$\Delta$ <i>Immigrant density</i> <sub>it</sub>	0.363*** (0.079)	0.843** (0.400)
<b>Control variables</b>		
<i>Right wing vote</i> <sub>it-4</sub>	-0.287*** (0.013)	-0.294*** (0.014)
$\Delta$ <i>Unemployment rate</i> <sub>it</sub>	0.237 (0.229)	0.312 (0.236)
$\Delta$ <i>Voters' age groups</i> <sub>it</sub>	Yes	Yes
<i>Year dummies</i>	Yes	Yes

Notes: 1) The dependent variable is the change in the right-wing vote share between municipal elections – pooling the 1999-2003 and 2003-2007 changes; 2) Robust standard errors in parenthesis clustered at the municipality level; 3) \*\*\* denotes statistical significance at the 1%, \*\* at the 5%, and \* at the 10% levels; 4) The  $\Delta$ *voters' age groups*<sub>it</sub> is the change in the following age groups as a percentage of the natives (including EU-15 citizens): 18-27, 28-37, 38-47, 48-57, 58-67 and >68 years-old.

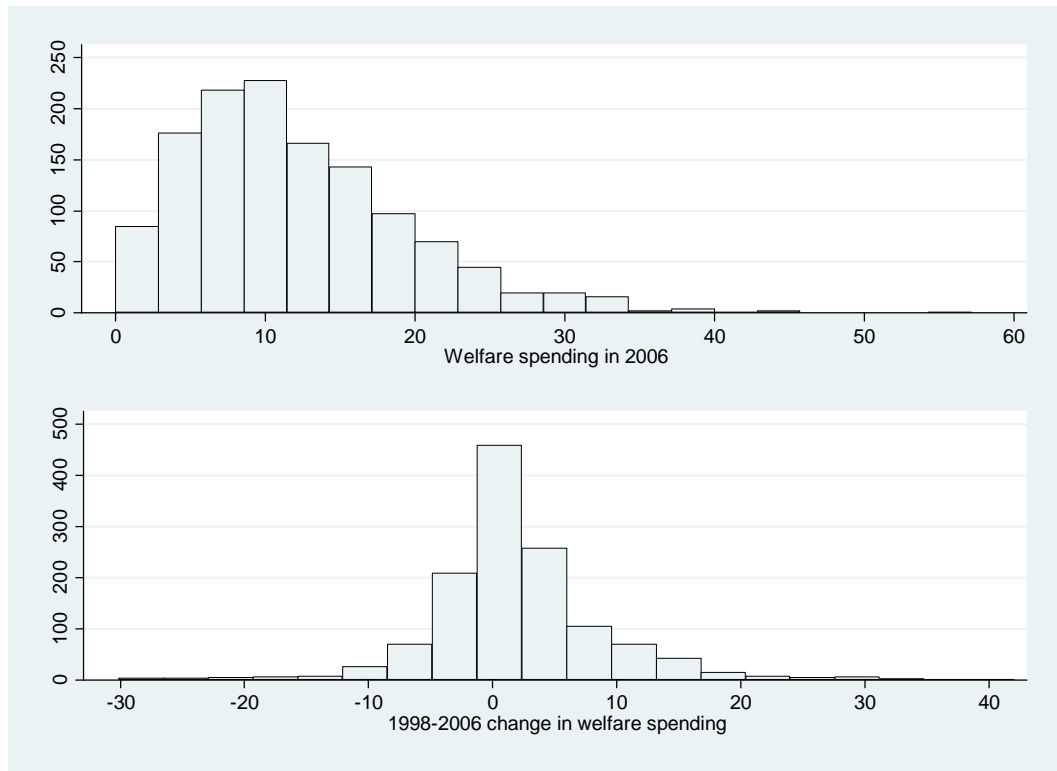


**Figure 1a.** Distribution of welfare spending per capita across municipalities.



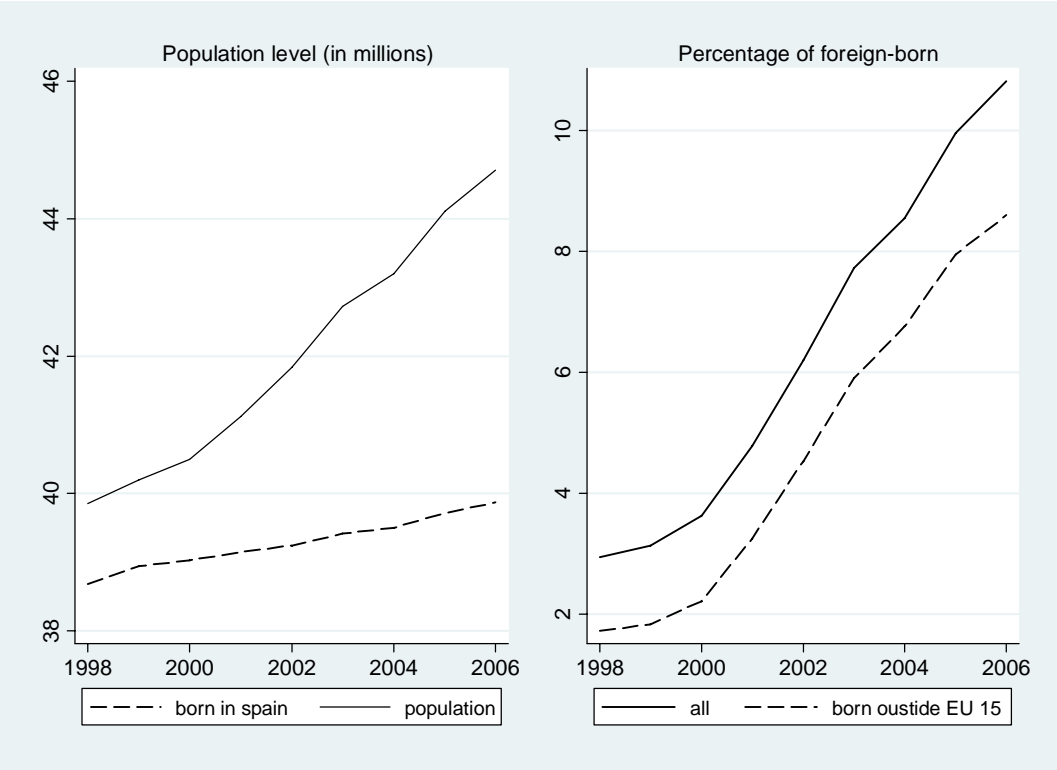
Notes: Frequency in the vertical axis. In the top (bottom) panel, the number of observations is 1,293 (895) which corresponds to the estimation sample.

**Figure 1b.** Distribution of welfare spending as a percentage of total spending across municipalities.



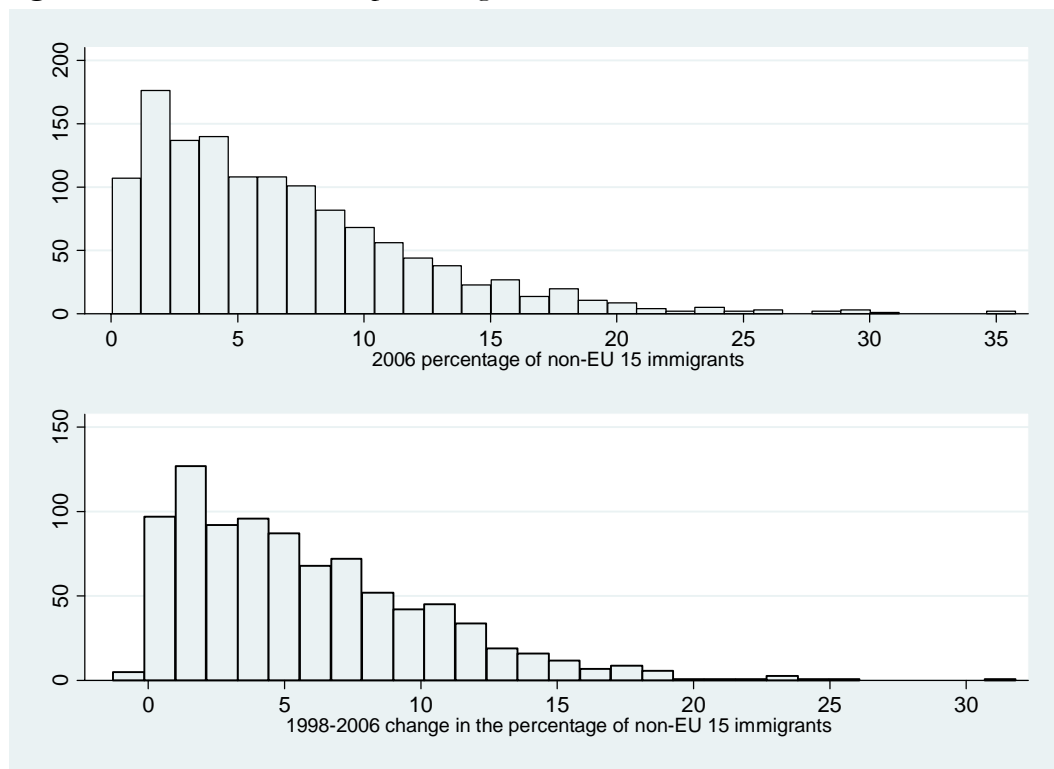
Notes: Frequency in the vertical axis. In the top (bottom) panel, the number of observations is 1,293 (895) which corresponds to the estimation sample.

**Figure 2.** The Spanish immigration wave: Nationwide population levels and shares



Source: Statistics Spain (INE).

**Figure 3.** Distribution of the percentage of individuals born outside EU-15 countries



Notes: In the top (bottom) panel, the number of observations is 1,293 (895) which corresponds to the estimation sample.

## Annex

**Table A1.** Municipalities in the estimation sample by population size (in thousands)

Variable	<1	(1-5]	(5-20]	(20-100]	>100	Total
Sample	0	470	541	230	52	1,293
All municipalities	4,616	1,813	830	285	56	7,600
% in sample	0%	26%	65%	81%	93%	17%

Source: Statistics Spain (INE).

Notes: These figures exclude the municipalities in the Basque Country and Navarra.

**Table A2.** Foreign-born individuals by country of origin

Country	2006	1998	1998-2006
Morocco	605,961	190,497	415,464
Ecuador	456,641	5,335	451,306
Romania	397,270	3,066	394,204
Colombia	286,969	17,928	269,041
United Kingdom	283,667	87,808	195,859
Argentina	271,444	61,323	210,121
Germany	208,933	115,395	93,538
France	199,364	143,023	56,341
Bolivia	140,740	2,581	138,159
Venezuela	124,851	46,388	78,463
Peru	123,464	26,900	96,564
China	104,789	12,036	92,753
Bulgaria	100,763	1,550	99,213
Portugal	93,767	51,303	42,464
Brazil	93,396	19,18	74,216
Dominican Republic	87,111	21,66	65,451
Cuba	79,228	31,223	48,005
Uruguay	76,635	15,577	61,058
Ukraine	69,359	585	68,774
Switzerland	62,632	46,981	15,651
Italy	60,175	17,437	42,738
Chile	57,864	16,984	40,880
Algeria	52,159	16,456	35,703

Source: Statistics Spain (INE).

**Table A3.** Reduced-form and first-stage results, levels specification (N=1,293)

<b>A) Welfare spending as a percentage of total spending in 2006</b>			
	<b>First-Stage</b>	<b>Reduced-form</b>	<b>2SLS</b>
<i>Immigrant density</i> <sub>106</sub>			-0.371*** (0.097)
$\overline{\text{Immigrant density}}_{106}$	0.156*** (0.020)	-0.058*** (0.015)	
<b>Control variables</b>			
<i>Current grants per capita</i> <sub>106</sub>	0.004*** (0.001)	0.013*** (0.003)	0.015*** (0.003)
<i>Per capita property tax base</i> <sub>106</sub> (in millions of €)	5.163 (13.375)	-41.217*** (15.563)	-39.299*** (14.430)
<i>Debt service</i> <sub>06i</sub>	0.006 (0.012)	-0.096*** (0.015)	-0.094*** (0.015)
<i>Municipality size dummies</i>	Yes	Yes	Yes
<i>Percentage young</i> <sub>106</sub> (<16 years old)	-0.192*** (0.071)	0.525*** (0.127)	0.454*** (0.129)
<i>Percentage old</i> <sub>106</sub> (>64 years old)	-0.211*** (0.041)	0.379*** (0.068)	0.300*** (0.073)
<i>Unemployment rate</i> <sub>106</sub>	-1.007*** (0.069)	0.679*** (0.126)	0.305* (0.170)
<b>First-Stage Statistics</b>			
<i>F-test of excluded instruments</i>	60.71		
<i>Partial R-squared</i>	0.155		
<b>B) Welfare spending per capita in 2006</b>			
<i>Immigrant density</i> <sub>106</sub>			-3.308*** (1.063)
$\overline{\text{Immigrant density}}_{106}$	0.156*** (0.020)	-0.517*** (0.159)	
<b>Control variables</b>			
<i>Current grants per capita</i> <sub>106</sub>	0.004*** (0.001)	0.297*** (0.039)	0.309*** (0.040)
<i>Per capita property tax base</i> <sub>106</sub> (in millions of €)	5.163 (13.375)	857.054*** (154.639)	874.132*** (173.007)
<i>Debt service</i> <sub>106</sub>	0.006 (0.012)	-0.231 (0.156)	-0.212 (0.166)
<i>Municipality size dummies</i>	Yes	Yes	Yes
<i>Percentage young</i> <sub>106</sub> (<16 years old)	-0.192*** (0.071)	6.511*** (1.135)	5.875*** (1.184)
<i>Percentage old</i> <sub>106</sub> (>64 years old)	-0.211*** (0.041)	2.712*** (0.611)	2.014*** (0.674)
<i>Unemployment rate</i> <sub>106</sub>	-1.007*** (0.069)	2.013* (1.223)	-1.317 (1.740)
<b>First-Stage Statistics</b>			
<i>F-test of excluded instruments</i>	60.71		
<i>Partial R-squared</i>	0.155		

Notes: 1) In the first column, the dependent variable is the immigrant density in 2006; 2) Robust standard errors in parenthesis; 3) \*\*\* denotes statistical significance at the 1% level, \*\* at the 5% level, and \* at the 10% level; 4) The results shown in the third column of panel A (B) are those reported in the 4th column of Table 2A (2B).

**Table A4.** Reduced-form and first-stage results, changes specification (N=895)

<b>A) Change in welfare spending as a percentage of total spending (1998-2006)</b>			
	<b>First-Stage</b>	<b>Reduced-form</b>	<b>2SLS</b>
$\Delta$ Immigrant density <sub>198-06</sub>			-0.531*** (0.159)
$\overline{\Delta}$ Immigrant density <sub>198-06</sub>	0.104*** (0.017)	-0.055*** (0.014)	
<b>Control variables</b>			
Welfare spending <sub>198</sub>	-0.054*** (0.018)	-0.385*** (0.039)	-0.414*** (0.042)
$\Delta$ Current grants per capita <sub>198-06</sub>	-0.003* (0.002)	0.019*** (0.005)	0.017*** (0.005)
$\Delta$ Per capita property tax base <sub>198-06</sub> (in millions of €)	-45.886* (23.549)	-16.735 (22.098)	-41.111 (28.378)
$\Delta$ Share of budget spent on debt interests <sub>198-06</sub>	-0.026** (0.012)	-0.050*** (0.018)	-0.064*** (0.021)
$\Delta$ Municipality size dummies	Yes	Yes	Yes
$\Delta$ Share young <sub>198-06</sub> (<16 years old)	-0.207*** (0.067)	-0.022 (0.093)	-0.132 (0.111)
$\Delta$ Share old <sub>198-06</sub> (>64 years old)	-1.024*** (0.091)	0.281** (0.110)	-0.263 (0.193)
$\Delta$ Unemployment rate <sub>198-06</sub>	-0.397*** (0.100)	0.465*** (0.171)	0.254 (0.187)
<b>First-Stage Statistics</b>			
F-test of excluded instruments	35.79		
Partial R-squared	0.085		
<b>B) Change in welfare spending per capita (1998-2006)</b>			
$\Delta$ Immigrant density <sub>198-06</sub>			-3.146* (1.626)
$\overline{\Delta}$ Immigrant density <sub>198-06</sub>	0.109*** (0.018)	-0.344** (0.164)	
<b>Control variables</b>			
Welfare spending <sub>198</sub>	-0.002 (0.003)	-0.066 (0.069)	-0.073 (0.069)
$\Delta$ Current grants per capita <sub>198-06</sub>	-0.003* (0.002)	0.349*** (0.074)	0.339*** (0.073)
$\Delta$ Per capita property tax base <sub>198-06</sub> (in millions of €)	-46.485* (23.732)	306.834 (345.029)	160.615 (363.894)
$\Delta$ Share of budget spent on debt interests <sub>198-06</sub>	-0.029** (0.012)	-0.102 (0.182)	-0.192 (0.197)
$\Delta$ Municipality size dummies	Yes	Yes	Yes
$\Delta$ Share young <sub>198-06</sub> (<16 years old)	-0.201*** (0.066)	-0.961 (0.852)	-1.593* (0.950)
$\Delta$ Share old <sub>198-06</sub> (>64 years old)	-1.041*** (0.092)	0.072 (0.937)	-3.202 (1.983)
$\Delta$ Unemployment rate <sub>198-06</sub>	-0.395*** (0.100)	1.644 (1.620)	0.401 (1.759)
<b>First-Stage Statistics</b>			
F-test of excluded instruments	38.72		
Partial R-squared	0.095		

Notes: 1) In the first column, the dependent variable is the change in immigrant density from 1998 to 2006; 2) Robust standard errors in parenthesis; 3) \*\*\* denotes statistical significance at the 1% level, \*\* at the 5% level, and \* at the 10% level; 4) The results shown in the third column of panel A (B) are those reported in the 4th column of Table 3A (3B).

## 2010

- 2010/1, **De Borger, B., Pauwels, W.:** "A Nash bargaining solution to models of tax and investment competition: tolls and investment in serial transport corridors"
- 2010/2, **Chirinko, R.; Wilson, D.:** "Can Lower Tax Rates Be Bought? Business Rent-Seeking And Tax Competition Among U.S. States"
- 2010/3, **Esteller-Moré, A.; Rizzo, L.:** "Politics or mobility? Evidence from us excise taxation"
- 2010/4, **Roehrs, S.; Stadelmann, D.:** "Mobility and local income redistribution"
- 2010/5, **Fernández Llera, R.; García Valiñas, M.A.:** "Efficiency and elusion: both sides of public enterprises in Spain"
- 2010/6, **González Alegre, J.:** "Fiscal decentralization and intergovernmental grants: the European regional policy and Spanish autonomous regions"
- 2010/7, **Jametti, M.; Joanis, M.:** "Determinants of fiscal decentralization: political economy aspects"
- 2010/8, **Esteller-Moré, A.; Galmarini, U.; Rizzo, L.:** "Should tax bases overlap in a federation with lobbying?"
- 2010/9, **Cubel, M.:** "Fiscal equalization and political conflict"
- 2010/10, **Di Paolo, A.; Raymond, J.L.; Calero, J.:** "Exploring educational mobility in Europe"
- 2010/11, **Aidt, T.S.; Dutta, J.:** "Fiscal federalism and electoral accountability"
- 2010/12, **Arqué Castells, P.:** "Venture capital and innovation at the firm level"
- 2010/13, **García-Quevedo, J.; Mas-Verdú, F.; Polo-Otero, J.:** "Which firms want PhDs? The effect of the university-industry relationship on the PhD labour market"
- 2010/14, **Calabrese, S.; Epple, D.:** "On the political economy of tax limits"
- 2010/15, **Jofre-Monseny, J.:** "Is agglomeration taxable?"
- 2010/16, **Dragu, T.; Rodden, J.:** "Representation and regional redistribution in federations"
- 2010/17, **Borck, R.; Wimbersky, M.:** "Political economics of higher education finance"
- 2010/18, **Dohse, D; Walter, S.G.:** "The role of entrepreneurship education and regional context in forming entrepreneurial intentions"
- 2010/19, **Åslund, O.; Edin, P-A.; Fredriksson, P.; Grönqvist, H.:** "Peers, neighborhoods and immigrant student achievement - Evidence from a placement policy"
- 2010/20, **Pelegrín, A.; Bolance, C.:** "International industry migration and firm characteristics: some evidence from the analysis of firm data"
- 2010/21, **Koh, H.; Riedel, N.:** "Do governments tax agglomeration rents?"
- 2010/22, **Curto-Grau, M.; Herranz-Loncán, A.; Solé-Ollé, A.:** "The political economy of infrastructure construction: The Spanish "Parliamentary Roads" (1880-1914)"
- 2010/23, **Bosch, N.; Espasa, M.; Mora, T.:** "Citizens' control and the efficiency of local public services"
- 2010/24, **Ahamdanech-Zarco, I.; García-Pérez, C.; Simón, H.:** "Wage inequality in Spain: A regional perspective"
- 2010/25, **Folke, O.:** "Shades of brown and green: Party effects in proportional election systems"
- 2010/26, **Falck, O.; Heblich, H.; Lameli, A.; Südekum, J.:** "Dialects, cultural identity and economic exchange"
- 2010/27, **Baum-Snow, N.; Pavan, R.:** "Understanding the city size wage gap"
- 2010/28, **Molloy, R.; Shan, H.:** "The effect of gasoline prices on household location"
- 2010/29, **Koethenbuerger, M.:** "How do local governments decide on public policy in fiscal federalism? Tax vs. expenditure optimization"
- 2010/30, **Abel, J.; Dey, I.; Gabe, T.:** "Productivity and the density of human capital"
- 2010/31, **Gerritse, M.:** "Policy competition and agglomeration: a local government view"
- 2010/32, **Hilber, C.; Lyytikäinen, T.; Vermeulen, W.:** "Capitalization of central government grants into local house prices: panel data evidence from England"
- 2010/33, **Hilber, C.; Robert-Nicoud, F.:** "On the origins of land use regulations: theory and evidence from us metro areas"
- 2010/34, **Picard, P.; Tabuchi, T.:** "City with forward and backward linkages"
- 2010/35, **Bodenhorn, H.; Cuberes, D.:** "Financial development and city growth: evidence from Northeastern American cities, 1790-1870"
- 2010/36, **Vulovic, V.:** "The effect of sub-national borrowing control on fiscal sustainability: how to regulate?"
- 2010/37, **Flamand, S.:** "Interregional transfers, group loyalty and the decentralization of redistribution"
- 2010/38, **Ahlfeldt, G.; Feddersen, A.:** "From periphery to core: economic adjustments to high speed rail"
- 2010/39, **González-Val, R.; Pueyo, F.:** "First nature vs. second nature causes: industry location and growth in the presence of an open-access renewable resource"
- 2010/40, **Billings, S.; Johnson, E.:** "A nonparametric test for industrial specialization"
- 2010/41, **Lee, S.; Li, Q.:** "Uneven landscapes and the city size distribution"
- 2010/42, **Ploeckl, F.:** "Borders, market access and urban growth; the case of Saxon towns and the Zollverein"
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- 2010/44, **Koethenbuerger, M.:** "Electoral rules and incentive effects of fiscal transfers: evidence from Germany"



- 2010/45, Solé-Ollé, A.; Viladecans-Marsal, E.:** "Lobbying, political competition, and local land supply: recent evidence from Spain"
- 2010/46, Larcinese, V.; Rizzo, L.; Testa, C.:** "Why do small states receive more federal money? Us senate representation and the allocation of federal budget"
- 2010/47, Patacchini, E.; Zenou, Y.:** "Neighborhood effects and parental involvement in the intergenerational transmission of education"
- 2010/48, Nedelkoska, L.:** "Occupations at risk: explicit task content and job security"
- 2010/49, Jofre-Monseny, J.; Marín-López, R.; Viladecans-Marsal, E.:** "The mechanisms of agglomeration: Evidence from the effect of inter-industry relations on the location of new firms"
- 2010/50, Revelli, F.:** "Tax mix corners and other kinks"
- 2010/51, Duch-Brown, N.; Parellada-Sabata M.; Polo-Otero, J.:** "Economies of scale and scope of university research and technology transfer: a flexible multi-product approach"
- 2010/52, Duch-Brown, N.; Vilalta M.:** "Can better governance increase university efficiency?"
- 2010/53, Cremer, H.; Goulão, C.:** "Migration and social insurance"
- 2010/54, Mittermaier, F.; Rincke, J.:** "Do countries compensate firms for international wage differentials?"
- 2010/55, Bogliacino, F.; Vivarelli, M.:** "The job creation effect or R&D expenditures"
- 2010/56, Piacenza, M.; Turati, G.:** "Does fiscal discipline towards sub-national governments affect citizens' well-being? Evidence on health"

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**2011**

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- 2011/1, Oppedisano, V.; Turati, G.:** "What are the causes of educational inequalities and of their evolution over time in Europe? Evidence from PISA"
- 2011/2, Dahlberg, M.; Edmark, K.; Lundqvist, H.:** "Ethnic diversity and preferences for redistribution "
- 2011/3, Canova, L.; Vaglio, A.:** "Why do educated mothers matter? A model of parental help"
- 2011/4, Delgado, F.J.; Lago-Peñas, S.; Mayor, M.:** "On the determinants of local tax rates: new evidence from Spain"
- 2011/5, Piolatto, A.; Schuett, F.:** "A model of music piracy with popularity-dependent copying costs"
- 2011/6, Duch, N.; García-Estévez, J.; Parellada, M.:** "Universities and regional economic growth in Spanish regions"
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- 2011/9, Costas-Pérez, E.; Solé-Ollé, A.; Sorribas-Navarro, P.:** "Corruption scandals, press reporting, and accountability. Evidence from Spanish mayors"
- 2011/10, Choi, A.; Calero, J.; Escardíbul, J.O.:** "Hell to touch the sky? private tutoring and academic achievement in Korea"
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- 2011/12, Duch-Brown, N.; García-Quevedo, J.; Montolio, D.:** "The link between public support and private R&D effort: What is the optimal subsidy?"
- 2011/13, Breuillé, M.L.; Duran-Vigneron, P.; Samson, A.L.:** "To assemble to resemble? A study of tax disparities among French municipalities"
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- 2011/15, Montolio, D.; Trillas, F.:** "Regulatory federalism and industrial policy in broadband telecommunications"
- 2011/16, Pelegrín, A.; Bolancé, C.:** "Offshoring and company characteristics: some evidence from the analysis of Spanish firm data"
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- 2011/19, López Real, J.:** "Family reunification or point-based immigration system? The case of the U.S. and Mexico"
- 2011/20, Bogliacino, F.; Piva, M.; Vivarelli, M.:** "The impact of R&D on employment in Europe: a firm-level analysis"
- 2011/21, Tonello, M.:** "Mechanisms of peer interactions between native and non-native students: rejection or integration?"
- 2011/22, García-Quevedo, J.; Mas-Verdú, F.; Montolio, D.:** "What type of innovative firms acquire knowledge intensive services and from which suppliers?"

- 2011/23, Banal-Estañol, A.; Macho-Stadler, I.; Pérez-Castrillo, D.: "Research output from university-industry collaborative projects"
- 2011/24, Ligthart, J.E.; Van Oudheusden, P.: "In government we trust: the role of fiscal decentralization"
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- 2011/27, Solé-Ollé, A.; Viladecans-Marsal, E.: "Local spending and the housing boom"
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