

Title:

Spatial determinants of Active Labour Market Policies and the efficiency of the European Social Fund in Spanish regions

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Abstract:

This paper investigates the role of spatial spillovers in the field of application of the European Social Fund, by estimating the determinants of public expenditure on Active Labour Market Policies (ALMPs) at the regional level using panel data from a sample of the 17 Spanish regions (1989-2010). The estimations take into account the endogeneity of explanatory variables, the dynamic behaviour of their relationship and the spatial dependence among regions. Estimation results detect the importance of imitation in the expenditure pattern of regional administrations, and the existence of some strategic behaviour to face a common pool problem.

Acknowledgements:

This work was supported by the “Càtedra Pasqual Maragall de Economia y Territorio” under the “Ayudas a la Investigación 2012” grants program, whose financial patronage is gratefully acknowledged.

Keywords:

Active Labour Market Policies, European Social Fund, Spatial panel data, Intergovernmental relations.

JEL Classification Numbers:

H53, H77, R19, C23.

1. Introduction

The level of vertical distribution of the public administration is extremely heterogeneous across the twenty-eight EU Member States. The diverse vertical allocation of competencies among the several tiers of government could affect the mechanisms ruling the determinants of Active Labour Market Policies (ALMPs). ALMPs run by sub-national levels of the administration could ignore spillover effects that would, otherwise, be internalized. On the other hand, imitation and competition among districts may foster public expenditures in highly demanded policy areas.

The denomination of Active Labour Market Policies (ALMPs) includes several policy actions which are quite heterogeneous among them, such as education schemes, wage subsidies, subsistence allowances, public employment systems, etc. For this reason, all levels of the public administration are usually involved in the execution of some kind of ALMP. But the vertical allocation of ALMPs across EU countries is not homogeneous, as, in some countries most of them are undertaken by regional administrations while in others they are mostly run at the national level. This situation could also interact with the fact that EU Structural Actions –in general- and the European Social Fund –in particular-, are allocated among countries and priority objectives for each programming period.

Spain experienced a process of fiscal decentralization, after its transition to democracy in the late seventies, observing a significant transfer of fiscal competencies from the national to regional governments, involving also ALMPs. It is, nowadays, one of the EU countries with a larger size of sub-national governments. In addition, due to the asymmetric level of economic development among Spanish regions, some of them are among the main recipients of EU Structural Funds, while others lie

in line with the wealthier EU member States.

This paper tries to identify spatial effects that could arise when ALMPs are undertaken at the regional level. The interpretation of the results will serve to understand better the rules governing the allocation of public expenditures at the regional level. But, in addition, these findings will also become extremely useful as an assessment of the field of application of the European Social Fund.

The macroeconomic determinants of public expenditure on ALMPs in the presence of spatial effects among regions are estimated using panel-data at the regional level (1989-2010) from the seventeen Spanish regions. Results are able to identify the importance of imitation among regions and the existence of some degree of strategic behaviour, probably as a consequence of the existence of a common pool problem related to the regional distribution of the European Social Fund.

The paper is organized as follows: Section 2 shows the main figures governing the evolution of the European Social Fund in Spain since its annexation to the EU, from a fiscal perspective; Section 3 describes challenges and results of previous studies using panel-data models that analyze the determinants of ALMPs; Section 4 described the variables used and present the data; Section 5 explains the methodology applied and the results obtained; and Section 6 concludes.

2. The European Social Fund in Spain, a regional perspective. Is there a common pool problem?

The European Social Fund (ESF) is the oldest of the Structural Funds and its creation was stated in the Treaty of Rome in 1957, with the original task of promoting within the Community employment facilities and the geographical and occupational mobility of workers. Spain joins the European Communities in 1986, simultaneously to Portugal. In contrast to the ERDF, there was no “a priori” distribution of the ESF among Member States apart from the fact that part of the budget was reserved for “absolute priority” territories, which included Greece, Portugal, Ireland, Northern Ireland, the French overseas territories, the Italian Mezzogiorno, and seven Spanish Autonomous regions¹. In addition, projects were submitted by the Member states and evaluated by the European Commission individually. Therefore, the final allocation of the ESF during these years is greatly a consequence of the absorptive capacity of the public administration (DOMINGUEZ, 1989).

The programming period 1989-1993 included a new classification of the European territory according to the targeted objective of the Structural Fundsⁱⁱ. The European Social Fund was the only one of the Structural Funds that would participate in the development of all five objectives. The aid would no longer be distributed through individual applications, but the Member States will now propose multiannual plans to the European Commission which include the use of all Structural funds in their territory.

The distribution of the ESF along Spanish regions during the next programming period (1994-1999) was fairly similar to the previous period. For the period 2000-2006, the former objective 5b was now included in the objective 2 while former objective 3 and 4 were merged in the new objective 3. Otherwise, the budget, main objectives, co-financing rates and supervision remained almost unchanged. The focus of the ESF in Spanish objective 1 regions became more accented during these years.

The programme 2007-2013 redesigned the objectives again in order to adapt the Structural Actions to the incorporation of new member states to the EU. Spain has 4 convergence regionsⁱⁱⁱ and two phasing-out regions plus two autonomous cities^{iv}. The remaining are the three phasing-in regions^v and the eight regional competitiveness and employment objective regions^{vi}. More than half of the ESF was spent in Convergence objective regions.

Figure [1] about here

Generally, all levels of public administrations, local, regional and national, are involved in projects financed by the Structural Funds. But the Spanish economy has went through a fiscal decentralization process since its adhesion to the European Union which is not common to other EU Member States (MOLERO, 2002; GONZÁLEZ-ALEGRE, 2010) which is mainly associated with a transfer of fiscal autonomy from the central to the regional government. Due to this decentralization process, Spanish regional governments have also gained additional control over the administration of the Structural Funds at the cost of a lower importance of the central government.

The following chart illustrates this phenomenon for the case of the ESF. Immediately after joining the

European Union, Spanish regional governments controlled around 10% of the ESF transfers from the EU to Spain, while during the last programming period this share has climbed to over 40%.

Figure[2] about here

But this decentralization process has not been symmetric. As illustrated by GONZÁLEZ-ALEGRE, 2010b, Spanish regional governments have not gained an homogeneous level of fiscal autonomy among them, and the process of transferring competencies from the central to regional governments have not been simultaneous either. The Spanish Constitution discriminates between two types of regions: the so-called "historic nationalities" or regions with a high level of competencies, described in the article 143 of the Spanish Constitution^{vii} and the ten remaining regions^{viii} (and the two autonomous cities) that in principle assume a lower level of competencies. In practice, the regions with high levels of competencies experienced a higher level of decentralization in the beginning, but the differences have been reduced as long as the decentralization process has been taking place.

The following chart illustrates the extent to which this situation affects also the administration of the ESF. As there are no significant differences in the level of per capita income among both groups of regions, or in other macroeconomic variables nor geographical concentration, the differences observed respond mostly to the level of fiscal autonomy of the regional governments. It can be observed that "historic nationalities" have administrated a slightly larger share of the ESF in their territories in comparison to the remaining regions, both as a share of GDP and in per capita terms. The gap does not seem to be too relevant, though.

Figure[3] about here

2.1. The Common Pool problem, regional spillovers and European regional policy

The common pool problem emerges when a resource or asset is jointly accessed by a group of agents so that the member of the group benefit from the resource individually but bear costs collectively. The

distribution of EU Funds across Member States could be viewed as an example of a common pool problem, although the fact that the Structural Funds, in each programming period, are allocated across countries and priority objective leaves little leeway to the European Commission to deviate from original allocation decided *a priori* (As described in the Sapir Report: SAPIR et al., 2003). The existence of a common pool problem leading to overspending on transfers in the EU induced by the distribution of its central budget has been indeed analyzed in several studies (OSTERLOH et al., 2009; ALESINA et al., 2005). Nevertheless, none of the consulted studies did focus either in regional-level data or in a particular policy area, as it is the purpose of this study for ALMPs.

The distribution among regions of the same Member State, however, is not as rigid as the allocation among countries. Regions belonging to the same priority objective (the former objective one or absolute priority, for example) do share a common budgetary limit in each programming period. Regions, therefore, could have incentive to make efforts in order to become eligible for additional funds among the quantity allocated to their country and category objective. The European Commission maybe unable to observe the quality of the projects submitted by the regional governments, arising an adverse selection problem as described in GOMIS-PORQUERAS and GARCILAZO, 2003.

In addition, as long as regions are aware that future ESF transfers will be allocated basically attending to indicators of the labour market^{ix}, regional governments may find it strategically optimal to perform poorly on these. This moral hazard problem gives rise to incentive conflict, as regional bodies maybe strategically planning their future access to additional ESF transfers. The allocation of own resources to assistance programs that could be, otherwise, partially funded by the ESF may be minimized as part of this rent-seeking strategy.

Several studies also identify the existence of spatial interactions of public expenditures at the state (CASE et al., 1993; BAICKER, 2005) or the local level (SOLE-OLLE, 2006; BARREIRA, 2011). In fact, the large amount of theoretical literature on the decentralized provision of public goods usually assumes the existence of public expenditure spillovers^x. Spillover effects may induce under provision or over provision of the public good, depending on whether these spillover effects are positive or negative (SWALES AND LEARMONTH, 2005). Most theoretical studies assume that the presence of spillovers is present in the utility function of the representative consumer of the public good, that is, the utility of a citizen of a particular region depends, not only on the level of public expenditure in a particular policy

area of her regional government, but also on the level of similar expenditure in neighboring regions.

Nevertheless, an alternative assumption explaining spatial dependence is the existence of yardstick competition among regional governments (BESLEY and CASE, 1995), according to which voters use neighbouring jurisdictions to evaluate the performance of elected officials. Re-election chances depend, basically, on the distance to taxation and expenditure policies in other regions that are used by the voter as a benchmark, usually according to physical or socio-economic proximity. As a result, yardstick competition provokes mimicking among jurisdictions as part of the solution of the incumbent's problem.

3. Modelling the determinants of active labour market policies

This paper tries to estimate the importance of the European Social Fund as a determinant of ALMP expenditure in subsidized public administrations, and the role of spatial effects when intergovernmental grants are distributed at the regional level. In order to construct a panel data model that captures this effect, it is necessary to analyze, first, the empirical strategy of previous studies.

The methodology developed in this paper in order to estimate the impact of the ESF is innovative with respect to previous studies according to several dimensions: firstly, this paper estimates the impact of ESF on public expenditure on ALMP as an intermediate stage to discover its final effect on other macroeconomic variables, such as unemployment or job creation; secondly, as this study uses regional-level data unlike most of the literature estimating the determinants of ALMP expenditure; and thirdly, since the attention of this analysis is focused on the role of spatial dependence on the effectiveness of the ESF. For this reason, this section distributes its attention to separated, but related, strands of the literature.

Despite its persistent and rising importance in the EU budget (See, for example, GONZÁLEZ-ALEGRE, 2013), the estimation of the effectiveness of the ESF has received very little attention from economics research, at least as a policy tool isolated from the other instruments of the EU Cohesion Policy. RODRIGUEZ-POSE and FRATESI, 2004, for example, conclude, in an analysis that discriminates the

functional field of application of the Structural Funds, that policies devoted to education and redeployment may be more effective to foster economic convergence in comparison to other policy areas of the Structural Funds.

There are, however, numerous studies that estimate the macroeconomic impact of the EU Cohesion Policy as a whole (See BRADLEY, 2006), very often using region-level data. Most of these studies use panel data models in order to estimate the impact of the EU transfers on economic growth (BECKER et al., 2010) or economic convergence (BEUGELSKIJK and EIJFFINGER, 2005), but they rarely estimate the impact of the Cohesion policy on fiscal variables (GONZÁLEZ-ALEGRE, 2012). Very often (DALL'ERBA and LE GALLO, 2008; MOHL and HAGEN, 2008), the presence of spatial autocorrelation is taken into account. DEL BO et al., 2011 criticize, from a political economy perspective, the rules governing the verification mechanism of the principle of additionality that must govern the allocation of the Funds.

The macroeconomic evaluation of ALMPs was particularly developed during the nineties with the estimation of panel data models from cross-sectional data at the country-level (See, for example, JACKMAN et al., 1990; ESTEVAO, 2007). More recently, the number of studies estimating the impact of ALMPs in a single country using panel data models for regional and local level variables has been quite prolific in some particular countries motivated by the availability of data and the focus of public policies. Sweden, for example, implemented an aggressive program of ALMP to fight rising unemployment in the early nineties which generated a considerable amount of research (summarized in CALFMORS et al., 2002). Another country in which research on the implementation of ALMPs has been extremely prolific in the view of the extended availability of data is Germany, in particular in the view of the importance that these policies reached after the reunification (See HUJER et al., 2002; HUJER et al., 2004).

The studies trying to estimate the main determinants of public expenditure on ALMP are closer to the type of analysis conducted in this paper. Nevertheless, these are mostly focused on the analysis of country level data. This literature has emerged in the last decade. RUEDA, 2005 estimates, from a panel data model for 16 OECD countries, the determinants of active and passive labour market policies in order to determine the role of political variables. ARMIGEON, 2007 use a similar model for 22 OECD countries in order to identify whether OECD and EU policy recommendations are taken into account by the policy maker of these economies with respect to their level of ALMP expenditures. Results, in both

cases, are not extremely conclusive with respect to the (political or institutional) variables of interest.

BORGHI, 2010 uses 3-year averaged data in order to estimate a panel data model for 20 OECD countries (1980-2003) through fixed-effects. She estimated the impact of economic openness and other indicators of globalization (FDI, Imports and the KOF index of globalization) on ALMPs (also on Passive LMPs) expenditures (measured as a % of GDP). Other control variables are dependency rate (share of non-active population), union density, deficit, GDP per capita and economic growth. Trade openness seems to be a negative determinant of public expenditure on ALMPs, although other indicators of globalization are found to be statistically insignificant.

TEPE and VANHUYSSSE, 2013, for a sample of 20 OECD countries (1985-2005), focus on the analysis of several political variables (ideological position of the cabinet, Union clout, institutional context) in order to estimate a Fixed-Effects model using 5-year averaged data. Other variables are GDP growth, Deficit, Openness, unemployment rate. Although they find a link between institutional variables and expenditure on ALMP, they conclude that political variables do not impact significantly public expenditure on ALMPs.

FRANZESE and HAYS, 2006 estimate the determinants of labour market training expenditure for a panel of 15 European countries introducing a spatially lagged dependent variable among the set of explanatories. They estimate a significantly negative coefficient associated to that variable, which suggest some degree of fiscal free-riding among European states associated to this particular policy area. VAN VLIET and KOSTER, 2011 introduce dummy variables capturing variations in the governance process of the European Employment Strategy –that represent the participation of the states in peer review sessions and the policy recommendations on activation received from the council- and also introduce a dummy representing their integration in the monetary union. While the results seem very conclusive about the importance of the monetary union on ALMP expenditure growth, the former effect does not seem robust to alternative model specifications.

Finally, it must be mentioned the existence of studies that estimate the effectiveness of intergovernmental grants measured as their capacity to efficiently raise expenditure in targeted policy areas. The earlier literature about the effects of grants policies on local and state expenditure emerged in the early seventies (HINES and THALER, 1995; BAILEY and CONNOLLY, 1998; include interesting

literature reviews). CASE et al., 1993 setup a model as a standard "fixed effects" linear panel data model in which they introduced common random shocks among neighbours. Subsequent studies (BESLEY and CASE, 2000; KNIGHT, 2002; GORDON, 2004) pay more attention to the endogeneity problem rather than to the spatial effects evidenced in CASE et al., 1993.

4 Data and Methodology

The role of the ESF in the Spanish regional public administrations is analyzed by constructing a database of panel data from the 17 Spanish regions for the time period 1989-2011. The dependent variable is public expenditure in Active Labour Market Policies (ALMP) at the regional level, measured as a share of regional GDP^{xi}.

Table [1] describes the variables, its unit of measure and the sources of data, while table [2] includes the summary statistics. Among the set of explanatory variables, the variable *esf_exp* represents the current transfers from the European Union to the Spanish regional government under the European Social Fund. This variable is expressed as a share over regional GDP. Two variations of this variable have been considered in the robustness check shown in table [5]: a measure of the ESF transfers received by the other regions, represented by the variable *esf_16*, and the aggregate level of ESF transfers received at the regional level, represented by the variable *esf_tot*. Both are also expressed as a share of GDP.

The variable *regional_exp* captures total public expenditure by the regional government, expressed as a share of GDP. As all fiscal variables, the interpretation of the coefficient attached must take into account the impact of the omitted fiscal variables on the dependent variable (see KNELLER et al., 1999). The unemployment rate, computed as the ratio of unemployed persons over the total active population, or alternatively the participation rate, is also considered, as it is assumed to capture the demand for ALMPs expenditure.

The set of controls also includes the log of income per capita, in order to capture the relative wealth of each region, and population, expressed in millions of people, that controls for the effect of changes on the

relative size. Finally, one of the robustness checks also considers real production growth, in order to capture the business cycle fluctuations, and population over 16 years as an alternative to total population.

5. Estimations and results

5.1 Econometric modeling

In order to estimate the determinants of public expenditure in active labour market policies in the seventeen Spanish regional governments, we build and estimate a panel data model in which public expenditure in active labour market policies at the regional level is the dependent variable and the ESF transfers is among the set of explanatories:

$$almp_{it} = \rho almp_{it-1} + \beta_1 m_{it} + \beta_2 W m_{jt} + \mu_i + \varepsilon_{it} \quad (1)$$

Where $almp_{it}$ represents public expenditure in “social promotion” in region “i” at time “t”, which includes –but not only- the expenditure due to active labor market policies undertaken by the regional government, measured as a share over regional GDP. m_{it} is a vector of macroeconomic variables affecting the level of expenditure on ALMP. It includes the share over GDP of public expenditure at the regional level, economic growth, the level of per capita income, total population and the unemployment rate. μ_i is the region specific term.

The baseline regression presented considers also the presence of spatial dependence, as it might be suspected that there is some degree of contagion among regions with respect to the relationship of employment with fiscal policy. Spatial spillover effects have been considered in previous studies analyzing the effect of EU Structural Funds, and its omission could lead to biased estimates (see, for example, MOHL and HAGEN, 2010). The baseline model is constructed as a Spatial Durbin model, which allows for the presence of spatial dependence in some or all explanatory variables capturing indirect spillover effects^{xii}.

The coefficient β_2 introduces the so-called local indirect effect. This implies that changes in the control

variables in the neighboring regions may affect a region's decision on public expenditure on ALMPs. In contrast to the global effect, the local effect is only propagated to a unit's neighborhood set according to the weights included in the matrix W . Equation (1) can be rewritten in order to report one indirect effect associated to each control variable:

$$almp_{it} = (I - \rho)^{-1} [\beta_1 m_{it} + \beta_2 W m_{ij}] + \mu_i + (I - \rho)^{-1} \varepsilon_{it} \quad (2)$$

The model assumes the presence of spatial lagged dependence (i.e. we will include a spatially weighted dependent variable), that in our model will imply that employment in region "i" may be influenced also by the determinants of employment in the remaining regions, weighted by the distance of these to region "i". For this sake, we will specify a weighting matrix, W , that includes information about the distance between regions. This matrix will be constructed from the great circle distance between the capital cities of every region^{xiii}.

In addition, the baseline estimations reported in this paper assume that some of the control variables are endogenous (ESF transfers, regional expenditure and per capita income) or predetermined (unemployment and participation rates) with respect to the dependent variable. For this reason, the model is estimated making use of the GMM estimator developed by ARELLANO and BOND, 1991 adapted to the presence of spatial effects (SHEHATA and MICKAIEL, 2012)

Robustness check

In addition to the aforementioned econometric model, two robustness checks have been conducted in order to reinforce the interpretation of the results by relaxing some of the underlying assumptions. Firstly, and in order to discover whether the use of a spatial matrix constructed from the physical distance is driving the results, the original weighting matrix is substituted by a binary matrix. The elements in this alternative matrix are either one or zero, representing whether two regions share a common border or not respectively.

Secondly, and following a methodological approach commonly used in several studies, the original

estimations are compared with a fixed-effects model in which variables are inserted as three-year averages. In order to prevent the presence of spurious results due to the high persistence of fiscal variables, the conventional strategy used by previous studies estimating the macroeconomic determinants of ALMPs (BORGHI, 2010; TEPE and VAHNHUYSSSE, 2012) is to take frequency larger than one year. The estimations of a linear model using 3-year averaged data are shown in table (5). The availability of observations is substantially reduced.

This model, that replicates the standard methodological approach of previous studies, would in principle ignore the spatial effects. Therefore, in order to capture the long-term relations discovered in the spatial model according to which one region's decision of public expenditure on ALMPs depends also in the level of ESF transfers that the remaining regions obtain through the European Cohesion Policy, it includes a variable capturing the ESF transfers to the remaining regions.

$$almp_{it} = \beta_1 m_{it} + \beta_2 esf_other_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

where:

$$m_{it} = esf_{i,t} + reg_expenditure_{i,t} + growth_{i,t} + unemploy_rate_{i,t} + population_{i,t} + pc_income_{i,t}$$

$$esf_other_{i,t} = \sum_{for\ all\ s \neq 1} esf_{i,t}$$

5.2 Results

Table [3] shows the results of estimating equation (1) using the ARELLANO and BOND (1991) GMM estimator. The estimates assume alternative models with respect to the control variables included: firstly, the variables that are common to most of the literature examined are introduced. This includes the one period lagged dependent variable and the ESF transfers, regional public expenditure, unemployment rate and population. Then, shorter versions of the original model are considered by omitting unemployment rate and population, in columns 2 and 3. Finally, participation rate is included as an alternative to unemployment rate and per capita income is considered as an alternative to regional public expenditure, in columns 4 and 5 respectively. All control variables are introduced also with a spatial lag as described in equation (1). The table also reports the output of the F-test of joint significance, and the outcome of the Lagrange Multiplier test under the null hypothesis of no general

spatial autocorrelation.

As can be seen from table [3], the increase in the public regional expenditure on ALMPs is strongly time persistent, as it seems to be driven by its own value in the previous period with a coefficient around 0.5. As for the variables in which we focus our interest, the dependent variable seems to depend extremely on the fiscal explanatory variables of the neighbouring regions: there seems to exist some degree of imitation, as public expenditure in ALMPs depends also on the level of public expenditure of other regional bodies. However, some strategic behaviour looks also to be evident, as ESF received by other regions are negative determinants of one region's decision of ALMP expenditure.

Table [4] shows the outcome of a similar analysis but using a binary weighting matrix in which the element are either one or zero, depending, respectively, if the regions are contiguous and share a common border. Most coefficients are extremely similar regarding sign, significance and absolute value to those in table [3]. Public expenditure in ALMPs seems to depend largely on the expenditure capacity of the regional administration (represented by the variable *regional_exp*) and on the expenditure pattern of neighbouring regions. The strategic behaviour captured by the variable *esf_expenditure* of adjacent regions seems more evident in this table as significance levels are stronger.

Finally, table [5] reports the estimation of equation (3), considering variables as three-year averages and including the variable *esf_other_{i,t}*, that captures the EU grants under the ESF transferred to all the regional bodies exclusive of the region under consideration. Obtained results confirm previous findings, as the level of ALMPs expenditure seems to be driven also by ESF transfers to other regional bodies. Like in previous tables, estimations are unable to find a significant impact of the current ESF transfers to a regional government on its own ALMPs expenditure, despite the fact that Structural Funds are intended to enhance public expenditure in targeted policy areas through the system of matching-grants. However, the level of ESF transfers to the whole country seems to disincentive regional expenditure on ALMPs. This could respond to the rent-seeking strategy described in section 2 that arises with the simultaneous presence of two main conditions: the existence of a common pool problem and the fact that the ESF is distributed according to indicators of labour market performance that depend largely on public intervention programmes.

6. Conclusions

The determinants of ALMPs could be conditioned by the –heterogeneous– levels of fiscal decentralization present among European countries. In particular, since some EU member states have transferred most labour market policies to regional governments. Spain has experienced a process of fiscal decentralization in the recent years and, simultaneously, has been recipient of an important share of the Structural Actions.

This paper, tries to estimate the determinants of ALMPs in the seventeen Spanish regional during the period 1989-2011. With that purpose, this analysis builds and estimates a panel data model that regress the public expenditure on ALMPs, on a set of fiscal and macroeconomic variables. The model is estimated by GMM, assuming the possible presence on endogeneity of the explanatory variables. The results reported assume, in addition, the presence of spatial effects among regions of the form of a spatial Durbin model.

The spatial model is able to unmask the relevant importance of imitation among regions, as public expenditure in neighbouring regions seems to be among the main determinants of ALMPs at the regional level. With respect to ESF transfers, it does not seem to be particularly strong on its aim of fostering AMLPs expenditure. In fact, and probably responding to some strategic behaviour due to the existence of a common pool problem, ESF transfers to other regions seems to disincentive ALMPs expenditure at the regional level. The larger the “*size of the cake*”, the larger the incentives to regional administrations to perform poorly on indicators of the labour market, possibly as part of a rent-seeking behaviour trying to attract larger transfers.

Probably, stronger robustness checks must be done in order to confirm these results. The use of alternative models, with larger variety of control variables and alternative estimation methodologies could shed some more light on this issue. In any case, if these conclusions are confirmed by subsequent research, other institutional features of the economies, such as their level of fiscal decentralization or the presence of intergovernmental grants, should be taken into account while evaluating the impact of ALMPs, in addition to the labour market variables that are driving recent research developments in this field.

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Table [1]: Variable definition and sources

Label	Variable	Definition	Units	Source
almp	Social expenditure by the public regional administration	Expenditure on social promotion: current transfers, unemployment protection, active labor market policies and housing subsidies	Share over GDP	2002/2010 Liquidación de presupuestos de las CC AA; 2000/2001 BADESPE; 1989/1999 Anuario liquidación presupuestos de las CC AA (yearbook)
esf_exp	EU transfers from the European Social Fund	Current transfers from the EU to the regional government under the ESF programme (commitments)	Share over GDP	1995 2001 BADESPE; 2002 2010 Liquidación presupuestos CCAA (database); 1987 1994 Informe sobre la financiación de las CCAA (yearbook)
regional_exp	Total expenditure by the public regional administration	Total final public expenditure at the regional level	Share over GDP	1984 2003 BADESPE; 2004-2010 Liquidación de los presupuestos de las CC AA
gdp_pc	Log of GDP per capita	GDP per inhabitant in logarithmic form	Miles Euro	INE (Instituto Nacional de Estadística)
unemploy_rate	Unemployment rate	Ratio of the unemployed over active population	Ratio	INE
particip_rate	Participation rate	Ratio of the active over working age population	Ratio	INE
population	Population	Population at 1 st of January	Million people	INE
pop->16	Population 16 or older	Average annual population older than 15 years	Million people	INE
growth	Real economic growth	Real GDP growth rate at constant prices	Growth rate	INE

Table [2]: Summary statistics (1989-2011).

Variable	Obs	Mean	Std. Dev.	Min	Max
almp	391	0.0120	<i>0.007</i>	0.001	0.043
esf_exp	391	0.0007	<i>0.001</i>	0.000	0.006
regional_exp	391	0.1365	<i>0.061</i>	0.023	0.312
gdp_pc	391	9.7972	<i>0.474</i>	8.680	11.561
unemploy_rate	391	14.9325	<i>6.497</i>	4.405	34.590
particip_rate	391	53.5280	<i>4.790</i>	42.765	66.010
population	391	2.4261	<i>2.123</i>	0.261	8.256
pop_>16	391	1.9798	<i>1.737</i>	0.208	6.786
growth	391	0.0665	<i>0.040</i>	-0.059	0.209

Table [3]: Determinants of public expenditure in ALMPS. Spanish regions (1990-2011)

	[1]	[2]	[3]	[4]	[5]
almp(t-1)	0.5392*** 0.038	0.5450*** 0.038	0.5385*** 0.037	0.5438*** 0.037	0.6708*** 0.039
esf_exp	-0.1952 0.189	-0.1824091 0.193	-0.2170726 0.188	-0.1221731 0.191	-0.1290531 0.212
regional_exp	0.0276*** 0.004	0.0267*** 0.004	0.0276*** 0.004	0.0277*** 0.004	
gdp_pc					0.0001695 0.001
unemploy_rate	-0.0113** 0.00460		-0.0116** 0.00453		-0.0094* 0.00528
particip_rate				-0.0198** 0.00882	
population	-0.00019 0.001	0.000097 0.001		0.00002 0.001	-0.00074 0.001
w*esf_exp	-0.7626 0.441	-0.8299* 0.449	-0.7124* 0.431	-0.7335* 0.444	-1.1165* 0.592
w*regional_exp	0.0266*** 0.009	0.0268*** 0.008	0.0260*** 0.005	0.0073465 0.011	0.00210* 0.001
w*unemploy_rate	0.0133** 0.005		0.0137** 0.005		0.00661 0.006
w*particip_rate				0.0497*** 0.017	
w*population	0.00002 0.002	-0.0007 0.002		-0.0039 0.003	0.0032 0.003
LM SAC ^[1]	27.5786 (0.00)	27.9512 (0.00)	27.9144 (0.00)	25.6394 (0.00)	37.2688 (0.00)
AIC ^[2]	-12.4900	-12.4838	-12.5003	-12.4970	-12.3573
F-test	(p)				
val)	188.60 (0.00)	230.57 (0.00)	242.59 (0.00)	187.64 (0.00)	144.71 (0.00)
R ²	0.8230	0.8147	0.8223	0.8223	0.7811
Obs (groups)	374 (17)	374 (17)	374 (17)	374 (17)	374 (17)
*, **, *** denote significance levels at the 10%, 5% and 1% respectively					
^[1] Lagrange Multiplier General Spatial Autocorrelation test					
^[2] Akaike information criterion					

Table [4]: Determinants of public expenditure in ALMPS. Binary weighting matrix

	[1]	[2]	[3]	[4]	[5]
almp(t-1)	0.4970*** 0.038	0.5061*** 0.038	0.5067*** 0.038	0.5039*** 0.037	0.6215***
esf_exp	-0.2676 0.177	-0.255 0.179	-0.2552 0.178	-0.2234 0.178	-0.3108
regional_exp	0.0261*** 0.004	0.0253*** 0.004	0.0256*** 0.004	0.0281*** 0.004	
gdp_pc					0.00079* 0.0005
unemploy_rate	-0.0047* 0.003		-0.00494* 0.003		-0.00539 0.003
particip_rate				-0.01026 0.006	
population	0.00073 0.0005	0.00085* 0.0005		0.0009 0.001	0.0005 0.001
w*esf_exp	-0.2441*** 0.089	-0.2335** 0.091	-0.2431*** 0.089	-0.1942** 0.091	-0.3397*** 0.105
w*regional_exp	0.00764*** 0.001	0.00728*** 0.001	0.0075*** 0.001	0.0035* 0.002	
w*unemploy_rate					0.00083*** 0.000
w*particip_rate	0.0016* 0.001		0.0016* 0.001		0.00125 0.001
w*population				0.0074** 0.003	
<i>LM SAC</i> ^[1]	12.7046 (0.001)	12.5049 (0.001)	12.8617 (0.001)	11.9989 (0.002)	26.8101 (0.00)
<i>AIC</i> ^[2]	-12.5215	-12.5221	-12.5278	-12.5316	-12.4089
<i>F-test</i>	(<i>p</i> 196.21 (0.00)	242.64 (0.00)	250.29 (0.00)	197.37 (0.00)	150.96 (0.00)
<i>val)</i>					
<i>R</i> ²	0.8287	0.8223	0.8268	0.8295	0.7882
Obs (groups)	374 (17)	374 (17)	374 (17)	374 (17)	374 (17)

*, **, *** denote significance levels at the 10%, 5% and 1% respectively
^[1] Lagrange Multiplier General Spatial Autocorrelation test
^[2] Akaike information criterion

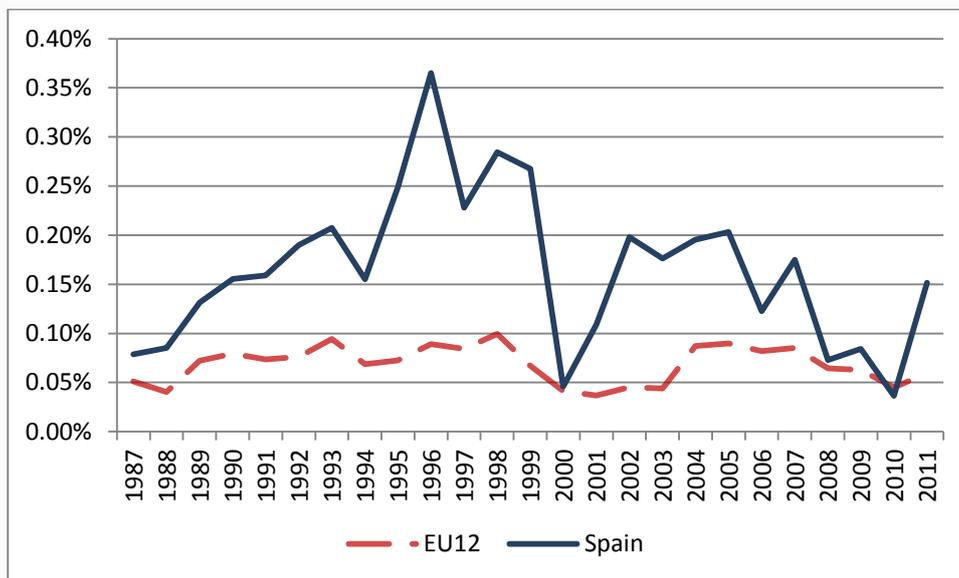
Table [5]: Determinants of public expenditure in ALMPS. Fixed-Effects on three-year averaged data

	[1]	[2]	[3]	[4]	[5]	[6]
esf_exp	-0.0037 <i>0.006</i>	0.0100 <i>0.007</i>	0.0048 <i>0.006</i>	0.0044 <i>0.006</i>	0.0043 <i>0.006</i>	0.0056 <i>0.006</i>
esf_tot		-0.0438*** <i>0.013</i>				
esf_16			-0.0328** <i>0.013</i>	-0.0390*** <i>0.012</i>	-0.0339*** <i>0.013</i>	-0.0313** <i>0.013</i>
regional_exp	0.0712*** <i>0.008</i>	0.0645*** <i>0.008</i>	0.0670*** <i>0.008</i>	0.0690*** <i>0.008</i>	0.0678*** <i>0.008</i>	0.0633*** <i>0.009</i>
gdp_pc	0.0009 <i>0.001</i>	0.0024** <i>0.001</i>	0.0022** <i>0.001</i>	0.0032*** <i>0.001</i>	0.0023** <i>0.001</i>	0.0017* <i>0.001</i>
unemploy_rate	-0.0021 <i>0.006</i>	-0.0013 <i>0.006</i>	0.0002 <i>0.006</i>	0.0058 <i>0.005</i>	0.0014 <i>0.006</i>	
particip_rate						0.0001 <i>0.000</i>
population	0.0004 <i>0.001</i>	0.0001 <i>0.001</i>	0.0002 <i>0.001</i>			-0.0005 <i>0.001</i>
pop_>16					0.0007 <i>0.001</i>	
growth	-0.0251** <i>0.013</i>	-0.0161 <i>0.012</i>	-0.0178 <i>0.013</i>		-0.0138 <i>0.014</i>	-0.0155 <i>0.011</i>
<i>Log-likelihood</i>	635.44	641.70	639.26	637.57	639.54	639.86
<i>F-test</i>	10.68		10.55	13.74	10.53 (0.000)	9.55
<i>(p val)</i>	(0.000)	10.54 (0.000)	(0.000)	(0.000)		(0.000)
<i>R²</i>	0.7454	0.7678	0.7594	0.7533	0.7603	0.7615
Obs (groups)	136 (17)	136 (17)	136 (17)	136 (17)	136 (17)	136 (17)

*, **, *** denote significance levels at the 10%, 5% and 1% respectively

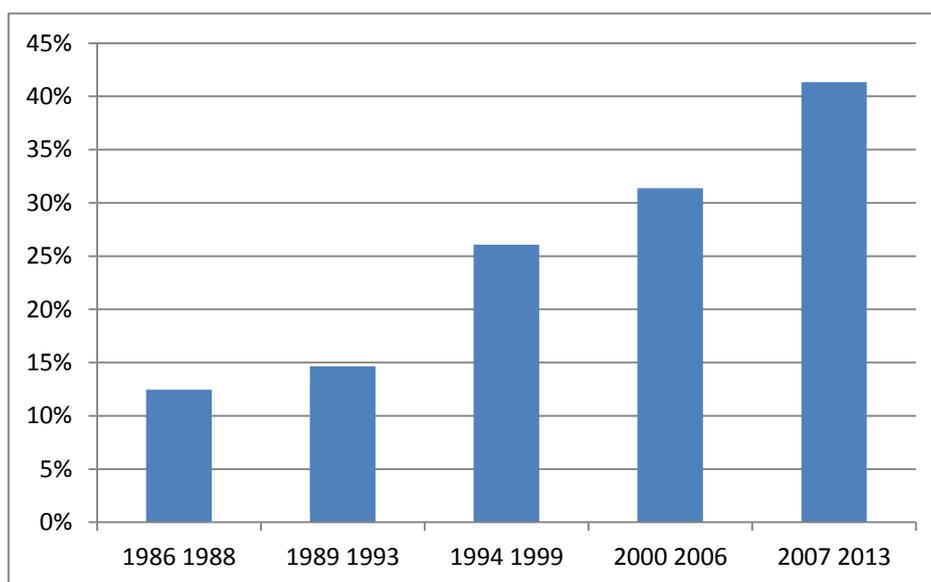
Figures:

Figure [1]: The European Social Fund in Spain: Currents transfers as a percentage of GDP



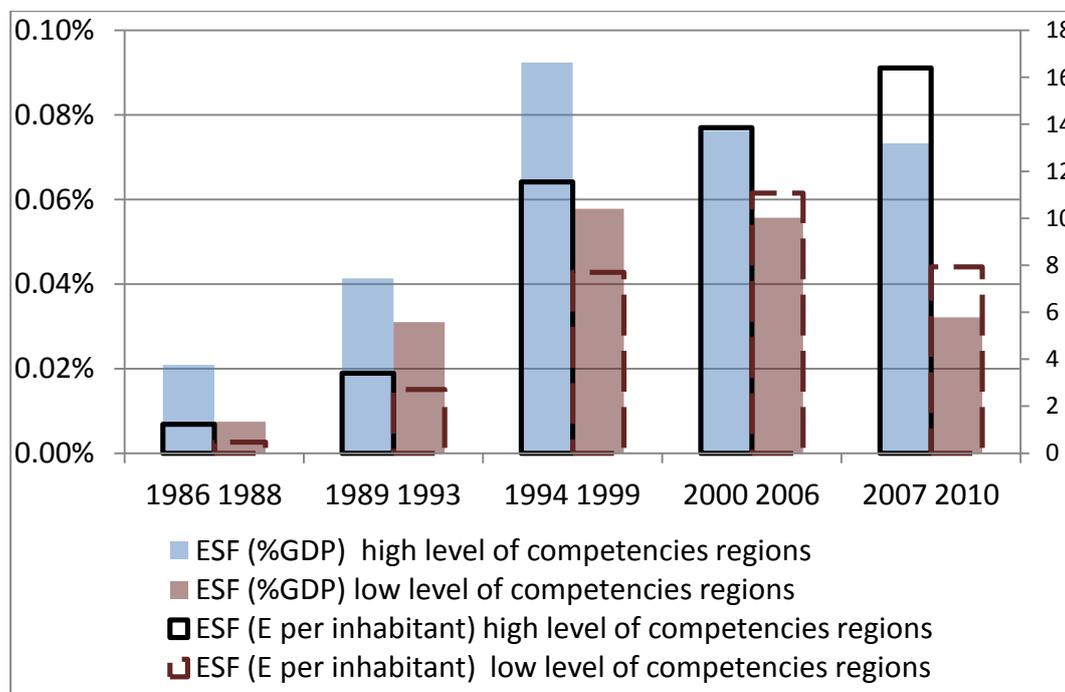
Source: Eurostat

Figure[2] : The European Social Fund in Spain: Evolution of the share of the ESF distributed to regional government to the total ESF allocated to Spain



Self-elaboration from data shown in previous figures and variable EFS

Figure[3] : The European Social Fund in Spain: Evolution of the share of the ESF distributed to regional government to the total ESF allocated to Spain



Self-elaboration from data shown in previous figures and variable EFS

ⁱ Andalusia, Canary Islands, Castile and Leon, Castile La Mancha, Extremadura, Galicia and Murcia, in addition to the two autonomous cities, Ceuta and Melilla.

ⁱⁱ Being the Objective 1 regions equivalent to the former AR regions, that represent less developed areas inside the community. The objective 2 regions were those suffering process of reconversion due to industrial decline. The objective 3 was to fight against long-term unemployment while the objective 4 was to promote the inclusion of young people in the labor market. Finally, objective 5 was targeted to the development of rural areas. Ten Spanish regions were considered objective 1 for this programming period, while one region was considered objective 2.

ⁱⁱⁱ Galicia, Extremadura, Castilla la Mancha and Andalusia, with a GDP per head of less than 75% of the EU-25 average.

^{iv} Asturias, Ceuta, Melilla and Murcia, with a GDP per head of more than 75% of the EU-25 average but of less than 75% of the EU-15 average

^v Castilla and León, Valencia and the Canary Islands, with a GDP per head of less than 75% of the EU-15 average in the period 2000-2006 but more than 75% of the EU-15 average for the period 2007-2013

^{vi} Catalonia, Aragon, Madrid, la Rioja, Navarra, Basque Country, Cantabria and Balearic Islands, that have a GDP per head of more than 75% of the EU-25 average

^{vii} Andalusia, Basque Country, Canary Islands, Catalonia, Galicia, Navarre and Comunidad Valenciana.

^{viii} Aragon, Asturias, Balearic Islands, Cantabria, Castile La-Mancha, Castile and Leon, Comunidad de Madrid, Extremadura, Murcia and La Rioja.

^{ix} See, for example, the Regulation (EC) No 1081/2006 of the European Parliament and of the Council of 5 July 2006

on the European Social Fund and repealing Regulation (EC) No 1784/1999

^x in addition to heterogeneous preferences among regions, see OATES 1972; BESLEY AND COATE 2003, for example

^{xi} The category is labeled as “regional public expenditure on social promotion”, and captures public expenditure on active labor market policies, among other issues. Unfortunately, the level of breakdown available does not allow isolating ALMP from other policy areas. Nevertheless, the examination of recent databases on public regional budget with better detailed accounting reveals that policies related to the labor market represent the vast majority of this type of expenditure.

^{xii} The selection of the model has been made on the basis of the outcome of the several spatial panel autocorrelation tests and preliminary estimations. In particular, the Lagrange Multiplier (LM) Spatial Autocorrelation test (reported in the tables) rejects the null of no-general spatial autocorrelation, and the absence of spatial autocorrelation is also rejected by the Moran’s I test, while the robust LM test cannot reject the null of no-spatial lag in the dependent variable. Most tests outcomes are not reported for the sake of simplicity.

^{xiii} as in DALL ERBA and LE GALLO, 2008. The use of physical distance, instead of infrastructure-based measures, ensures the exogeneity of the criteria. Each element (w_{ij}) of this matrix, whose diagonal consists of zeros, represents the inverse of the distance between two regions (“i” and “j”), normalized so that every row add to one (that is, $w_{ij} = [1/d_{ij}] / \sum_j [1/d_{ij}]$)