



Do Interregional Transfers Improve the Economic Performance of Poor Regions? The Case of Spain

TERESA GARCIA-MILÀ

Departament d'Economia, Universitat Pompeu Fabra, Ramon Trias Fargas 25-27, 08005 Barcelona, Spain

teresa.garcia-mila@econ.upf.es

THERESE J. MCGUIRE

Institute of Government and Public Affairs, University of Illinois, 815 West Van Buren Street Suite 525, Chicago, Illinois 60607, USA

tmcguire@uic.edu

Abstract

The 17 regional governments of Spain receive grants from both the central government and the European Union. The grants are generally redistributive and are intended to stimulate economic activity in the poorer regions. We evaluate the effectiveness of the grants by comparing the economic performance of the regions before and after the implementation of the grant programs using a differences-in-differences approach. We find that these policies have not been effective at stimulating private investment or improving the overall economies of the poorer regions.

Keywords: regional grants and economic development

JEL Code: H7, R5

I. Introduction

The Spanish economy has experienced dramatic economic changes in the last three decades, and its economic performance has slowly approached the European average, although not consistently over time. At the beginning of the 1960s Gross Domestic Product (GDP) per capita in Spain was less than 60 percent of the average of the countries that now comprise the European Union, but by 1975 the Spanish figure was nearly 80 percent of the average. It fell again after the oil crisis and the important political and social changes that occurred in Spain on its road to democracy, but by the early 1990s Spain's GDP per capita was 75 percent of the European average.¹

Within this broad context, regions in Spain exhibited large differences among themselves in GDP per capita. In 1994, Balears, Cataluña and Madrid had real GDP per capita 58 percent, 23 percent and 28 percent, respectively, above the Spanish average, while the values for Andalucía and Extremadura were 28 percent and 31 percent below the average for Spain. The differences among the regions in GDP per capita have narrowed over time. In 1964 the richest region, País Vasco, had per capita GDP three times that of Extremadura, but by 1994 the richest region, Balears, was a bit more than twice as rich as Extremadura.

Although the Spanish government made attempts at regional policy in the 1960s, it was not until the decentralization process in the 1980s, which created the regional governments

called *Comunidades Autónomas* or Autonomous Communities, that a regional solidarity fund was established. The *Fondo de Compensación Interterritorial* (FCI) was established in 1982 as a redistributive fund aimed at reducing disparities among regions through mainly public investment projects.² With the addition of Spain to the European Community in 1986, the regions in Spain also benefitted from the European regional policy, and especially the European Fund for Regional Development (FEDER).

The purpose of both the Spanish central government FCI policy and the regional policy of the European Union was to encourage the development of poor regions in order to reduce large differences among regions. How successful these policies have been in achieving their goal is still an open question and is the subject of this paper. Essentially, we address two questions: (i) What have been the fortunes of poorer regions in Spain and their relative evolution with respect to richer regions since the implementation of regional policies? (ii) What have been the private market responses to these policy innovations, and in particular, has private investment been stimulated by the regional policies?

Several studies have analyzed the evolution of the regional economies of Spain, without relating them explicitly to regional policies. These studies can be framed within the convergence literature that follows the work of Barro and Sala-i-Martin (1991) and that for Spain has materialized mainly in two papers, Dolado et al. (1994), which examines convergence at the provincial level for 1955–1989, and Mas et al. (1994a), which analyzes regional convergence for 1981–1991. They find that the convergence process in Spain is strong until the mid-1970s, but then it slows or is nonexistent during the 1980s, a pattern that is not unique to Spain (see Canova and Marcet (1995)).

An important characteristic of the regional grants is their relationship to public investment, and it is therefore important to consider the literature that has analyzed for Spain the impact of public capital on the development of regional economies. Mas et al. (1994b) estimates a Cobb-Douglas production function with public capital as one input for the 17 regions of Spain for 1980–1989 and finds an elasticity of output with respect to public capital of approximately 0.2. The authors do not test for stationarity of the series; if non-stationarity is present as other similar studies have found, it would shed doubt on the significance of these results (see Garcia-Milà, McGuire and Porter (1996)).

The work of de la Fuente and Vives (1995) attempts to address directly the issue of whether the European Union's FEDER grant was effective at stimulating regional growth. Because they lack regional private investment data, they assume perfect mobility of private capital and perfect immobility of labor and public capital. Assuming that FEDER funds are spent on public capital, they evaluate its impact on regional growth through the response of output to public capital in their estimated regional production function, concluding that the FEDER funds had a small but significant effect on output. There are limitations to this analysis related to the lack of private investment and other data and to the assumptions made. First, the authors are restricted to three years of public capital data for estimation of the production function. Second, the assumptions made about the mobility of factors in a context that implies identical returns to capital can be questioned; important differences in average productivity of private capital observed in Spain's regions suggest that there may not be perfect mobility of private capital among the regions of Spain.

While it remains controversial as to whether public investment has been a major factor in the development of regions, it is important to understand to what extent any impact has been more than the direct effect generated by the public investment in a region; in other words, is the public investment triggering any private economic activity besides the activity directly related to the intervention? Garcia-Milà and Marimón (1996) attempt to answer this question by undertaking a sectoral analysis of the regional economies of Spain. They find that development of poor regions with large public interventions during the 1980s, such as Andalucía, Extremadura and Castilla-La Mancha, occurred in the public or semi-public sectors, but there was little improvement in the manufacturing or private services industries.

In this paper we continue the lines of inquiry that seek to evaluate the overall impact of public interventions in regional economies and to determine to what extent the private market responds to these types of public incentives. A variable of primary interest is private investment because, in the long run, only if private investors are induced by the public intervention to invest in poor regions can the intervention be deemed a success.

In Section II we summarize the regional policies of both the Spanish and the European governments. In Section III we analyze how the regional policies have affected the economies of the regions by comparing their economic performance before and after the regional public interventions. In the final section we present our conclusions.

II. Regional Grant Policy in Spain

Regions in Spain receive regional grants from two sources, the Spanish central government and the European Union. The Spanish redistributive or solidarity fund (Fondo de Compensación Interterritorial, FCI) was created in 1982, within the framework of fiscal decentralization that began with the 1978 democratic constitution. Initially, the FCI was designed to support public investment in all regions, but favored those regions with relatively low income per capita, net out-migration of population, and relatively high levels of unemployment. With time the FCI became less redistributive and it evolved into a method of financing responsibilities given to the regional governments by the central government. In 1990 the FCI was revised once again to be a purely redistributive grant, and after a period of transition, only relatively poor regions received monies under the FCI. Also, more flexibility was allowed for how the FCI monies could be spent in order better to coordinate with the funds received from the European Union.

Grants from the European Union (EU), which Spain began to receive in 1986 upon its entry into the EU, can be grouped into three types of policies: (i) Agricultural Policy, with two main programs, FEOGA-Garantía and FEOGA-Orientación; (ii) Social Policy, mainly the Social European Fund (FSE); and (iii) Regional Policy, mainly the European Regional Development Fund (FEDER). Of the three the Agricultural Policy has absorbed the largest share of the EU budget, amounting to 75 percent of the total budget in 1975, falling to 50 percent of the budget by 1993. The FEOGA-Garantía, an income-support program for farmers, accounts for about 90 percent of the total going to agricultural policies, leaving a much smaller amount for the FEOGA-Orientación program, which is a program intended to improve farming structures and infrastructure.

The purpose of the primary Social Policy program, the FSE, is to educate and train workers, particularly young and long-term unemployed members of the labor force. The training is expected to improve the chances of obtaining employment and of switching employment from declining industries to growing industries. The Regional Policy, with its primary program FEDER, is directed towards reducing regional differences through the support of public and private investment. Its importance has increased over time, going through several reforms since its inception in 1975.³

The three structural funds, FEOGA-Orientación, FSE and FEDER, are distributed to regions according to objectives as specified in the policy directives of the European Union. These objectives include promoting the development and structural adjustment of less developed regions, helping regions affected by industrial decline, encouraging the development of agricultural areas, and fighting long-term unemployment. Our focus is on these three EU programs and the Spanish FCI program, all of which are designed to stimulate economic activity through structural reform of the labor market or through regional economic development projects.

Table 1 displays cumulative amounts received on a per capita basis by each region from each of the fund programs from the first year of the program to the most recent year for

Table 1. Funds per capita.

	FEDER	FCI	FSE	FEOGA Or	FEOGA Ga	Total EU Structural Funds	Total Structural Funds
Andalucía	17,966	47,187	7,567	2,487	43,410	28,020	75,207
Aragón	9,642	19,599	4,829	7,596	52,041	22,067	41,666
Asturias	22,440	23,039	6,402	4,301	5,413	33,143	56,182
Baleares	1,559	13,936	3,490	1,708	5,212	6,757	20,693
Canarias	19,787	45,102	6,809	3,305	5,222	29,901	75,004
Cantabria	9,151	17,753	4,852	4,881	12,068	18,884	36,637
Castilla-León	20,536	38,204	6,795	6,625	44,744	33,956	72,160
Castilla-La Mancha	28,812	49,227	5,754	6,826	80,120	41,392	90,619
Cataluña	3,916	15,857	4,845	1,057	10,414	9,818	25,675
C. Valencia	7,841	18,365	4,511	1,958	7,595	14,310	32,675
Extremadura	28,420	77,912	8,811	6,354	79,333	43,586	121,498
Galicia	14,044	46,403	5,637	6,073	6,934	25,755	72,158
Madrid	1,562	12,088	4,276	282	1,756	6,120	18,208
Murcia	13,639	25,349	6,351	2,990	26,750	22,981	48,330
Navarra	4,320	11,764	5,633	5,430	35,587	15,383	27,148
País Vasco	7,968	19,798	6,411	2,689	6,649	17,068	36,866
La Rioja	3,453	13,695	4,230	4,011	34,907	11,694	25,389
Spain	11,975	29,970	5,795	3,101	23,609	20,871	50,841
Coefficient of Variation*	0.71	0.63	0.24	0.55	0.96		

Key: These figures are the sum from 1986 to 1993 of the annual per capita values, except for FCI where the sample is from 1982 to 1993. EU structural funds include FEDER, FSE and FEOGA Orientación; total structural funds are the EU structural funds plus FCI.

Unit: 1980 pesetas per person.

*For the 17 Autonomous Communities.

Source: See appendix.

which data are available. All figures are in real 1980 pesetas. The final columns of the table display the totals for two aggregates, one being an aggregate over the EU structural funds only, and the other including the EU structural funds as well as the FCI.

On average, the largest of the structural funds (structural funds consist of all funds except the income support program FEOGA-Garantía) was the FCI.⁴ However, the FCI had been in operation since 1982, four years before Spain's entry into the European Union. The FEDER program was also relatively important, while the FSE fund and particularly the FEOGA-Orientación were relatively small. It is important to note that the aggregate intervention represented by the various funds is generally quite small. Total EU structural funds as a share of GDP over the period 1986–1991 for Spain were 0.46 percent, while FCI funds over the 1982–1991 period were 0.63 percent of GDP.

That being said, the funds were somewhat important for many of the regions. Using total structural funds per capita (the final column of Table 1) the top six recipients were Andalucía, Canarias, Castilla-León, Castilla-La Mancha, Extremadura and Galicia, all of which received more than 70,000 pesetas per capita. By comparison, the average real disposable income per capita for these regions in 1990 was approximately 330,000 pesetas (in 1980 pesetas).

These six regions plus Asturias were also top recipients for at least two of the four structural funds. Extremadura, in particular, received significantly more than the Spanish average from all four structural funds. Andalucía and Canarias were far above average recipients from the FEDER, FCI and FSE grant programs, Asturias received above average amounts from the FEDER and FSE grants, and Galicia received relatively large aggregate amounts from the FCI and FEOGA-Orientación programs.

Regions that were consistently below average in terms of receipts under each of the four structural funds were Baleares, Cataluña, and Madrid. Four additional regions, C. Valenciana, Navarra, País Vasco, and La Rioja, received relatively small amounts under the two biggest structural funds, FEDER and FCI. Using the last column of figures from Table 1, five regions, Baleares, Cataluña, Madrid, Navarra, and La Rioja, received less than 30,000 pesetas per capita during the period.

As can be seen by examining the coefficients of variation displayed in the last row of Table 1, there was significant variability across the seventeen regions in the amounts received under the four structural funds. The most variable of the structural funds was the FEDER followed by the FCI. Because these two funds are the largest, the fact that they vary significantly across regions implies that there is a potential for differential impacts.

Figure 1 illustrates the evolution over time of the average per capita amounts for Spain for the four structural funds from 1982 to 1993. The FCI declined in importance over time especially during the 1982–1987 period, and again in the early 1990s. FEDER increased steadily until the early 1990s when it reached a plateau and then declined. The much smaller FSE and FEOGA-Orientación grants displayed a slight upward trend over the period. Until 1991, the average FCI grant per capita was larger than the average FEDER grant per capita. A major change in the FCI program in 1991, notably the fact that several richer regions no longer received monies under this program, caused the average FCI to fall dramatically, so that for 1992 and 1993, the average FEDER grant per capita was nearly double the average FCI grant per capita.

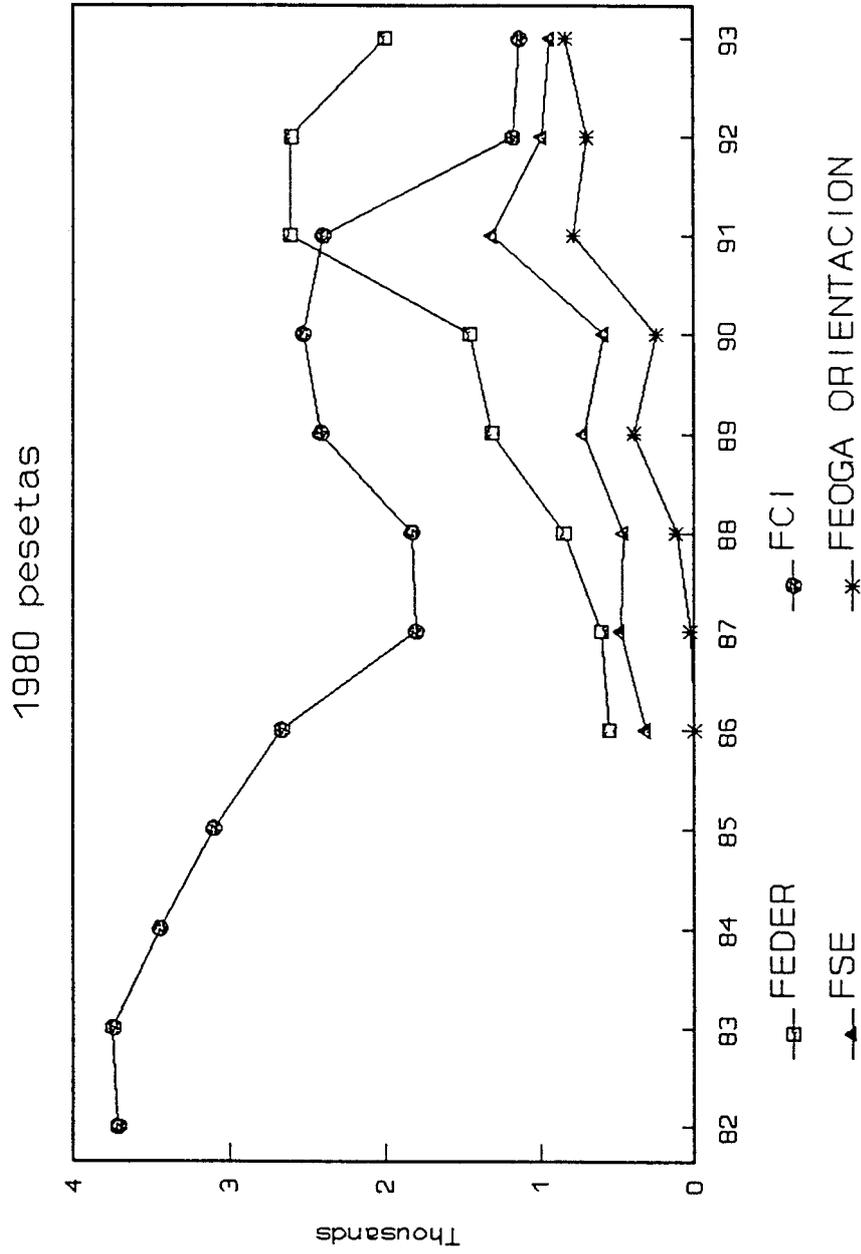


Figure 1. Structural funds per capita.

III. Analysis of the Effect of Regional Grants on Regional Economic Performance

The basis for a positive effect of grants that support public investment on the performance of an economy can be found in models that consider public capital, or public services in general, as an input into private production. While Arrow and Kurz (1970) specify that public capital enters the production function as a complementary input to private capital, Barro (1990) considers public services as an input to private production. Barro and Sala-i-Martin (1992) discuss further the implications of the different types of public services, according to characteristics of being rival, excludable or subject to congestion. In all cases, private and public inputs are complements, and an increase in the public input raises the marginal productivity of the private input.

Each of these models assumes that public investment is financed through some type of tax, and therefore the final impact of additional public investment is the sum of two counter effects. On the one hand, additional taxes to finance new public investment take away resources from private capital. On the other hand, the complementarity of the public input raises the marginal productivity of the private input, and has an indirect as well as a direct impact on production and private investment. If the provision of public capital is below the optimal level, the second effect outweighs the first one and an increase in public capital has a positive impact on output and private investment. If, following Barro (1990) and Barro and Sala-i-Martin (1992), we consider that production exhibits constant returns to scale in the private capital and public capital inputs together, but diminishing returns in private capital, then the economy follows a steady-state growth rate: the growth rates of consumption, production and private capital increase with the size of the public input when its level is below its optimum. These models conclude that, if public capital is small, an increase in its level should be followed by an improvement in the growth rate of production and a larger amount of private investment.

The analysis of the possible impact of the interregional grants fits well in the above framework. Grants must be spent on public investment, the type of government expenditure that most clearly enters as an input in the private production function. It is also reasonable to assume that, at least compared with other regions in Europe, the level of public capital in the Spanish regions is small, likely below the optimal level. Under those circumstances, the models discussed above predict that an increase in public capital, or public productive services in general, will have a positive impact on private production, and a crowding-in effect on private investment.

There is an additional characteristic of the solidarity funds that enhance the effects just described. The solidarity funds are largely financed by taxes paid by the regions or countries with relatively higher income per capita, and in very small proportion by the tax payers of the recipient regions. For that reason, and from the poor regions point of view, the amount used for new public investment does not compete with alternative uses of their income such as private investment.

In general, the models that incorporate public inputs assume flexible labor markets and full employment, an assumption that is not appropriate in general for Europe, and less so for Spain, a country that suffers one of the highest unemployment rates in Europe. In economies like the Spanish one, it is reasonable to expect a decrease in unemployment when production grows. Besides this general effect associated with the overall improvement of the economy,

the European funds should have a specific positive impact on employment as a result of the FSE. This program provides funds for training and acquisition of new skills of workers, as well as incentives for the creation of new and stable jobs.

We can conclude, therefore, that development funds spent in public investment should have important effects in the economies of the recipient regions. Specifically, we should observe changes on the growth rate of production, a larger amount of private investment per capita, and an improvement in the unemployment rate. We focus in our analysis on these three variables to determine the effect that the Spanish and European solidarity grants have had on the relatively poor regions of Spain that have benefitted most from these programs.

To assess the impact of the grants on regional economic development, we compare the economic performance of two groups of regions before and after the grant policy intervention. We use the information in Table 1 to choose one group of regions that has received very little in structural grants and a second group of regions that has received relatively large grant amounts.⁵ One group consists of Balears, Madrid, Cataluña, La Rioja and Navarra. These regions, the “non-recipient” regions, are consistently below average in terms of receipt of grant monies from the central government of Spain and the European Union. The other group consists of regions that are consistently above average in terms of receipt of grant monies. The “recipient” group consists of Extremadura, Castilla-La Mancha, Castilla-León, Galicia, and Andalucía.⁶ We eliminate from the analysis regions that receive average or close to average amounts in order to provide as strong a contrast as possible between the recipient and non-recipient groups.

The two time periods we examine are 1977–1981 and 1989–1992 (with slight variations on these periods depending on data availability for certain variables). The earlier time period ends in the year before the imposition of the FCI grant in Spain, while the latter period is as far into the period of both Spanish and European Union grant intervention as the data permit. We choose roughly comparable lengths for the two time periods. In results not presented here but discussed below, we vary the definitions of the time periods to test for robustness of the results.

Our methodology is a differences-in-differences approach where we examine differences between the two groups in the differences across the two time periods for each group. We estimate equations with the dependent variable defined as the difference between the value of the variable of interest (GDP growth, unemployment rate, or private investment per capita) for the post-intervention period and its value for the pre-intervention period. As explanatory variables we include a constant and a dummy variable that takes the value of one if the region belongs to the recipient group and zero otherwise. If the grants have been effective, we would expect to see a larger improvement in economic well-being between the two periods for the recipient group relative to the non-recipient group, which would be indicated by a significant and appropriately signed coefficient on the dummy variable. While we clearly do not have a natural experiment because regions are not assigned randomly to be recipients and non-recipients of the grants, the differences-in-differences approach enables us to control, if imperfectly, for other factors affecting the different groups, regions and time periods.

There is another aspect of the differences-in-differences approach that is especially helpful in addressing our set of questions. Given the nature of our intervention variable, the development funds, it is not always appropriate to identify the time when the funds appear

in the official accounts with the time when the public investment takes place. In some cases, the matching nature of the funds requires previous public investments in order to qualify for the funds; in other cases, the funds are used for infrastructure projects that take several years to come on line. The grants are effectively spent with different delays and in projects with different spans in their expected economic impact. A standard regression analysis with grants as an explanatory variable to explain the evolution of economic variables such as output, investment or employment, should have a rich dynamic structure that our data do not allow. The alternative is to consider that the bulk of all interventions will have an impact, with more or less delay, and that the economy will perform better in a period well after the intervention compared with a period prior to the receipt of grant monies, and also compared with other regions that have not received grants. This is the kind of analysis that the differences-in-differences approach allows us to undertake. We are therefore not trying to quantify the impact of the funds on the variables of interest, for which we would need better data and a longer time period, but simply to measure if there are significant differences in those variables.

We caution that this approach says very little about whether the grants have *caused* changes in the economic performance of the regions. A major difficulty we face is that the period we examine was a period of massive changes in the economy, policy and politics of Spain and its regions. It would be exceedingly difficult if not impossible to attempt to model all of the relevant processes and causes of regional economic growth. What our approach does offer is a simple comparison of regional outcomes before and after the imposition of the grants, controlling for factors common to all regions in different periods, such as central government policies and aggregate economic disturbances, and for time-invariant factors specific to individual groups of regions.

In the tables that follow we present results for the three variables that we have argued might most clearly be affected by new public investment: annual growth rate of real GDP, unemployment rate and real private non-residential investment per capita. The private investment data have only become available in the last two years, and, as far as we know, our study is the first one to utilize these data to evaluate regional grant policies. For each variable we present the comparison of averages (across time and across members of the group) of the recipient and non-recipient groups for the two time periods.

In Table 2 we find evidence that the average annual growth rate of real GDP improved for the recipient group and decreased for the non-recipient group between the two time periods, and that the difference in these trends is statistically significant (t -statistic of 2.3). Thus, without attributing causality, there appears to be a correlation between the imposition and receipt of the grants, and an improvement in growth rates of real GDP.⁷ However, the results for this variable are not robust to changes in the definition of the time periods. For example, when the time periods are longer (1973–1981 and 1985–1994 instead of 1977–1981 and 1989–1994) the difference between the trends for the two groups is not statistically significant.

The results in Table 3 indicate that the unemployment rate increased for both groups between the two time periods, but that the increase was greater for the recipient group with the difference between the two groups being statistically significant (t -statistic of 3.8). Thus, the imposition of the grant programs appears to be associated with an unexpected deterioration in the employment situation of the recipient group relative to the non-recipient

Table 2. Average annual percentage growth rate of real gross domestic product.

	1977–1981	1989–1994	Difference Between Groups in Differences Between Periods
Recipient group	1.33	1.47	
Non-recipient group	2.51	1.24	1.41 (2.31)

Table 3. Unemployment rate (percentages).

	1977–1981	1988–1992	Difference Between Groups in Differences Between Periods
Recipient group	9.87	19.19	
Non-recipient group	7.97	12.36	4.93 (3.75)

Table 4. Real private non-residential investment per capita (1980 pesetas).

	1977–1981	1988–1991	Difference Between Groups in Differences Between Periods
Recipient group	111,413	141,297	
Non-recipient group	127,231	202,440	–45,325 (4.24)

Notes: Absolute values of *t*-statistics in parentheses.

The recipient group consists of Extremadura, Castilla-La Mancha, Castilla-León, Galicia, and Andalucía.

The non-recipient group consists of Baleares, Madrid, Cataluña, La Rioja, and Navarra.

group as evidenced by a larger increase in the level of unemployment for the recipients relative to the non-recipients. These results for unemployment rates are robust to changes in the time periods analyzed.

In Table 4, we find that the non-recipient group experienced a larger increase in private investment per capita between the two time periods relative to the recipient group, that the difference is important in percentage terms as the non-recipient group average increased 60 percent between the two time periods while the recipient group average increased only 27 percent, and that the difference in trends between the two groups is statistically significant (*t*-statistic of 4.2). These results, which are robust to changes in the time periods analyzed, are the opposite of what we would expect if the grant programs had a positive influence on private investment decisions.⁸

Because the recipient regions tend also to be poor,⁹ one difficulty we encounter in trying to uncover an effect of the grants on the economies of the recipient regions is that it is difficult

to untangle the effect of being a recipient region with the effect of being a poor region. In an effort to control for the possible persistence of differential outcomes for poor and rich regions, we re-estimate the equations underlying the simple differences-in-differences results of Tables 2, 3 and 4 by including a lagged value of the dependent variable, thus controlling for the economic conditions of the regions prior to the grants intervention. The dependent variable in these simple equations is the change in the average value of the variable between the two periods (pre-grants-policy period and post-grants-policy period). The lagged independent variable is the change in the average value of the variable between the pre-grants-policy period and an earlier period. The results of this estimation, as well as the regressions underlying Tables 2, 3, and 4 are reported in Table 5.¹⁰ We find that controlling for a prior period in this way, essentially controlling for persistence over time, alters the results negligibly. The coefficients on the variable of interest, recipient, are similar in size and statistical significance regardless of whether we control for economic conditions prior to intervention.¹¹

To summarize, except for annual growth rate of real GDP (and even these results are not robust to changes in the time period analyzed), our results do not support the notion that the economies of the recipient regions have been differentially assisted by the grant programs. In terms of unemployment rates and real private non-residential investment per capita,

Table 5. Regressions with lagged dependent variable.

	(1) Average Annual Growth Rate of Real GDP	(2) Unemployment Rate	(3) Real Private Non-residential Investment Per Capita
Constant	-0.013 (2.95)	0.044 (4.74)	0.075 (9.95)
Recipient	0.014 (2.31)	0.049 (3.75)	-0.045 (4.24)
R^2	0.40	0.64	0.69
Constant	-0.013 (2.76)	0.038 (1.89)	0.066 (15.98)
Recipient	0.015 (2.20)	0.050 (3.54)	-0.025 (3.76)
Lagged dependent variable	0.045 (0.35)	0.111 (0.35)	-1.102 (5.01)
R^2	0.41	0.64	0.93

Notes: Each regression has ten observations corresponding to the ten regions.

The dependent variable is the difference between the average value for the variable in the post-intervention period (typically 1988 to 1992) and the average value for the variable in the pre-intervention period (1977 to 1981).

The lagged dependent variable is defined analogously to the dependent variable with the periods 1977 to 1981 and 1973 to 1977.

Absolute values of t -statistics in parentheses.

The variable "recipient" takes a value of one for the five recipient regions (Extremadura, Castilla-La Mancha, Castilla-León, Galicia, Andalucía) and zero for the five non-recipient regions (Balears, Madrid, Cataluña, La Rioja, Navarra).

contrary to expectations, the evidence suggests that when we compare a period just before the imposition of the grants to a period well into receipt of monies from the grants the position of the non-recipient group was improved relative to the position of the recipient group.¹²

Both the Spanish central government grant and the European Union grants are directed in large part towards increasing the amount of public infrastructure in the recipient regions. In a comparison of real public investment per capita for the two groups before and after the grant intervention, we find that real public investment per capita was marginally significantly higher for the recipient group in the latter period relative to the non-recipient group. In fact, in percentage terms, real public investment per capita for the recipient group increased by 200 percent, while the level for the non-recipient group increased by less than 40 percent. Thus, it appears that the imposition of the grants may be correlated with changes in levels of investment in public capital across the two groups, where the changes have favored the recipient group. Over a longer horizon than we can observe with present data these public capital differences may manifest themselves in relative improvements in economic development in the recipient regions, but we find no evidence here that unemployment or private investment are influenced by the grants or the public investment partially financed by the grants. We find some evidence that there is a positive impact of grants on GDP growth, although along with other studies (for example, Garcia-Milà and Marimón, 1996) we suspect that the impact is an immediate one on public economic activity and not a long-run effect on the private economy. Our findings are consistent with the emerging view in the literature that public capital investment may not affect private-sector productivity and thus it may not be a particularly effective tool for regional economic development.¹³

Our findings are in line with a recent study of specific projects funded by the EU grants (FEDEA (1994)). In an empirical analysis of fifteen regions from 1980 to 1991, the authors estimate equations with value added as the dependent variable and public investment funded by both the FCI and FEDER as independent variables. They find that the public investment variables are not significant determinants of value added in the regions.

IV. Conclusion

Regional redistribution is an important part of the policy of the European Union and the Spanish government. In this study we find that these policies have not been effective at stimulating private investment or improving the overall economies of the grant-recipient (and poorer) regions. The lack of impact may be attributable to several factors. First, the policies were only implemented in recent years (1982 for the Spanish FCI and 1986 for the EU grants) and these sorts of policies directed at infrastructure improvement and structural change of the labor market may take time to have an impact. Second, the amounts of the grants are not large even for the very poor regions. It just may be that the interventions were too weak to have had an effect. Third, while we present no evidence on how the funds are used, it seems clear that certain uses are likely to be more productive than others, and it is not clear that the monies are well targeted to the most productive investments.¹⁴ *The Economist* has argued that there are likely to be inefficiencies in the EU structural grant process and in the management of the program.¹⁵ In a FEDEA (1994) study evaluating approximately 350 projects funded by FEDER between 1989 and 1993, the authors find

that, while there is room for improvement, the projects are generally well-managed; the problem may not be so much mismanagement of funds, but rather lack of targeting or general planning of the projects, which are sometimes considered in isolation instead of in an overall plan for regional development. Fourth, the period we examine has been a tumultuous one for Spain with numerous changes in the policy, politics and economies of the regions, rendering it difficult to detect an effect of the regional grant policies. Finally, the informational and technical requirements may simply be overwhelming for the government bureaucracies charged with implementing these policies. The track record is generally not encouraging when governments attempt to resuscitate firms, cities, or regions suffering economic distress.

An alternative explanation for our findings is that regional development policies, at least the kind described here, are doomed to fail. The persistence of differential economic performances across regions over time, as evidenced by Blanchard and Katz (1992), for example, whether regional policies exist or not, is *prima-facie* evidence that factors, which are not well understood and non-obvious, are at work. Without a better understanding of how regions develop and how the fates of regions are determined, we cannot expect government intervention to be effective.

Appendix: Data Sources

The data used in this paper come from several sources that we detail below.

“Renta Nacional de España y su distribución provincial: serie homogénea 1955–1991,” *Banco Bilbao Vizcaya* (BBV). This is the source for regional GDP. The data are biannual.

“Capital humano 1964–1992,” *Instituto Valenciano de Investigaciones Económicas* (IVIE) and *Fundación Bancaixa*. Employment, labor force and population data up to 1992 were obtained from this source.

“Estimación del crecimiento del PIB por Comunidades Autónomas. Año 1994,” *Papeles de Economía Española*, No. 64, 1995, anexo 11 Junio 1995. Source for GDP and population for 1994. This series follows the same methodology as the BBV. BBV has the advantage that the data series begins at a much earlier date, but unfortunately the series is updated with a long delay. For this reason we use a different source for 1994 data.

“El stock capital en España y sus Comunidades Autónomas,” *Fundación BBV*. This source provides data for private and public capital and investment for the period 1964–1991.

“Fondos Comunitarios en España: regionalización y análisis de su incidencia,” by M.D. Correa, A. Fanlo, J. Manzanedo and S. Santillán, Documento de Trabajo D-95002, *Ministerio de Economía y Hacienda*. This is the source for the European funds for 1986–1993 by region.

For the Fondo de Compensación Interterritorial (the Spanish FCI) we have used four sources of data:

- “Desarrollo del proceso autonómico en el período 1986–1989,” *Ministerio de Economía y Hacienda*
- “Informe sobre financiación de las Comunidades Autónomas en 1993,” *Ministerio de Economía y Hacienda*

- “Finançament de la Generalitat de Catalunya, 1980–1991,” *Institut d’Estadística de Catalunya*
- “Informe económico financiero de las Administraciones Territoriales en 1992,” *Ministerio para las Administraciones Públicas*, Colección Memorias y Estadísticas, Madrid, 1993.

Acknowledgments

The authors are grateful to Rob Porter for discussions and to Marisa de la Torre and Alessandro Secchi for superb research assistance. We would also like to thank participants at the MIT public finance lunch seminar, participants at the 1996 Trans-Atlantic Public Economics (TAPES) Seminar in Amsterdam, participants at a seminar at the Public Policy Institute of California, and three anonymous referees and the editors for helpful comments and suggestions. We are particularly grateful to Robert Moffitt for very helpful comments and suggestions. Garcia-Milà gratefully acknowledges support from DGICYT, Ministerio de Educación y Ciencia, Spain.

Notes

1. See Marimón (1996) for a detailed description of the economic fortunes of Spain during the past three decades.
2. See Garcia-Milà and McGuire (1991) and (1993) for an analysis of the FCI program and its effects on the public finances of the Autonomous Communities.
3. In 1993 the Cohesion Fund was created to finance environmental programs and trans-European network investment in countries with income per capita below 90 percent of the EU average. Because of its recent development and small size, we do not address the Cohesion Fund herein.
4. The amounts for the income-support program, FEOGA-Garantía, are displayed for comparison purposes only.
5. We also used information on grants as a share of GDP in designating the groups. Canarias is a top-five grant recipient in terms of grants per capita, but not in terms of grants as a share of GDP. Also, the Canarias region has historically been a free-trade zone and therefore its economy and tax system have developed differently from other regions in Spain. We thus chose not to include Canarias in our group of recipient regions.
6. While the number of regions to include in each group is somewhat arbitrary, these ten regions are all clearly far above or far below average in terms of receipt of funds from the major structural grants. When we experimented with slightly different groups, the results changed very little.
7. Given that the recipient (non-recipient) regions also tend to be poor (rich) regions, this finding could also simply reflect a convergence across regions in GDP per capita.
8. We examined three other measures of economic activity and found similar results to those reported herein. In particular, we found no difference in the performance of the two groups when we examined annual growth rate of private investment and annual growth rate of employment. In regressions not reported, we also controlled for year and region fixed effects and found very little difference in the results for the intervention variable.
9. In 1994 average income per capita for the group of recipient regions was 1,320,617 pesetas, while it was 2,100,008 pesetas for the non-recipient regions. Throughout the sample period average income per capita of the recipient regions was about 60 percent of the value for non-recipient regions.
10. We thank Robert Moffitt for suggesting this approach to the data.
11. We have also estimated the equations controlling for the initial values (1977) of GDP per capita as suggested by a referee in order to allow for the possibility of convergence. Initial GDP per capita is not significant in any of the estimated equations, and its inclusion does not change other coefficients, thus maintaining the validity of the overall conclusions.
12. The positive impact of GDP that we find in some specifications is compatible with the results for unemployment and private investment if we take into consideration the industries where growth has occurred in the recipient

regions. Garcia-Milà and Marimón (1996) find that the industries that have performed well in recipient regions tend to be those related to economic activity of the public sector, such as public services and construction. In general, manufacturing and private services have performed poorly in recipient regions, a fact reflected perhaps in our results for private investment.

13. See Garcia-Milà, McGuire and Porter (1996) and Holtz-Eakin (1994).

14. On vacation in Scotland in 1997 one of the authors came upon a brewery financed by the EU structural grants. If this is typical of the type of project financed by the EU grants, it would not be surprising to find that the grants were not particularly effective at boosting productivity.

15. See "Fund of disappointment" page 46 of the January 27, 1996 issue of *The Economist*.

References

- Arrow, K. J. and M. Kurz. (1970). *Public Investment, the Rate of Return, and Optimal Fiscal Policy*. Baltimore: Johns Hopkins University Press.
- Barro, R. (1990). "Government Spending in a Simple Model of Endogenous Growth." *Journal of Political Economy* 98, 5(2), S103–S125.
- Barro, R. and X. Sala-i-Martin. (1991). "Convergence Across States and Regions." *Brookings Papers on Economic Activity* 1, 107–182.
- Barro, R. and X. Sala-i-Martin. (1992). "Public Finance in Models of Economic Growth." *Review of Economic Studies* 59, 645–661.
- Blanchard, O. J. and L. F. Katz. (1992). "Regional Evolutions." *Brookings Papers on Economic Activity* 1, 1–75.
- Canova, F. and A. Marcet. (1995). "The Poor Stay Poor: Non-convergence Across Countries and Regions." Universitat Pompeu Fabra Working Paper No. 137.
- De la Fuente, A. and X. Vives. (1995). "Regional Policy and Spain." *Economic Policy*, 13–51.
- Dolado, J. J., J. M. González-Páramo and J. M. Roldán. (1994). "Convergencia Económica entre las provincias españolas: evidencia empírica (1955–1989)." *Moneda y Crédito* 198, 81–120.
- FEDEA (Fundación para Estudios de Economía Aplicada), Julio. (1994). "Evaluación del Marco de Apoyo Comunitario 1989–1993." FEDEA, Madrid.
- Garcia-Milà, T. and R. Marimón. (1996). "Integración regional e inversión pública en España." In R. Marimón, (ed.), *La economía española: una visión diferente*, Barcelona: Antoni Bosch, 197–256. (Published in English as "Regional Integration and Public Investment in Spain." In J. Adams and F. Pigliaru (eds.), *Economic Growth and Change*, Northampton: Edward Elgar, 1999.)
- Garcia-Milà, T. and T. J. McGuire. (1991). "The Effects of Central Government Financing on Regional Government Expenditures in Spain." In Rémy Prud'homme (ed.), *Public Finance with Several Levels of Government*. The Hague, Netherlands: Foundation Journal Public Finance, 223–234.
- Garcia-Milà, T. and T. J. McGuire. (1993). "Evaluación del Régimen de Financiación de las Comunidades Autónomas a Través de un Análisis del Gasto y la Renta." *Revista de Economía Aplicada* 1(3), 5–26.
- Garcia-Milà, T., T. J. McGuire and R. H. Porter. (1996). "The Effect of Public Capital in State-level Production Functions Reconsidered." *The Review of Economics and Statistics*, 177–180.
- Holtz-Eakin, D. (1994). "Public-Sector Capital and the Productivity Puzzle." *The Review of Economics and Statistics* 76, 12–21.
- Marimón, R. (1996). "Introducción. In R. Marimón (ed.), *La economía española: una visión diferente*, Barcelona: Antoni Bosch, 9–43.
- Mas, M., J. Maudos, F. Perez and E. Uriel. (1994a). "Disparidades regionales y convergencia en las Comunidades Autónomas." *Revista de Economía Aplicada* II(4), 129–148.
- Mas, M., J. Maudos, F. Perez and E. Uriel. (1994b). "Capital público y productividad de las regiones españolas." *Moneda y Crédito* 198, 163–192.
- Rodenas, C. (1994). "Migraciones interregionales en España, 1960–1989." *Revista de Economía Aplicada* II(4), 5–36.