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The Long Term Effect of Education Spending Decentralization on Human Capital in Spain

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The Long Term Effect of Education Spending Decentralization on Human Capital in Spain*

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December 2006

Abstract

In 1980, seven out of the seventeen Spanish regions were devolved education spending responsibility. Using a difference-in-differences approach, which I show to be particularly credible in this context, I evaluate the long term effect of this reform on human capital. I find no robust evidence to corroborate the theoretically predicted benefits of decentralization. *JEL: E6, E61, E65*

*Part of this paper was written when I visited Uppsala University as a Marie Curie Fellow within the RTN in Microdata Methods and Practice. I also thank numerous seminar participants and Jean-Marc Robin, Frank Windmeijer, Eureka at Paris I-Sorbonne and the Institute for Fiscal Studies for hospitality.

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1 Introduction

In recent years, there has been a broad agreement among policymakers that decentralisation is a key element of achieving economic efficiency and equity at the local level. Educational decentralization in particular is a popular reform theme of governments around the world. Many different, but often interrelated, goals drive decentralization initiatives such as: increased economic development through institutional modernization; increased management efficiency; redistribution of financial responsibility; democratization; the neutralization of competing centres of power; and improved quality of education (Weiler, 1993). In theory decentralization can substantially improve efficiency, transparency, accountability, and responsiveness of service provision compared with centralized systems and, eventually, improves coverage and quality. However, on the cost side is the danger that local governments may be subject to ‘capture’ by local elites, wherein targeting performance and responsiveness to local needs may deteriorate. Hence, it remains an empirical task to assess the extent to which the benefits of decentralization outweigh the costs. Empirical work that convincingly measures the returns to decentralization is difficult because decentralization is usually accompanied by many other changes. In addition, identifying the impact of decentralization requires country level policy experiments wherein decentralization is (at best, randomly) undertaken in some regions (or projects) but not in others; such experiments are however rather scarce¹. Spain offers a ideal setting to evaluate the returns to decentralization.

¹Some rare attempts to evaluate the relative benefits of decentralization include Somanathan et al (2006) and Jimenez and Sawada (1999).

Following the decentralization law voted in 1980, only 7 out of the 17 regions were devolved education spending responsibility. Exploiting this asymmetry, I assess the long term effect of this reform on human capital. A commonly alleged pitfall of decentralization is that poverty, socio-economic inequality and lack of political competition allow local elites to capture local governments (Bardan and Mookherjee (2005)) in developing countries. Hence, by focusing on a developed economy I provide evidence on what decentralization can achieve in a environment where these mechanisms have limited rooms to operate .

The remainder of the paper is organized as follows. Section 2 provides an overview of the fiscal decentralization model in Spain. Section 3 describes the data. Section 4 develops the empirical methodology and discusses the results. Section 5 concludes the paper.

2 Background²

Spain is presently divided in seventeen regions, called Autonomous Communities. The Autonomous Communities have important expenditure responsibilities, but the central government keeps under its control almost all revenue authority. The details of the decentralization process were developed in a high level law, “Ley Orgánica de Financiación de las Comunidades Autónomas” (LOFCA) passed in 1980. During the early 1980s, each Autonomous Community developed and approved its own Statute of Au-

²This section heavily relies on Teresa Garcia Mila (2003) and Hanson (2000).

tonomy, in accordance with the general principles of the Constitution and the LOFCA. Two different systems of decentralization coexist, the Foral and the Common regimes. The Foral regime is instituted for only the Basque Country and Navarra, while the Common regime is applied to the other fifteen regions. Under the Foral regime the autonomous communities have authority to raise taxes locally, whereas regions in the Common regime have limited local taxing authority. In terms of spending responsibilities, the regions of the Foral regime have large responsibilities covering almost all sectors including health, education and infrastructure.

Under the Common regime, two alternative paths for devolution of education authority are defined, one slow and one fast. In particular, only the five high-responsibility regions, were responsible for education (and health), attaining the same level of expenditure devolution as the regions under the Foral regime (see Figure 1).

These asymmetries respond to regional diversity in many dimensions, including history, culture and language (e.g. the Basque Country, Catalonia and Galicia). For instance, some regions had in the past history their own forms of government and still today their own language which in some way contribute to enhance a desire for self-governance. In fact, until the early eighteen century, Spain was formed by a set of kingdoms that were united by the person of the king. Some of these kingdoms had their own political and economic institutions which were very different from those existing in Castille. A slow route was reserved for the regions that tended to be made of artificially created communities that had no historic or cultural identity of their own. Regional differences in levels of development are unrelated to the decentralized

financing schemes, with rich and poor regions in both the high and low responsibility regions in the Common regime (Fondacion BBV (1999) and Garcia Mila (2003)).

Three aspects of the decentralization process need to be pointed out. First of all, 65 per cent of the instructional material taught in all schools remained defined by the Ministry of Education. Second, a block grant budget transfer to the decentralized regional governments is used to pay for those newly acquired tasks and resulting expenses previously controlled and paid by the central government (e.g. education, health, transportation). Hence, the decentralized autonomous communities establish their own public expenditure budget priorities. Last, thousands of state bureaucrats were transferred to the autonomous communities as power and resources were decentralized. Consequently, in education as well as in other sectors that had been transferred, there was a corps of experienced and professional administrators who were in place to make the changes work.

3 Data and Descriptive Evidence

I consider two measures of human capital: the illiteracy rate and the fraction of the working age population with primary or no education³. The historical human capital series covering the working age population were collected by Mas et al (2001). The data set covers all autonomous communities (except the African regions of Ceuta and Milia) over the period 1964-2001. Descriptive statistics are reported in Table 1.

³Unfortunately, the number of years of education is not available.

Figure 2 and 3 plot the series of the average levels of the outcome variables by treatment status and their differences over the sample period 1964-2001. The graphs depict a general increase in education levels over the whole sample period. Both outcomes follow a common trend over the sample period and the differences between treatment and control regions remain relatively stable after 1980. In other words, this graphical analysis shows no evidence that education has increased more rapidly after the decentralization law in the regions that were devolved education spending responsibility than in the regions that were not devolved education spending responsibility.

This descriptive analysis is however only indicative. In order to more accurately and precisely measure the effect of the reform I next turn to a regression framework.

4 Empirical Methodology and Results

Basic Specification The basic framework consists in using a difference-in-differences estimator which compares the outcomes in treatment and control regions before and after decentralization. Formally, the corresponding regression reads as follows:

$$HC_{it} = \text{const} + \alpha_1 (post * T_i) + \beta_1 post + \gamma_1 T_i + \varepsilon_{it} \quad (1)$$

where the left-hand side variable is human capital in autonomous community i in year t , T_i is a treatment dummy for autonomous community i , $post$ is a post 1980 dummy. The observations in the control and the treatment regions tend to move together over time (see Figure 2 and 3). Hence, I will report standard errors clustered

at the region level to correct for this correlation over time.

A difference-in-differences approach is rendered credible by the fact that the average levels of the outcomes are not statistically different in treatment and control regions in the pre-reform period and follow a common trend over the whole sample period. Hence, in this context means reversion is not a serious concern. If pre-decentralization averages were very different between treatment and control regions, one could observe a situation where the observed increase in education over time would be negatively correlated with initial levels and this pattern would be observed in the data even if decentralization had no effect. Another factor that contributes to enhance the credibility of the difference-in-differences approach is that to the best of my knowledge, there was no other reform or important public intervention in the education sector undertaken contemporaneously to the decentralization law that specifically targeted either the treatment or the control regions.

Results Means of education for different regions and periods are reported in table 2. This two-by-two box is a useful tool to illustrate the identification strategy. According to these simple means differences, the illiteracy rate and the fraction the working age population with no or only primary education fall more quickly in regions that were devolved education spending responsibility in 1980 e.g. by an additional 0.75 percentage point for the illiteracy rate. However, none of these differences is significant statistically. Like the graphical analysis these results are imprecise due to the fact that only a small part of the available information is used. Estimates of α_1 are reported

in Table 3. As I emphasized already, these results have to be interpreted in light of a general and sustained increase in education levels over the whole sample period. Hence, the purpose is to determine whether or not human capital accumulates more rapidly in treatment regions than in control regions after decentralization. The point estimates on $(post * T_i)$ are negative suggesting that decentralization led to a more rapid increase in education in reform regions. However, the estimates are not statistically different from zero when the standard errors are adjusted to take into account the common random effect at the time*region level (there are significant at the 1 per cent level when standard errors are not adjusted).

Generalized Specification Estimates of α_1 using regression (1) are very conservative because while the outcome variables cover the working age population, all years immediately following 1980 are taken as treatment years. Indeed, since the outcomes are stock variables for the working age population one should not observe any immediate or short –run effect of the reform. Further, if there is an effect of decentralization on human capital, this effect should cumulate over time i.e. it should grow larger as more individuals educated under the new fiscal regime enter the labour market. Hence, to more efficiently and precisely identify the long-term effect of the reform, equation (1) can be generalized to an interaction term analysis which incorporates the fact that the effect of education spending decentralization on human capital is delayed and cumulative.

Consider the following relationship between human capital in autonomous commu-

nity i in year t , HC_{it} , and the number of years spent under the new fiscal regime n_{it} :

$$HC_{it} = \text{const} + \alpha_2 (n_{it}) + \gamma_{2i} + \lambda_{2t} + \varepsilon_{it} \quad (2)$$

where $n_{it} = (\text{post 1980 Trend}) * (\text{Treatment dummy})$.

Results Estimates of α_2 reported in Table 3 confirm the previous results. Moreover, the results are qualitatively robust to assuming that the long term effect of decentralization on human capital follows a quadratic or exponential trend instead of a linear trend. The effect of education decentralization is also insignificant on higher levels of education, in particular when considering the fraction of the working age population with secondary or university education. Finally, all results are robust to assuming 1992 (i.e. the year when the first cohort fully educated under the decentralized regime completed 18 years old) as a threshold year rather than 1980⁴.

5 Concluding Remark: Why no Effect of Decentralization in Spain?

Exploiting the Spanish decentralization experiment in the education sector this paper finds no evidence that decentralization of education to local authorities contributed to increase human capital in reform regions. Two factors may have contributed to offset

⁴Results available upon request.

the impact of the reform. Firstly, the more rapid increase in education spending in reform regions (particularly those of the high responsibility common regime) than in non-reform regions after 1980 due to the block grant approach in allocating financial resources (Teresa Garcia-Milà (2003) . Indeed, rather than specifically earmarking money for educational expenditures, all the financial transfers for the public sectors are lumped together for the regional parliaments to spend according to their own priorities. As a result, some regions fund education at a much higher level than others. Secondly, the national minimum curricular was not respected making it difficult for students to transfer from a school in one region to a school in another region. This probably caused increased dropouts among migrant children.

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Figure 1- Asymmetric Fiscal Decentralization in Spain



Legend

- Common Regime – High Responsibility
- Common Regime – Low Responsibility
- Foral Regime

Figure 2- Illiteracy rate, Treatment and Control Regions, 1964-2001

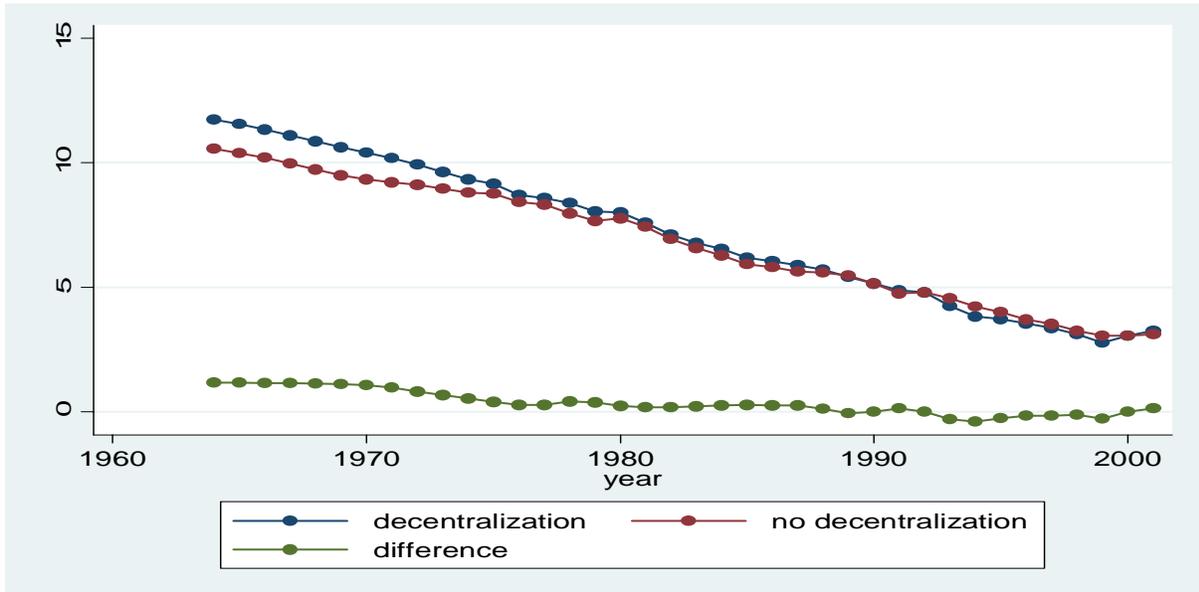


Figure 3- Fraction of the working age population with Primary or No Education, Treatment and Control Regions, 1964-2001

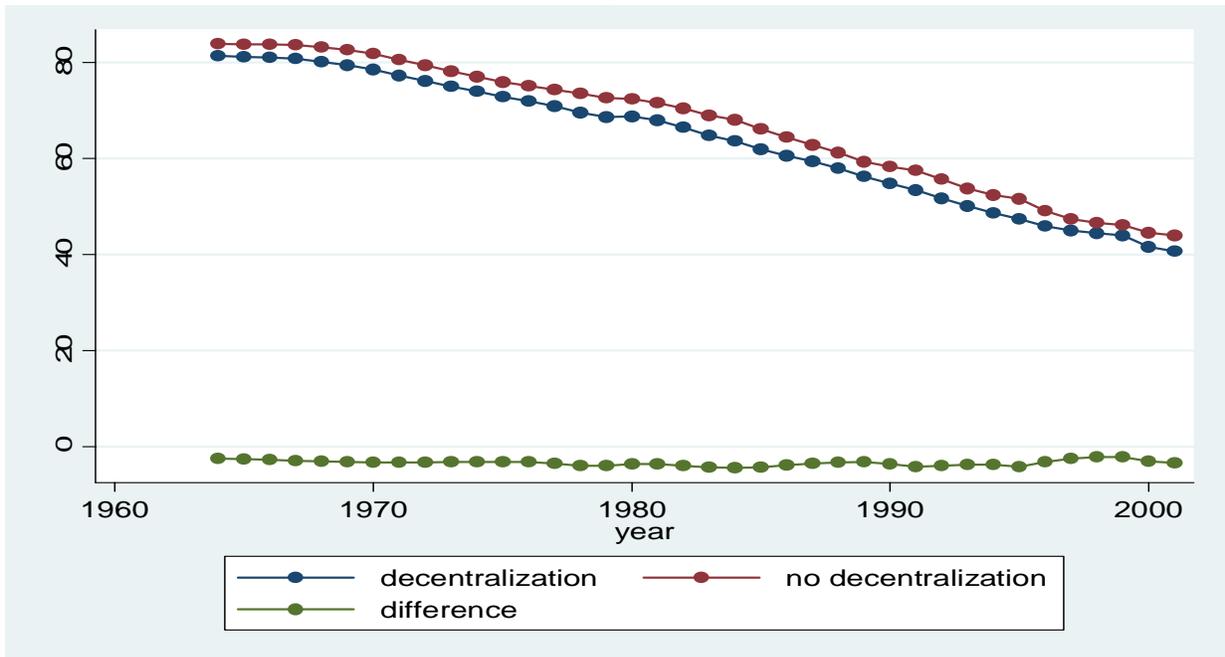


Table 1- Descriptive Statistics

Outcomes	Means	Standard deviations	Nber. Observ
Primari or no Education (a)	65,51	18,23	646
Illiteracy Rate (a)	6,92	5,34	646

Notes: (a) proportion of the working age population

Table 2- Means of Education for Treatment and Control Regions

	Illiteracy rate			Primary or no Education		
	Treatment	Control	Difference	Treatment	Control	Difference
Post-1980	4,9 (1,46)	4,89 (1,31)	0,008 (1,96)	53,64 (8,42)	57,15 (8,82)	-3,51 (12,19)
Pre-1980	9,85 (1,21)	9,10 (0,87)	0,75 (1,49)	75,72 (4,52)	78,93 (4,19)	-3,2 (6,16)
Difference	-4,95 (1,89)	-4,2 (1,57)	-0,75 (2,46)	-22,08 (9,56)	-21,77 (9,76)	-0,31 (13,66)

Table 3- Difference-in-Difference Estimates, Pre-Post Decentralization comparison

	<u>Illiteracy rate</u>	<u>Primary or no Education</u>
(Post 1980 dummy)*(Treatment Dummy)	-0,746 (1,159)	-0,308 (2,283)
Post 1980 dummy	-4,206 (0,662)	-21,773 (1,785)
Treatment dummy	0,753 (2,839)	-3,202 (6,214)
Nbr. Observ.	646	646

Note: clustered standard errors by region in parentheses

Table 4- Difference-in-Difference Estimates, Number of years under the new fiscal regime

	<u>Illiteracy rate</u>	<u>Primary or no Education</u>
(Post 1980 Trend)*(Treatment Dummy)	-0,049 (0,088)	0,011 (0,168)
Post 1980 Trend	-0,314 (0,049)	-1,766 (0,142)
Treatment dummy	0,642 (2,743)	-3,44 (6,108)
Nbr. Observ.	646	646

Note: clustered standard errors by region in parentheses

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