



Partial fiscal decentralization reforms and educational outcomes: A difference-in-differences analysis for Spain

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ABSTRACT

Several arguments derived from fiscal federalism theory suggest that decentralization may improve the provision of public goods and services. However, theory remains inconclusive regarding these effects under partial decentralization. The aim of this study is to examine this hypothesis by evaluating the effects on educational outcomes of the partial fiscal decentralization reform that took place in Spain during the 1980s. Since education competences were devolved to the regions at different points in time, we can consistently estimate the effects of this reform by applying the *differences-in-differences* method and by using the non-decentralized regions as the comparison group. We find that the reform had a sizeable impact on the percentage of students dropping out early from school. The effects are much stronger for regions with a high level of revenues. We also find that the effects are concentrated in the high-school program and that the reform was not able to improve educational outcomes in the vocational program. We interpret these results as evidence that decentralization improved the match between education policy and population preferences.

1. Introduction

In the last three decades Spain has been involved in a far-reaching process of fiscal decentralization, to the extent that today it is one of the most decentralized public sectors in Europe. As a result of this process important areas of expenditure, such as education, health care or social welfare, are nowadays devolved to the regional governments (Solé-Ollé, 2010). Focusing on the education policy area, we find that while regions with a historic regional status were able to accede to the educational powers not specifically assigned to the central government in the Spanish Constitution (1978) at the beginning of the 1980s, the other regions did not receive these powers until the final years of the 1990s. An additional characteristic of the decentralization reform in Spain at the beginning of the 1980s is that it was a *partial decentralization reform*, since subnational governments were not granted any powers to raise tax revenues until the end of the 1990s. Within this context, theory remains inconclusive regarding the effects of decentralization and empirical analyses are required (Weingast, 2009; Brueckner, 2009; Borge et al., 2014). Despite this need, empirical studies on the effects of education decentralization under such setting have, until recently, been non-existent.

Thus, the aim of this study is to evaluate the effects of the Spanish partial fiscal decentralization reform in Spain on educational outcomes. The way in which education policy has been decentralized in Spain provides a unique benchmark against which to identify the effects of a partial decentralization reform in education, since the regions that did not receive educational powers in each time period can be used as a comparison group for the regions that did receive them. Given that the decision to decentralize educational policy to these regions was made on historical grounds, and as part of a broader decentralization process affecting other areas of expenditure policy, we do not expect the implementation of the reform to be endogenous. Despite this, we estimate the effects of the education decentralization reform on educational outcomes with a *difference-in-differences* approach. In this way, we can control for the non-observable characteristics of regions that might have influenced the decision to decentralize and which could result in differences between the treatment and comparison groups before decentralization that determine the evolution of their educational outcomes. Additionally, we conduct an *event-study analysis* that allows us to test the exogeneity assumption by looking at the evolution of the outcome variable in the years before and after decentralization.

There is a long-standing tradition of studies that argue that the decentralized provision of public goods and services should be preferable in terms of social welfare to that of a centralized provision, both because

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subnational governments have a better knowledge of local preferences and needs than the central government (Oates, 1972), and because they have more incentives than centralized authorities to act in accordance with these preferences (Seabright, 1996; Oates, 2005). However, it has been argued that when subnational governments are highly dependent on intergovernmental grants to finance their expenditures (as it happens under a partial fiscal decentralization setting) they have an unclear perception of hard budget constraints (Wildasin, 1997) and they are not as accountable as they would be if they were financed by their own revenues (Weingast, 2009). Early empirical studies that have sought to test this proposition conclude that such a situation of vertical fiscal imbalance encourages subnational governments to overspend and generates unsustainable deficits and bailout demands (Rodden 2002, 2003). Despite this evidence, recent studies conclude that the provision of public goods and services in a situation of *partial fiscal decentralization* can be preferable to both full central control and full decentralization, when per capita spending is held fixed (Brueckner, 2009; Borge et al., 2014). These papers suggest that partial fiscal decentralization might improve both the responsiveness of government to the demand of public services and the efficiency in its provision.

There are already several papers in the literature providing evidence on the effects of decentralization on educational outcomes in several countries (see Barankay and Lockwood (2007) for Switzerland; Galiani and Schargrodsky (2002) and Galiani et al. (2008) for Argentina, and Brutti (2016) for Colombia). The general conclusion reached by these studies is that decentralization is positively related to educational outcomes, and that it is more beneficial when subnational governments have a good financial situation (Barankay and Lockwood, 2007; Galiani and Schargrodsky, 2002; Brutti, 2016). Falch and Fischer (2012) conduct a similar analysis for a set of countries, for which they also find that the average effect of decentralization on educational outcomes is positive.

However, as noted above, the effects of decentralization are likely to depend on how subnational governments are financed and on the degree of political accountability in each country, so that the effects of decentralization could be heterogeneous between countries. In Spain, subnational governments were not granted powers to raise tax revenues. In addition, democracy in Spain had just been established after a long period of dictatorship. Thus, we might not expect the effects of decentralization to be the same in this country than in Argentina, where a far-reaching process of revenue decentralization was implemented before educational competences were devolved to the provinces, or Switzerland, with a tradition of sub-national tax autonomy and democracy. The effects of the decentralization reform in Spain in the educational sector have only been previously studied in Esteller-Moré and Solé-Ollé (2005), where the focus was specifically on the analysis of its effects on the *allocative efficiency* of education investment policies. That is, the authors analyse whether the decentralization reform in Spain had an impact on investment patterns and the extent to which these changes could be related to objective measures of need. They concluded that the Spanish decentralization reform improved *allocative efficiency* in both education and road investment.¹ Note that this paper is relevant for us because the improvement in the *allocative efficiency* might actually be one of the mechanisms that help improve educational outcomes under decentralization.

We measure educational outcomes using the *dropout rate* in secondary (non-compulsory) education, defined as the proportion of students from a cohort enrolled in a given grade at a given school-year who do not continue their studies in the following school-year

¹ The effects of decentralization in Spain have been analyzed in other contexts than education. For instance, Carrion-i-Silvestre et al. (2008) analyze its effects on economic growth for the period 1965–2000, concluding that the effect was positive for those regions with the highest levels of fiscal decentralization (those that received educational competences at the beginning of the eighties), but negative for those regions with the lowest levels of competencies.

(UNESCO, 2009). As there were two alternative pathways upon completion of compulsory education, the high-school program and the vocational program, we measure dropout rates in secondary education for both of them. There are at least two reasons for our interest in the proportion of students who dropout full-time education after finishing compulsory education. First, in a country where enrolment rates in compulsory education are close to 100%, as it was the case in Spain, it seems appropriate to use a variable that focus on students that dropout school after this period to measure educational outcomes. Second and most importantly, still nowadays each year a large number of young people in Spain fail to finish secondary education.² As a consequence, upper-secondary graduation rates in Spain remain low in international comparisons and raising them is one of the main objectives facing the educational policy in Spain, as it was during the eighties. Finally, tests score data is not available for the analysed period.

To conduct the analysis, we constructed a panel data set containing information on the 50 provinces of Spain for the period 1977–1991, a period that includes the years before and after the education decentralization reform of the 1980s. The reason to focus our study on this period is that a reform of the educational system that extended compulsory education from the age of 14 until the age of 16 was implemented at the same time that the decentralization reform at the end of the 1990s. In addition, during the 1990s there was also a reform of the regional funding system, which implied a significant increase in the degree of regional tax autonomy (Bosch and Duran, 2005). As a consequence, it is not possible to disentangle the effects of the education decentralization reform during the 1990s from the effects of the education and the funding system reforms.

We find that the reform had a sizeable impact on the percentage of students dropping out early from school. Decentralization cut the *dropout rate* in around one (two and a half) percentage points in the short-run (in the long-run). This represented a reduction of around 13% and 20% with respect to the pre-decentralization *dropout rate*, respectively. However, the effect is concentrated in the *high-school program*, with a reduction in the *dropout rate* of about three (four and a half) percentage points in the short run (in the long run), which represents a reduction of around 22% and 40% with respect to the pre-decentralization *high-school dropout rate*. However, the reform was not able to improve educational outcomes in the *vocational program* on average. Therefore, our results suggest that decentralization had the effect of shifting government priorities both towards education (given that the overall regional budget is fixed) and also towards the education programs most preferred by a majority of the population. Additional results complement this view: the effect of the reform on *vocational dropout rates* increases with either the level of government revenues or with unemployment. This suggest that when revenues are low the priority is the high school program and that education policy priorities shift away from it as unemployment rises. Overall, we interpret this as evidence that decentralization improved preference matching and, as a result, education outcomes.

The rest of this article is organized as follows. Section 2 describes the main features of the educational sector in Spain, with particular reference to the education decentralization reform. Section 3 describes the empirical strategy, and it includes a description of the variables that we use in the analysis and our data sources. Section 4 presents the different tests conducted to check the validity of our comparison group. Section 5 presents the results. Finally, the last section reports the conclusions.

² In 1978, the average gross enrolment rate in secondary education in Spain was 52.1 per cent, 36.1 per cent in the high-school program and 16 per cent in the vocational program. In 1991, the average gross enrolment rate in secondary education was 89.1 per cent in Spain (61 per cent in the general education program and 28.1 per cent in the vocational program), although differences between regions were quite significant. Thus, during the eighties enrolment rates in secondary education in Spain experienced a significant growth.

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