Is decentralization a driver of local state capacity?

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Abstract

We explore decentralization's effects on local state capacity, defined as the ability to increase local revenues and provide public services, focusing on Colombian municipalities at the beginning and end of the 20th century. We compare municipalities with different levels of fiscal capacity at the beginning of the 20th century, before and after decentralization. We also use an instrumental variable model to find only the effect of fiscal decentralization. In both analyses, we find evidence that decentralization and fiscal decentralization improve the public provision of education, including its quality, while reducing the ability to raise local taxes, generating fiscal laziness. The effects are more significant in municipalities with lower fiscal capacity at the beginning of the 20th century. These new behaviors are related to closing historical gaps in providing public goods while broadening them in collecting local resources.

Keywords: Decentralization, fiscal decentralization, state capacity, public services, local taxes, difference-in-difference,instrumental variable

JEL Codes: H41, H5, H71, H75, H77

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1 Introduction

In the last decades, developed and developing countries have granted political, administrative, and fiscal powers from the central government to local governments. For example, in Europe, Scotland, Italy, Spain, and France have been politically decentralized recently, while Denmark and Sweden have adopted fiscal decentralization. Asia, particularly China ([He and Sun, 2018]) and Indonesia ([Pepinsky and Wihardja, 2011]), have delivered tax powers locally. While in South America, countries such as Bolivia, Mexico, Brazil, Argentina, and Colombia are going through fiscal, administrative, and political decentralization processes ([Falleti, 2005], [Falleti, 2010]).

The literature commonly distinguishes between three types of decentralization: fiscal, administrative, and political. According to [Falleti, 2010], fiscal decentralization creates new policies through which local governments receive greater autonomy. Therefore, local governments are increasing their revenues; raising transfers from the central government, converting national taxes into local taxes, or creating new local taxes are ways to increase local revenue. Administrative decentralization refers to policies that transfer the administration of the provision of public services, such as education and health, from central to local government. Finally, political decentralization comprises a set of norms that generate the representation of sub-national polities, such as creating popular elections.

This transfer of resources, responsibilities, and authority has led sub-national governments to be at the forefront of the policy. However, it is not clear how valuable this power delivery can be. There are two opposite arguments; [Oates, 1972] argues that administrative decentralization produces greater efficiency when providing public goods since local governments have more accurate information about the needs of the local population than the central government. According to [Faguet, 2014], political decentralization allows citizens to have a closer relationship with elected politicians, causing more accountability. Contrarily, the effect on both efficiency and responsibility should be harmful due to corruption; [Lessmann and Markwardt, 2010] and [Bardhan, 2002] argue that weak institutions have high levels of corruption due to the power of social elites.

Most empirical works try to understand the effect of decentralization on economic development ([Rodríguez-Pose and Ezcurra, 2011], [Ezcurra and Rodríguez-Pose, 2013]), poverty ([Martinez-Vazquez and Sepúlveda, 2011] , [Ramirez et al., 2016]), inequality ([Rodríguez-Pose and Ezcurra, 2009], [Tselios et al., 2012], [Lessmann, 2012], [Sacchi and Salotti, 2014],[Cavusoglu and Dincer, 2015]), local spending ([Maličká, 2016], [Jia et al., 2014]), fiscal capacity ([Sun and He, 2018]) and of course in the provision and quality of public

goods ([Faguet, 2008], [Hodge et al., 2015], [Jeong et al., 2017], [Sanogo, 2019], [Diaz-Serrano and Meix-Llop, 2019], [Arends, 2020], among others). However, results are mixed and depend on the type of analysis performed; that depends on the case study analyzed (cross-section analysis or one country study) and the methodology used.

Our work aims to understand how decentralization can build local state capacity and improve the provision and quality of public services. Specifically, we want to answer the following questions: Can decentralization improve the local state capacity? Can decentralization close historical gaps in the quality and provision of public services and the capture of local taxes? What are the mechanisms that explain this effect?

We answer these questions by analyzing Colombian decentralization at the end of the 20th century. We measure state capacity in two ways: first, as the ability of local governments to supply public goods and their quality; in this article, we use the coverage rate of primary and secondary education and the quality of education since they are outcomes of improvement in the ability to provide public services. Second is the ability of local governments to raise local taxes. Specifically, we compare the capacity to raise local taxes and the provision and quality of education in municipalities with different levels of fiscal capacity at the beginning of the 20th century (1912) before and after the decentralization imposed by the 1991 Constitution. In this analysis, we use two databases, a novel database, which we created for this analysis, with census information from 1938 to 2005, and another with annual data from 1985 to 2010.

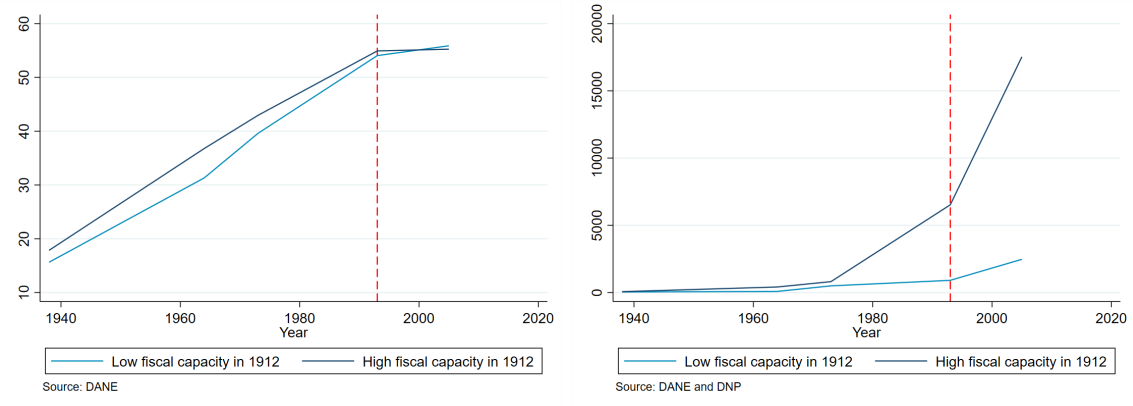
The Colombian case is an ideal case for different reasons. First, in Colombia, the three types of decentralization recognized by the literature were carried out: political, fiscal, and administrative ([Falleti, 2005], [Falleti, 2010]). These processes generated sustainable changes at the institutional and structural levels. Political decentralization placed people closer to political decisions through the popular elections of mayors and governors. Fiscal decentralization led both large and small municipalities to learn better management of public resources due to two changes: increasing the local tax base by moving national taxes to the local level; and delivering national transfers to invest in public services. Finally, administrative decentralization allowed municipalities to take responsibility for providing public services such as education, health, and drinking water. Second, in Colombia, unlike in other developing countries, data at the municipal level is abundant and of sound quality. It allows us to build long-term panel databases, focusing on the effects of decentralization without having noises related to the characteristics of the municipalities.

Figures 1 and 2 depict how the Colombian decentralization after 1991 may be related to

the closing and widening of historical gaps in education provision and the rise of local taxes, respectively. For this analysis, we divided the municipalities into two groups, those with high and low fiscal capacity at the beginning of the century, specifically in 1912, according to the median property taxes per capita. Then, we compare these two groups according to the behavior in coverage rates, standardized state test scores for secondary education (Saber11), and local taxes.

We hypothesize that, after decentralization, municipalities with lower fiscal capacity at the beginning of the century have different effects on state capacity depending on the variable analyzed. They manage to increase their provision of public services until they reach municipalities with high fiscal capacity in the same period, while the gap between them concerning collecting local taxes is widening.

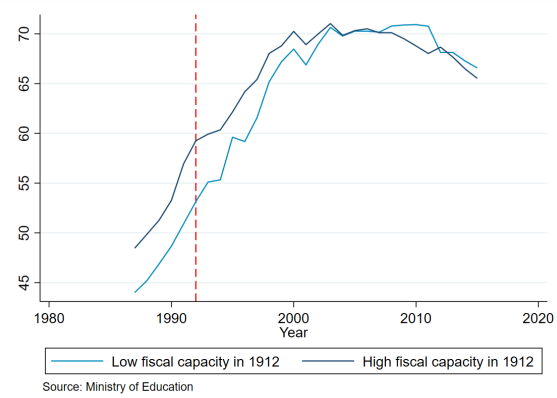
Figure 1: State capacity (1938-2005)



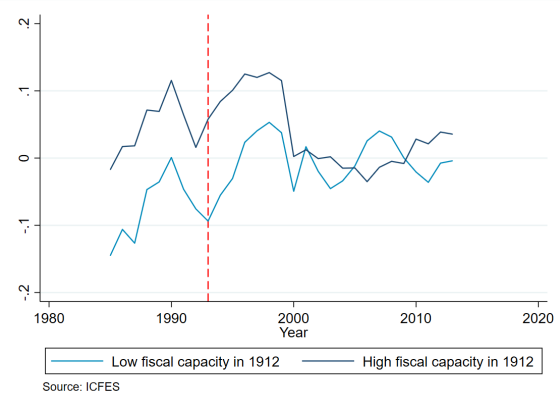
(a) Enrollment rate (%)

(b) Local taxes per capita

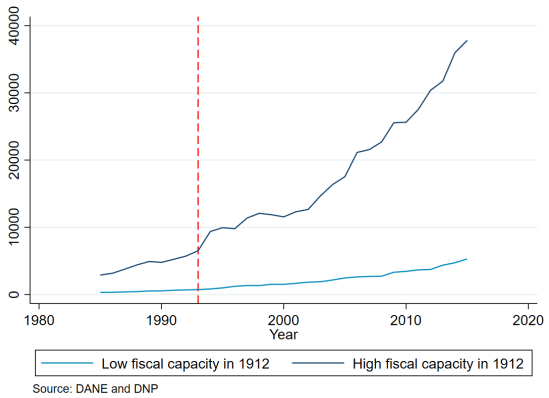
Figure 2: State capacity (1985-2015)



(a) Enrollment rate (%)



(b) Saber11 (sd)



(c) Local taxes per capita

We conclude that decentralization is a strategy implemented by the Central Government that has managed to improve the local state capacity related to the provision of public services, especially for the more vulnerable municipalities. Nevertheless, it has the opposite effect when analyzing the collection of local taxes. In particular, we use a difference-in-difference model (flexible and non-flexible), in which we compare municipalities with distinct levels of fiscal capacity at the beginning of the 20th century before and after decentralization. We also find evidence about the effect of fiscal decentralization measured as transfers per capita throughout an instrumental variable model. With these analyses, we arrive at the same conclusion; fiscal decentralization has a positive and significant effect on education provision; nonetheless, it generates fiscal laziness. Moreover, both positive and negative effects substantially impact municipalities with lower fiscal capacity at the beginning of the 20th century.

This article is organized as follows. Section 2 reviews the relation between decentralization and local state capacity. Section 3 describes the Colombian context explaining the decentralization process since the late '60s. Section 4 presents the data that we use in this analysis. Section 5 describes the econometric strategy. Section 6 proves how fiscal decentralization affects local state capacity. Finally, Section 7 provides some conclusions.

2 Literature Review: Decentralization and State Capacity

The empirical literature that relates decentralization to different aspects of state capacity divides naturally into three groups. The first analyzes the effect on the provision of public goods, especially the impact on education and health services. The second investigates the influence of qualitative improvements in the provision of public services, such as the results of standardized tests in primary and secondary education. Finally, the literature studies the effect on local taxes and expenses. Although each of these publications covers an issue related to state capacity, as far as we know, this is the first work that brings together the effects of decentralization in different measures related to local state capacity. It shows that delivering autonomy to local governments affects historical behaviors in closing the gaps in the provision of public goods and widening the gaps in capturing local taxes. Moreover, especially for the Colombian case, it is the first to empirically explore the impact on the ability to raise local taxes.

Different studies that relate decentralization to the provision of public goods vary in contexts and methodologies; some of these, especially the recent ones, also focus on finding the effect on the quality of the provision of public services. Some studies analyze a group of countries, and some investigate a single one. These investigations have shown this effect on countries in Europe, Africa, Asia, and South America. For example, [Guerra and Lastra-Anadón, 2019] use a novel cross-country panel from the OECD and show that decentralization has some adverse effects on education. According to the authors, decentralization generates an increase in coverage rate, giving evidence of an improvement in the provision of services; nevertheless, this causes a reduction in the quality of education.

In Africa, [Sanogo, 2019] shows how fiscal decentralization, measured as local resources, in Ivory Coast increases access to education, resulting in a reduction in population poverty levels; however, they find no effect on the provision of health, drinking water, and sanitation services. In Asia, one of the cases that have attracted the attention of researchers is

the well-known Big Bang of Indonesia. In 1999, from being one of the most centralized countries to one of the most decentralized systems ([World-Bank, 2003], the government established fiscal and administrative decentralization. The provinces were responsible for collecting and investing local taxes provision of education and health. Studies show the positive effect of decentralization. For instance, [Hodge et al., 2015] present evidence of how decentralization increased the provision of health services; however, regional inequality in the service provision increased as well, given that there are more prosperous provinces than others, depending on their fiscal base. [Soejoto et al., 2015] analyze the effect of fiscal decentralization in Indonesia on different variables that positively affect public spending, reducing the poor population, increasing HDI, and, therefore, human development.

Finally, cases such as Colombia, Bolivia, Argentina, and others are being analyzed in South America. In particular, [Faguet and Sanchez, 2006] and [Faguet, 2008] examine how fiscal decentralization affects the provision of education in Bolivia and Colombia; in both cases, the coverage rate improves, especially for smaller and poorer municipalities. As well, [Faguet, 2004] and [Faguet, 2014] complement these results by showing an improvement in the provision of education and health in Colombia, where accountability is an important mechanism that leads to these results.

Likewise, when analyzing the effect of decentralization on education quality, results are mixed depending on the case of analysis. Results are also mixed depending on the case of the study. For instance, [Diaz-Serrano and Meix-Llop, 2019] divide the effect of decentralization on fiscal and political; they find that fiscal decentralization improves the Program for International Student Assessment (PISA) tests, while political decentralization has the opposite effect. [Jeong et al., 2017] find precisely the same impact in Korea. Additionally, in Indonesia, [Leer, 2016] finds evidence that decentralization has almost no effect on educational quality and negatively impacts teachers' efforts. Finally, in Argentina, [Galiani et al., 2008] find that decentralizing school control from central to provincial governments positively impacts student test scores only in the wealthiest provinces.

Finally, the last group of literature to which this paper contributes is related to the local capacity to generate expenses and collect taxes. Regarding the first topic, [Maličká, 2016] analyzes the case of the Visegrad Countries and finds evidence of an increase in local spending generated by the decentralization of expenditure and revenues. While[Jia et al., 2014] investigate how fiscal decentralization increases government spending on construction, education, and administrative capital; however, it has little effect on local expenditures. Regarding local taxes, Indonesia and China are particular examples of how national transfers

discourage efforts to capture local resources ([Ranis and Stewart, 1994], and [Sun and He, 2018]).

3 Colombian decentralization process

3.0.1 Background

Colombia is a regionally divided country. In particular, it is divided into territorial entities such as departments, municipalities, and districts; and since the 19th century, the country was strongly centralized.

In the Constitution of 1886, Colombia was a unitary republic politically centralized and administratively decentralized. On the one hand, the executive power was in the hands of the President, who decided the people that governed with him, such as ministers, magistrates, and governors characterizing political centralization. Thus, the President had vertical power, and the citizens' political participation was impossible. On the other hand, each department was in charge of the provision of public goods, especially primary education (Article 189), characterizing administrative decentralization.

In 1968, there were two fundamental reforms: first, a reform of the Constitution, in which the President's power increased, strengthening political centralization; and the intergovernmental transfers were created, destined for regional and local development, encouraging administrative decentralization (Article 53). Second, Law 33 of 1968 introduced fiscal decentralization, in which departments and municipalities received some national taxes.

In 1971 Law 4 established the source, distribution criteria, and destination of transfers. They correspond to a percentage of the Current Revenue of the Nation based annually: 13% in 1973, 14% in 1974, 15% in 1975, and this would increase annually (Article 1). The Central Government delivered monetary transfers to departments, giving the resources to municipalities; 30% is divided equally between the departments and districts, and the remaining 70% is in direct proportion to the population of each one. Finally, these resources were invested in the operation of primary education (74%) and health (26%).

In the '80s, when the National Government imposed norms that strengthened fiscal and administrative decentralization, and for the first time, the discussion on political decentralization began. Regarding tax rates, Law 14 of 1983 increased the amount of local taxes that both municipalities and departments perceived. This law transferred cadastral, property, industry and commerce, finance, and consumption taxes from the Central Government to de local. As for the administrative decentralization, Law 12 of 1986 defined the

sectors in which national transfers must be invested, and the functions also transferred from the Central Government to the local [1]. Regarding political decentralization, representative democracy was strengthened at the local level:

> Legislative act 1 of 1986 amended the Constitution of 1886, allowing citizens to elect mayors by popular vote from the second Sunday of March 1988 for two years. The reform is fundamental because previously, the mayors were freely appointed and removed officials appointed by the governors, who could permanently transfer them from one municipality to another, without any guarantee of stability for the performance of the position (Oun translation Valencia-Tello 2013, p. 184).

From the '60s until the '80s, administrative, fiscal, and political changes related to decentralization were made. Finally, they were consolidated in the Constitution of 1991, as shown in the following section.

3.0.2 Decentralization in Colombia

Colombian people voted in favor of changing the Constitution of 1886 in 1990; a Constituent Assembly was chosen and was characterized by political pluralism. The constituents decided to have a decentralized government with autonomy from territorial entities and participatory democracy (Art 1 of the 1991 Constitution). That was how the Constitution of 1991 deepened and shaped the decentralization process initiated at the end of the '60s.

According to [Falleti, 2010], the Colombian movement toward consolidating decentralization in the context of the post-developmental state was a sequential process encompassing first political, then fiscal, and finally administrative reforms.

Although political decentralization began in 1986 when Legislative Act 1 approved the popular election of mayors, it consolidated with the 1991 constitution, with the popular election of governors. By reinforcing the power of sub-national rulers, coalitions between municipalities and departments pushed forward the second phase of decentralization, fiscal decentralization; through constitutional reform, transfers given to departments and municipalities increased significantly.

The administrative decentralization (Laws 60 and 115) started when the National government transferred expenditure responsibilities to sub-national governments. Each level of

[1] Municipalities had functions related to the following sectors: drinking water and basic sanitation, health, education, agriculture, urban development, and public works.

government's competencies is defined to strengthen administrative decentralization: National, departmental, and municipal. In particular, since 1993, the municipalities have been responsible for directing and coordinating activities related to providing public goods and services such as education, health, drinking water, and basic sanitation.

With this new constitutional framework and the legislative processes before the Constitution of 1991, the Government incentive the provision of public services, the participation of citizens in political decisions, and the autonomy of territorial entities.

Table 1: Colombian decentralization process 1986-1994

Year	Type of Dec	Dec. Policy	Policy Description	Main Actors Advancing Reform	Dominating Territorial Interest	Main Territorial Beneficiaries
1986	P	Legislative Act No. 1	Popular election of mayors	National executive; factions of the liberal and conservative parties in Congress	Sub-national	Municipal
1991	P	Constitutional Reform	Popular election of governors	National executive; sub-national actors of ruling and opposition parties	Sub-national	Departments
1991	F	Constitutional Reform	Increase of the base and rate of automatic transfers to departments and municipalities	Sub-national ruling and sun-national opposition	Sub-national	Departments
1993	A	Laws 60 and 115	Establish the funding schemes and distribution of responsibilities among levels of government for the management of education and health services	National government (in negotiation with national teachers' union	National and sub-national	Departments

Font: [Falleti, 2010]

4 Data

The paper's main objective is to understand how decentralization encourages local state capacity and how this effect differs according to the levels of fiscal capacity at the beginning of the 20th century. In particular, we want to understand if decentralization closes or widens state capacity's historical gaps between Colombia's poorest and wealthiest municipalities.

On the one hand, we use different measures of state capacity. First are local taxes, which measure the capacity of each municipality to collect taxes; enrollment rate, as an

outcome of the ability of local governments to provide public education; and academic performance, representing the quality in the provision of public services. Specifically, we have:

- Enrollment rate is the ratio between the enrolled students in primary and secondary, and the population between 5 and 19 years old in municipality m at time t:

$$ER_{mt} = \frac{enrolled.students_{mt}}{population.5-19_{mt}} \tag{1}$$

- Standardized tests Saber11 results are the standardized average score in the test of the students of municipality m at time t:

$$saber11_{mt} = \frac{\sum_i \left(\frac{score_{imt} - mean.socre_t}{sd.score_t}\right)}{students_{mt}} \tag{2}$$

- Local taxes per capita in municipality m at time t:

$$LT_{mt} = \frac{local.taxes_{mt}}{population_{mt}} \tag{3}$$

On the other hand, we define fiscal capacity as the ability of each municipality to raise property taxes (per capita) in 1912. We want to understand if the poorest municipalities at the beginning of the 20th century had a more significant increase in their state capacity due to decentralization than more prosperous municipalities. Therefore, we use a discrete measure equal to one when per capita property taxes in 1912 were below the median and zero otherwise. As a robustness test, we also use the continuous variable corresponding to the actual value of property taxes per capita collected by each municipality.

4.1 Sources of information

We use two unbalanced panel databases at the municipal level. They differ in their sources, the length of the period analyzed, the number of periods observed, and the number of outcome variables.

The first data-set is one of the main contributions of this article because it is a unique panel database we created for this analysis. It contains information from five different years of the 20th century, and the outcome variables are enrollment rate and local taxes. The

data comes from the National Censuses (1938, 1964, 1973, 1991, and 2005), National Fiscal Statistics, and the database of the Center of Studies on Economic Development of the Universidad de Los Andes (CEDE). In addition, we found the first two sources of information in the archives of the National Administrative Department of Statistics (DANE), which we digitized manually due to the absence of digital bases with the information we required to perform long-term analysis.

The second database includes annual information from 1985 to the 2010s and has as outcome variables: enrollment rate (until 2011), academic performance (until 2013), and local taxes (until 2015). Information comes from different sources: variables related to education come from the Ministry of Education and the Colombian Institute for the Promotion of Higher Education (ICFES); variables related to revenues come from the National Planning Department (DNP), and geographical variables come from the database of CEDE.

Table 2 shows descriptive statistics for 1938-2005 data. The outcome variables are enrollment rate which indicates that, on average, 43% of people between 5 and 19 years old attend school. And local taxes per capita, which shows that during the 20th century, on average, there was a local revenue per capita of COP 30 thousand or 9.44 USD (constant prices of 2008) per year. National transfers per capita are 60% of the total income per capita, while local taxes per capita are 13% of total revenue per capita, of which 5% is from property taxes per capita.

Table 2: Descriptive Statistics (1938 - 2005)

	Obs.	Mean	sd	Min.	Max.	p25	p50	p75	years
Outcomes: State capacity									
Enrollment rate	3886	42.75	14.04	3.26	61.12	33.00	46.75	54.65	1938-2005
Local taxes p.c	3886	0.03	0.04	0.00	0.35	0.00	0.01	0.03	1938-2005
Public finance									
Total revenue p.c	3960	0.23	0.34	0.00	6.83	0.02	0.10	0.34	1938-2005
National transfers p.c	3922	0.14	0.19	0.00	1.41	0.00	0.00	0.21	1938-2005
Property taxes p.c	3960	0.01	0.02	0.00	0.14	0.00	0.01	0.01	1938-2005
Population									
Population	3960	27049.60	162492.62	450.00	6778691.00	6010.50	10252.50	18629.50	1938-2005
Students	3960	4325.81	23768.97	0.00	822783.00	825.00	1550.50	3040.00	1938-2005
Geography									
Municipal area	3960	602.16	1811.17	15.00	65674.00	122.00	241.00	532.00	1938-2005
Municipal altitude	3960	1345.05	1160.66	2.00	25221.00	450.00	1400.00	1950.00	1938-2005
Dis. to the nearest dep. capital	3960	74.48	49.98	0.00	376.12	38.55	64.79	98.58	1938-2005
Dist. to Bogotá	3960	282.42	174.64	0.00	1270.85	152.26	245.44	381.75	1938-2005

Notes: Enrollment rates (%) come from the National Census. Local taxes per capita, total revenue per capita, national transfers per capita, and property taxes per capita are in constant 2008 million pesos, and come from DANE and DNP. Municipality area (square kilometers), distance to the nearest departmental capital (kilometers), and distance and distance to Bogotá (kilometers) come from CEDE.

Table 3 presents descriptive statistics for the 1985–2015 database. For this case, we have more variables related to state capacity due to data availability. For this period, on average, 62% of the children between 5 and 19 years old are enrolled in school, and the local revenue per capita is COP 50 thousand or USD 15.73 (constant prices of 2008) per year. We also use the results of the standardized exam Saber11, which represents the quality of education provision. Additionally, national transfer per capita continues to represent the highest proportion of total revenue per capita (50%), and local taxes per capita represent 10%, of which 6% is from property taxes per capita.

Table 3: Descriptive Statistics (1985 - 2015)

	Obs.	Mean	sd	Min.	Max.	p25	p50	p75	years
Outcomes: State capacity									
Enrollment rate	26674	62.40	17.37	0.87	182.85	52.03	63.53	73.47	1985-2011
Saber11	26069	-0.09	0.34	-3.99	3.03	-0.30	-0.09	0.10	1985-2013
Local taxes p.c	31018	0.05	0.07	0.00	1.04	0.01	0.03	0.07	1985-2015
Public finance									
Total revenue p.c	31618	0.47	0.54	0.00	17.33	0.14	0.35	0.62	1985-2015
National transfers p.c	29035	0.24	0.19	0.00	1.34	0.10	0.21	0.34	1985-2013
Property taxes p.c	31618	0.02	0.03	0.00	0.45	0.00	0.01	0.02	1985-2015
Population									
Population	31633	37734.31	224792.41	0.00	7878783.00	7204.00	12949.00	24308.00	1985-2015
Students	27202	6155.32	24030.59	0.00	861793.00	1349.00	2595.00	5147.00	1985-2011
Geography									
Municipal area	31633	835.81	2901.80	15.00	65674.00	132.00	278.00	664.00	1985-2015
Municipal altitude	31633	1207.05	1169.00	2.00	25221.00	237.00	1240.00	1850.00	1985-2015
Dis. to the nearest dep. capita	31633	77.78	54.68	0.00	376.12	40.02	66.27	101.67	1985-2011
Dist. to Bogotá	31633	305.44	183.54	0.00	1270.85	168.59	267.37	434.03	1985-2015

Notes: Enrollment rates (%) come from the Ministry of Education. Graduation rate(%) and Saber11(sd) come from ICFES. Local taxes per capita, total revenue per capita, national transfers per capita and property taxes per capita are in constant 2008 million pesos, and come from DANE and DNP. Municipality area (square kilometers), distance to the nearest departmental capital (kilometers), and distance to Bogotá (kilometers) come from CEDE.

We compare municipalities with low and high fiscal capacity at the beginning of the 20th century (1912) in Tables 4 and 5. However, the data we analyze have a significant limitation. Although Colombia currently has around 1100 municipalities, our database only has data on fiscal capacity at the beginning of the 20th century for 499 because many municipalities were created during the 20th century.

The analysis of the mean differences shows that the two groups of municipalities have statistically significant differences in state capacity and characteristics related to local public expenditure, population, and geography. Specifically, in Table 4, the poorest municipalities in 1912 during the whole century (1938-2005) have, on average lower enrollment rates and local taxes per capita; also, they have smaller populations yet broad in area. However, it should be noted that national transfers per capita are not significantly different among the two groups analyzed, which is why total income per capita is not significant either.

Table 4: Mean differences (1938 - 2005)

	Low fiscal capacity (1912)		High fiscal capacity (1912)			
	Obs.	Mean	Obs.	Mean	Diff	p_value
Outcomes: St. capacity						
Enrollment rate	1084	40.49	1114	42.63	-2.14	0.001
Local taxes p.c	1076	0.02	1119	0.03	-0.01	0.000
Public finance						
Total revenue p.c	1104	0.19	1138	0.19	-0.01	0.554
National transfers p.c	1096	0.12	1127	0.11	0.01	0.190
Property taxes p.c	1104	0.01	1138	0.01	-0.01	0.000
Population						
Population	1104	18854.29	1138	39173.38	-20319.08	0.019
Students	1104	2957.11	1138	6200.66	-3243.55	0.010
Geography						
Municipal area	1104	438.01	1138	263.51	174.50	0.000
Municipal altitude	1104	1467.42	1138	1714.68	-247.26	0.000
Dis. to nearest capital	1104	77.23	1138	63.45	13.78	0.000
Dist. to Bogotá	1104	300.88	1138	183.78	117.10	0.000

Notes: Enrollment rates (%) come from the National Census. Local taxes per capita, total revenue per capita, national transfers per capita, and property taxes per capita are in constant 2008 million pesos, and come from DANE and DNP. Municipality area (square kilometers), distance to the nearest departmental capital (kilometers), and distance and distance to Bogotá (kilometers) come from CEDE.

These differences hold when analyzing the data at the end of the 20th century in Table 5. Wealthier municipalities with higher state capacity in 1912 have higher enrollment rates, better educational achievements (Saber11), and higher local taxes per capita. In addition, variables related to population and geography behave the same as in the period analyzed above; that is, the municipalities with low fiscal capacity at the beginning of the century have fewer individuals but larger areas. Finally, in this database, income-related variables gain statistical significance, showing that less disadvantaged municipalities at the beginning of the century have, on average more resources per capita.

Table 5: Mean differences (1985 - 2015)

	Low fiscal capacity (1912)		High fiscal capacity (1912)			
	Obs.	Mean	Obs.	Mean	Diff	p_value
Outcomes: St. capacity						
Enrollment rate	6505	61.09	6437	63.22	-2.14	0.000
Saber11	5825	-0.02	6471	0.04	-0.06	0.000
Local taxes p.c	7465	0.04	7433	0.06	-0.02	0.000
Public finance						
Total revenue p.c	7578	0.44	7539	0.47	-0.03	0.001
National transfers p.c	6997	0.25	6871	0.24	0.01	0.041
Property taxes p.c	7578	0.01	7539	0.03	-0.01	0.000
Population						
Population	7580	26809.11	7540	65317.77	-38508.66	0.000
Students	6578	5014.66	6512	8302.12	-3287.46	0.000
Geography						
Municipal area	7580	448.92	7540	279.35	169.57	0.000
Municipal altitude	7580	1427.86	7540	1682.43	-254.57	0.000
Dis. to nearest capital	7580	76.11	7540	63.17	12.94	0.000
Dist. to Bogotá	7580	309.33	7540	192.63	116.70	0.000

Notes: Enrollment rates (%) come from the National Census. Local taxes per capita, total revenue per capita, national transfers per capita, and property taxes per capita are in constant 2008 million pesos, and come from DANE and DNP. Municipality area (square kilometers), distance to the nearest departmental capital (kilometers), and distance and distance to Bogotá (kilometers) come from CEDE.

So far, we have shown significant differences during the whole century in the state capacity of municipalities with high and low fiscal capacity at the beginning of the 20th century. However, we hypothesize that these differences change after decentralization. In the next section, we show how decentralization changes these gaps.

5 Decentralization effects: Empirical strategy and results

After 1993 Colombia's three decentralization processes were reached: political, fiscal, and administrative. From then on, the population elected the politicians in charge of departments and municipalities; departmental and local governments distributed national transfers destined for education, health, and other public services; and the same tiers of government were responsible for providing public services.

Decentralization in Colombia was a process that affected all municipalities simultane-

ously; therefore, we cannot claim causality by comparing treated and controlled municipalities. However, we decided to compare municipalities with different fiscal capacities at the beginning of the century and see how decentralization changes the long-run behavior of state capacity among these groups. Thus, this section presents the empirical approach used to estimate the effects of decentralization on local taxes, provision, and quality of education using a difference-in-difference method.

5.1 Difference-in-difference approach

5.1.1 Non-flexible model

The main goal of this analysis is to find the differential effect of decentralization between two groups of municipalities, those with high and low levels of fiscal capacity, at the beginning of the 20th century. The differences-in-differences analysis takes advantage of the panel data structure we have for the two data sets and the arbitrary start of the three decentralization processes in 1993.

The baseline empirical strategy estimates the following equation:

$$Y_{mt} = d_t + \delta_m + \beta FC_{m1912} D_t + \eta' X_{mt} + \varepsilon_{mt} \tag{4}$$

Where Y_{mt} is the outcome variable representing the logarithm of local taxes per capita, enrollment rates, and Saber11 test scores in municipality m at time t. FC_{m1912} represents the fiscal capacity at the beginning of the century; it is a dummy indicating whether the municipality had low or high fiscal capacity in 1912 (this dummy is equal to 1 if the municipality had low state capacity in 1912). D_t is the dummy variable that represents decentralization, is equal to one after 1993, and zero otherwise. d_t and δ_m denote year fixed effects and municipality fixed effects, respectively. X_{mt} is a vector of covariates, which includes population and local GDP per capita, and ε_{mt} is a disturbance term.

β is the coefficient of interest because we want to know whether decentralization improves the capacity of rising local taxes and the provision of public goods and their quality in the poorest municipalities in 1912 compared to those wealthier in 1912. We hypothesize that this coefficient should be positive and significant for the provision of public services while negative and significant for collecting local taxes.

Figures 1 and 2 show the stylized facts that guide our hypothesis, which is that decentralization has a more significant impact on the poorest than the wealthier municipalities in the early 20th century, closing historical gaps in the provision of education while widening

in rising local resources. Tables 5 and 6 corroborate these results.

Table 6 shows that municipalities with lower fiscal capacity at the beginning of the 20th century had a larger positive and significant effect of decentralization over enrollment rates and standardized test scores and an opposite impact on local taxes. Columns (1) and (2) show the estimates of the census data-set (1938-2005), while Columns (3) to (5) show the estimation of the annual database (1985-the 2010s).

For the provision of education, Column (1) shows that municipalities with low fiscal capacity at the beginning of the century had 3.4 pp more students enrolled after decentralization than municipalities with high fiscal capacity. The second database corroborates this result; Column (3) confirms that the poorest municipalities at the beginning of the century had a 2.7 pp higher coverage rate after decentralization. Finally, Column (4) presents the coefficients of the Saber11 test, [2]; after decentralization, municipalities with low fiscal capacity in 1912 have 0.1 sd higher test result than wealthiest municipalities.

For the case of local taxes per capita, the results are the opposite; Column (2) presents the coefficients for local taxes per capita. While the poor municipalities decrease their ability to raise local taxes (1.3 pp), the wealthiest municipalities increase their local taxes after decentralization (0.4 pp). These results hold in the second data set in Column (5); after decentralization, municipalities with high fiscal capacity in 1912 increased their local taxes by 0.9 pp, and those with low fiscal power decreased their local taxes by 0.6 pp.

[2]We only have these data for the base that covers the years from 1985 to 2010s.

Table 6: Decentralization and state capacity - Fiscal capacity as a dummy variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap.1912 x Dec	3.453***	-0.013***	2.795**	0.066***	-0.015***
	(0.518)	(0.002)	(1.197)	(0.023)	(0.003)
Constant	16.362***	0.004***	47.935***	-0.078***	0.009***
	(0.292)	(0.001)	(1.191)	(0.016)	(0.002)
Observations	2,198	2,195	12,939	12,293	14,898
R-squared	0.924	0.634	0.421	0.027	0.571
Number of code	499	498	491	491	491
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity is a dummy variable denoting whether the municipality had high fiscal capacity at the beginning of the 20th century. Decentralization is a dummy variable denoting whether the time is before of after the implementation of decentralization (1993). Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1

The results in Table 6 for the provision and quality of education are consistent with the hypothesis that decentralization is closing historical gaps. Nevertheless, it is the opposite in the ability to collect local taxes between municipalities with different levels of vulnerability at the beginning of the century. Furthermore, the estimates are evidence that decentralization granted fiscal laziness to the poorest municipalities at the beginning of the century. Therefore, decentralization, including political, fiscal, and administrative, generated a decrease in the collection of local taxes.

5.1.2 Robustness checks

1. *Addressing bias due to the dummy construction*: One may worry that the effects of fiscal capacity at the beginning of the century will lose variability since municipalities are grouped according to property taxes. Therefore, in this robustness test, we decided

to take as regressor the natural logarithm of the municipality's property tax in 1912. Table 8 (Appendix A) shows the estimation when replacing the fiscal capacity dummy at the beginning of the 20th century for the monetary value of property taxes per capita. In this case, because it is a continuous variable, the results must have the opposite sign to those of the analysis with dummies (which is equal to one if the municipality had low taxes per capita at the beginning of the century). In this way, the results of the previous analysis hold. After decentralization, the provision and quality of education have a lower impact as more property taxes were available in 1912, while local taxes per capita increased their effect.

2. *Including new municipalities*: More than 500 municipalities were created after 1912, and in this paper, we can only analyze 499. Therefore, a concern may arise due to the possibility of having endogeneity problems by not including the new municipalities. Consequently, we carried out two analyses; first, we identified the municipality's origin in 1912 for 100 new secessions and thus assigned them their fiscal capacity dummy in 1912. Consequently, we expanded the sample; the results are in Table 9 (Appendix B). Second, instead of including the new municipalities, we control each observation for the number of secessions per year; the results are in table 10 (Appendix B). For both cases, the estimates show that the results are maintained and robust to different specifications.

5.1.3 Flexible model

We use a flexible model for two reasons: first, we can corroborate the assumption of parallel trends necessary to develop a difference-in-differences model. Second, we can determine how long the effect of decentralization lasts over time; the model estimates different coefficients for each year.

With this empirical strategy, we estimate the following equation:

$$Y_{mt} = d_t + \delta_m + \sum_{t=1987}^{1991} \beta_t FC_{m1912} d_t + \sum_{t=1993}^{2012} \beta_t FC_{m1912} d_t + \eta' X_{mt} + \varepsilon_{mt} \qquad (5)$$

β_t are the coefficients of interest, which infers the effect of having low fiscal capacity in 1912 each year. Before the decentralization process (1993), the dummy variables are placebos, and their coefficients should not be significant. While after decentralization, they should be statistically significant if being decentralized changes the state capacity behavior of these groups of municipalities.

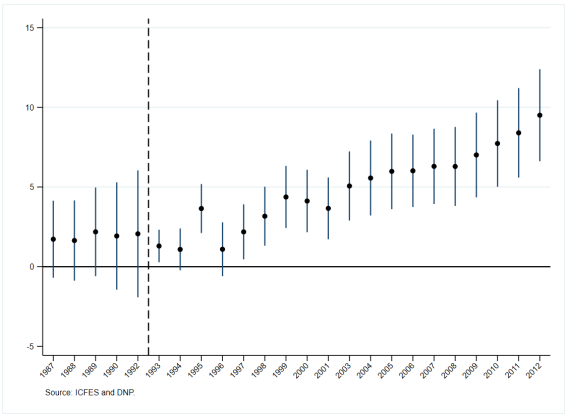
Figure 3 and Appendix C show the results for our outcome variables: Enrollment rate, Saber11 standardized test score, and local taxes. This analysis uses the annual data-set with information from 1987 until 2012.

Figure 3a depicts the annual coefficients for the enrollment rate; before decentralization (1993), they are not statistically significant, checking the assumption of parallel trends. However, since 1995 the coefficients have been significantly positive, and as the years go by, they grow. Hence, after decentralization, the municipalities with low fiscal capacity at the beginning of the 20th century have positive and greater effects than those with high fiscal power. Therefore, the historical gap in the coverage rate between these two groups of municipalities is closing after decentralization (See Figures 1a and 2a).

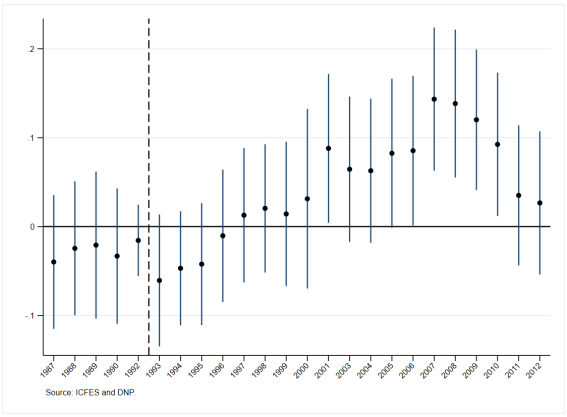
Figure 3b shows the coefficients for the quality of education; before decentralization, the estimations are non-significant, proving the assumption of parallel trends. Furthermore, the coefficients remain non-significant until 2004 jet they grow in magnitude, then they continue to grow and are positive and statistically significant until 2010. Figure 3b suggests that the effect of decentralization on the quality of education in the municipalities with low fiscal capacity at the beginning of the century takes some time; however, the impact does not last over time; it seems to be a medium-term effect. In this case, the historical gap in Saber11 test scores between the two groups of municipalities closes only for a while.

Finally, Figure 3c presents the estimates for local taxes per capita. While the behavior before 1993 proves the parallel trends assumption, as in the case of the provision of education, the one after decentralization is the opposite; the coefficients of each year are negative and statistically significant, and they decrease in magnitude over time. Therefore, decentralization's effect is a decline in the local tax collection for the poorest municipalities at the beginning of the 20th century. Figure 3c implies that the gap in local taxes between the two groups of municipalities increases due to the decentralization process.

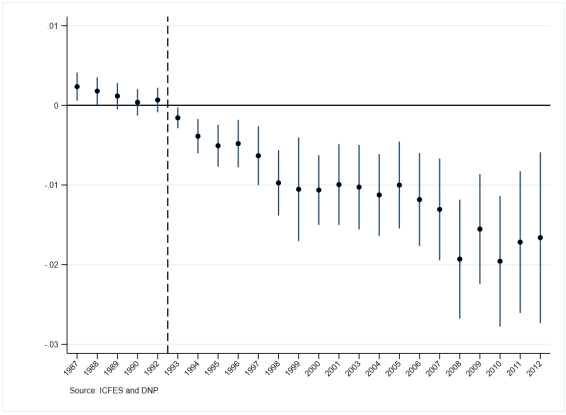
Figure 3: State capacity (1985-2015)



(a) Enrollment rate (%)



(b) Saber11 (sd)



(c) Local taxes per capita

These results combine two different changes: on the one hand, increasing national transfers and assigning responsibilities for providing public services to local governments incentivized both groups of municipalities to provide better education, especially municipalities with low fiscal capacity in 1912. But, on the other hand, for the wealthiest, it induces the collection of local taxes, while for the poorest, fiscal laziness.

6 Fiscal decentralization effects: Empirical Strategy and results

So far, we have found evidence that decentralization serves as a dynamic device to improve the provision of public services in Colombian municipalities while generating fiscal laziness

in those more vulnerable municipalities at the beginning of the 20th century. Nevertheless, it is crucial to understand how each type of decentralization explains these effects.

We want to find the ideal empirical method to identify the proportion of the effect corresponding to each type of decentralization: political, fiscal, and administrative. However, it is a very challenging task. Nevertheless, thanks to data on national transfers, we can identify the effect of fiscal decentralization in this analysis.

According to [Falleti, 2010], fiscal decentralization creates new regulations through which local governments receive greater autonomy. In the Colombian case, local governments are increasing their revenues by raising transfers from the central government; the allocation of national transfers to the municipalities was one of the fundamental changes generated after decentralization. With this in mind, we hypothesize that since 1993, the municipalities began a learning process on managing and allocating public resources, causing a more significant effect in municipalities with low fiscal capacity in 1912.

6.1 IV approach

To test our hypothesis about fiscal decentralization, we use the same model described in Equation 4. However, we take each municipality's transfers per capita yearly instead of using a dummy for devolution.

When national transfers per capita are included as an explanatory variable, endogeneity problems may arise for two main reasons. First, there is the confounding influence of variables that can explain the public spending per capita and the municipality's state capacity; for instance, idiosyncratic preferences of the municipality's population about public services. Second, there is a negative bias due to a reverse causality problem; municipalities that receive higher public resources per capita are more vulnerable. For example, they have a more significant proportion of poor people with fewer students, their performance is worst, and they collect less local taxes. Our identification strategy uses an instrumental variable model for addressing this issue.

We create a shift and share instrument we call potential transfers per capita. This variable distributes the national transfers for each year in Colombia (Shift) as a proportion of each municipality's population in 1912 (Share). Thus, we calculate this variable by multiplying the logarithm of total transfers at time t by the ratio of the people that municipality m had in 1912:

$$pot.transf_{mt} = ln(trasnf_t)\frac{population_{m1912}}{population_{1912}} \tag{6}$$

For this instrument to be valid, it must be uncorrelated to unobservable variables that determine the municipality's state capacity to guarantee the exogeneity assumption; and be correlated to the actual transfers per capita, conditional on controls to ensure the relevance condition.

To assure the exogeneity assumption, we must secure that the shifts and/or the shares are exogenous: national transfers per person in each moment and the municipal population in 1912 determine the municipal state capacity only through the transfers per capita the municipality receives. Therefore, the population of 1912 (shares) measures the differential exogenous exposure to the common shock: transfers invested by the National Government.

The relevance condition requires that a change in national transfers per capita affects municipal transfers per capita, conditional on controls. In a specific case where there is an increase in the National Public Spending per person, it will be reflected as an increase in the number of resources per capita the municipality receives.

The second stage of the instrumental variable model is as follows:

$$Y_{mt} = d_t + \delta_m + \beta ln(\hat{transf}_{mt}) + \gamma FC_{m1912} ln(\hat{transf}_{mt}) + \eta' X_{mt} + \varepsilon_{mt} \qquad (7)$$

Where $transf_{mt}$ is the natural logarithm of transfers per capita that municipality m receives at time t. Similar to the previous sections, the parameter of interest is β due to our interest in knowing the change in historical gaps related to state capacity. However, in this case, we are analyzing the specific case of how the National Government can change these behaviors by directly delivering resources to Colombian municipalities. As before, we hope to find a positive and significant coefficient that shows that the differences in the provision of public services between municipalities with low and high fiscal power at the beginning of the century are decreasing, while the gap related to raising local taxes is increasing.

Table 7: Decentralization and state capacity - Fiscal capacity as a dummy variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Transfers pc	-3.629	-0.117***	43.322***	0.047	-0.178***
	(10.326)	(0.041)	(7.403)	(0.257)	(0.017)
Fiscal Cap.1912 x Transfers pc	12.433***	-0.038***	5.312**	0.258***	-0.033***
	(2.384)	(0.010)	(2.628)	(0.071)	(0.006)
Observations	2,168	2,166	12,717	11,598	13,194
R-squared	0.052	0.062	0.006	0.006	-0.141
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES
First-stage F-statistic	22.06	26.67	264.2	150.7	327.1

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity is a dummy variable denoting whether the municipality had high fiscal capacity at the beginning of the 20th century. Transfers per capita is the log of the national transfers that the municipality received. The excluded instrument from the first stage is the potential transfers per capita. Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1

Table 7 shows the results of the estimation. We can highlight the following findings: The effect of transfers per capita on the enrollment rate is not clear among the two data-sets; for the census one, there is no evidence of the effect, while for the yearly one the is a positive and significant effect: increasing transfers per capita in 10% generate an increase of 4.3 pp in the enrollment rate. In both data-sets, in municipalities with low fiscal capacity at the beginning of the century, the effect is significantly higher compared to the municipalities with high fiscal capacity in 1912. Although we only have information for the yearly database about the Saber11 test score, the results are similar; transfers per capita increase the test results of both groups of municipalities; nevertheless, for the poorer municipalities in 1912, the effect is larger. Therefore, according to this evidence, fiscal decentralization closed existing gaps in the provision of education between municipalities with high and low fiscal capacity in 1912.

The effect of transfers per capita is different when analyzing the case of local resources; for both databases, we find the same results: increasing transfers per capita generates fiscal laziness in both municipal groups. As a result, their ability to collect local taxes is reduced: increasing transfers by 1 pp reduces local taxes by 0.11 pp on the census data and 0.17pp on the annual data. Additionally, for municipalities with low fiscal capacity at the beginning of the 20th century, the effect is more significant by 0.03pp, a robust result for both data-sets.

These results corroborate those found in the difference-in-differences analysis and provide evidence of how fiscal decentralization is essential to the effect seen in the previous sections. However, unlike the previous analysis, this one shows evidence that fiscal decentralization, understood as an increase in national transfers, generates fiscal laziness in all municipalities.

6.1.1 Robustness checks

For this model, we perform robustness tests similar to difference-in-difference analysis:

1. *Addressing bias due to the dummy construction*: as in the difference-in-difference analysis, one may worry that the effects of fiscal capacity at the beginning of the century will lose variability since municipalities are grouped according to property taxes. Therefore, in this robustness test, we decided to take as regressor the natural logarithm of the municipality's property tax in 1912. Table 12 (Appendix D) shows the results. As in the previous analysis, it is a continuous variable, and the results must have the opposite sign to those of the analysis with dummies (which is equal to one if the municipality had low taxes per capita at the beginning of the century). In this case, the results maintain that increasing transfers while higher property taxes reduces the provision and quality of education and increases local taxes per capita.

2. *Including new municipalities*: To respond to the concern about the non-inclusion of municipalities created during the 20th century, for the instrumental variable analysis, we include secessions as controls; that is, for each municipal observation, in the regression, we have the number of secessions created per year. Results are in Appendix E, showing the specification's robustness; there is no significant change in the estimates.

7 Conclusion

This paper disentangles the relationship between decentralization and local state capacity, measured as the ability to provide public services and raise local taxes. We find the causal effect of decentralization over historical gaps related to local taxes per capita, provision of education, and quality of education. Similarly, we see the causal impact of fiscal decentralization, measured as transfers per capita, over the same variables. This paper, unlike the others, unifies two of the primary stages of state capacity in the same analysis: we include variables that measure the power to increase local taxes and variables resulting from an increase in the ability to provide public goods.

We use two databases: one long-term database with census information from 1938 until 2005 and one with annual data for a shorter period from 1985 until 2015. We also implemented two models, a difference-in-difference strategy, where we compare municipalities with different fiscal capacities at the beginning of the century before and after decentralization. Also, we use an instrumental variable model to reach the same groups of municipalities; however, we replace the analysis before and after decentralization with the value of transfers per capita, so we expect to see the effect of fiscal decentralization.

On the one hand, we conclude that municipalities with lower fiscal capacity at the beginning of the century managed to increase their ability to provide public services until they reached the capacity of the municipalities with high fiscal capacity in the same period; in this case, the gaps are closed due to the decentralization process consolidated with the Constitution of 1991. At the same time, on the other hand, decentralization disincentivized the capability to raise local taxes generating fiscal laziness, especially in the municipalities with lower fiscal capacity in 1912; in this case, the gaps have been wider since 1993.

Fiscal decentralization is the regulation through which local governments receive greater autonomy; the increment of revenues due to the rise of transfers from the central government characterized the Colombian fiscal decentralization process. Therefore, we measure fiscal decentralization as transfers per capita, and by using an instrumental variable model, we reach the same conclusions as in the difference-indifference approach; however, the effect is granted only to fiscal decentralization.

By using different identification strategies and new sources of information and variation, this paper reaches the same conclusions found in other quasi-experimental analyses: there is a positive relationship between decentralization and the provision of public goods. Nevertheless, the advance in the literature due to this paper is threefold. First, this paper unifies two primary stages of state capacity in the same analysis: we include variables that measure

the ability to increase local taxes and variables resulting from an increase in the capability to provide public goods. Second, this analysis is the first that includes long-term information. Third, the Colombian context and the available data allow us to find both the effect of decentralization as a whole and to extract only the impact of fiscal decentralization.

The paper's findings are an appetizer for future analyzes in which a promising identification strategy can be found that reveals the effect of the three types of decentralization separately, in particular administrative and political.

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Appendix A

Table 8: Decentralization and state capacity - Fiscal capacity as a continuous variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap.1912 x Dec	-2.030***	0.010***	-2.904***	-0.044***	0.014***
	(0.315)	(0.001)	(0.679)	(0.015)	(0.002)
Constant	16.311***	0.004***	47.767***	-0.082***	0.009***
	(0.293)	(0.001)	(1.156)	(0.016)	(0.002)
Observations	2,198	2,195	12,939	12,293	14,898
R-squared	0.924	0.644	0.426	0.027	0.577
Number of code	499	498	491	491	491
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity represents the amount of local taxes collected by the municipality at the beginning of the 20th century. Decentralization is a dummy variable denoting whether the time is before of after the implementation of decentralization (1993). Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1

Appendix B

Table 9: Decentralization and state capacity - Fiscal capacity as a dummy variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap.1912 x Dec	3.407***	-0.012***	2.033*	0.061***	-0.013***
	(0.492)	(0.002)	(1.061)	(0.021)	(0.003)
Constant	16.126***	0.004***	47.875***	-0.079***	0.008***
	(0.290)	(0.001)	(1.154)	(0.016)	(0.002)
Observations	2,451	2,447	15,051	14,298	17,355
R-squared	0.924	0.635	0.423	0.022	0.561
Number of code	590	588	580	580	580
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity is a dummy variable denoting whether the municipality had high fiscal capacity at the beginning of the 20th century. Decentralization is a dummy variable denoting whether the time is before of after the implementation of decentralization (1993). Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Decentralization and state capacity - Fiscal capacity as a dummy variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap.1912 x Dec	3.466***	-0.013***	2.731**	0.067***	-0.015***
	(0.519)	(0.002)	(1.198)	(0.023)	(0.003)
Constant	16.320***	0.004***	47.993***	-0.077***	0.009***
	(0.292)	(0.001)	(1.193)	(0.016)	(0.002)
Observations	2,183	2,180	12,811	12,166	14,747
R-squared	0.925	0.634	0.420	0.028	0.570
Number of code	494	493	486	486	486
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity is a dummy variable denoting whether the municipality had high fiscal capacity at the beginning of the 20th century. Decentralization is a dummy variable denoting whether the time is before of after the implementation of decentralization (1993). Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1

Appendix C

Table 11: Flexible model

	(1)	(2)	(3)
	1987-2012		
	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap. 1912 x 1987	1.725	-0.040	0.002***
	(1.230)	(0.038)	(0.001)
Fiscal Cap. 1912 x 1988	1.643	-0.024	0.002**
	(1.281)	(0.038)	(0.001)
Fiscal Cap. 1912 x 1989	2.186	-0.021	0.001
	(1.416)	(0.042)	(0.001)
Fiscal Cap. 1912 x 1990	1.926	-0.033	0.000
	(1.713)	(0.039)	(0.001)
Fiscal Cap. 1912 x 1991	2.063	-0.016	0.001
	(2.025)	(0.020)	(0.001)
Fiscal Cap. 1912 x 1993	1.298**	-0.061	-0.002**
	(0.519)	(0.038)	(0.001)
Fiscal Cap. 1912 x 1994	1.087	-0.047	-0.004***
	(0.668)	(0.033)	(0.001)
Fiscal Cap. 1912 x 1995	3.649***	-0.042	-0.005***
	(0.782)	(0.035)	(0.001)
Fiscal Cap. 1912 x 1996	1.095	-0.010	-0.005***
	(0.859)	(0.038)	(0.002)
Fiscal Cap. 1912 x 1997	2.184**	0.013	-0.006***
	(0.879)	(0.038)	(0.002)
Fiscal Cap. 1912 x 1998	3.168***	0.021	-0.010***
	(0.942)	(0.037)	(0.002)
Fiscal Cap. 1912 x 1999	4.373***	0.014	-0.011***
	(0.991)	(0.041)	(0.003)
Fiscal Cap. 1912 x 2000	4.121***	0.031	-0.011***
	(0.998)	(0.051)	(0.002)
Fiscal Cap. 1912 x 2001	3.661***	0.088**	-0.010***
	(0.986)	(0.043)	(0.003)
Fiscal Cap. 1912 x 2002	5.063***	0.065	-0.010***
	(1.104)	(0.042)	(0.003)
Fiscal Cap. 1912 x 2003	5.563***	0.063	-0.011***
	(1.197)	(0.041)	(0.003)
Fiscal Cap. 1912 x 2004	5.980***	0.082*	-0.010***
	(1.207)	(0.043)	(0.003)
Fiscal Cap. 1912 x 2005	6.015***	0.085**	-0.012***
	(1.157)	(0.043)	(0.003)
Fiscal Cap. 1912 x 2006	6.296***	0.143***	-0.013***
	(1.201)	(0.041)	(0.003)
Fiscal Cap. 1912 x 2007	6.290***	0.138***	-0.019***
	(1.261)	(0.042)	(0.004)
Fiscal Cap. 1912 x 2008	7.010***	0.120***	-0.016***
	(1.352)	(0.040)	(0.004)
Fiscal Cap. 1912 x 2009	7.729***	0.092**	-0.020***
	(1.381)	(0.041)	(0.004)
Fiscal Cap. 1912 x 2010	8.396***	0.035	-0.017***
	(1.429)	(0.040)	(0.005)
Fiscal Cap. 1912 x 2011	9.503***	0.027	-0.017***
	(1.468)	(0.041)	(0.005)
Constant	47.217***	-0.032	0.009***
	(1.334)	(0.023)	(0.003)
Observations	12,023	10,691	12,027
R-squared	0.395	0.035	0.541
Number of code	491	486	491
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D

Table 12: Decentralization and state capacity - Fiscal capacity as a continuous variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Fiscal Cap.1912 x Transfers pc	-7.429***	0.038***	-9.222***	-0.234***	0.043***
	(1.530)	(0.007)	(1.539)	(0.050)	(0.004)
Observations	2,168	2,166	12,717	11,598	13,194
R-squared	0.052	0.062	0.006	0.006	-0.141
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES
First-stage F-statistic	22.06	26.67	264.2	150.7	327.1

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity represents the amount of local taxes collected by the municipality at the beginning of the 20th century. Transfers per capita is the log of the national transfers that the municipality received. The excluded instrument from the first stage is the potential transfers per capita. Each regression includes municipality fixed effects, year fixed effects and controls. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix E

Table 13: Decentralization and state capacity - Fiscal capacity as a dummy variable

	(1)	(2)	(3)	(4)	(5)
	1938-2005		1985-2010's		
	Enrollment rate (%)	Local taxes pc (ln)	Enrollment rate (%)	Saber11 (sd)	Local taxes pc (ln)
Transfers pc	-2.559	-0.123***	40.004***	0.046	-0.174***
	(10.352)	(0.042)	(7.361)	(0.257)	(0.017)
Fiscal Cap.1912 x Transfers pc	12.311***	-0.038***	5.552**	0.265***	-0.034***
	(2.392)	(0.010)	(2.623)	(0.072)	(0.006)
Observations	2,153	2,151	12,589	11,476	13,057
R-squared	0.056	0.055	0.014	0.006	-0.134
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES
First-stage F-statistic	22.16	26.65	265.9	152	329.3

Notes: Robust standard errors in parentheses. Columns (1) and (2) are from the data-set 1938-2005. Columns (3), (4) and (5) are from the data-set 1985-2010's. Each regression represents a different outcome: (1) is enrollment rate (%) between 1938 and 2005, (2) is local taxes per capita (ln) between 1938 and 2005, (3) is enrollment rate between 1985 and 2011, (4) is Saber11 (sd) between 1985 and 2013, and (5) is local taxes (ln) between 1985 and 2015. Fiscal state capacity is a dummy variable denoting whether the municipality had high fiscal capacity at the beginning of the 20th century. Transfers per capita is the log of the national transfers that the municipality received. The excluded instrument from the first stage is the potential transfers per capita. Each regression includes municipality fixed effects, year fixed effects and controls. *** p<0.01, ** p<0.05, * p<0.1