Governance and school performance in Colombia: A subnational look from the new institutional economy

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ABSTRACT

The article examines from a contractual logic the problems of quality and equity of education in the Colombian educational system, within a subnational context. The study applies a mixed and sequential approach considering the transaction and its attributes as the basic unit of analysis. The findings suggest that more autonomous educational systems are associated with better performance and indicate that the risks of inequity in performance are greater when the organization mode of the educational system has greater autonomy.

Keywords: *School governance, School outcome, School autonomy, New Institutional Economy.*

Gobernanza y desempeño escolar en Colombia: una mirada subnacional desde la nueva economía institucional

RESUMEN

El artículo examina desde una lógica contractual los problemas de calidad y equidad de la educación del sistema educativo colombiano, bajo un contexto subnacional. El estudio aplica un enfoque mixto y secuencial considerando la transacción y sus atributos como la unidad básica de análisis. Los hallazgos sugieren que sistemas educativos más autónomos se asocian con un mejor desempeño, y apuntan a su vez a que los riesgos de inequidad en el desempeño son mayores cuando el modo de organización del sistema educativo ostenta mayor autonomía.

Palabras clave: *Gobernanza escolar, Resultado escolar, Autonomía escolar, Nueva Economía Institucional.*

Governança e desempenho escolar na Colômbia: uma visão subnacional a partir da nova economia institucional

RESUMO

O artigo examina, sob uma lógica contratual, os problemas de qualidade e equidade da educação do sistema educativo colombiano, num contexto subnacional. O estudo aplica uma abordagem mista e sequencial considerando a transação e seus atributos como a unidade básica de análise. Os achados sugerem que sistemas educativos mais autônomos estão associados a um melhor desempenho, e indicam ao mesmo tempo que os riscos de inequidade no desempenho são maiores quando o modo de organização do sistema educativo apresenta maior autonomia.

Palavras-chave: *Governança escolar, Desempenho escolar, Autonomia escolar, Nova Economia Institucional.*

1. Introduction

An examination of various empirical studies reveals that school resources (spending per student, class size, instructional materials, infrastructure, etc.) do not satisfactorily explain school outcomes (Woessmann, 2016). Institutional changes as determinants of this outcome and governance factors associated with education policies oriented towards decentralization in resource management gain relative importance[1]*. This article examines the governance structure of the official educational system of the Atlántico department (a subnational territory in northern Colombia) and its relationship with school outcomes, appealing to the New Institutional Economy (NEI), which includes the Agency and Transaction Cost approach, better known as the North-Williamson school (Parada, 2003).*

Helping to resolve the dilemma between autonomy or centralization of the educational system and school organizations and to glimpse the risks of deepening it at the public policy level is a central aspect from the contractual logic of the NEI. In other words, it seeks to contribute to explanations about the risks of adopting administrative decentralization policies in the educational systems of developing countries, in terms of quality and equity, and knowledge about the reasons that may motivate these results, mostly adverse compared to developed countries, as evidenced by results in national and international tests (Melo, Hahn, Ariza, and Carmona, 2016; Sánchez, 2014; Galvis and Bonilla, 2014; Ayala, 2015; Barrera, 2014; Cortés and Vargas, 2012).

The Atlántico department, for its part, with about two million inhabitants and made up of 23 municipalities, records results in standardized national tests for middle education, Saber 11, in critical reading, mathematics, and natural sciences below the national average. The gaps between the official and non-official sectors are noticeable and more pronounced for the rural official sector. The results at the primary and secondary levels maintain similar behavior. These results occur within the institutional framework of regulation and operation of the Colombian educational system, based on the 1991 Constitution and the 1994 General Education Law, which can be defined as decentralized with a duplication of functions, a performance incentive structure, and accountability mechanisms with an emphasis on evaluation.

1 In this work, the terms "school," "college," "organization," or "educational center" are used interchangeably.

This constitutional and legal framework gave Colombian subnational territories [departments and municipalities] the responsibility to guarantee educational services from primary to secondary, and in turn delegated the task of supervising private institutions. The administration of personnel and educational funds also remained in the hands of subnational territorial entities (MEN, 2016).

Although there are a large number of entities involved throughout the system, responsibility is concentrated between the Ministry of National Education (MEN) and the Certified Territorial Entities (ETC), which are the highest expression of administrative autonomy in managing education at the subnational level. This certification process can be accessed by departments and municipalities and depends on factors such as physical and financial resources, a basic information system, and the ability to manage teaching staff (MEN, 2016).

The Ministry of National Education (MEN) has the power to determine the guidelines of national education policy, define standards, guarantee access, support territorial entities, and evaluate the quality of the system (Decree 5012 of 2009). However, schools have significant autonomy regarding the curriculum and evaluation, through the definition of Institutional Educational Projects (PEI), in which the adoption of national standards and curricular guidelines is reflected. On the other hand, the management of official schools in Colombia has little autonomy over the management of teaching staff. They have the power to distribute the workload and evaluate teacher performance, but they have no control over their hiring, dismissal, and remuneration. Education funding is highly centralized.

The incentive structure of the official basic and secondary education system can be classified into financial incentives for the management of educational establishments, incentives for the teaching profession, and incentives for students. In the first group, the distribution of general resources from the General Participation System (SGP) is included, which, in addition to socioeconomic conditions, is also conditioned by fiscal performance indicators and net coverage indicators by territorial entities (Barrera, 2014). The second group corresponds to incentives for the teaching profession in terms of entry into the profession, promotions, retirements, remuneration, and performance evaluation. Here two schemes coexist: in the first, where promotion and remuneration depend on the scale and promotion obeys criteria of time of permanence without evaluations (Decree 2277 of 1979). While in the second, entry, permanence, and promotion of the teaching career are subject to evaluation and merit as a fundamental element (Decree 1278 of 2002). In the last group, there are student performance incentive programs[2], especially focused on granting scholarships and loans under flexible conditions.

Regarding accountability mechanisms, both education secretariats and educational establishments follow some MEN guidelines to submit to the scrutiny of the educational community and society in general about actions taken in the education management process (MEN, 2010), focused on quality, access and permanence, efficiency, educational infrastructure, use of ICT, training of students and teachers, enrollment, school transport, food, adult education, bilingualism, and free education. For public educational establishments, the same guidelines are set as for education secretariats, and they are required to carry out an annual mandatory self-assessment exercise on the quality of the service provided, which should lead to an institutional improvement plan. The self-assessment includes the evaluation of resources, processes, and results.

2 The "Ser Pilo Paga" program, which was introduced in 2014, is highlighted in this work. It offered 10,000 scholarships per year for entry into higher education to low-income secondary school students who achieved outstanding scores in the Saber 11 exams. This program was discontinued in 2018, making way for another program called "Generación E" with a similar purpose but with resource rationing.

In the above context, two hypotheses are proposed to contrast: 1) greater school autonomy as a mode of organization of the educational system is associated with better school outcomes because decentralization improves the quality of decisions and promotes competition, however, 2) it can lead to a greater risk of inequity in achievement. The latter is explained because autonomous adaptation (Williamson, 1999) drives gaps between local and global goals; among which the inequity in achievement linked to socioeconomic and sociodemographic factors stands out. The nature of autonomy in this case is understood in terms of responsibility for centralized decision-making —national or subnational authority— versus those that are the responsibility of the school organization. The concept has been used extensively in various theoretical and empirical developments (Balu et al., 2009; Hanushek and Woessmann, 2010), and its theoretical basis is the agency approach (Bishop and Woessmann, 2004).

Theoretical Considerations on Agency and Transaction Cost Economics

Bishop and Woessmann (2004) synthesized a principal-agent theoretical model, based on certain governance factors as determinants of performance. Specifically, these factors are: 1) central exams, 2) centralization of responsibilities versus school autonomy, 3) influence of teachers, 4) influence of parents, 5) competition in the educational system, and 6) the incentive system. The latter is a direct consequence of the prevailing institutional structure.

Table 1 summarizes the main effects highlighted by the authors and an explanation from this theoretical line on transmission mechanisms. For some factors, such as school autonomy and the influence of teachers, there are two potentially contradictory effects of greater decision-making power at the school level. On the one hand, school autonomy and decentralization of responsibilities improve the quality of information and therefore the quality of decisions, having positive effects on performance. However, the authors warn about the risk of greater school autonomy, teacher autonomy, and greater decentralization at the subnational level due to the increased leeway to act opportunistically in a possible diversion of educational resources intended for teaching towards other objectives of self-interest of education producers, unless decisions can be fully monitored and the extent to which educational objectives are met can be fully assessed, and unless there is a credible threat of sanctions for opportunistic behavior (Bishop and Woessmann, 2004, p. 17).

On the other hand, the general feature of Transaction Cost Economics (TCE) is risk mitigation through ex-post governance, starting from the premise that contractual relationships are inevitably incomplete and therefore the ex-ante incentive alignment of agency theory is not sufficient (Williamson, 1989). In summary, the general reasoning is that national authorities, subnational governments, and school organizations face incomplete contracts in managing the educational system. Consequently, governance structures or modes are debated between autonomy, becoming more important as contractual risks increase, resulting from opportunism, bounded rationality, and asset specificity.

Table 1. *Bishop and Woessmann Model. Institutional Effects on Educational Performance from the Principal-Agent Perspective*

Institutions	Transmission mechanism	Effect
Central exams	The external standard promotes competition and makes it observable and transparent. It simplifies performance tracking for students, teachers, and schools.	Positive
Distribution of responsibilities for tasks between schools and administrative authorities.	School autonomy should enhance the quality of information for decision-making and improve educational outcomes.	Positive
	School autonomy increases the school's possibilities to act opportunistically. For example, resource diversion or pursuing objectives different from those agreed upon.	Negative
Distribution of responsibilities among administrative authorities.	Increased decentralization enhances the quality of information.	Positive
	It increases the possibilities of opportunism and collusion of local interests.	Negative
Teacher influence	Teacher autonomy improves the quality of information and enhances teaching.	Positive
	It increases the possibilities of opportunism and their interest in enhancing their own financial well-being while reducing their workload.	Negative
Parents influence	Increased parental involvement in the administration and teaching processes elevates the political priority of enhancing education quality.	Positive
Private schools	It intensifies competition as well as parental influence. Offers greater monetary incentives for school management and reduces the principal-agent relationships.	Positive

Source: Authors' elaboration based on Bishop and Woessmann (2004).

From this perspective, adaptation, not maximization, is the central problem of economic (public or private) organization, from which two types are distinguished: autonomous adaptation and cooperative adaptation. Markets, for example, exhibit greater autonomous adaptation, but move to hierarchy as the needs for cooperative adaptation increase (Williamson, 1999). Thus, "the recurring dilemma with which transaction cost economics deals is, therefore, between the benefits/costs of autonomy and cooperation" (p. 312). Alternative governance modes differ in structural forms, incentive intensity, more or fewer administrative controls, and the contractual law regime; these are the key attributes with which governance operates (Table 2).

Table 2. *Attributes of public order governance structures*

Governance structure			
Attributes	**Privatization**	**Regulation**	**Public agency**
Instruments			
Incentive intensity	+ +	+	0
Bureaucratization	0	+	+ +
Performance			
Autonomous adaptation	+ +	+	0
Cooperative adaptation	0	+	+ +
Contract law - Employment relationship			
Executive autonomy	+ +	+	0
Staff safety	0	+	+ +
Legal dispute resolution	+ +	+	0

Source: Authors' elaboration based on Williamson (1999). Conventions: Strong = + +; Semi-strong = +; Weak= 0.

The above summarizes a simple scheme of governance structures and alternative contracting relationships for the public sector, which in general can be used to examine educational governance. The study of contractual relationships between the central government, subnational governments, and school organizations in the education sector focuses on the transaction costs that may arise from the interdependence of tasks (greater or lesser autonomy); tasks that, due to their degree of complexity, can be carried out jointly, individually, or in a mixed manner, such as policy setting, supervision, organization, evaluation, and administration of the educational system.

The typology of governance structures can differ due to the magnitude of hierarchical controls that can be imposed on a subnational entity or a school organization and can explain the higher or lower levels of autonomy and contractual relationships, influenced by perceived transaction costs and concerns about the appropriation of resources and efficiency outcomes (Gulati and Singh, 1998).

Without limits on rationality, organizing an educational system to optimize global public policy objectives, for which the national authority is responsible, would be less complex. However, barriers to rationality and opportunism threaten this coherence between intermediate or local objectives versus global ones. The pursuit of global goals becomes complex when strategic efforts are employed to gain a local advantage using asymmetric information or the exploitation of contractual imprecisions or uncertainties that un-

dermine strategic cooperation. This approach warns that for types of transactions like education, greater or lesser autonomy depends on a compliance matrix that implies moving away or not from local goals to global ones; to the traditional contractual risks identified by TCE such as asset specificity (human in the case of education), cost overruns, and bilateral dependence, risks of inequity could be added that manifest in access and quality gaps associated with socioeconomic, sociodemographic, and gender factors.

From this theoretical perspective, it is deduced that the autonomous adaptation of educational systems tends to better cost control (due to higher incentives, fewer administrative controls, and executive autonomy) but increases the risks of non-cooperation and inequity, while governance modes of cooperative adaptation weakly control costs, but bilateral dependence works better, and the risks of inequity in the system are reduced.

2. Methodology and Data

We employed a mixed approach to address the relationship between governance and school outcomes, following a sequential and evidentiary logic. The population of interest consisted of the official school organizations of the Atlántico department (a subnational territory case in Colombia), prior to sample design. In this regard, we designed and applied to each school principal a structured instrument that first relates the level of relative responsibility of the school organization in the main administrative tasks compared to national and local authorities; subsequently, the mechanisms of accountability, evaluation, incentives, and finally, the level of parental participation, as the most relevant variables. The population of interest that we identified from the ICFES[3] databases was 144 official schools with secondary education in the Atlántico department, excluding its capital Barranquilla, which accounts for approximately 60% of the entire population and warrants separate analysis.

The calculated sample size was 32 schools[4], and the questionnaire was applied to the acting principals of the selected official schools from the sample frame using Simple Random Sampling (SRS) and the questionnaire's validation was carried out through expert judgment[5]. In summary, the sample design is simple and representative of the total population of official schools located in the subnational territory of Atlántico, but not at the municipal level. Of the total sample, more than half of the educational centers (56%) correspond to schools with a full or single day, 41% provide service in the morning, and only 3% operate in the afternoon. 100% serve the secondary education level and 71% of the schools that made up the sample have a student population of more than 1000 students[6].

The qualitative approach was carried out based on convenience sampling where three principals of official schools from the Atlántico department, an executive from the departmental Education Secretariat, and an expert academic were interviewed. The inclusion criteria for the selection of the non-probabilistic sample and the application of the unstructured interview were derived from the survey application to principals, which required complementary explanations.

3 It corresponds to the Colombian Institute for the Evaluation of Education [ICFES]. Its databases are public and can be accessed directly at: https://www.icfes.gov.co/web/guest/investigadores-y-estudiantes- posgrado/acceso-a-bases-de-datos. The population of public schools in the department of Atlántico corresponds to the applicants for the Saber 11 exam in the second semester of 2018.

4 Using the formula for finite populations with a variance of 3%, a confidence level of 95%, and a sampling error of 5%.

5 Content and construct validity (Weir, 2005) were evaluated using the expert judgment technique; in this case, recognized and active researchers (with publications) in the fields of education, education economics, and governance. The prototype of the questionnaire, both structured and unstructured, was analyzed by three assessors using standardized observation sheets, based on which adjustments were made until final approval.

6 The total population served by the 31 schools is 34,104 students.

Through Ordinary Least Squares (OLS) regression, we modeled the performance of the departmental schools using as the dependent variable the average score obtained by each school in the Saber 11 Test in the period 2016 (2) - 2018 (2), in the areas of science, mathematics, and critical reading[7]*, and the unit of analysis is the official school organization. The results of the standardized tests for school i are described as:*

$$\boldsymbol{Yi} = \mathrm{Q}\mathbf{0} + \mathrm{Q}\mathbf{1}\boldsymbol{Ai} + \boldsymbol{Xi}\mathrm{Q}\mathbf{2} + \mathrm{Q}\mathbf{3}\boldsymbol{Zij} + \boldsymbol{Ci}\mathrm{Q}\mathbf{3} + \mathrm{s}\boldsymbol{i} \quad (1)$$

Where $\boldsymbol{Yi}$ *is the average score in the test of school i in Saber 11;* $\boldsymbol{Ai}$ *is the school autonomy indicator;* $\boldsymbol{Xi}$ *is a vector of accountability indicators, represents parental participation and incentives;* $\boldsymbol{Zi}$ *captures the average effect of socioeconomic backgrounds extracted from the ICFES databases per student and an average is constructed for each school;* $\boldsymbol{Ci}$ *is the usual vector of control variables that includes quality of infrastructure indicators, class size, type of school, proportion of women, and school climate, among others; and* $\boldsymbol{\varepsilon i}$ *is the error term.*

3. Discussion of Results

Table 3 provides a summary of the measures of central tendency and dispersion for all variables included in the models. Scores in mathematics, reading, and science are shown on a scale of 0 to 100, where a higher score indicates better performance. On the other hand, control variables such as time in the position of rector, experience, and time as an employee are expressed in years. The variable Religious Organization is a dichotomous variable that expresses the presence or absence of this type of organization in relation to school administration. In those variables where the mean is not presented, it is due to their categorical nature, such as class size, teacher's educational level, and distribution of the teaching staff by type of decree supporting official appointments.

The artificial indices or variables, such as the infrastructure index, parent participation index, and accountability index, are constructed using the Principal Component Analysis (PCA) methodology, taking negative and positive values. Their interpretation in the positive direction of the scale indicates better infrastructure, higher parent participation, and higher levels of accountability. As for the climate variable, it was constructed using the same PCA methodology, but the scale's direction is interpreted in reverse, where higher values indicate poor school climate. The socioeconomic level index (INSE) is extracted from the 2018 ICFES databases and aims to summarize the student's sociodemographic and economic characteristics on a scale of 0 to 100, aggregated at the school level through a simple average.

The results of the regression estimations by Ordinary Least Squares (OLS) of the average student performance by school on various explanatory variables in different specifications of equation (1) are presented in Annex 1, 2, and 3 for each of the evaluated knowledge areas. In all specifications, the dependent variable is the average performance of public schools in the subnational territory (Atlántico department) in the mathematics, reading, and science tests, and the sample includes the 32 randomly selected schools from different municipalities.

7 Just like in the case of the PISA data, for the Saber 11 tests, the latest data available at the time of writing this document extended up to 2018.

Table 3. *Descriptive Statistics of Variables, Atlántico Department*

Variables	Observ.	Mean.	Std. Dev.	Min.	Max.
Mathematics Score	32	43,97	4,89	37,2	57,1
Reading Score	32	47,94	3,77	42,3	58,2
Science Score	32	46,06	3,86	41,5	57,4
Total Number of Students	32	1065,75	735,64	250	2675
Time as Rector	32	6,62	6,75	1	28
Religious Organization	32	0,06	0,24	0	1
Experience as Rector	32	9,18	6,75	1	28
Time as Employee	32	7,53	8,95	1	41
School Existence Time	32	43,03	24,85	3	110
% of Female Students	32	54,46	9,72	40	80
Class Size	32	-	-	1	8
Infrastructure Index	32	0,00	0,42	-0,77	1,01
School Autonomy Index	32	0,00	0,58	-1,62	0,62
Parental Participation Index	32	0,00	0,42	-0,66	1,07
School Climate Index	32	0,00	0,51	-0,98	1,16
Accountability Index	32	0,00	0,42	-0,84	0,7
Socioeconomic Level Index	32	46,26	3,21	41,62	56,52
Teacher Postgraduate	32	-	-	1	5
Teacher Distribution by Decree	32	-	-	1	5
	32	0,44	0,32	-0,68	1,42
	32	0,11	0,1	0,00	0,57

Source: Authors' elaboration based on survey to rectors in the Atlántico department, 2019, and ICFES data.

The findings show that governance factors such as autonomy and standardized tests applied by external parties to students can reflect effects of the institutional structure on educational performance. The differences in the orientation and implementation of de facto educational policy are consistent with differences in results and suggest, through general relationships, the potential effect of an incentive framework aimed at preserving school autonomy by encouraging certain actions of school organizations aimed at achieving policy objectives.

Considering the above, it is useful to apply the econometric strategy of Woessmann (2007) through basic models of 32 observations that maintain parsimony; being as small as possible and without omitting variables that show independent significant effects. Thus, fourteen specifications are presented because of different controls and revisions with different variables, making it clear that socioeconomic background, school autonomy index, and the variable related to the number of standardized tests applied to students, once included in the models, hardly allow any other available measure to enter significantly or manage to change the essential results. Together, these three variables explain between 60 and 70 percent of the total variation in the results obtained by schools in the Atlántico department in the Saber 11 test during the study period.

Two-thirds of the schools under study contract standardized external tests for their students at least once a year, and this can be done five to six times in exceptional cases. It can be inferred from the NEI approach that state exams like the Saber 11 test at the end of secondary education function, on one hand, as accountability mechanisms to the school community, and on the other hand, as incentives that influence the behavior of students, parents, teachers, and principals to improve learning outcomes, especially when these results determine entry into higher education (universities and technical institutes).

Additionally, the quality resources of territorial entities that official institutions may receive are tied to classification standards of the institution and indicators of dropout rates, as confirmed by the perceptions of the school principals under study:

> *"Additional resources (own resources) are provided to help schools finance their investments. These resources are tied to the classification of the institution, Saber 11 results, and dropout rates. (...) At this moment, there is no balance, official schools with a favorable socioeconomic environment have a greater chance of accessing these resources, with some exceptions (official, regional administrative authority).*
>
> *Yes, and there are other resources that come from the general system of allocations, the product of the interests generated by the SGP, these resources by law must be allocated to quality, and these resources go to the territorial entity, and this has the discretion to distribute them. So, it is clear that the trend that has occurred in recent years is this discretion, at least for schools that perform better, they receive more resources in terms of quality, and those that perform worse, receive fewer resources" (Principal 1).*

Programs like "Ser pilo paga" and "Generación E," offered as fully condonable credit-scholarships, are part of the intensity of incentives that characterize autonomous governance structures referred to by Williamson (1999). In line with autonomous adaptation, most school organizations choose the most expedient path, which is to prepare students for the test, often financed by parents, giving rise to a parallel market of organizations specialized in conducting standardized tests of this kind. If this decision yields the desired marginal results, the number of tests per year increases. Two interviewed principals express it as follows:

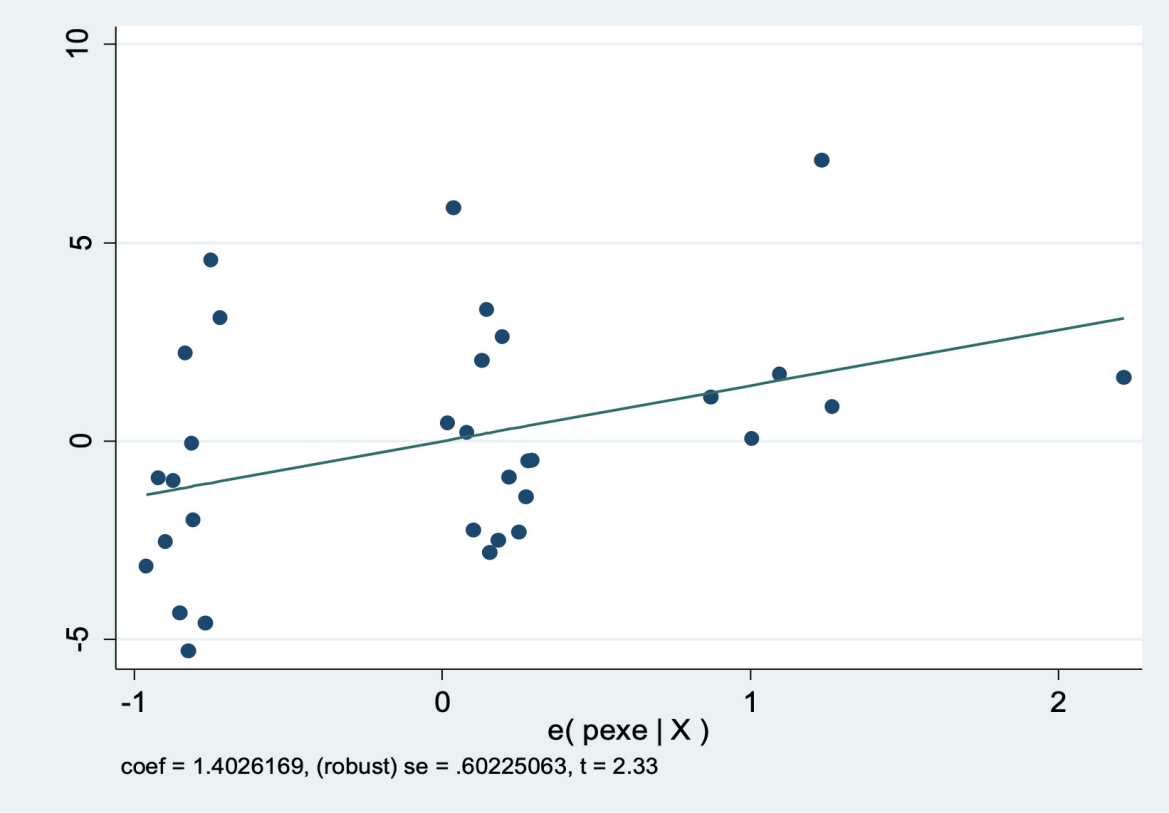
> *"We try to do one test per term, but it depends on the parents who pay for the test. So, in parent assemblies, we have considered having one test, last year we wanted to have two, and the parents agreed, but we didn't*

have enough time due to various reasons. But for now, we are doing only one test from first to tenth grade. In the case of eleventh grade, the education department supports the process, so the students prepare with a group sent by the department, but there are parents who also make a maximum effort to prepare the tenth-grade students and pay external companies for pre-ICFES preparation" (Principal 2).

"I internally arrange with my teachers, as long as the parents agree, and I give them, in addition to the full-day schedule, two additional hours three times a week, in other words, three times a week I stay with them, giving them two additional hours of different subjects with the same teachers, but as long as the parents cooperate. How do they cooperate? A small course is done and they pay for it, but of course, well below the market price, for example, an ICFES course is in the market for 450 or 380 thousand pesos, but they do it for 50 thousand pesos and they already have that preparation until August, which is when the ICFES exams are" (Principal 1).

As expected, the number of standardized tests administered in a year is statistically related to better student performance, and its effect is positive once controlled for socioeconomic background. If we compare, for example, the average performance in mathematics between schools that do not administer external standardized tests to their students and those that do, there is a seven-point difference on average and an eleven-point difference between higher-performing public schools that do not conduct tests and those that conduct up to four tests per year.

Figure 1. *Standardized External Tests and Mathematics Performance*



Source: Authors' elaboration based on survey to rectors in the Atlántico department, 2019

Figure 1 represents the partial regression between mathematics scores and the number of standardized external tests per year. It shows the association between two variables after eliminating the influence of control variables, in this case, the autonomy index and socioeconomic background. The schools on the left with a value of -1 are the ones that do not administer standardized external tests to their students. On the right, with a value greater than or equal to 0, are the schools that conduct these types of tests. It is clear that at least in six schools, tests are not conducted, yet they achieve or surpass the scores of schools that do administer tests. However, the trend appears to be that schools employing this strategy improve significantly, with adverse cases positioned on the left side of the diagram.

The result is crucial because if the funding for these tests often comes from parents, the institutional capacity of some schools could be undermined due to the inability to cover the test costs. A preliminary conclusion can be drawn that autonomy in admission processes and the excessive demand focused on certain schools encourage a certain selectivity that ensures the educational organization maintains or improves its standards. One of the key interviewees expresses the following:

> *"Because there are also variables that are directly related, for example, the economic situation of the family members, family status, and the level of family education are directly related to student performance. (...) Given this, in schools that are of level A, which are mostly from stratum 3, it's difficult to find stratum 2; it's a possibility, but not the majority. So, these schools will have the ease of buying pedagogical elements. For example, most category A schools use a software that costs 450,000 pesos per year" (Principal 1).*

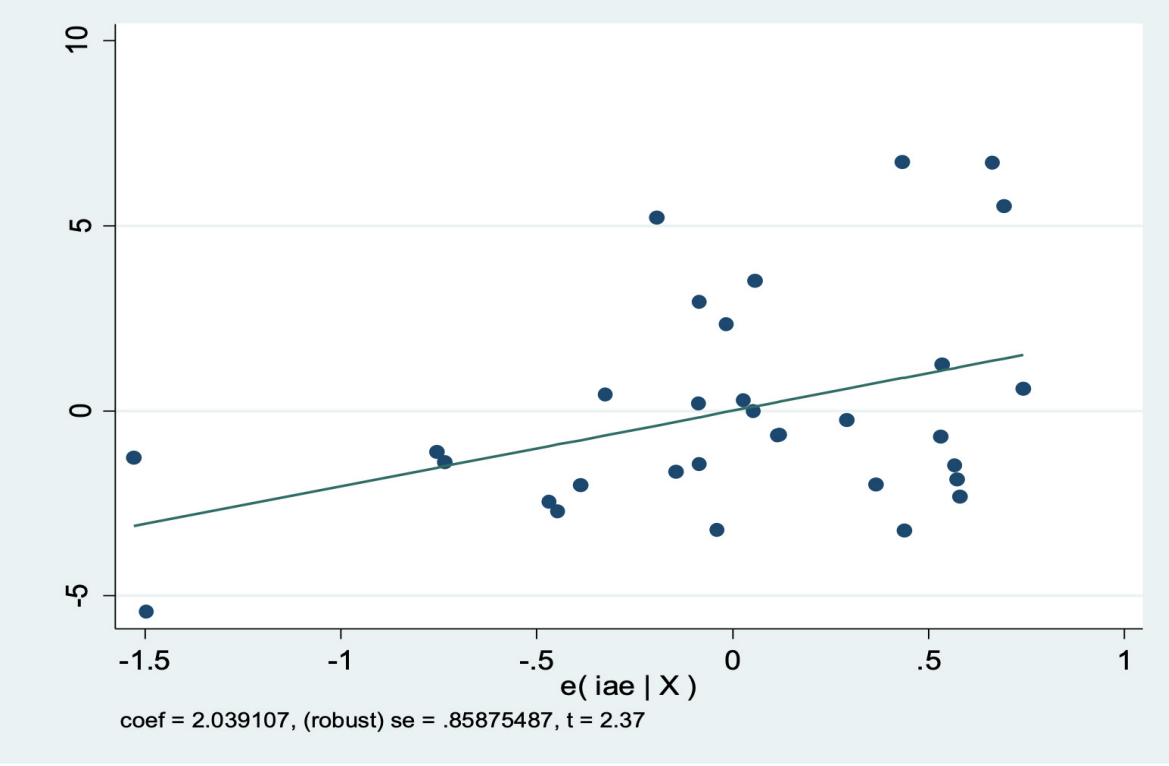
Regarding the autonomy index, once socioeconomic backgrounds are controlled, it is associated with an improvement in scores of one to two points on the test across all specifications. This result in some way proves that although regulations govern levels of autonomy in different tasks, de facto functions carried out by educational organizations differ in degree, often depending on contractual risks perceived by national and regional authorities that increase hierarchy at the expense of autonomy. In other words, de facto school autonomy, understood as the relative level of responsibility that the school organization has in practice in various tasks, is not inherently an exogenous process in the development of functions.

The influence of national, regional, and local authorities in various tasks, from the development and execution of the Institutional Educational Project (IEP), execution of quality improvement plans, execution of investment projects, to the control of teaching functions, is perceived less intensely in those schools where certain standards adjusted to policy goals have been achieved. Some testimonies from interviewees can reinforce this point:

> *"We do intervene. We review the IEPs of schools with the lowest achievement results to verify that their IEP and their curriculum and classroom plans comply with MEN criteria. We hold strategic planning meetings with schools where we look at the institutional horizon and there are outdated visions. Together with them, we reconstruct the IEP. Similarly, when they transition to full-time schooling, we review the IEPs (official, regional administrative authority).*
>
> *For example, we have the case of school X (with a socioeconomically disadvantaged population), it has always been in category D, and last year its infrastructure was changed, with the commitment of the principal to engage in the development of the formative processes that we propose for the students, the reinforcements that we provide in basic skills so that the students perform the saber tests. And the school managed to move out of category D, our commitment is for that school to continue in that process and it transitioned to full-time schooling (official, regional administrative authority).*

There are a series of factors that, combined, can allow for improvement. But you can't apply the same recipe to all schools and say that all schools with this recipe will rise or improve. You have to be there (the administrative authority), immersed in the process, in the sector, in the institution, to know what the real shortcomings are and to be able to work on each of them. That's why on-site support has been really important, being there" (Regional administrative authority).

Figure 2. *Autonomy and Mathematics Performance*



Source: Authors' elaboration based on survey to rectors in the Atlántico department, 2019

Figure 2 shows the significance of this relationship after controlling for socioeconomic factors and the potential effect of external standardized tests. The relationship is clear and reinforces how greater autonomy is associated with better performance in mathematics.

On the other hand, variables like parental involvement and accountability did not yield significant results in any specification, even when tested in accordance with the theoretical line of interaction with school autonomy. However, qualitative information collected from various principals highlights the role of the school community in improvement processes:

"I would say that 70% of participation comes from the community because they believe in the institution, in what we do, in the transparency regarding the growth and beautification of the institution, so they believe in us and give their best" (Principal 2).

"The vast majority. There are even some who don't pay attention to this, and I proceed in a way that I alert the parent for not attending meetings, and if that person (parent) doesn't attend the next meeting, their child will be reported to the ICBF. We need to be committed" (Principal 3).

> *"Yes, I say this from my experience, students who are supported and monitored by their parents have better behavior and therefore better academic performance. Students where you can see that parental involvement and monitoring is minimal or absent, are students with poor behavior and academic performance" (Principal 1).*

Similarly, whether incentives for quality from national, regional, or local authorities (e.g., by ISCE) were received did not explain performance differences, nor did reporting teacher disciplinary violations to the competent authority, suggesting that regulated administrative control processes or sanctions for teaching staff do not constitute mechanisms influencing their behavior to enhance performance.
Only in the case of mathematics scores as the dependent variable, the administration of entrance exams (dichotomous variable) was significant. This suggests that autonomous adaptation can increase contractual risks when the organization uses its autonomy to select certain students to reduce agency problems (adverse selection) and fulfill quality goals, potentially at the expense of equity, a public policy objective in education.

Another important aspect of the model concerns the results of variables that could be called customary in this analysis, such as the socioeconomic level index provided by ICFES, and indices like infrastructure, school climate, average class size, and teacher training, constructed from primary information. The socioeconomic level index captures variables like parents' educational level and occupation, housing stratum, household income, and related endowments such as computer and internet access and ownership of certain appliances. This measure entered the model as statistically significant as expected, with a positive relationship to average student performance. This finding aligns with a wide range of literature on the substantial effects of these characteristics on performance and leaves no doubt, even though in official schools in the Atlántico region, socioeconomic disparities reduce, resulting in less variability of these factors.

But beyond this result, it is confirmed that variables associated with school resources such as infrastructure, class size, and teacher training are not significant or fail to explain the behavior of the variable of interest, opening the door to institutional factors.

Lastly, we included two variables that have yielded results in some empirical documents, such as the principal's experience and years of service in this position. Although they produce significant coefficients in some specifications, their relationship with performance is negative and therefore counterintuitive. However, there is a consensus about the maturity a school reaches over time, which inevitably influences the functionality of various instances of school governance and affects performance. At this point, the gaps between what is written and what works in practice are notable:

> *"For instance, a school that has reached maturity is a school that not only has the presence of governing bodies within its institution but also has them in continuous improvement. I mean they have them at a higher level, which means they act and at the same time review their actions to enhance them; for example, selection and admission committee, teacher selection and evaluation committee, academic council, coexistence committee, student spokesperson committee, student representative, board of directors. These bodies are established by law, but schools have different levels. For example, you go to a school and they might say, 'Here are committees,' but they show them to you at the level of existence; there might be a mere formality" (Principal 1).*

Other Institutional Factors:

An institutional characteristic that distinguishes some public schools in the department of Atlántico and throughout Colombian territory is the administration by a religious organization. Only two schools from the selected sample have this characteristic, with high levels of autonomy (the highest indices in the selected sample) that allow for a selective system, sometimes quite different from purely public schools. They conduct between 1 and 4 standardized external tests per year in secondary education and have a relatively appropriate school climate (very low indices).

The model in column 3 (see Appendices 1, 2, and 3) demonstrates how religious administration is associated with an improvement in the average scores by five to seven points depending on the subject area once the possible effects of socioeconomic level are controlled for. These characteristics of schools managed by religious organizations raise the possibility of questioning whether institutional governance factors such as standardized tests, school autonomy, student selection, or evaluation weigh more in their relationship with performance, or if it involves some influence of what could be termed religious values. As explained in the historical overview, conservative values in Colombia have shaped the evolution of education, and despite the spaces gained by the State, a large portion of high-quality private education remained in the hands of experienced religious organizations in the sector. These organizations aim to replicate their framework and results in the public sector with the approval of certain public administrations.

Unfortunately, from an empirical perspective, it is very challenging to contrast the above, and only the fictitious variable used leaves the notion that there is a relationship between administration by a religious entity and educational performance.

4. Conclusions

This study was based on the premise that the governance structure of the educational system is a fundamental determinant of educational performance in subnational territories in Colombia. School autonomy constitutes one of those variations in institutional arrangements (Balu et al., 2009). The importance of socioeconomic background as a source of better or worse performance was confirmed, as well as the limited explanatory power associated with so-called school resources. However, once socioeconomic, and cultural factors were controlled for, various institutional aspects appear to have strong links with performance variables. Hypothesis (1) is confirmed, indicating that greater school autonomy—as a mode of organizing the educational system—is positively associated with educational outcomes. The findings suggest that more autonomous educational systems are associated with better performance, but the practice of autonomy could be related to the actions of national or local authorities regarding de facto control over school tasks. Other results suggest and tend to confirm hypothesis (2) that the risks of inequity in performance are higher when the mode of organizing the educational system has greater autonomy. This dilemma between autonomy and equity, where equity refers to the extent to which achievement results are explained by socioeconomic backgrounds, reinforces the idea that equity issues can be understood from a contractual perspective where the agent can leverage their position to select students who meet certain standards aligned with their local goals, to the detriment of global objectives.

This is crucial because the goods and services provided by the state with distributional or equity considerations lead to the problem of agency not being solely reduced to disciplining the agent to meet standard indicators to make them visible to the respective authority and interest groups. In the case of education, autonomous adaptation can have various implications that might go against those distributive interests and systematically increase transaction costs. Consequently, a school with the autonomy to exercise ad-

mission controls might select students aligned with organizational quality objectives or certain skills or knowledge through standardized tests, choose them based on religious affinity with parents, fail them based on certain internal standards or those distant from system objectives, etc. All these strategies can have implications for the equity of the system if admission or retention criteria are in turn associated with the socioeconomic and cultural background of the individual. Therefore, monitoring actions are required to prevent or address these issues, and such actions come at a cost, which could be substantial for schools and/or the educational system of the subnational territory (department or municipality).

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