

# Schools Expenditures

Christopher A. Neilson\*

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## 1 Introduction

Resource accountability has been a substantial part of the policy reforms in Chile during the last decade, particularly in the Preferential School Voucher policy (SEP policy). This document seeks to describe how publicly financed schools expend their resources and to analyze how the participants from the SEP voucher subsidy, a targeted voucher law from 2008, differ from other schools.

The document is structured as follows. Section 2 describes the different reforms to resource accountability that have been established in the publicly-funded education system in recent years. Section 3 provides an extended description of school expenses categories. Finally, section 4 presents an analysis of the spending behavior of schools and how the SEP policy intervenes in schools' expenses and management of resources.

## 2 Recent reforms to resource accountability in Chile

One of the most significant reforms to resource accountability of schools was the SEP Law in 2008. Law No. 20,248 established the SEP voucher (for its acronym in Spanish, *Subvención Escolar Preferencial*), a subsidy that add-on resources to the general educational voucher, raising the transfers per kid in 50% for low-income students that accomplished a set of defined conditions. Schools that receive this improvement of funding had to, among other things, present finance records explaining the use of these resources. Letter (a) of law's 7th article established that the school owners must report to the Ministry of Education regarding the use of all the resources received under the SEP policy. Given that, both revenues and expenses were only reported if they used SEP resources and if they went to the Educational Improvement Plan actions, action plans schools must follow regarding the law.

In 2009, article No. 46 of Decree with Force of Law (DFL) No. 2 of the Ministry of Education stated that all school owners who receive public resources have to account publicly for the use of resources, and they will be subject to the audit and supervision of the Superintendency of Education. However, there were not common records reporting expenses as administrative data, apart from the SEP-expenses reports.

In August 2011, Law 20.529 created a new system for quality education guarantee, called the "National System for Quality Assuring of Pre-School, Primary and Secondary Education". This system aims to ensure quality and equity in education through policies, evaluations, and support and supervision mechanisms over schools and other agents in the educational system. In the 54th article of this law, it is established that all school owners who receive public resources must annually account for the use of all the resources they receive, both public and private voucher, and not only for SEP-related expenses. These accountability records must follow the procedures and

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setup established by the Superintendency of Education, through the National System for Quality Assuring.

In September 2013, Decree No. 469 approved the rules that established the characteristics, modalities, and conditions for the shared mechanism of public accountability of the use of resources. This mechanism has to be followed by all school owners of public or private voucher schools<sup>1</sup>.

The accountability processes for the years 2013 and 2014 had some discrepancies that were perceived in the administrative data. In the first place, in 2014, the Superintendency of Education notified the existence of about 1300 schools that had not sent their reports on the use of resources of the general subsidy in 2012. These cases were allowed to render accounts for 2012 in the 2013 process (which took place in 2014). Then, that same year, the Superintendency established a new revenue and expense report format that had much more detailed entries. For example, in the case of expenses, it goes from having six categories, to having eighteen.

All these changes caused the administrative expenditure records for 2012 and 2013 to be inconsistent with the other years. The data of expenses that we receive from the Superintendency are balanced and consistent between 2008 and 2011 for exclusive SEP-related expenses, and between 2014 and 2017 for aggregate expenses. However, about 90% of the schools that register expenses in 2012 only have SEP expenses, 4% only report according to the new detailed expense format, and 6% report both. For 2013, 1% reported only SEP expenses, 30% reported only under the new detailed norm, and the remaining 69% reported both. Also, the total number of schools that reported expenses in 2012 was 8,189, while in 2013, they were 11,531.

Considering the context, we will do two separate analyses: (1) General expenses between 2014 and 2017, and (2) SEP-related expenses between 2008 and 2012, considering the 90% mentioned above. The principal analysis will describe the use of general resources, and we will link the schools' behavior with the use of SEP resources. Even though the 69% who report both types of expenses in 2013 could be considered in the 2014-2017 analysis, there could be some selection bias if the difference between the records is due to the engagement of the school owner (reporting or not within the established date), and from 2014 onward other spending categories are defined that do not coincide with the detailed format of 2012-2013. Since the 2014 process, the Superintendency of Education publishes manuals for accountability records each year.

### 3 Expenses Description

In this section, we will describe each of the expenses categories a school can report on its records. First, we will relate to general expenses, and then we will describe more in detail expenses related to the SEP policy.

For general expenses, we will describe the following nine categories of expenses: Labor Expenditures, Technical Advisory and Training expenses, Learning and Development Resources, Operational Expenses, Services Expenses, Infrastructure Expenses, Expenses for Contingencies, Fines and Interests, and Other expenses. For SEP expenses, we will also explain nine categories: Operational Expenses, Staff or Labor expenses, Technical Advisory and Training, Pedagogical Support Equipment, Learning Resources, Contingencies Expenditures, Centralized Resources, Law No. 20,550 and Law No. 20,452.

#### 3.1 General Expenses

In this subsection, we will describe the detailed categories where general expenses are classified. For the analysis, some related expenses will be grouped into more general categories.

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<sup>1</sup>Decree 469 will be modified later in 2016 by Decree 575, adding more details in the descriptions of central concepts and giving more time to schools to send the reports.

The first class of expenses is Remuneration Expenses, and they account for wages and compensations for teachers, assistants, and other educational workers. Items considered in these records are the base wages, payment for extra hours, and some other compensations.

Then, we have expenses assigned to the payment for bonuses established in the Readjustment Law of the Public Sector (which is set every December); pension contributions to workers; other transfers due to indemnities; and other remuneration adjustments.

All of these expenses that are related to teachers' and workers' payments will be grouped into **Labor Expenditures** for the upcoming analysis.

The **Technical Advisory and Training** expenses are directed to invest in advisory services, consultancies, and training for the school workers. The resources are used to qualify teachers and assistants, and to improve their pedagogical and technical abilities.

Learning Resources expenses are dedicated to acquiring resources for the correct development of the students' learning process. Some examples are laboratory implements, sports implements, musical and artistic instruments, audiovisual resources and educational software, books, and educational and cultural events. Pedagogical Support Equipment expenses, on the other hand, accounts for the acquisition of needed equipment to develop the students' learning process. Some examples are photography equipment, interactive boards, computers and notebooks, televisions, DVD players and projectors, printers, scanners, and speakers.

There is a category of expenses named Expenditures on Student Welfare, that record all resources used for the students' basic needs, like meals, clothing, transfers for the public shuttle, and school supplies, among others.

For the analysis, we will add up Learning Resources, Pedagogical Support Equipment, and Student Welfare Expenditures into an only group for **Learning and Development Resources**.

The **Operational Expenses** are the expenditures aimed at ensuring the proper functioning of the establishment. In this context, they include expenses for rent of school transport, operation of transportation, office supplies, computer inputs for administrative areas, and expenses related to specific activities of the school (events and field trips).

Expenditures on services are split into two types: Basic Services and General Services. Basic Services satisfy the primary needs for running the school, like water, electricity, gas, internet, mail, telephone, and heating. General Services, on the other hand, correspond to services that require the hiring of workers (or enterprises), such as cleaning, gardening, and security. These two types of expenditures are analyzed as **Services Expenses**.

We have five categories in school expenses records related to investment in school infrastructure. First, we have the lease of real estates, such as the educational place or possible administration offices, and the lease of movable property, such as furniture and machinery. Then, we have the expenses in construction and maintenance of the infrastructure, which considers both the heavy construction and the lighter installations; and the expenditures in maintenance and repair of movable property. Finally, the expenses in the acquisition of movable and immovable property are also considered, for those schools that decide to buy them. These five categories are considered as **Infrastructure Expenses** for further analysis.

Finally, schools have to account for **Expenses for Contingencies**, and they run them with petty cash that has a fixed amount of money to operate with cash available to schools' dependencies or officials, in case it is needed. Also, schools have to record payments for **Fines and Interests** that the school owner must pay for non-compliance and infractions of the regulations. Note that it does not include fines issued by the Superintendency of Education, because these are deducted from the voucher settlement.

We add into a ninth category all **other expenses** reported by schools that do not fit in the categories previously defined. These expenses are adjustments for rectification, centralized resources, late reports for Law N0. 20,550 (See Subsection 3.2) and withdrawals.

## 3.2 SEP Expenses

The SEP-related expenses are classified in similar categories that the general ones, but they have more restrictions and have to be exclusively related to the actions of the Educational Improvement Plan (EIP).

First, we have **Operational Expenses** on goods and services. This entry accounts for all resources directed to daily use material, regular consumption goods, several services, leases, and minor expenses related exclusively to the EIP. The expenses of the regular operation of the establishment cannot be imputed to the SEP.

**Staff or Labor expenses** are the resources destined to the remunerations of the educational workers for their work in exclusive relation with the execution of the EIP. In 2011, Law No. 20,550 modified the SEP Law in multiple fields, but in particular, it extended the permitted expenses in staff, mostly to hire more teachers and education assistants and to extend the working hours of the available personnel.

Another group of expenses is the one for **Technical Advisory and Training** directed to invest in advisory services, consultancies, and training in pedagogical or administrative matters for the school workers, within the framework of the EIP. Entities who provide these services have an essential influence on school development and its preparation for setting goals at the EIP, so they must be supervised by the Superintendency of Education. They can be natural or legal agents, and they have to register in the ATE Registry (External Technical Advisory in Spanish) to be accountable for schools.

The EIP establishes different actions related to learning outcomes that require resources both for its implementation and for its development. In this context, we have two groups of defined expenses: expenses in **Pedagogical Support Equipment** and expenses in **Learning Resources**. Pedagogical Support Equipment expenses account for the acquisition of goods and equipment to carry out the actions on the EIP, while Learning Resources are those resources allocated to the consumable and non-consumable material to develop pedagogical activities of support and reinforcement of the students, within the framework of the EIP. Examples of these two groups of expenses are presented in the General Expenses subsection.

There are two other groups of expenses defined by special situations: **Contingencies Expenditures** and **Centralized Resources**. Expenses for contingencies cannot exceed the 5% of SEP resources, and they have to be within the context of the SEP policy, like solving problems with SEP rules or expenses linked with the EIP. When school owners have more than one school in the SEP policy, they can allocate up to 10% of SEP resources to Central Administration. These resources must be spent on technical, pedagogical, and administrative financial support tasks that involve the preparation and implementation of each EIP.

Another change introduced by **Law No. 20,550** in 2011 was that, for schools that have entered into the SEP policy between 2008 and October of 2011 and have not reached the minimum percentage of SEP spending required, can benefit from exceptional requirements and conditions in the first renewal of the SEP agreement.

The minimum percentage of spending on SEP resources was 70%. As mentioned in the 7th bis article and the transitory 15th article of Law No. 20,248, the requirements for the first renewal of the agreement in this extraordinary situation are: (a) to have asked the Ministry of Education for an agreement renewal at least sixty days before its expiration; (b) to have accounted for all SEP resources in the previous years, and (c) to have spent at least 50% of these resources in EIP's actions. Additionally, it can be exceptionally considered for the third requirement expenses for up to 15% of total voucher incomes spent in actions out of the EIP. As we will see in the spending analysis, expenses for Law No. 20,550 were only reported for 2012 because it was an extraordinary situation.

Finally, the last expenses reported by schools in the SEP policy context are expenses due to **Law No. 20,452** published in July 2010. This law approved extraordinary conditions for the use of voucher resources for infrastructure repair and construction, and equipment replacement needed after the earthquake that took place on February 27, 2010.

## 4 Spending Analysis

In this subsection, we analyze the spending behavior of schools considered in schooling markets defined in *Targeted Vouchers, Competition Among Schools, and the Academic Achievement of Poor Students* (More details about schooling markets in *Building Schooling Markets in Chile* - Supplementary document), examining the use of general resources between 2014 and 2017.

Table 1 shows the spending behavior of schools within the nine categories described before. It is clear to see that Labor expenditures are the main subject of spending for both the private voucher and public schools. Panel (a) of Figure 1 shows the distribution of the share of labor expenses between public and private voucher schools<sup>2</sup>. As we can see, private subsidized schools have a wider distribution in this expense subject, but public schools spend more on average.

Panels (b) and (c) show the distribution of the share of operational expenses and learning resources expenses, respectively. For operational expenses, private voucher schools spend more than public schools, most probably because the latter depends on municipalities where operational costs can be centralized. For expenses on learning and development resources, schools' behavior is similar between private voucher and public schools, showing that both types of schools dedicate an equal share of their resources to provide students with school supplies and equipment for a proper learning environment.

Additionally, there is a field in which private voucher schools spent much more than public schools, due to the centralization of resources that municipalities do for public schools. This field corresponds to the infrastructure expenses, where 50% of public schools spend 0.1% or less of their total expenses, reaching only 2% in their 95th percentile. On the other hand, as we can see in Panel (c) of Figure 1, private voucher schools spend considerably more resources compared to public schools, where the average spending is 8%, and their 95th percentile reaches 24% of infrastructure expenses over total expenses.

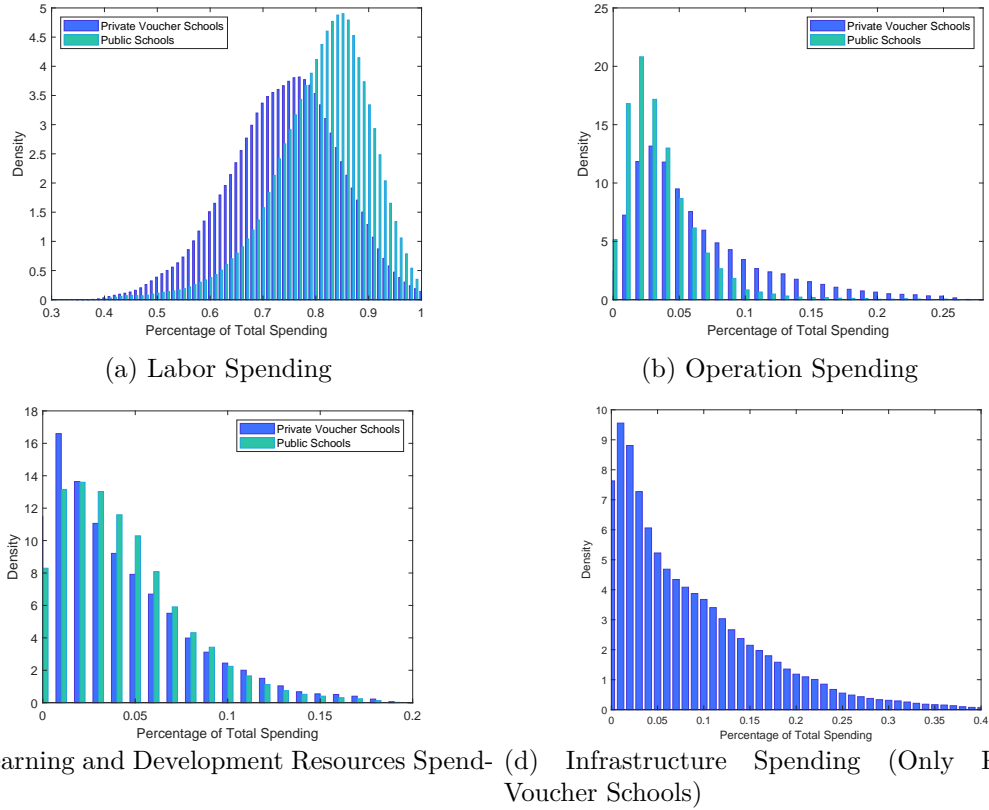
Table 1: Spending 2014 - 2017 Percentage of Total Spending

Expense Type	2014		2015		2016		2017	
	P	PV	P	PV	P	PV	P	PV
Labor	80	74	81	74	80	74	81	73
Technical Advisory and Training	2	1	1	1	1	1	1	1
Learning and Development Resources	4	4	4	4	5	4	5	5
Operational	4	6	4	7	4	7	3	6
Services	3	4	2	4	2	4	2	4
Infrastructure	1	9	0	8	1	8	1	8
Contingencies	0	0	0	0	0	0	0	0
Fines and Interests	0	0	0	0	0	0	0	0
Other Expenses	7	2	7	3	7	2	8	2

Note: This table presents schools' types of spending as a percentage of total spending between 2014 and 2017, self-reported data. This data includes SEP spending, but it isn't differentiated between General and SEP sources. 'P' columns are for public schools, and 'PV' columns for private voucher schools. Labor Expenses account for remuneration expenses, bonuses for the public sector, pension contributions, indemnities, and other remuneration adjustments. Learning and Development Resources account for learning resources expenses, student welfare expenditures, and pedagogical support equipment expenses. Services expenses account for Basic and General Services expenses. Other expenses consider adjustments for rectification, centralized resources, late reports for Law N0. 20,500 and withdrawals.

<sup>2</sup>The figure consider all years between 2014 to 2017. The figures for each year show similar results.

Figure 1: Share of Spending over General Expenses



Note: This figure shows the distribution between public and private voucher schools of the percentage of different spending categories over general spending. Panel (a) shows labor spending that accounts for remuneration expenses, bonuses for the public sector, pension contributions, indemnities, and other remuneration adjustments. Panel (b) shows operational spending. Panel (c) shows learning resources spending that accounts for learning resources expenses, student welfare expenditures, and pedagogical support equipment expenses. Panel (d) shows infrastructure spending that accounts for the lease of real estate and movable property, expenses in construction and maintenance of the infrastructure, expenditures in maintenance and repair of movable property, and the acquisition of movable and immovable property.

#### 4.1 Analysis of SEP Expenses

In this subsection, we show the spending behavior of schools considered in schooling markets respecting SEP expenses for 2008 to 2012. Table 2 shows the spending behavior of schools within the nine categories described in the description subsection.

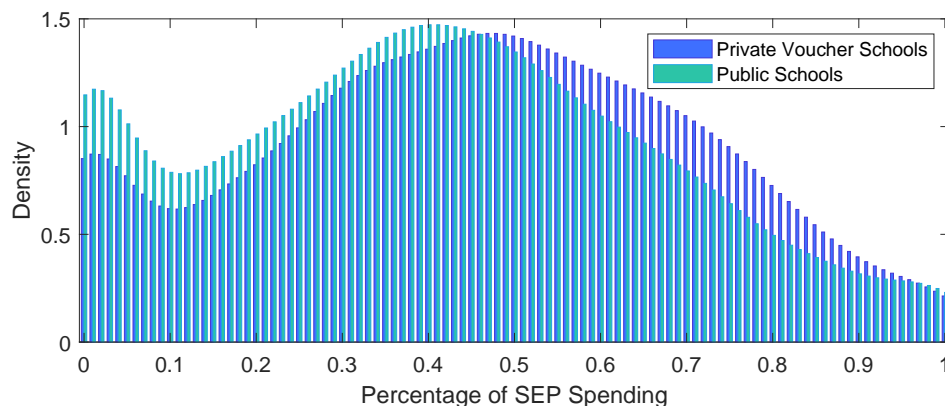
Table 2: SEP Spending 2008 - 2012 Percentage of Total SEP Expenditures

Expense Type	2008		2009		2010		2011		2012	
	P	PV	P	PV	P	PV	P	PV	P	PV
Operational	31	24	15	18	15	18	15	17	12	16
Labor	36	35	35	39	41	46	45	49	43	50
Technical Advisory and Training	13	6	10	8	10	6	13	9	9	7
Pedagogical Support Equipment	11	19	17	17	10	12	7	9	6	8
Learning Resources	8	15	13	16	14	14	12	13	10	13
Contingencies	0	1	1	1	1	1	1	1	1	1
Centralized Resources	0	0	8	1	8	1	8	1	6	1
Law N. 20.550	0	0	0	0	0	0	0	0	13	4
Law N. 20.452	0	0	0	0	0	1	0	1	0	0

Note: This table presents schools' types of SEP spending as a percentage of total SEP expenditures between 2008 and 2012. 'P' columns are for public schools, and 'PV' columns for private voucher schools.

Once again, as we saw for general expenses, labor-related expenses are the main subject of spending for all types of school. Considering that rules for SEP expenditures were more rigid than for general resources, and only since 2012 with the reform of 2011 (Law No. 20,550) schools have fewer restrictions to hire and to extend teachers' working hours, it is expectable that the share of Labor expenditures on total SEP expenditure is lower than the same percentage in general spending.

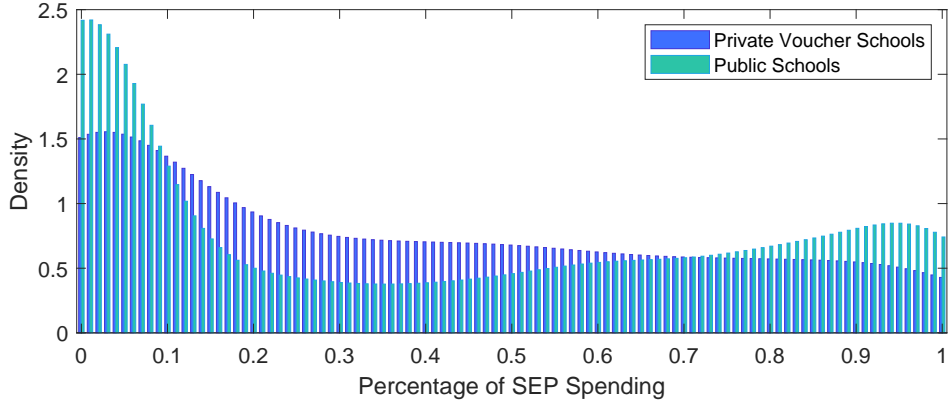
Figure 2: Share of Labor Spending over SEP Expenditure



Note: This figure shows the distribution between public and private voucher SEP schools of the percentage of labor spending over SEP spending.

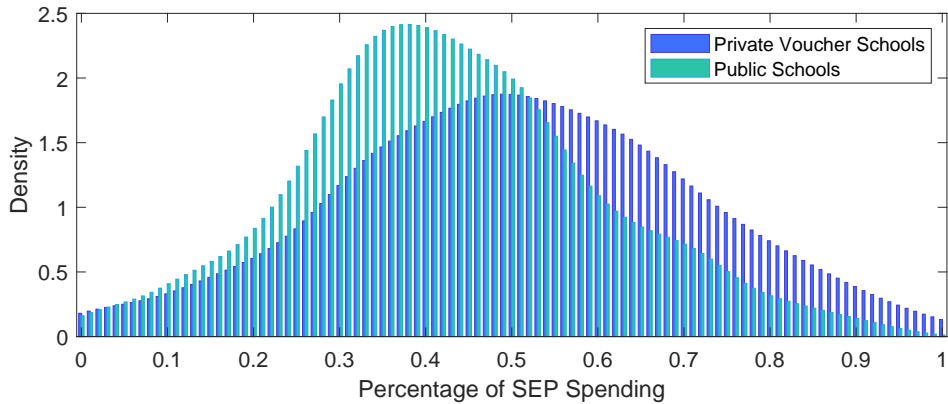
Figure 2 shows the distribution of the share of labor expenses over SEP expenditure, including from 2008 to 2012. The distribution is more heterogeneous than the one for general resources, what it has to do with the legal change. We can split the data between years to see if the reform in 2011 change how schools spent their resources. Figures 3 and 4 show the same distribution as Figure 2, but for 2008 and 2012, respectively. This evidence shows how the law change compress and increase the rate of resources spent on labor because of the more flexibility to do it.

Figure 3: Share of Labor Spending over SEP Expenditure in 2008



Note: This figure shows the distribution between public and private voucher SEP schools of the percentage of labor spending over SEP spending for 2008.

Figure 4: Share of Labor Spending over SEP Expenditure in 2012



Note: This figure shows the distribution between public and private voucher SEP schools of the percentage of labor spending over SEP spending for 2012.

## 4.2 Productivity of expenditures

Considering that the labor expenditures are the most significant component in the spending structure of schools, we can wonder if all these resources are being well-spent. There is some literature on the economics of education that studies whether a higher amount of resources and their usage, implies greater productivity and product, and the evidence is mixed. (Hanushek, 2003) was an influential literature review that examines more than 150 studies relating school resources to student achievement published prior to 1995. (Hanushek, 2006; Mizala and Torche, 2012), among other authors and along with the previous review, conclude that more resources do not necessarily lead to better educational outcomes, analyzing resources like per-pupil expenditures, pupil-teacher ratios, teacher experience, and tuition fees. On the other hand, (Jackson, 2018) ran an updated literature review with new studies build upon empirical models that employ exogenous independent variation in school spending for obtaining more reliable causal effects. Some of the sources of variation in school spending that he summarize are school finance reforms, changes in revenue sources, and

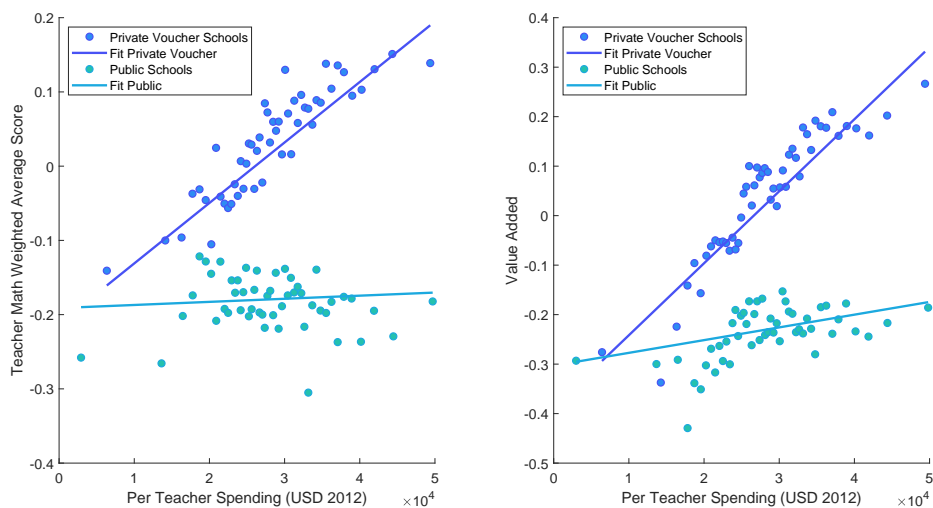


overviews of multi-state studies, and he also analyzes different types of spending that schools do. This literature review concludes that there is a causal relationship between more school spending and higher student outcomes, indicating that money matters on average. He also noted that this could depend on the setting and the context where it is evaluated.

To check if schools' expenditures on labor are productive, we can see the correlation between the amount of spending and signs of productivity of the labor, differentiating for type school. In this context, the main proxies for the productivity of teachers and teaching staff are weighted math test scores of teachers (a performance proxy, weighted at school level) and the value added of the school<sup>3</sup>. Figure 5 shows the correlations between per teacher spending and these two measures. Per-teacher spending accounts for spending on labor resources divided by the number of teachers in the school. Teachers' math weighted average score represents the average of teachers' scores in the school weighted by their teaching hours. The math test is the test for entering college or tertiary education, at the end of high school. On the other hand, value added is a measure of the quality of the school.

The main conclusion about Figure 5 is that private voucher schools have a positive relationship between their labor expenses and the quality of the resources they get. However, public schools can spend less or more resources, without changing their quality significantly, being less productive on their expenses.

Figure 5: Share of Labor Spending over SEP Expenditure in 2012



Note: This figure shows the correlation between labor spending and the average weighted teachers' score of the school in the left subfigure; and the correlation between labor spending and the school value-added in the right subfigure. Both subfigures are differentiated by types of school, showing a positive relationship between labor spending and the productivity proxies for private voucher schools, while public schools show low or none relationship.

<sup>3</sup>Value added is estimated in the main paper of this supplementary document, and it is detailed in the supplementary document of Value Added. The estimated value added is the school fixed effect predicted from a regression of students test scores over a large set of students' observables, including health information at birth, the demographic composition of families, parents' employment and educational levels as well as mothers' math and language college-entrance exam scores.

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