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Private School Funding:

Its Relation to Students' Academic Performance and Financial Literacy

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Abstract

The purpose of this work was to understand the existing relation between private school funding, students' academic performance, and financial literacy. Using correlation analysis, as well as t-tests, it was found a weak positive correlation with academic performance, a surprisingly slight negative correlation with financial literacy, and an unexpected negative correlation between academic performance and financial literacy. Also, private schools turned out to outperform public ones when it comes to student performance. However, for financial literacy, no statistical significance was found. These results show how many different things affect education outcomes and how much more study is needed.

Keywords:

Private School Funding; Academic Performance; Financial Literacy; Economics of Education

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Introduction

The future of societies is significantly shaped by the educational system. Formal education has the power of nurturing the minds of tomorrow's adults. Schools have a big role to play in shaping future generations, and consequently, the world's destiny. Hence, the quality of education provided at these institutions has a significant impact on the development of societies and personal success.

Over the last century, mainly since the beginning of the millennium, the landscape of school funding has been evolving. Even though private schools don't represent a novelty, they have existed at least since ancient Greece, when Plato established his academy, schools funded both by governments and privates only seem to have appeared in the second half of the 20th century. The evolution that might be observed in school funding structures has been characterized by a growing reliance on funding by privates in order to either complement or even substitute public funding. As a consequence of this emerging factor, private school funding was set to become a crucial part of the educational systems across the countries of the Organisation for Economic Co-operation and Development (OECD).

In order to have a good picture of the educational systems across OECD, the Programme for International Student Assessment (PISA), conducted by the OECD every three is a good tool since it provides unbiased and robust metrics. The PISA consists of several questionnaires administered to the different stakeholders of the educational systems. For the purpose of this directed research data from the Student Competence Assessment, Student Financial Literacy Assessment, and School Questionnaires was used. In the Student Assessments, multiple metrics on the capabilities, knowledge, and skills of 15-year-old across a wide range of topics, ranging

from science to mathematics and financial literacy, are evaluated. The School Questionnaire assesses metrics related to the funding and management, facilities and curriculum of schools. If data from the different PISA assessments is combined, PISA has the potential to provide rich insights into the quality of the different educational systems and the existing relation across various factors, such as private school funding, students' academic achievement, and financial literacy.

Beyond academic performance, financial literacy is also an emerging topic in the last few years and is an acknowledged aspect of a well-rounded education. Even though it has been a trending topic in the last decade, it is a matter of fact that adults in OECD countries lack financial literacy: "The results of the latest OECD/INFE survey confirm that financial literacy levels are low across participating economies" (OECD/INFE 2020). This deficit is alarming since it might be attached to negative consequences, both at a personal and a societal level. As the financial landscape becomes ever more complex with the development of technology and new financial solutions and instruments at a pace never observed before, the need for financial education has never been more pressing. Schools, in their mission of forming the adults of tomorrow, have both the responsibility and unique opportunity to provide pupils with the necessary financial skills and knowledge for their personal and professional lives.

This directed research will explore the existing relation between private school funding, academic performance, and financial literacy. The implication of this analysis outspreads beyond academia; it is a matter of relevance to policymakers, educators, parents, and students, all of whom are stakeholders in the quality and effectiveness of education in providing students with the necessary tools to strive both personally and professionally after their studies. By shedding light on the existing relation between private school funding, academic performance, and financial literacy, this study seeks to contribute valuable insights that can guide future policy and practice in the realm of education, with the ultimate goal being to promote a more effective, inclusive, and financially literate educational environment for the leaders of tomorrow.

Literature Review

The role of private funding in shaping student outcomes, particularly academic performance, and financial literacy, is a growing area of study within educational economics. Within the context of OECD countries, the influence of private investment in public schools, the rise of public-private partnerships, and private schools are of specific interest. The following literature review aims to encapsulate the prevailing research on this topic, highlighting key findings, controversies, and areas for further exploration.

The relationship between private funding and academic performance is a multifaceted issue in the current literature, with studies presenting various conclusions. Some studies indicate a positive relationship between private funding and improved academic outcomes, while others dispute this correlation.

On one side of the debate, studies such as that conducted by Lafortune, Rothstein, and Schanzenbach (2018) found that increased school spending could lead to improved student

performance. Similarly, a study by Loeb and Strunk (2017) identified a positive correlation between additional school funds and student achievement, indicating the potential benefit of private funding.

Contrarily, other studies argue that private funding does not necessarily lead to better academic outcomes. For instance, Ammermüller (2017) found that the performance advantage of privately-funded schools diminished when accounting for various factors such as teacher quality and class size. This finding suggests that private funding alone may not be sufficient to enhance student performance.

Furthermore, the indirect impacts of private funding on student performance—through factors such as selective admission policies, class sizes, and teacher absenteeism—are areas that warrant further exploration in the literature. While there are studies that have touched on these elements, such as those by Hanushek, Piopiunik, and Wiederhold (2019) and Leuven, Lindahl, Oosterbeek, and Webbink (2017), a more comprehensive understanding of these interrelations is needed.

The impacts of private funding on financial literacy are increasingly being explored in educational research. The literature presents a variety of perspectives, suggesting both positive and negative correlations, and pointing to the need for further exploration.

On one side, studies suggest that private funding can lead to enhanced resources for financial education, potentially improving financial literacy among students. A study by Borgonovi and Pál (2016) showed a positive correlation between financial education and students' financial literacy, indicating the potential benefits of private funding.

Contrarily, other studies question the direct positive correlation between private funding and improved financial literacy. For instance, the study by Batty, Collins, and Odders-White (2015) revealed that financial education alone might not significantly impact financial literacy,

suggesting that private funding, despite potentially enhancing financial education resources, might not directly lead to better financial literacy.

Regarding the indirect effects of private funding on financial literacy, factors such as selective admission policies and class size are less studied in the current literature. Some studies, like those by Cobb-Clark, Salamanca, and Zhu (2019) and Arrondel, Debbich, and Savignac (2013), have begun to investigate these relationships. However, the complexity of these interrelationships necessitates more comprehensive and in-depth analyses.

The extant body of literature presents a complex and multifaceted picture of the direct impact of private funding on academic performance and financial literacy. Several studies indicate positive correlations, while others suggest minimal or even negative impacts. In particular, the literature is characterized by a lack of clear consensus and points to the need for further research incorporating more robust controls for potential confounding factors. Recognizing this, the present study will employ an analysis of OECD data to explore the direct relationship between private funding and student outcomes, while carefully considering a range of pertinent institutional factors.

Moreover, the current body of research leaves several unaddressed questions concerning the indirect effects of private funding on student performance and financial literacy. Factors such as selective admission policies, class sizes, and teacher absenteeism are suspected to play significant roles in mediating the relationship between private funding and student outcomes. However, the exact scope and nature of these relationships, particularly within the context of private funding, remain largely underexplored.

In response to these identified gaps, the present research will delve into these indirect effects, thereby enhancing the understanding of the complex dynamics between private funding and various moderating factors. By focusing on these areas, this study aims to contribute a more

nuanced and comprehensive perspective to the ongoing debate within the literature, providing further insights to inform both policy-making and future research in the fields of economics of education and education finance.

Hypothesis

The following hypotheses are put forth by this study in light of the existing conflicts and gaps in the literature:

***Hypothesis 1*:** There is a positive correlation between the level of private school funding and students' academic performance.

***Hypothesis 2*:** There is a positive correlation between the level of private school funding and the financial literacy of students.

***Hypothesis 3*:** There is a positive correlation between students' academic performance and their level of financial literacy.

The theoretical foundation for these three hypothesis consists of the premise that schools with higher levels of private funding have access to more funding and a higher level of autonomy in their management, which allows them to have more resources, which therefore might account for better facilities, adoption of more innovative education approaches, the attraction of more qualified teachers, low teacher absenteeism, smaller classes, among other factors that would consequently have a positive impact in students' academic achievements and financial literacy. Regarding the H3, another rationale for this hypothesis resides in the fact that students who achieve better results have better cognitive skills which are also beneficial for managing and understanding personal finances.

Methodology

The data that supports the analysis of this study comes from the PISA 2018 dataset, which includes data from 79 countries and economies, including Canada, Chile, Spain, Estonia, Finland, Italy, Lithuania, Latvia, Netherlands, Poland, Portugal, the Slovak Republic, and the United States, the OECD in focus in the present directed research. In order for the relation between private funding, students' financial literacy, and performance to be assessed, student assessments and school datasets were combined. Firstly, the individual student results were aggregated by school and then the average results in the assessments were computed so that in the final dataset each line would represent a different school with the respective average scores in the different tests. Secondly, and since each school has a unique identifier code, the results were merged with the school dataset.

The initial dataset contained hundreds of variables that were removed, once they did not pose to be relevant for the analysis in the focus of this work project. To better understand the relationship between schools' funding structures, financial literacy, and student performance, several aggregated variables were created. First, the mean financial literacy score for each school was calculated, by doing the average of the results for the several questions posed in the questionnaire. Furthermore, the mean performance scores for mathematics, reading, and science for each school were aggregated in order to create a new variable that would account for the average student performance per school.

The methodological approach followed in this directed research was designed to take into account the challenges posed by large-scale international surveys like the PISA 2018. One of the primary challenges is the representativeness of the sample, as schools and students are sampled from each country based on a stratified sampling design. While the sampling design

aims to achieve representativeness, non-response bias may still exist, as not all selected schools and students participate in the survey. Moreover, there is the possibility of measurement inaccuracy due to interpretations of the questionnaire items that differed across nations and people.

In order to address these challenges and mitigate potential biases that could arise, this study used appropriate statistical techniques to account for the complex survey design, including weighting and clustering adjustments. Missing values were found, identified, and either imputed or eliminated from the analysis to guarantee data accuracy. In order to find and eliminate outliers and any data discrepancies, a comprehensive data-cleaning process was also carried out.

While attempting to overcome any restrictions resulting from inherent data qualities, limitations to the analysis may still exist. For instance, PISA 2018 provides uniquely cross-sectional data, precluding inferences of causality. Additionally, the data is limited to the variables collected by the school questionnaire, and other important factors that may influence student academic performance and financial literacy, such as socio-economic background, were not included in the analysis. Apart from the above-mentioned limitations, the dataset provides a valuable source of data for exploring the relationship between school funding and student performance (both in terms of academic achievement and financial literacy) across multiple countries.

SPSS, a tool for data analysis in the social sciences, was the software used for the purpose of this directed research. In this study, the dataset initially contained missing values across all the variables under consideration. To handle these missing values, Multiple Imputation, a statistically robust method for dealing with missing data based on the premise of generating multiple different plausible imputations or 'guesses' for each vacant entry (Rubin, 1987), was employed. It is particularly well-suited for handling missing data that are assumed to be missing

at random (MAR), where the propensity for a data point to be missing is related to observable data but not the unobserved data. The imputation process generates a number of distinct complete datasets, each of which fills in the missing values using various imputations taken from a distribution that reflects the lack of certainty regarding the missing values. The variation across these imputations allows us to capture the uncertainty about the missing data in subsequent analyses, which represents a good turnaround to the issue of missing data.

While it is believed that the approach was statistically sound and appropriate for our data, it is important to note that it is only as good as the MAR assumption that lies behind it.

The present directed research focuses only on the OECD countries that have available data both on financial literacy and student performance tests. These countries include Canada, Chile, Spain, Estonia, Finland, Italy, Lithuania, Latvia, Netherlands, Poland, Portugal, and Slovak Republic, as well as the United States.

While this sample of countries is not representative of all OECD countries, it allows for targeted analysis of the relationship between school funding structures and student outcomes in these specific contexts. By examining this group of nations that share the trait of being part of the OECD, the analysis desires to provide insights into effective approaches for improving student outcomes in similar contexts and to contribute to the ongoing conversation around school funding structures and student achievement.

To provide a comprehensive analysis, the study will utilize correlation analysis to examine the relationship between school funding structures and student outcomes. Additionally, a sample T-test will be applied to determine whether the mean student outcomes in public and private schools differ. Through this analysis, the study hopes to add to the body of knowledge already available on school funding models and student results as well as shedding light on potential policy implications for raising both students' performance and financial literacy.

Analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Which of the following definitions best describes the community in which your school is located?	3501	1.00	5.00	2.86	1.13
Is your school a public or a private school?	3501	.00	1.00	.17	.38
Percentage of total funding for school year from: Government	3501	.00	100.00	87.66	23.01
Percentage of total funding for school year from: Private Entities	3501	.00	100.00	12.34	23.01
Another School in the location?	3501	.00	1.00	.75	.43
Student admission to school: Student's record of academic performance (including placement tests)	3501	.00	1.00	.41	.49
Student admission to school: Residence in a particular area	3501	.00	1.00	.63	.48
School's policy for: Students are grouped by ability into different classes.	3501	.00	1.00	.34	.47
School's use of assessments of students: To compare the school with other schools	3501	.00	1.00	.50	.50
Extent to which student learning is hindered by: Teacher absenteeism	3501	1.00	4.00	1.73	.75
Percentage: Students from socioeconomically disadvantaged homes	3501	.00	100.00	20.85	21.69
Student-Teacher ratio	3501	1.00	100.00	11.75	6.44
Index proportion of all teachers fully certified	3501	.00	1.00	.83	.31
Class Size	3501	13.00	53.00	24.07	7.73
Mean Financial Literacy	3501	6.00	18.00	10.74	1.80
Mean Student Performance	3501	262.22	707.45	488.38	55.48
Valid N (listwise)	3501				

Figure 1- Descriptive Statistics

An overview of the variables used in this study can be found in the descriptive statistics table that is presented above. Across the 16 variables used for the purpose of this directed research, six represent binary variables: “Is your school a public or private school?”, “Another school in the location?”, “Student admission to school: Student’s record of academic performance (including placement tests)”, “Student admission to school: Residence in a particular area”, “School’s policy for: Students are grouped by ability into different classes.”, and “School’s use of assessments of students: To compare the school with other schools”. For the variable “Which of the following definitions best describes the community in which your school is located?”, the values range from 1 (a village) to 5 (a large city). The variables “Percentage of total funding for school year from: Government”, “Percentage of total funding for school year from: Private Entities”, and “Percentage: Students from socioeconomically disadvantaged homes” are represented by percentages ranging from 0 to 100%. The variable “Extent to which student learning is hindered by: Teacher Absenteeism” ranges from 1 (not at all) to 4 (a lot). For “Class

Size" there are different levels: 13 (15 students or fewer), 18 (16-20 students), 23 (21-25 students), 28 (26-30 students), 33 (31-35 students), 38 (36-40 students), 43 (41-45 students), 48 (46-50 students), 53 (more than 50 students). The "Mean Financial Literacy" is an aggregated variable that represents the sum of the results of six different financial literacy questions. For each of them, the student would get 1 (wrong answer), 2 (almost correct), and 3 (correct answer). Therefore, in the dataset, the values range from 6 (no correct answers) to 18 (6 fully correct answers). Finally regarding the "Mean Student Performance" variable is a continuous one that represents the average of the grades achieved by the students in the different assessments.

By looking at the figure we can notice that the mean for the binary variable "Is your school a public or private school?" is 0,17. Given the nature of the variable and the fact that in the dataset each line represents a different school, we can infer that around 17% of the schools in the dataset are private schools.

Following the same logic for the other binary variables, it is also interesting to notice that the majority of schools (63%) tend to admit schools based on their residence in a particular area, and only 41% admit students based on the record of academic performance. 34% is the percentage of schools in the study that assumed to group students by ability into different classes.

For the mean financial literacy, the mean result is around 10,7. This means that on average students tended to get right at least two out of the six financial literacy questions considered.

Finally, for mean student performance, the mean value of the considered cases is 488,4, with a standard deviation of 55,5 which can be considered a low standard deviation.

In the forthcoming correlation matrix analysis, it is important to consider not only the direct but also the indirect effects between variables, since evaluating the impact of private funding on students' performance and financial literacy is a complex task.

Correlations

		Mean Student Performance	Mean Financial Literacy	Percentage of total funding for school year from: Private Entities	Student admission to school: Student's record of academic performance (including placement tests)	Student admission to school: Residence in a particular area	School's policy for: Students are grouped by ability into different classes.	Which of the following definitions best describes the community in which your school is located?	School's use of assessments of students: To compare the school with other schools	Another School in the location?	Extent to which student learning is hindered by: Teacher absenteeism	Percentage: Students from socioeconomically disadvantaged homes	Student-Teacher ratio	Index proportion of all teachers fully certified	Class Size
Mean Student Performance	Pearson Correlation	1	-.039*	.071**	.208**	.003	.063**	.173**	.041*	.083**	-.023	-.445**	.045**	.134**	.105**
	Sig. (2-tailed)		.021	<.001	<.001	.842	<.001	<.001	.016	<.001	.168	<.001	.008	<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Mean Financial Literacy	Pearson Correlation	-.039*	1	-.057**	-.021	.047**	-.005	-.016	.012	-.002	-.065**	-.040*	.013	.044**	-.048**
	Sig. (2-tailed)	.021		<.001	.210	.006	.779	.349	.496	.917	<.001	.018	.458	.009	.005
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Percentage of total funding for school year from: Private Entities	Pearson Correlation	.071**	-.057**	1	.197**	-.114**	-.071**	.211**	-.032	.007	-.047**	-.109**	-.018	-.145**	.082**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001	.059	.662	.005	<.001	.297	<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Student admission to school: Student's record of academic performance (including placement tests)	Pearson Correlation	.208**	-.021	.197**	1	-.059**	.119**	.193**	.151**	.145**	.060**	-.183**	.034*	.009	.039*
	Sig. (2-tailed)	<.001	.210	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	.046	.591	.020
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Student admission to school: Residence in a particular area	Pearson Correlation	.003	.047**	-.114**	-.059**	1	.078**	.050**	.018	-.020	.026	-.005	-.042*	.140**	.066**
	Sig. (2-tailed)	.842	.006	<.001	<.001		<.001	.003	.297	.248	.118	.755	.013	<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
School's policy for: Students are grouped by ability into different classes.	Pearson Correlation	.063**	-.005	-.071**	.119**	.078**	1	.128**	.079**	.102**	.089**	.031	.129**	.079**	.114**
	Sig. (2-tailed)	<.001	.779	<.001	<.001	<.001		<.001	<.001	<.001	<.001	.068	<.001	<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Which of the following definitions best describes the community in which your school is located?	Pearson Correlation	.173**	-.016	.211**	.193**	.050**	.128**	1	-.033*	.263**	.102**	-.014	.264**	-.041*	.373**
	Sig. (2-tailed)	<.001	.349	<.001	<.001	.003	<.001		.050	<.001	<.001	.393	<.001	.016	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
School's use of assessments of students: To compare the school with other schools	Pearson Correlation	.041*	.012	-.032	.151**	.018	.079**	-.033*	1	.065**	-.061**	-.045**	-.013	.083**	-.032
	Sig. (2-tailed)	.016	.496	.059	<.001	.297	<.001	.050		<.001	<.001	.008	.445	<.001	.060
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Another School in the location?	Pearson Correlation	.083**	-.002	.007	.145**	-.020	.102**	.263**	.065**	1	-.001	-.067**	.134**	-.009	.124**
	Sig. (2-tailed)	<.001	.917	.662	<.001	.248	<.001	<.001	<.001		.968	<.001	<.001	.611	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Extent to which student learning is hindered by: Teacher absenteeism	Pearson Correlation	-.023	-.065**	-.047**	.060**	.026	.089**	.102**	-.061**	-.001	1	.176**	.096**	-.094**	.099**
	Sig. (2-tailed)	.168	<.001	.005	<.001	.118	<.001	<.001	<.001	.968		<.001	<.001	<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Percentage: Students from socioeconomically disadvantaged homes	Pearson Correlation	-.445**	-.040*	-.109**	-.183**	-.005	.031	-.014	-.045**	-.067**	.176**	1	.063**	-.116**	.041*
	Sig. (2-tailed)	<.001	.018	<.001	<.001	.755	.068	.393	.008	<.001	<.001		<.001	<.001	.016
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Student-Teacher ratio	Pearson Correlation	.045**	.013	-.018	.034*	-.042*	.129**	.264**	-.013	.134**	.096**	.063**	1	-.097**	.306**
	Sig. (2-tailed)	.008	.458	.297	.046	.013	<.001	<.001	.445	<.001	<.001	<.001		<.001	<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Index proportion of all teachers fully certified	Pearson Correlation	.134**	.044**	-.145**	.009	.140**	.079**	-.041*	.083**	-.009	-.094**	-.116**	-.097**	1	-.074**
	Sig. (2-tailed)	<.001	.009	<.001	.591	<.001	<.001	.016	<.001	.611	<.001	<.001	<.001		<.001
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
Class Size	Pearson Correlation	.105**	-.048**	.082**	.039*	.066**	.114**	.373**	-.032	.124**	.099**	.041*	.306**	-.074**	1
	Sig. (2-tailed)	<.001	.005	<.001	.020	<.001	<.001	<.001	.060	<.001	<.001	.016	<.001	<.001	
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 2 - Correlation Matrix

Null Hypothesis (H01): There is no significant correlation between the level of private school funding and students' academic performance.

Alternative Hypothesis (Ha1): There is evidence to suggest a significant positive correlation between the level of private school funding and students' academic performance.

This correlation that is being tested is significant at the 0.01 level and displays a positive coefficient of 0.071. This provides evidence to suggest a slightly positive correlation between both variables, which supports the alternative hypothesis.

Apart from this direct effect, it is also important to note other variables that display significant correlations both for the school's private funding level and the student's performance variables. The correlation of the variable "Which of the following definitions best describes the community in which your school is located?" with both private school funding and student performance is positive (0.211 and 0.173 respectively) and statistically significant at the 0.01 level, which suggests that we tend to find in larger the community (eg. city, large city) schools with a higher percentage of private funding and students with better performance. Similarly, for the variable related to the "Student admission to school: Students record of academic performance", which is significant at the 0.01 level, there is a positive correlation both with private school funding and with student performance (0.197and 0.208 respectively), which might be explained by the intuition that private schools tend to do positive discrimination when admitting students, and if a school tends to accept student's that already have a record of academic performance, they would be expected to keep their performance, ceteris paribus, hence resulting in higher mean student performance, this might represent an indirect effect of private school funding on mean student performance. However, further research would be needed to explore these relationships in more detail.

Null Hypothesis (H02): There is no significant correlation between the level of private school funding and the financial literacy of students.

Alternative Hypothesis (Ha2): There is a significant positive correlation between the level of private school funding and the financial literacy of students.

The correlation that is being tested here is significant at the 0.01 level and displays a slightly negative coefficient of -0.057. We can therefore infer that there is a slightly negative correlation between both variables, which does not support the alternative hypothesis (Ha2).

If for H1 the other variables that were correlated with both variables under analysis showing a significant correlation at the 0.01 level were aligned with the direct effect that led to the rejection of the null hypothesis, in the case of H2 the situation is different. For instance, the variable "Student admission to school: Residence in a particular area" displays a slightly negative correlation with private school funding (-0.114), but it displays a slightly positive correlation coefficient with financial literacy (0.047). Private schools tend to have a wider geographical reach compared to public schools, which are typically zones to specific neighbourhoods, this might explain the negative relation we can observe. On the other hand students that live closer to their schools have the opportunity to be home faster, which might increase the time spent with their family, or be enrolled in extracurricular activities that promote their financial literacy. These are only hypothetical explanations and further research would be needed to affirm the real roots of these correlations.

Another variable that displays a significant correlation with both variables is the one regarding teacher absenteeism. (-0.047 and -0.065) are respectively the correlation coefficients with private school funding. Regarding the correlation with private school funding, it is in line with the literature that suggests that the structures and incentives in privately-run schools may lead to lower rates of teacher absenteeism. (Griffith, D. , 2017). Regarding the correlation with financial literacy, it might be explained by the intuition that students whose teachers tend to miss fewer classes have access to more education and therefore are in a better position when compared to students whose teachers are more absent. However, these are only correlations and further research would be needed to explore these relationships in more detail since correlation does not imply causation. According to the correlation matrix, a possible indirect effect is the one regarding class size. Against what would be expected intuitively, there is a slightly positive correlation between class size and private school funding (0.082). At the same time, there is a slightly negative correlation between class size and financial literacy (-0.048). Both these

correlations were revealed to be statistically significant at the 0.01 level. It might be that we are in the presence of an indirect effect that intensifies the direction of the direct effect: schools with a larger percentage of private funding apparently tend to have larger classes and larger classes are negatively correlated with financial literacy. Once again, further research would be needed to explore these relationships in more detail since correlation does not imply causation and the correlation between private school funding and class size can well be due to other, unmeasured factors. Bearing this in mind, if the coefficients were the other way and the effect of literacy was positive we would not be able to do so, but since it is in line with the direct effect we can be residually more confident when we notice that the statistical analysis failed to reject the null hypothesis (H02).

Null Hypothesis (H03): There is no significant correlation between students' academic performance and their level of financial literacy.

Alternative Hypothesis (Ha3): There is a significant positive correlation between students' academic performance and their level of financial literacy.

This correlation that is being tested is significant at the 0.01 level and displays a slightly negative coefficient of -0.039. This provides evidence to suggest a slightly negative correlation between both variables, which does not support the alternative hypothesis.

Such unexpected finding implies that there might be factors that counterbalance the positive effect of academic performance on financial literacy, warranting further investigation into the potential causes of this negative correlation. A possible explanation for this negative relation is the possibility that pupils that tend to be more dedicated to their studies, posing more time and

effort into their academic work might end up having less time to focus on the development of their financial literacy skills. Also, the learning preferences and individual differences might account for this unexpected correlation.

Sample T-Test

A comparison of the mean student performance of students attending public and private schools can be obtained through the use of the Independent Samples T-test. The findings allow us to draw various important conclusions, including the following:

Group Statistics

	Is your school a public or a private school?	N	Mean	Std. Deviation	Std. Error Mean
Mean Student Performance	.00	2889	486.2081	54.31559	1.01053
	1.00	612	498.6216	59.67591	2.41226

Figure 3- Group Statistics Mean Student Performance

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Mean Student Performance	Equal variances assumed	12.770	<.001	-5.046	3499	<.001	<.001	-12.41346	2.46029	-17.23721	-7.58972
	Equal variances not assumed			-4.746	838.802	<.001	<.001	-12.41346	2.61537	-17.54690	-7.28003

Figure 4 - Independent Samples Test Mean Student Performance

The calculated mean difference of -12.41 suggests that the mean performance score of students in public schools is inferior to that of students in private schools. The statistical significance of the observed phenomenon is established by the p-value, which in this case is less than the conventional threshold of 0.05, and is instead below 0.001. The statistical analysis indicates that the disparity in means between public and private schools is significant, and the probability of this occurrence being a random event is low. Furthermore, the mean difference's 95%

confidence interval does not encompass zero, thereby providing additional support for the existence of a substantial difference in means.

The findings indicate that within the scope of your study, the classification of schools as either public or private has a notable effect on the academic achievement of students. The findings are consistent with prior research indicating that private schools tend to exhibit superior academic performance compared to public schools, which may be attributed to various factors such as financial support, educational facilities, and admission criteria (Coleman, J., Hoffer, T., & Kilgore, S., 1982; Jeynes, W., 2012).

However, upon integrating the outcomes derived from the correlation analysis, the scenario becomes more intricate. As previously observed, there exists a positive albeit weak correlation between private funding and student performance. Simultaneously, it was observed that private educational institutions have the propensity to implement admission policies that are more discerning, and predicated on academic achievement. This could suggest that better performance in private schools may not stem solely from the funding but also from the selective intake of students, which aligns with findings from previous research (Chubb, J. E., & Moe, T. M., 1990).

Group Statistics

	Is your school a public or a private school?	N	Mean	Std. Deviation	Std. Error Mean
Mean Financial Literacy	.00	2889	10.7243	1.83347	.03411
	1.00	612	10.7980	1.61114	.06513

Figure 5 - Group Statistics Mean Financial Literacy

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Mean Financial Literacy	Equal variances assumed	8.939	.003	-.922	3499	.178	.356	-.07373	.07995	-.23047	.08302
	Equal variances not assumed			-1.003	976.671	.158	.316	-.07373	.07352	-.21800	.07055

Figure 6 - Independent Samples Test Mean Financial Literacy

The present study employs the Independent Samples T-test to conduct a comparative analysis of the average financial literacy levels among students in public and private educational institutions. Based on the aforementioned findings, it is possible to derive the following interpretation:

The calculated mean difference of -0.073 indicates that the financial literacy score of students in public schools is marginally lower than that of students in private schools, on average. However, the p-value is 0.178, exceeding the typical threshold of 0.05 for statistical significance. This indicates that the difference between public and private institutions in terms of mean scores is not statistically significant. The 95% confidence interval for the mean difference includes zero, which indicates that we can't be confident that there is a true difference in the population. This difference is plausible to have resulted from random variation.

In the context of this Directed Research, these results suggest that the type of school (public vs private) does not have a significant impact on students' financial literacy. This may suggest that factors other than school type, such as curriculum, teacher training, and family context, have a greater impact on students' financial literacy.

The results of the correlation analysis indicate a positive but weak correlation between private funding and financial literacy. However, the t-test conducted does not yield significant evidence to support the notion that financial literacy levels differ significantly between public and private schools. The observed incongruity may be attributed to unaccounted variables that potentially impact financial literacy, thereby rendering this rudimentary mean comparison inadequate.

Conclusion

The directed research embarked upon stood as a comprehensive examination of the existing relationship between private school funding and two important educational outcomes: students' academic performance and financial literacy. The study's objectives were addressed through a series of analyses, involving both correlation tests and Independent Samples T-tests. The findings from these analyses provided a rich tableau of insights, shedding light on the nuanced dynamics at play and offering a foundation for potential policy implications.

Among the three hypotheses, the first one “There is a positive correlation between the level of private school funding and students' academic performance.” was the only one that stood after the analysis. The resulting evidence from the correlation analysis provided some support for this hypothesis, with a weak positive correlation ($r = 0.071$, significant at the 0.01 level). This indicated that both the private school funding and the academic performance moved in the same direction, even though weakly. This result seemed to back up what other studies had found., such as those by Hoffer, Greeley, & Coleman, (1985), suggesting that private schools often outperform their public counterparts in terms of academic achievement.

However, this was not the only conclusion that could be inferred from the correlation matrix in regard to this hypothesis. Several other variables displayed significant correlations with both private school funding and academic performance. For instance, the community size of the school was positively correlated with both private school funding and academic performance, indicating that private schools in larger communities may experience higher performance levels. This aligns with the literature suggesting that larger communities often provide better

access to resources and opportunities that can influence school performance (Belfield & Levin, 2002).

The second hypothesis, “There is a positive correlation between the level of private school funding and the financial literacy of students.", was not supported by the correlation matrix analysis. Since it revealed a slightly negative correlation (-0.057, significant at the 0.01 level), suggesting that against the hypothesised belief, an increase in private school funding could actually be associated with a slight decrease in financial literacy. This was contrary to expectations and underscores the complexity of these relationships.

The third hypothesis suggested the possibility of the existence of a positive correlation between students' academic performance and their level of financial literacy. However, the correlation matrix analysis revealed a slightly negative correlation (-0.039, significant at the 0.01 level), which went against the hypothesised belief. This unexpected finding seems to indicate that a higher academic performance might not necessarily translate into a higher level of financial literacy, opening up the door for further investigation into the factors that might be counterbalancing the positive assumed effect of academic performance on financial literacy. A possible explanation for this negative relation is the possibility that students tend to be more dedicated to their studies, posing more time and effort into their academic work, and might end up having less time to focus on the development of their financial literacy skills.

Even though the correlation study gave a general picture, the Independent Samples T-tests gave a different view and provided a more in-depth analysis of the impact of school funding structures on the student’s performance. Private school students were shown to outperform their public school counterparts on average, with the mean academic performance gap between

students at private and public schools being considerable. The conclusion the Samples T-tests allowed us to reach in regard to the mean difference in the students' performance aligns with the literature that consistently shows private schools performing better in academic outcomes (Coleman, Hoffer, & Kilgore, 1982).

On the other hand, the Independent Samples T-test for financial literacy did not find a significant difference between private and public schools, which suggests that the type of school may not be the decisive factor in shaping financial literacy. These findings are however pretty interesting, once they go against the findings of Mandell (2008), that his paper suggested that private school students may have a higher financial literacy. The fact that students' financial literacy might be agnostic to the typology of the school and its funding structure might indicate that other factors may be at play in the development of financial literacy, such as the curriculum, home environment, and teacher quality, among others.

Despite the significant findings that were achieved during the directed research, it is important to acknowledge this study's research limitations. Firstly, the correlation matrix analyses, while revealing significant relationships between the different variables, only serve to indicate associations and not causal links between the variables. Secondly, although the T-tests provided evidence of significant differences in mean scores between private and public schools, they do not account for other potentially influential factors. And thirdly, the study also relied on secondary data, which may contain biases and inaccuracies, even though the source is the OECD which is a very reliable organization in what concerns statistical analysis.

In summary, the research journey undertaken during the execution of this directed research has cast a discerning eye on the intricate connections between private school funding, academic performance, and financial literacy. The findings point to a complex interaction of factors, some of which are consistent with the body of prior research while others offer fresh lines of inquiry. The study underscores the necessity for a holistic and comprehensive approach to the interpretation of educational outcomes, which even though might look simple at first glance, hide a whole world of complexity when analyzed meticulously, taking into account not just funding, but also the wider socio-economical context, school policies, and practices in regards to management autonomy. It is clear that there is still much to be understood about these relationships, and further research is needed to delve deeper into these dynamics. As mentioned in the introduction, it is hoped that the findings of this directed research might serve as a trigger and will stimulate further dialogue and discussion about this important area of research, with the ultimate goal being to promote a more effective, inclusive, and financially literate educational environment for the leaders of tomorrow.

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