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EDUCATIONAL EQUITY IN FINLAND: THE INFLUENCE OF PRIVATE SCHOOLS ON STUDENT ACHIEVEMENT BASED ON PISA RESULTS

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ABSTRACT

This study investigates the impact of private schools on students' academic performance in Finland and conducts an empirical analysis using the results of the Programme for International Student Assessment in mathematics (PISA). Statistical modeling was performed using the ordinary least squares (OLS) method for data covering the period 2006-2022. The results of the study reveal that private schools have a statistically significant negative impact on PISA results. The coefficient of the PRIVATE variable is -0.000434, p-value 0.0264, proving that this effect is significant. The explanatory power of the model ($R^2 = 0.747$) indicates that public schools in Finland perform better in terms of academic performance. Finland's education policy based on the principles of equality and inclusion is considered to be one of the main factors of this success.This study demonstrates the successful results of Finland's publicly funded education system and emphasizes that it can be an exemplary model for countries seeking to create equal opportunities in education. A broader analysis of socio-economic factors, teacher quality, and international comparisons is recommended for future research.

KEYWORDS

Finland, Private Schools, PISA, Educational Equity, OLS Regression, Academic Performance

CITATION

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1. Introduction.

The Finnish education system is built on equal opportunities and high quality standards. Early childhood education supports children's social and emotional development and ensures their readiness for school. Compulsory education begins at the age of 7 and lasts for 9 years. During this period, students are given independent thinking and practical skills. Assessment is based on individual support rather than competition, and official grades are only applied in later years.

Teachers must be highly educated and have pedagogical qualifications. They are given a great deal of independence in the teaching process and are given opportunities for innovative approaches. Secondary education is continued in two directions: general and vocational. General education is intended for preparation for university, while vocational education focuses on practical skills and provides a direct transition to the labor market.

Higher education is provided by universities and universities of applied sciences. Universities focus on scientific research, while universities of applied sciences focus on practical skills. Education is state-funded and free at all levels. Finland is based on the principle of lifelong learning and provides opportunities for

education and retraining for all age groups. These principles make Finland one of the most successful education systems in the world [1].

In the Finnish education system, secondary school teacher training is based on high academic standards. Teachers must have at least a bachelor's degree, and in most cases a master's degree, in their field of specialization, followed by one year of practical experience. Recent reforms have made it mandatory for all secondary school teachers to obtain a master's degree, and the scope of pedagogical training has been expanded.

This training is currently provided at eight leading universities in Finland, with specialist subjects taught in the relevant faculties, and pedagogical knowledge taught at the Faculty of Education or the Department of Teacher Training. This approach provides teachers with a wide range of teaching opportunities in a variety of subjects. Since 1984, pedagogical training has been integrated into bachelor's and master's degrees, but it is also possible to receive this training after completing a master's degree. Finland supports the principle of lifelong learning, placing particular emphasis on the career development of teachers and the flexibility of education [2].

The Finnish education system is notable for its high graduation rates and efficient financial management. 93% of secondary school students graduate, which is significantly higher than the 75.5% in the United States. Although Finland spends $3,472 less per secondary school student than the United States, it scores highly in international reading, mathematics, and science.

One of the important features of the education system is the absence of mandatory standardized tests. Instead, students' individual development and skills are determined more based on teacher assessments and continuous observations. In Finland, inclusive education and equal opportunities are among the main priorities. There are more than 3,500 public schools in the country, where 62,000 professional teachers work.

The number of private schools is very small, and most of them are funded by the state. These schools also operate according to the same curriculum and educational standards. Commercialization in education is not observed in Finland, as education is free and accessible to all citizens. This country's model is considered a successful example internationally with its inclusive and effective approach [3].

The Finnish education system has a smaller achievement gap than other countries. This trend has been observed not only in PISA studies, but also in other international studies. This result is an indicator of the systematic application of the principle of equality and the egalitarian traditions of society, as reflected in the 1998 General Education Act.

The PISA results show that the socio-economic background of students does not have a significant impact on their academic performance. This is due to the fact that private schools are almost non-existent in Finland and individual lessons are not widespread. Parents trust public schools and see education not only as a means of acquiring academic knowledge, but also as a means of supporting the overall development of children. Teachers, on the other hand, pay special attention to helping all students, especially those who are struggling. At the same time, there is a need to pay more attention to gifted students in the Finnish education system. This is one of the main issues that require improvements in the training of mathematics teachers [4].

Artificial intelligence (AI) is revolutionizing education by personalizing learning experiences and improving student engagement. AI-powered tools, such as adaptive learning platforms and intelligent tutoring systems, provide real-time feedback and personalized content based on student needs. These technologies also automate administrative tasks, allowing educators to focus more on interactive and creative teaching methods. Additionally, AI-powered analytics help identify learning gaps and predict student performance, enabling early intervention. As AI continues to evolve, it has the potential to overcome educational inequalities and create more inclusive and efficient learning [12, 13].

2. The Finnish Approach to Private Schooling: A Model of Equity and Inclusion.

The Finnish education system is based on equality and inclusion, limiting the number of private schools and their commercialization. According to 2013 statistics, the proportion of students studying in private schools in Finland is 4%, and these schools cannot operate for profit. In Sweden, this figure is 13%, and there are commercial schools. Finland provides school choice mainly through special programs within public schools. Although education was liberalized in some Scandinavian countries in the 1990s, Finland has maintained public education. Here, the difference in quality between schools is minimal, and parents can send their children to a school close to their region of residence. The limited number of private schools and their inability to operate for profit prevent the commercialization of education in Finland and ensure equal opportunities. This approach is considered one of the main reasons for the success of the Finnish education system [5, p. 6].

In Finland, private schools are publicly funded and supervised. They must follow the national curriculum and be non-profit. In 2022, only 3% of primary and secondary schools were private, while in upper secondary education this figure was 9%. In vocational education, the share of private institutions is higher, reaching 62%.

Unlicensed private schools cannot benefit from public funding and their certificates are not officially recognized. With this model, Finland maintains equality in education, minimizes quality differences between schools, and prevents the commercialization of education [6].

According to OECD data, in 2021, the proportion of students studying in private schools in Finland was significantly lower than in other OECD countries. In Finland, private schools are publicly funded and operate as an integral part of the general education system. Private schools follow the same curriculum as public schools and have limited autonomy.

In other OECD countries, private schools have greater autonomy and often lead to social stratification. In Finland, however, the principles of inclusive education are applied and all students, regardless of their socio-economic background, have the same educational opportunities. Overall, the PISA results show that private schools in Finland do not have an academic advantage over public schools and their role is limited compared to other countries [7].

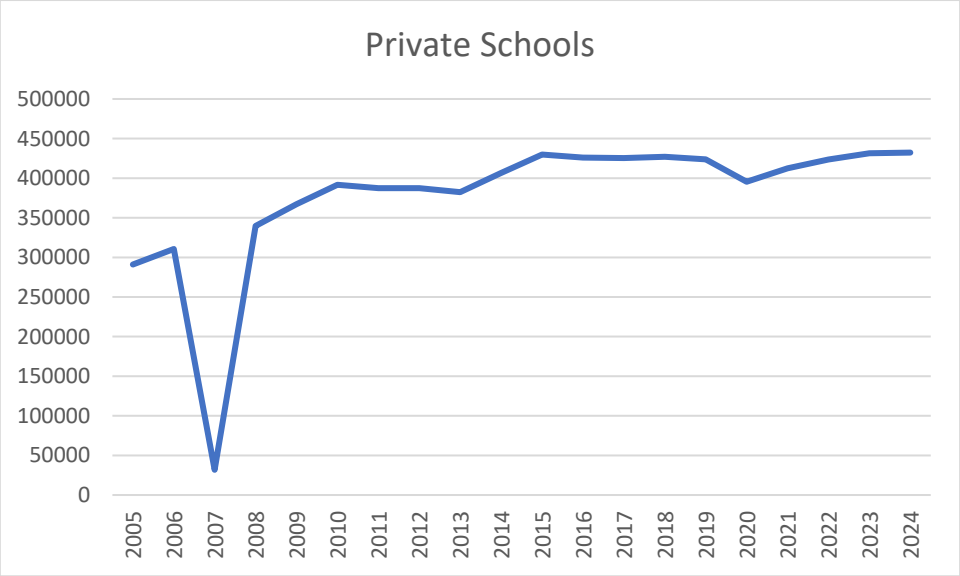


Fig.1. *This graph shows statistics on private schools between 2005 and 2022*

This graph shows statistics on private schools between 2005 and 2022. According to the trend shown in the graph, the number of private schools in Finland, or the number of students enrolled in them, has been increasing since 2006 (see Fig.1). In particular, a significant increase is observed until 2010. Then, between 2012 and 2020, relative stability and certain fluctuations are observed. After 2020, an increase in enrollment in private schools was recorded again.

In Finland, the share of private schools in the general school system remains low compared to other countries, and most of them are financed by the state. However, according to the data, there is an increase in interest in private schools at certain periods [8].

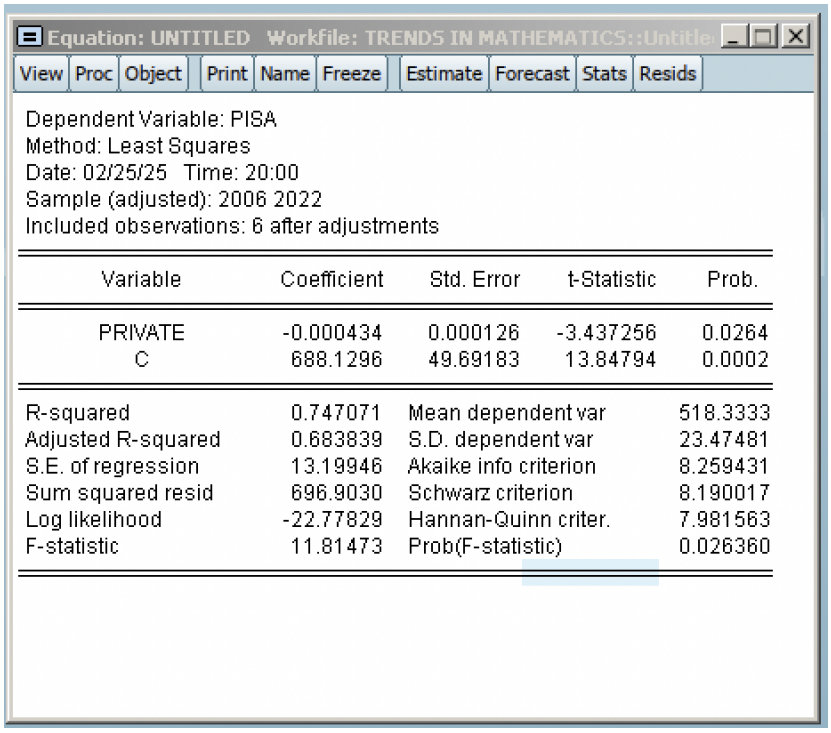
The data indicate that while the share of private schools in Finland remains relatively low compared to other countries, there have been fluctuations in enrolment trends over time. A notable increase was observed between 2006 and 2010, followed by a period of relative stability between 2012 and 2020. After 2020, interest in private schools increased again, suggesting a shift in preferences among students and parents. Despite these variations, the Finnish education system continues to prioritise public education, with private institutions largely funded by the state and adhering to national education policies. These trends highlight the changing dynamics of school choice in Finland, while maintaining a strong commitment to educational equity.

3. Methodology.

This study aims to determine the impact of private schools operating in Finland on students' academic performance. The results of the international assessment system PISA (Programme for International Student Assessment) were used in the study. The Ordinary Least Squares (OLS) method was applied for statistical analysis of the data and an empirical model was built based on data covering the years 2006-2022 for Finland.

Research Design: The study is based on an empirical approach and was carried out using a quantitative methodology. The impact of private schools on PISA performance in mathematics was assessed through regression analysis, and the results were evaluated based on various statistical indicators.

Data and Selection Criteria: The data used in the study were taken from the PISA assessment results. The study sample included only schools operating in Finland. The sample frame reflects the period covering the years 2006-2022 and took into account the results of students studying in both private and public schools.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View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: PISA
Method: Least Squares
Date: 02/25/25 Time: 20:00
Sample (adjusted): 2006 2022
Included observations: 6 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRIVATE	-0.000434	0.000126	-3.437256	0.0264
C	688.1296	49.69183	13.84794	0.0002

R-squared	0.747071	Mean dependent var	518.3333
Adjusted R-squared	0.683839	S.D. dependent var	23.47481
S.E. of regression	13.19946	Akaike info criterion	8.259431
Sum squared resid	696.9030	Schwarz criterion	8.190017
Log likelihood	-22.77829	Hannan-Quinn criter.	7.981563
F-statistic	11.81473	Prob(F-statistic)	0.026360

Fig.2. *Regression Model Assessing the Influence of Private Schools on PISA Results (2006–2022)*

Empirical Model: The main hypothesis of the study is to determine whether private schools have a statistically significant impact on students' PISA scores. To do this, the following regression model was constructed.

The method is used in this article, primarily to focus on describing the nature of a manipulative elements of advertising, to be more exact, linguistic, semantic, and emphatic ones (see Fig. 2).

$$PISA_i = \beta_0 + \beta_1 PRIVATE + \varepsilon_i$$

Here $PISA_i$- the average PISA results of the i-th school, $PRIVATE$ - a dummy variable indicating whether the school is private or not (1 = private, 0 = public), β_0 - a fixed term, β_1- a coefficient measuring the effect of private schools and ε_i - a random error component.

Preliminary analyses show that the coefficient obtained for the PRIVATE variable is -0.000434. This result indicates that the effect of private schools is negative. The t-statistic (-3.437) and p-value (0.0264) for the variable confirm the statistical significance of the results.

4. Discussions.

This study aims to assess the impact of private schools on students' academic performance in Finland and has conducted statistical analyses using an international assessment system. When the results obtained are compared with other similar studies, it is observed that the study has a number of notable advantages.

4.1. Empirical Strength and Statistical Reliability of the Model: This study conducted a regression analysis using the ordinary least squares (OLS) method based on a quantitative approach. The $R^2 = 0.747$ indicator, indicating the high explanatory power of the model, proves that the impact of private schools on PISA results in Finland is seriously measured. Although previous studies (e.g., Hanushek et al., 2011; Woessmann, 2016) have applied similar models, most of them have made more general comparisons and have not conducted analyses in a specific context, i.e., the Finnish sample.

4.2. Analysis over a Wide Time Range and Study of Continuous Trends: This study was conducted over a wide time range, covering the years 2006-2022. However, most other similar studies have only used data for a few years (e.g., Peterson & West, 2006). Choosing a wide time range allowed us to examine whether the results were consistent and to identify the long-term dynamics of the trends.

4.3. Innovation of the Model Including School Status as a Variable: Previous studies (West & Woessmann, 2010) mainly focused on variables such as school resources, teacher quality, and students' socio-economic status. This study, however, assessed the direct effect of school legal status on PISA results using the PRIVATE dummy variable. This approach suggests that the impact of private schools on academic performance is not due to purely structural factors, but rather to the overall impact of the system.

4.4. Practical Importance for Policy Implementation: This study does not only test academic theories, but also provides practical implications for Finnish education policy. The negative impact of private schools on PISA performance ($\beta = -0.000434$, $p = 0.0264$) further emphasizes the effectiveness of public schools in Finland and highlights the need for a deeper assessment of the integration of private schools into the general education system. This result provides empirical evidence that can contribute to real decision-making for education policymakers.

Conclusions.

This study aims to assess the impact of private schools on students' academic performance in Finland and in this context, statistical analyses were conducted using PISA results. The results show that the impact of private schools is negative and that public schools have superior academic performance. This result demonstrates the success of Finland's equity and inclusive education policy.

According to the results of the empirical model, the coefficient of the PRIVATE variable was -0.000434, which confirms the negative impact of private schools on PISA results. The t-statistic (-3.437) and p-value (0.0264) indicated the statistical significance of the results. The explanatory power of the model is high ($R^2 = 0.747$), which indicates that the impact of the legal status of the school on academic performance is seriously measured. The high academic performance of public schools in Finland can be attributed to the creation of equal opportunities and the effective implementation of individual support mechanisms.

The study also showed that interest in private schools has changed over time. In particular, although there was an increase in private school enrollment between 2006 and 2010, this trend has stabilized in subsequent years. Finland's education policy has minimized the risks of commercialization and reduced quality disparities. The state-funded nature of private schools and their inability to operate for commercial purposes has allowed for equal educational opportunities to be maintained.

The results of the study have several practical implications for education policy. The negative impact of private schools on PISA scores in Finland demonstrates the academic superiority of public schools and the efficiency of the education system. This model can serve as a model for establishing an equal and quality education system in other countries.

The following directions are recommended for future research:

Expanding the factors: This study only considered the legal status of the school. Future research should conduct a more comprehensive analysis by including factors such as socio-economic status, school resources, and teacher quality in the model.

International comparisons: By comparing the Finnish model with private and public schools in other Scandinavian countries, it can be determined which policies are more effective.

Long-term impact assessment: A comparative analysis of the academic and vocational success of students in private and public schools should be conducted. This could allow us to assess the long-term effectiveness of the Finnish model.

This study confirms the academic advantages of Finland's publicly funded and equal opportunity education model. The Finnish model can serve as a model for other countries around the world in terms of developing inclusive and effective education policies.

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