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# **The effect of monetary support on non-profit schools' performance – the results of the Hungarian secondary schools' empirical analysis**

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Pupils after elementary education should make important choices: what to learn and where. After deciding the field of interest, the type of school is also a crucial point. It is possible to study in a state-supported school or to go to a religious school or to a nonprofit school. In all cases, the same type of school leaving exam could be received, but the way of achievement could be different. It depends on the place, on teachers, on the teaching environment, on the curricula and last, but not least on the financial resources.

Financing nonprofit institutions is an elementary question. These organizations are working in those fields of the economy, where the rentability is not ensured, but it is usual, that the governmental services are below the demand. This tendency is observable in secondary education. The level of financing is supposed to have an impact on the level of education. A minimal level of funds is necessary to ensure that a school can operate but the questions are whether additional money is fundamental to the reliable performance of the pupils. This paper shows the results of the Hungarian secondary schools' empirical analysis with the help of multivariate modeling to show the factors of a better school leaving exam result.

## *Introduction*

Economic organizations are varied and diverse in modern societies, but two major groups should be formed traditionally: the business and the governmental sector. However, a third, non-profit sector is getting a dominant role in economies. Its recent contribution to GDP is still low, stands for 3-5% of GDP, but its presence in the field of employment is more significant and it is between 8-10%. At the field of secondary education from the 28986 hired pedagogue 2349 are working in a non-profit institution. This 8.1% is a relatively low employment ratio among non-profits.

At some fields of economy, the importance of non-profit institutions is higher than average like services at health care, social services, education, and culture. Moreover, one of the typical functions of these organizations is the protection of cultural, religious, moral, professional, political values and interests. Non-profit economic organizations are very heterogeneous as a legal and organizational form, activity, aims, functions or financial resources. It could be illustrated by showing that theatres, schools, public bodies, and associations are also operating as non-profits. At the same time, it is common that they are working outside the governmental and private sector.

Enterprises at the business sector could be modeled by supposing that their aim is to maximize the profit and their operation and behavior and decisions about prices and output are based on this assumption. Certainly, this could be indirect and collateral if the property and governance are separated, and individual interests are followed. Nevertheless, the efficiency and performance of the firm are computable if the aim, which means the profit is measurable.

At non-profit organizations, this aspect is not adequate, but it should be mentioned that earning a profit as an aim is not forbidden; just the allocation of revenues over expenses to owners and managers is prohibited. Although there are no real owners who are eligible to receive the profit, they could be represented by the founders, directors, managers, members or donors whose aims are not always overlapping.

## *Theoretical background*

The aims of non-profit organizations are diversified: these could be general social or societal or in favor of a smaller community. But it is common, that they are formulated on a monetary basis while the focus is on the necessities or interests of the members or the target audience. Meanwhile, these plans should be accomplished by acquiring the necessary financial assets to fulfill the mission and also developing a financially sustainable organization. Therefore, they are working on a double bottom line but the two targets are not identical, the latter is just a tool. It is possible, that the two objectives are opposite or that the fulfillment of the mission and the financial requirements has conflicts and the operation become similar to a for-profit business (Young, 2005)

On the other hand, these institutions should deal with a duplex market: they are providing goods and services to consumers, but at the same time they are looking for revenues from the donor's market. The support could be donations as well as incomes that are similar to for-profit revenues. In case of non-profit schools' tuition, fees and revenues from entrepreneurial activities are counted in these categories. Theoretical approaches are distinguished into three groups according to Bois et al. (2003).

Neoclassical economic theory that uses the classical optimization model by utilizing different variables to maximize the different target functions.

Entrepreneurial theories deduct the unique objects from the preferences of founders and directors of organizations.

Principal-agent theories could also be used in the field of non-profit sector as well as at the for-profits because the groups and aims of concerned people are diverse and could be in contrast.

The basis of these theories is that attribution of non-profits and their operation depends on others' donations which could have financial and nonfinancial form as well. Although the non-profit organization cannot distribute the profits, the revenues could be spent on better working conditions, on providing free meals, or free travel; or other discounts.

The tax allowances of these organizations could make these legal forms attractive for non-altruistic entrepreneurs and in this case the firm is operating as a for-profit one and is called non-profit in disguise. Moreover, according to Badelt (1989) economic advantages, the presence of religious institutions, the access to volunteer labor and the political preferences could also influence the institutional form of social services.

The non-profit objective functions are different in arguments and targets could also be various: quantity, quality, revenues, net wages of employees or some non-financial utilities as working conditions, prestige, social welfare or consumer surplus. The aims could be deducted from the motivations of organizations and contributors. Altruist motivations are behind the targets as maximizing the quantity of service if the utility is coming from the help of others besides the own consumption. On the other hand, the maximization of revenues could increase the prestige of the organization and it is not an altruistic behavior. Steinberg's model is built and empirically tested on the combination of this two aims (Petró, 2013).

Brooks and Ondrich (2007) developed Steinberg's model by defining a third objective, the maximizing of quality. They supported it by Hansmann's (1980) theory that the information asymmetry is one of the most spread reasons of starting a non-profit organization because the consumers trust more in these firms if they don't have the possibility to control the quality than in for-profits as a result of the forbidden profit distribution.

## *Methodology*

Non-profit institutions formulate their missions as different specific purposes because they are heterogeneous instead of having financial aims. These goals are determined by entrepreneurs or external supporters and could appear as altruism, or the quality of the service. This study is based on empirical analysis. By the help of the database of Public Education different analytical calculations are made to support the theories shown in the previous part.

The database is received from the Office of Education, who is operating the Information System of Public Education (Köznevelési információs rendszer – KIR). The KIR is an electronic registration and data supplier system based for Hungarian institutions relating to public education. The

data is uploaded by the schools through an online surface. The system is storing the data that could be requested from the Office for statistical usage according to the act CXII of 2011.

In the received table, the supporter of school is not indicated properly, from 58 Ltd one is a Baptist school, and 53 are non-profit or in some cases public benefit school. Just 4 secondary schools are for-profit. Among the public limited companies (2): one is a non-profit, the other is supported by Herend Porcelain (a world-famous manufacturer). Therefore, we could state, that the for-profit presence at secondary education is not significant, principally, because the 4 Ltd. has foreign relations.

The database was also imperfect at the field of financial data. Schools with missing financial data were deleted from the analysis: from 981 schools 269 were eliminated because of missing financial, and another 119 because of missing final grade.

Throughout the qualitative analysis, the aim is to get an image about the non-profit secondary schools in Hungary by identifying which factors are determining their result. These results are identified by the average of final exams of mathematics and Hungarian language and literature. These two subjects are highlighted from the five final exams results of pupils because these are obligatory and the 50% weight of each makes equilibria between humanities and science subjects. Comparing the result of the average of final exams and the list made by two Hungarian magazines, the order is similar. Although the ranking of *Heti Világgazdaság* (HVG) is based on the competence surveys from mathematics and reading, the graduation results (Hungarian language and literature, mathematics, history and foreign language) and the college entrance results the final exam average closely follows the ranks, but the latter is numerical.

Table 1. The Best non-profit schools

1	Alternatív Közgazdasági Gimnázium, Szakképző Iskola	4,1
2	Neumann János Középiskola és Kollégium	4,0
3	Xántus János Két Tanítási Nyelvű Gimnázium és Szakközépiskola	3,8
4	Lauder Javne Zsidó Községi Óvoda, Általános Iskola, Középiskola és Zenei Alapfokú Művészeti Iskola	3,8
5	Pesthidegkúti Waldorf Általános Iskola, Gimnázium és Alapfokú Művészeti Iskola	4,0
6	Óbudai Waldorf Általános Iskola, Gimnázium és Alapfokú Művészeti Iskola	4,0
7	Magyarországi Németek Általános Művelődési Központja	3,8
8	SEK BUDAPEST Óvoda Általános Iskola és Gimnázium	3,6
9	Energetikai Szakközépiskola és Kollégium	3,7
10	Közgazdasági Politechnikum Alternatív Gimnázium és Szakközépiskola	3,7

(Source: HVG 2017:37)

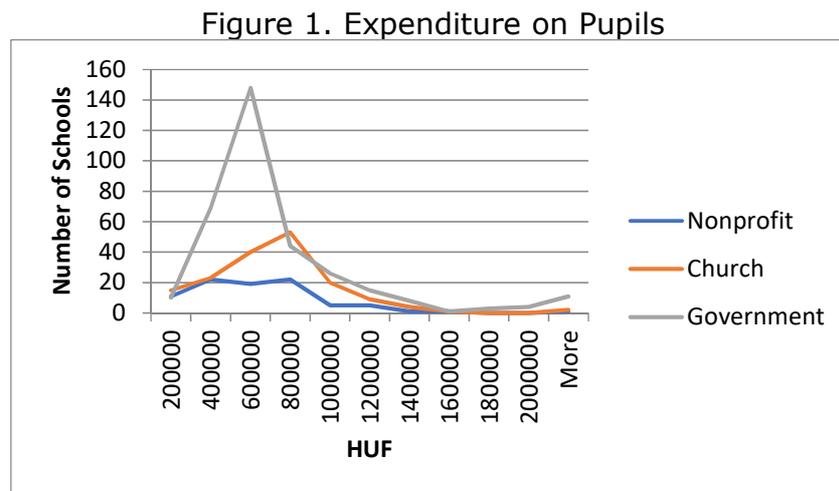
If we compare this ranking with the other published secondary education ranking by *Nők Lapja* (*Nők Lapja, Iskolaválasztó, 2017:43-48*) where the schools are evaluated according to their type as well, it is visible, that the previously mentioned schools are in the top 10 of secondary grammar and

secondary vocational schools. But none of the top 10 vocational non-profit school is in the cumulative ranking. It should be considered according to Nguyen-Hoang and Yinger (2014), that significantly higher pupil performance could be the result of an educational reform and a new state education aid system.

## Findings

From the given database it could be calculated that the expenditure on pupils is diverse. The cause for this result could be the different renovation, investment structure of schools and the small number of students could also distort this outcome. But it could be stated that 83.3% of schools get less than 800 000 HUF: among non-profits, it is 85%, among church-supported schools it is 78.4% and 79.9% of government supported as it is illustrated in the graph below.

Moreover, it could be also determined, that the median schools get less if it is state-owned than church supported, but for non-profits, it is not evident because the graph has two peaks. It is strengthening the idea, that the non-profit secondary schools are not homogeneous.



(Source: KIR)

## The non-profit schools

Those schools where the number of pupils wasn't indicated and those who haven't got any state support are eliminated from the analysis. In 64 from the 254 analyzed schools has art studies, and a minimum of 10 schools has special teaching programs for pupils with disabilities. There are 14 Waldorf schools, and 14 schools for adults. 110 institutions indicated that they get state support after its educational activities. And there are just 3 more who gets state support in other ways (for projects or in virtue of a contract).

After selecting those schools where the supporter is a non-profit organization, and there is a possibility to have a school leaving exam

(GCSE) 88 items remained in the database. The smallest one has 18 students, the biggest has 2228. The number of teachers varies from 3 to 101. Consequently, the pupil-to-teacher ratio is between 1.8 and 35.88. It means that the group of non-profit secondary schools is very heterogeneous.

### *The number of pupils*

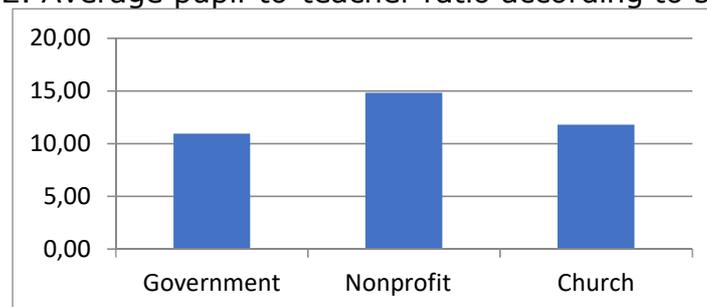
In 78 schools the number of pupils is below 100. It means that in an average 4-year education there is only one class in each grade. There are 11 schools between 100 and 500 pupils, 27 between 500 and 1000, and the biggest ones (14) has more than 1000 students. In this way, 4 groups could be easily distinguished on the base of the number of pupils. This grouping could be useful because for bigger schools the running and fix expenses are not the same as for schools with less than 100 children. And the effectiveness of education is also different: in schools where the pupils know each other, the ambiance is more familiar, than in those which have more premises all over the country.

If a school wants to increase the number of its pupils, it could start a new class, or increase the number of pupils in the class or maybe to open a new site of a new school in other cities. The first two possibilities have strong limits. Usually, the buildings are fully used because of efficiency reasons, but they could rent buildings or just rooms but it could be difficult to organize education in more sites. The other two is not very common but exists.

### *Pupil-to-Teacher ratio*

The pupil-to-teacher ratio could show the level of education because fewer pupils mean more attention from the teacher. At the same time, special students need more staff, and their performance is not linear to the help they receive. According to Figure 2, the non-profit schools employ more teachers than government and church-supported schools. So, it could be an appropriate choice for those pupils, who need more help.

Figure 2. Average pupil-to-teacher ratio according to supporter



(Source: KIR)

Mainly the art schools have low rates, the lowest is 2 pupils/teacher. 77 schools are below the level of 10. 76 schools are between 10-15. And it goes up to 40 for the next 73 schools. It is supposed, that the number of students for a teacher could indicate the quality of education. Ferguson (1991) found that student achievement fell as the pupil-to-teacher ratio increased for every pupil above 18 to one ratio.

If the number is low, the adults have more time to a child, and better results could be achieved. On the other hand, in for pupils with special needs, more teachers are necessary and the educational couldn't be measured by the final exam results because sometimes the successful exam needs more effort than a distinction for a prominent. At the field of non-profit schools some special schools are presented, and in these institutions, the pupil-to-teacher ratio is lower than in normal ones. Moreover, in art schools, this indicator is also low because this type of education requires personal one to one contact between teacher and pupil like learning a musical instrument. Although the number of state-financed teachers and pedagogical employment is maximized and differs for art and special schools.

### *The share of state support*

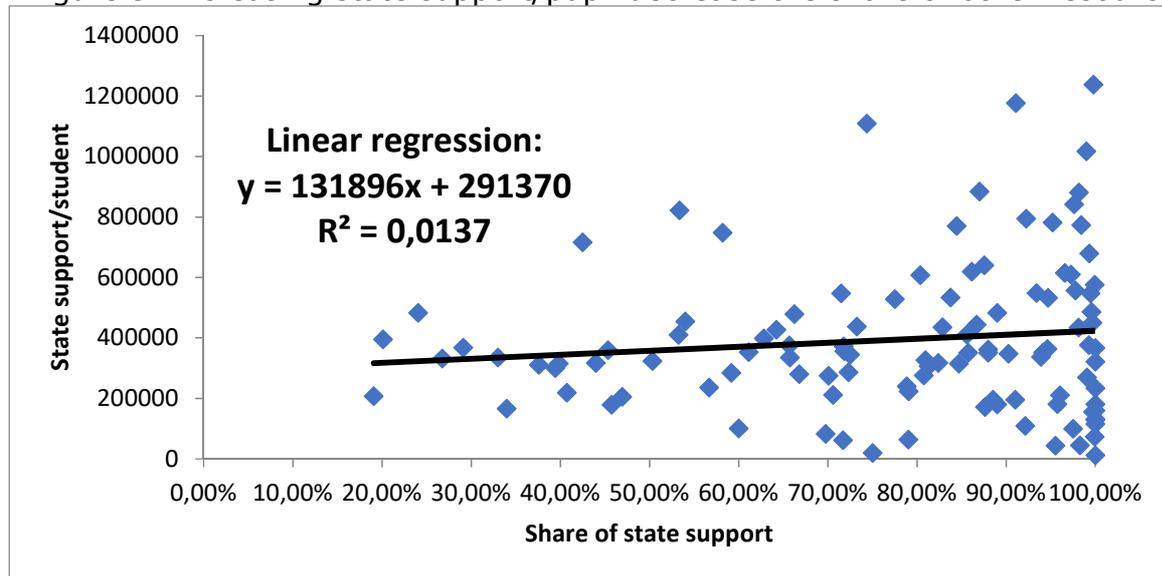
All types of schools can get state support in Hungary if they fulfill some basic specifications of Act 2014/C. If an institution is the subject of support it could get the money after the employed teachers (4,4367,700 HUF a year in 2015), but the maximal number of teachers is limited as a function of the number of pupils (pupil-to teacher ratio should be between 12 and 13.7). It also gives operational support cases to church-owned institutions.

Besides all, there are 4 schools with foreign origins where the Hungarian state support is 0%. In 17 institutions it is below 50%, and these are those schools that could be viable under market conditions because their students could or wants to pay for a better or specific knowledge. In 51% of non-profit secondary schools, the state support is between 50 and 90%. It means, that they have income from tuitions or fees, but pupils must pay less than the cost of education. Therefore, they just pay some supplementary sum to increase the level of education or to have a different kind of education.

The support it is between 90% and 99,9% in 34% of observed schools. Here, the private income is not more than in those public schools, where a foundation is created and has percentage donations. Moreover, in 10 so-called non-profit schools, the only income is coming from the Hungarian treasury as it could be seen in Figure 3. Therefore, these institutions must live with the same amount of money as public schools, and in this case, it has no financial reason to operate in a non-profit form. From the data given, it could be shown that the average state support for Waldorf schools is 65%, for art schools is 86% and for economic schools is 72%. Unfortunately, the database is incomplete, and we have no information about 130 institutions.

## State support for a pupil

Figure 3. Increasing state support/pupil decrease the share of other resources?



(Source: KIR)

If we want to create group within non-profit secondary schools, the presence of tuition fee should be considered. In 40 institution the pupils have to pay some kind of money between 5 and 1,570,922 forints a year. But in just 4 schools could we state that the tuition fee is significant (more for a year than an average monthly wage in Hungary). In half of the schools the fee is under 2500 HUF (8 EUR) a year. But as we know, averages could hide a lot of information. In this case, we could see that the total income for a pupil is between 45544 and 1,966,201 HUF. The difference between different kind of fees and the total income is mainly the several types of supports. Because these schools are non-profits, it is possible to ask the tuitions fees as support, and this way they could avoid taxes. This way the institutions (just 56 receives monetary or another kind of support) could gain up to a value of 718,745 HUF for a pupil yearly. But it is difficult to measure which part of this support is paid by the parents of students as tuition fee and which part is paid by other supporters, like for-profit companies.

Moreover, there are 13 schools where some entrepreneurial income is shown. But the amount is not high, 47500 HUF is the maximum for a pupil. Finally, we should mention that just 2 non-profit secondary schools have foreign support, but in the case of the General Community Centre of Germans in Hungary, it is significantly more than 285000 HUF per pupil.

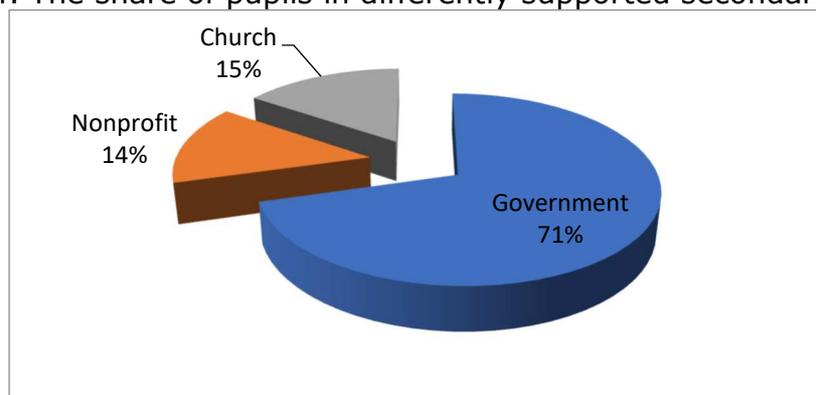
Table 2. The weight of non-profit education in Hungary (2014)

Type of school	Type of supporter		Share of non-profit schools
	Number of Schools	Number of non-profit schools	
Vocational School	683	140	20%
Special Vocational School	155	4	3%
Secondary Grammar School	882	114	13%
Secondary Vocational School	941	169	18%
Total	2661	427	16%

Source: [www.ksh.hu](http://www.ksh.hu)

Table 2 shows that the share of non-profit schools is 16% on the average. Their presence is greater at vocational education but very small at special vocational education according to the statistics. On the other hand, just 14% of students are enrolled in non-profit schools. It means that the average size for a non-profit school is usually less than for a government supported one.

Figure 4. The share of pupils in differently supported secondary schools



Source: Author

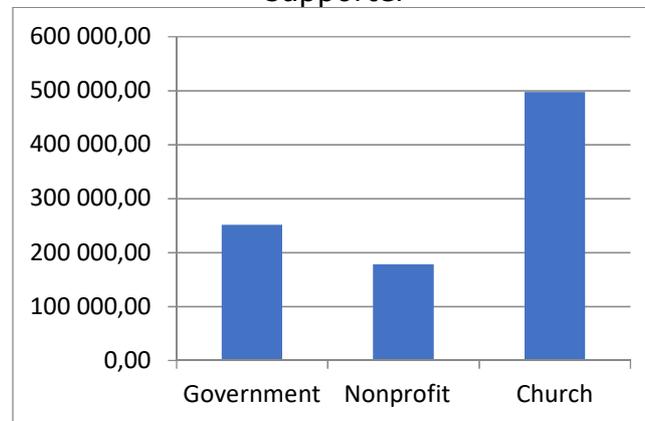
### *Money spent on pupils*

It could also be supposed, that more money spent on a pupil could also increase the level of performance. At this field, the non-profit schools spend less on a child, less than half than a church supported the school. According to PISA ("Pisa in Focus," 2012) results: "greater national wealth or higher expenditure on education does not guarantee better pupil performance. Among high-income economies, the amount spent on education is less important than how those resources are used."

In his empirical study Baker (2016) shortly concluded, that money matters, resources that cost money matter, and a more equitable distribution of school funding can improve outcomes. In addition, Wenglinsky (1997) measured math scores among fourth-graders and found that smaller classes resulted in the best testing outcomes. Notably, the

group that benefited most from lower ratios was the socioeconomically disadvantaged.

Figure 5. Average expenditure on a Pupil in secondary schools according to supporter



Source: Author

At the secondary level of education, other crucial factors affect the number of pupils enrolled according to Čepar and Bojnec (2008). Fertility remains as a factor with a significant effect on the number enrolled in secondary schools, but the number of scholarships granted to pupils also has significance. Declining fertility has already started to outweigh positive social policy and other socioeconomic factors.

James E. (1987) found, that the presence of private education in the USA indicates that higher quality requires higher expenditure per student, hence these schools would be unable to survive without distinguishing qualities. Duncombe and Yinger (2011) followed this idea when they created an educational production function to study the effect of spending on outcomes. In their model, the explanatory variables are:

- a measure of relevant per-pupil spending,
- characteristics of the student population served,
- contextual factors that might affect the value of the dollar toward achieving outcomes. In their study, the Outcomes =  $f(\text{Spending}, \text{Students}, \text{Context})$ .

## Results

Building a multiple regression model on the possible explanatory factors like the presence of grammar school, the pupil-to-teacher ratio, the number of pupils, the number of employed teachers, the number of non-teacher employees, the amount spent on a pupil and the income from entrepreneurship, the value of  $r$  will be relatively low by its 559.519 value. But the value of  $p$  shows that a better solution could occur by decreasing the explanatory variables.

The best results occur when just three observed variables are left: the presence of grammar school classes, the number of pupils and the pupil-

teacher ratio and the value of the constant is set to be zero. Consequently, the value of  $R^2$  is 0,9175 which is a relatively strong result for the observed 593 schools. The following expression shows the model and the p values, where R is the average of final exams' results, G is the presence of grammar school classes in the given secondary school, N is the number of pupils and N/T is the pupil-to-teacher ratio.

$$R = 1,9824 * G + 0,0009 * N + 0,0901 * N/T \quad (1)$$

(9,02337E-78)
(6,29116E-10)
(1,34092E-22)

It shows, that in grammar schools, the final results are usually higher than in schools where just vocational education is present. Secondly, bigger schools perform slightly better than smaller ones and finally, the model contradicts the theory: higher pupil-teacher ratio led to better marks, but the value of the coefficient is also very low.

Among non-profit schools, the regression analysis gives different results. When the previously observed significant variables are included in the model, the  $R^2$  value decreases to 0.8176, but the number of pupils' p-value will increase to 0.8958 which means that in this model it does not explain a better final exam result. After eliminating the non-explanatory variable, the model's  $R^2$  value is decreasing to 0.7971.

But by using the number of teachers as a measure of school's size, we get a relatively good model, where the  $R^2$  value is 0.8321, and the p-value of the two explanatory variables are very low, which is a better solution than explaining the final exam results just by the presence of grammar school classes.

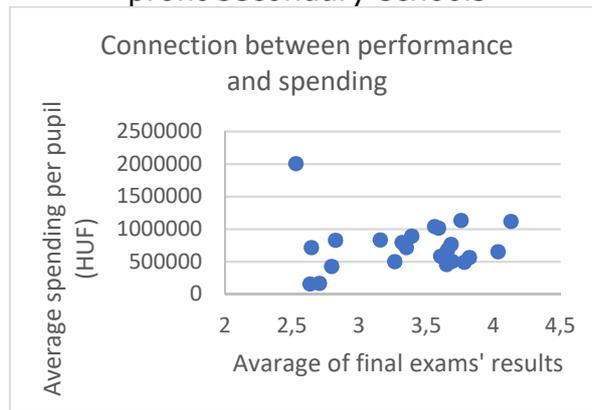
It means, that by employing more teachers and having grammar school classes, the non-profit secondary schools could have better performance as it is indicated by the following expression, where T is the number of teachers employed in the given school:

$$R = 2,2314 * G + 0.0317 * T \quad (2)$$

(p=6,92 \* E-17)
(p=1,18 \* E-07)

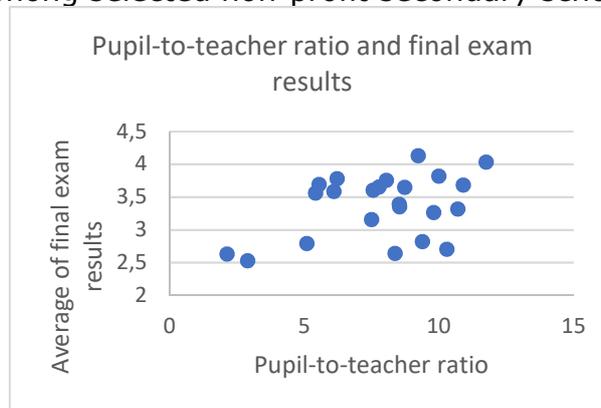
Among non-profit schools, the results of the pupils could be increased by employing more teachers, while in the whole sector bigger schools could have better results besides having grammar school classes, which usually means better pupils because grammar school students are supposed to continue the studies at colleges or at universities. After eliminating those schools where the share of state support is more than 70%, the support and results are illustrated in Figure 6 and 7.

Figure 6. Connection between performance and spending among selected non-profit secondary schools



Source: Author

Figure 7. Connection between pupil-to-teacher ratio and final exam results among selected non-profit secondary schools



Source: Author

Figure 6 shows that one secondary school has very high spending on a pupil with a low level of performance. But the real cause of this spending is not known (it could be a renovation project or other) the data of this school are not analyzed in the following model.

The multiple regression of the 22 remained schools shows that the pupil-teacher ratio and the amount of money spent on a pupil (M stands for one million HUF) are the two factors that have a noteworthy influence on the average of the final exams' result. It should be mentioned, that the pupil-to-teacher ratio has still a positive correlation with the performance of the school, but from the given database it is not possible to analyse the cause. Therefore the model, with the relatively high R<sup>2</sup>-value (0.9544) is the following:

$$R = 0.252871 * N/T + 1.79 * M \quad (3)$$

(p=4.75\*E-05)                      (p=0,004583)

## Conclusion

As a result, it could be concluded, that money only cannot increase the performance of pupils, but under appropriate circumstances it could help the other factors and a better result could occur. But at the field of non-profit education a positive correlation could be observed, so higher tuition fees could be used more effectively and could worth if our aim is increase pupils performance. Even though the statistics shows that higher pupil-to-teacher ratios could increase the exam results of Hungarian pupils, previous studies assume that it is not absolutely appropriate and further specific studies could give explanation to this phenomena. All in all, we could agree with Hanushek (1997), who included the following core tenets:

1. Schools spend a lot and inefficiently, therefore additional funding is unlikely to lead to improved student outcomes.
2. How money is used matters much more than how much money is spent.
3. Schools spend money differently; less money could be spent smartly.

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