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## EXAMINATION OF THE RELATION BETWEEN PUPILS' RESULTS AND PUBLIC SCHOOLS' EXPENDITURE

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**Abstract:** This paper aims to analyse the impact of expenditure to fund primary schools in big cities in Poland on pupils' performance (measured with the results of 6<sup>th</sup> graders' exam). Analysis of literature allowed us to hypothesize about the correlation of average 6<sup>th</sup> graders' exam results as a test of competence, and the expenditure related to the education of students in public primary schools, and presents the results of public primary schools in a big city. Research conducted by the author in a big city among the primary schools, which were established by one unit of local government, suggests that, although a dependence can be observed, interestingly this is of a negative nature, not statistically significant. Thus there is no correlation between the 6<sup>th</sup> graders' exam results and the amount of expenditure in public primary schools.

**Keywords:** local government finance, education, pupils' outcome measurement.

### 1. Introduction

Financing a primary education is the responsibility of local government<sup>1</sup> in Poland. Determining the level of expenditure on education and identifying specific expenditure for the maintenance of educational institutions is part of an expenditure policy of the local government units. Cost-effective education is not just educating the largest number of pupils within limited financial resources, but also educating within limited financial specific resources, a specified number of pupils at the highest level.

Educational institutions should work in a way that the quality of the performance of their tasks is optimal, possibly the best in the circumstances. This raises the question of the impact of the funding on the effects of the quality of the educational tasks. This paper aims to analyse the impact of primary schools' expenditure in big cities in Poland based on pupils' performance (measured with results of 6<sup>th</sup> graders' exam).

This article reviews the literature on the correlation between pupils' performance and the level of expenditure related to the financing of education, both in Poland and

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<sup>1</sup> Those tasks are also carried out by big cities in Poland.

in the rest of the world. Analysis of the literature helped to identify the factors that influence the performance of pupils. It also allowed us to hypothesize about the correlation of average 6<sup>th</sup> graders' exam results as a test of competence, and the expenditure related to the education of pupils in public primary schools. This paper presents the results of public primary schools in a big city.

## 2. Literature review

The basis for research on the relationship between expenditure policy and the effects of school education, expressed by scores of the students' written competency exam, was created by Coleman and his team<sup>2</sup>. They found that the increase in expenditure has no effect on student performance. Their research became the basis for many subsequent research projects. The rationale for the link between the effects of the learning process and the expenditure incurred for this purpose is the production function. It shows that an increase in production leads to an increase in expenditure. Assuming that the effect of the school production, which should be achieved, is a properly educated student, then this should be associated with an increase in expenditure. Such an approach is justified by the type of expenditure incurred in schools. The main part of expenditure is the salaries of teachers, hence the higher salary level, from a theoretical point of view, the better the quality of education, because of the employment of better experts. Hoxby points out, however, that in reality the statement according to which schools with more resources – higher expenditure per pupil or per school division – will result in improved student performance, is far from obvious<sup>3</sup>.

In a number of studies it is indicated that factors other than financial determine the performance of students. One of the groups of factors that have a significant impact is the social environment. In his study, Dee<sup>4</sup> indicated that the family and the immediate surroundings, in particular the level of education of the parents, have a significant impact on the performance of students. This was confirmed by Häkkinen, Kirjavainen and Uusitalo<sup>5</sup>, who pointed out that expenditure does not affect results. A study of primary schools in California has shown that there is a systematic, positive relationship between students' achievements and teachers' experience<sup>6</sup>.

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<sup>2</sup> J.S. Coleman, E.Q. Campbell, C.J. Hobson, F. McPartland, A.M. Mood, F.D. Weinfeld et al., *Equality of Educational Opportunity*, U.S. Government Printing Office, Washington DC 1966.

<sup>3</sup> C.M. Hoxby, *Introduction*, [in:] *The Economics of School Choice*, ed. C.M. Hoxby, The University of Chicago Press, Chicago and London 2003, p. 5.

<sup>4</sup> T.S. Dee, *Expense preference and student achievement in school districts*, "Eastern Economic Journal", vol. 31, no. 1, Winter 2005, p. 35.

<sup>5</sup> I. Häkkinen, T. Kirjavainen, R. Uusitalo, *School resources and student achievement revisited: new evidence from panel data*, "Economics of Education Review" 2003, no. 22, p. 335.

<sup>6</sup> J.R. Betts, K.S. Rueben, A. Danenberg, *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California*, Public Policy Institute Of California 2000, p. 183.

Some research, however, has confirmed the existence of the relation between educational expenditure and students' performance. Pan, Rudo, Schneider and Smith-Hansen<sup>7</sup> in their study of the impact of funding on students' achievements in the United States, showed that schools in states with a higher expenditure directly related to education, but lower expenditure associated with administration, achieved better results. The factor which determined the relative amount of expenditure were expenditure per pupil. At the same time the study showed that the level of student achievement was positively affected by the operation of a specific financial allocation strategy, although it was not possible to create a universal model.

Some studies have shown that the correlation of students' performance and the level of expenditure exists, but it concerns details, usually selected areas of education. Research on schools in Florida for the period 1998-1999 showed that a correlation between expenditure per pupil and results in reading and mathematics is at the level of -0.14<sup>8</sup>. Fuchs and Wößmann<sup>9</sup> in their study, suggested that the positive link between educational expenditure per pupil and students' performance in mathematics takes place in countries with very low expenditure and does not occur in developed OECD countries. Eliminating developed OECD countries makes the link statistically insignificant. Eide and Showalter's<sup>10</sup> study indicated that marginal expenditure allocated on students affected results of the lowest level, and the elongation of the school year increases results in the upper half of the distribution, although these factors do not affect the average results. In their study, Steele, Vignoles and Jenkins<sup>11</sup> indicated that additional resources have a positive impact on students' achievement in mathematics and science, but not in English. In the latter case, there was even an inverse relationship.

One of the important factors indicated as the cause of the relationship between the results of students and the level of education expenditure, is the dominant position of teachers' salaries in the general structure of educational expenditure. According to Fox<sup>12</sup>, under certain conditions, there will be an increase, not a decrease of costs of

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<sup>7</sup> D. Pan, Z.H. Rudo, C.L. Schneider, L. Smith-Hansen, *Examination of Resource Allocation in Education: Connecting Spending to Student Performance*, Research report, Southwest Educational Development Laboratory, April 2003, pp. 79-81.

<sup>8</sup> D.N. Figlio, M.E. Page, *Can School Choice and School Accountability Successfully Coexist?*, [in:] *The Economics of School Choice*, ed. C.M. Hoxby, National Bureau of Economic Research-The University of Chicago Press, Ltd., London 2003, p. 53.

<sup>9</sup> T. Fuchs, L. Wößmann, *What accounts for international differences in student performance? A re-examination using PISA data*, "Empirical Economics" 2007, no. 32, p. 458.

<sup>10</sup> E. Eide, M.H. Showalter, *The effect of school quality on student performance: A quantile regression approach*, "Economics Letters" 1998, no. 58, p. 349.

<sup>11</sup> F. Steele, A. Vignoles, A. Jenkins, *The Impact of School Resources on Student Attainment: A Multilevel Simultaneous Equation Modelling Approach*, <http://www.cepr.org/meets/wkcn/3/3525/papers/FVignoles1.pdf>.

<sup>12</sup> W.F. Fox, *Reviewing economies of size in education*, "Journal of Education Finance" 1981, no. 6, pp. 273-296.

maintaining schools or departments. What is more, this is a characteristic phenomenon, in his opinion, for the majority of organizations in which employees are the most important resource. Reducing educational expenditure in developing economies, especially in rural areas, can lead to limited access to skilled teaching staff or teaching aids<sup>13</sup>.

Research carried out in Poland led to the identification of factors that determine the competency exams' results. In the first study conducted after the introduction of the external evaluation of students, i.e. the year 2002, Herbst and Herczyński list the factors significantly affecting the level of results recognized<sup>14</sup>:

- unemployment rate (at district level),
- income of local government unit from participation in personal income tax,
- percent of agricultural land owned by the state (state farms, the level of the old province).

Bański, Smith and Śleszyński<sup>15</sup> in their study for the same period, found that the nationwide results reflected the history of Polish historically specific regions (e.g. the results were on average lower in the north-west than in the centre of Poland), as well as economic status and the social position of the family. Swianiewicz, Herbst and Marchlewski<sup>16</sup> even state that “the education of a family is the most important factor determining the success of pupils and the school, and it is much more important than the quality and organization of schools.” These results were confirmed in Śleszyński's study<sup>17</sup> in the 2002-2004 period. He stated that there is a significant correlation between the results of the competency tests and the level of teachers' salaries. It should be noted, however, that the main object of the study was presented at municipality level, which means that the relationship between competency test results and the municipal budget expenditure and its structure, was tested as an average for the municipality, rather than the results and expenditure for particular schools. These studies have shown that in the case of big cities, there is a correlation between the total expenditure per pupil and the average annual 6<sup>th</sup> graders' exam results (Pearson correlation coefficient of about 0.29), and also:

<sup>13</sup> M. Herbst, J. Herczyński, *Is Large More Effective than Small is Beautiful? Size and Performance of Primary Schools in Poland*, MPRA Paper No. 6139, Munich 2004.

<sup>14</sup> J. Herczyński, M. Herbst, *Pierwsza odsłona. Społeczne i terytorialne zróżnicowanie wyników sprawdzianu szóstoklasistów i egzaminu gimnazjalnego przeprowadzonych wiosną 2002 roku*, Fundacja „Klub Obywatelski”, Warszawa 2002, p. 22.

<sup>15</sup> J. Bański, M. Kowalski, P. Śleszyński, *Zarys problemów związanych z uwarunkowaniami zróżnicowań przestrzennych wyników sprawdzianu dla uczniów szkół podstawowych w 2002 r.*, Polska Akademia Nauk – Instytut Geografii i Przestrzennego Zagospodarowania im. S. Leszczyckiego, Warszawa 2002, p. 27.

<sup>16</sup> P. Swianiewicz, M. Herbst, W. Marchlewski, *Diagnoza systemu finansowania i realizowania zadań oświatowych na obszarach wiejskich*, [http://www.euroreg.uw.edu.pl/index.php/pl/dokumenty/doc\\_download/15-mherbst-diagnoza-systemu-finansowania-i-realizowania-zada-owiatowych-.html](http://www.euroreg.uw.edu.pl/index.php/pl/dokumenty/doc_download/15-mherbst-diagnoza-systemu-finansowania-i-realizowania-zada-owiatowych-.html).

<sup>17</sup> P. Śleszyński, *Ekonomiczne uwarunkowania wyników sprawdzianu szóstoklasistów i egzaminu gimnazjalnego przeprowadzonych w latach 2002-2004*, Polska Akademia Nauk – Instytut Geografii i Przestrzennego Zagospodarowania, Warszawa 2004, p. 66.

- in the case of eligible expenditure (budget classification chapters directly related to education) per pupil, the relationship was substantially lower – a correlation coefficient of approximately 0.05<sup>18</sup>.
- in the case of chapter 80101 Primary School – the correlation reaches the level of 0.5.

Different results are indicated by the authors of “Society on the way to knowledge. Report on the state of education in 2010”<sup>19</sup>. It is stated that “while it is true to correlate a small number of pupils with teachers' workload, the belief that pupils in less numerous classes obtain much better results than their peers attending bigger classes is not appropriate. This effect is apparent in the very early stages of education (nursery and early years of pre-school), while in elementary school and later stages of education it is much weaker. Reducing the number of pupils can indeed increase learning outcomes, but it is very small and only applies to some pupils (especially those from disadvantaged backgrounds), and the same time, a reduction in class sizes is an expensive tool of educational policy”. One should bear in mind in this case, that the study concerned the relationship between pupils' performance and the size of school divisions. In this case, you can talk about the indirect effects of the number of school divisions on the amount of expenditure per school division.

Previous studies in Poland concerned diversity and, consequently, the correlation of learning outcomes and educational expenditure between municipalities, as authorities which established educational institutions, including primary schools. There are no studies on the diversity in learning outcomes and the level of expenditure between schools. More often such studies are published in foreign literature. The results of these studies allowed to bring the hypothesis of the existence of the relationship between the performance of pupils in schools and expenditure related to the education of those pupils.

### 3. Research methodology

In order to carry out the research, it has been assumed that there exists a relation between average 6<sup>th</sup> graders' exam results carried out at the end of primary school and the level of expenditure associated with the operation of public schools (per school division in a six-year learning period).

The study is thus primarily focused on the efficiency of public (state) schools. Measuring the efficiency of public expenditure is about determining the relationship between the level and structure of public expenditure and the actual benefits that refer to society and the economy as a result of this expenditure<sup>20</sup>. Efficiency is treated

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<sup>18</sup> *Ibidem*, p. 35.

<sup>19</sup> *Spoleczeństwo w drodze do wiedzy. Raport o stanie edukacji 2010*, Instytut Badań Edukacyjnych, Warszawa 2011, p. 134.

<sup>20</sup> S. Owsiak, *Finanse publiczne. Teoria i praktyka*, Wydawnictwo Naukowe PWN, Warszawa 2005, p. 246.

as a quantitative feature of the activities, reflected in the relationship to utility effects, obtained at a certain time and the efforts to meet the needs of the recipient (intermediate and final) and the inputs (resources) needed to achieve these effects, incurred in a period of time<sup>21</sup>. The benefits of educational tasks are understood to be educated pupils. The measurement of this feature is carried out through an indicator that shows the average level of the 6<sup>th</sup> grades' exam (competency exam). The average 6<sup>th</sup> graders' exam score as the indicator of outcome has certain disadvantages, but it is an objective measure of the amount of knowledge possessed by pupils. At the same time it is the indicator<sup>22</sup> for which it is possible to determine a value. Quite apart from expenditure, 6<sup>th</sup> graders' exam score is a measure of effectiveness. Effectiveness as an economic category which determines whether the goal has been achieved fully or satisfactorily, or whether achieving it in the future has been made easier<sup>23</sup>.

From the point of view of measuring the efficiency of primary schools, expenditure per school division is also important. The primary schools' expenditure structure is dominated by expenditure on salaries. In order to ensure comparability between primary schools, the relative altitude, i.e. staff costs per school division, will be used in the study. "School division" is defined by the Polish Central Statistical Office as follows: "the school division is a group of pupils in the same class"<sup>24</sup>.

The relation between the 6<sup>th</sup> graders' exam results and the level of expenditure per school division in the following years was studied using correlation, both linear and multiple. In the first case, the correlation is examined using the Pearson coefficient, in the second case, with a use of regression analysis, the relationship can be defined as the model determined by the formula:

$$Spr_t = a \cdot \exp_t + b \cdot \exp_{t-1} + c \cdot \exp_{t-2} + d \cdot \exp_{t-3} + e \cdot \exp_{t-4} + f \cdot \exp_{t-5} + g,$$

where:  $Spr_t$  – average 6th graders' exam result in year  $t$ ;

$a, b, c, d, e, f, g$  – regression parameters;

$\exp_t$  – primary school expenditure per school division in year  $t$ ;

$t$  – year 6th graders' exam.

The research period is 1999-2007. 47 public primary schools, which were established by the city of Szczecin, were examined. Some schools that could likely

<sup>21</sup> W. Czakon, *Procesowe podejście do badania efektywności*, [in:] *Efektywność – rozważania nad istotą i pomiarem*, Prace Naukowe Akademii Ekonomicznej we Wrocławiu nr 1060, Wrocław 2005, pp. 56-57.

<sup>22</sup> According to the definition proposed by T. Lubińska, "an indicator" shows the characteristics of the specified value directly. Similar concept is an "index", but this indicates the ratio of the two features of the same titers. See: *Nowe Zarządzanie Publiczne – skuteczność i efektywność. Budżet zadaniowy w Polsce*, red. T. Lubińska, Difin, Warszawa 2009, p. 57.

<sup>23</sup> I. Gorzeń-Mitka, *Skuteczność – próba interpretacji*, [in:] *Efektywność – rozważania nad istotą i pomiarem*, Prace Naukowe Akademii Ekonomicznej we Wrocławiu nr 1060, Wydawnictwo AE we Wrocławiu, Wrocław 2005, pp. 136-137.

<sup>24</sup> *Oświata i wychowanie w roku szkolnym 2007/2008*, Główny Urząd Statystyczny, Warszawa 2008, p. 21.

distort exam results were not qualified for research, for example a primary school at emergency accommodation.

Using the public value matrix, which takes into account the interaction between efficiency and effectiveness, public organizations can be distinguished into four groups that<sup>25</sup>:

- destroy value – show low performance, low efficiency;
- are focused on efficiency – focus on improving efficiency in achieving low or average performance;
- are focused on efficiency – focus on improving performance at average or low efficiency;
- create value – expertly combine to achieve high performance with high efficiency.

**Table 1.** Number of schools according to their public value

Average 6th graders' exam result	Expenditure per school division	
	low	high
High	10	8
Low	14	15

Source: own study.

The analysed primary schools can be divided into four main groups based on two parameters: the amount of expenditure per school division and the average 6<sup>th</sup> graders' exam result. The value that indicates the status to a particular group is the average value of those parameters. In the case of expenditure per school division, the reference value is the average expenditure per school division in the analysed schools from a period of six years preceding the time of carrying out the exam. Thus, the reference value of expenditure per school division for the examination conducted in 2007 includes the school years from 2001 to 2006. The criterion to qualify a particular elementary school in one of groups is to reach the level of expenditure per school division higher (respectively lower) than the reference value for at least 2 to 3 years (the years in which the exam was conducted were 2005, 2006 and 2007). In the case of 6<sup>th</sup> graders' exam result that will allow schools to divide into two groups (those in which high exam scores are achieved and those in which the exam results are low), is a weighted average of the exam result in the primary schools surveyed in a given year. The weight is the number of pupils taking the exam in a given year. The school is classified into one of the groups if the average exam results for each school with at least 2 of the 3 years (2005, 2006 and 2007) are higher (respectively lower). A schematic division of the above-mentioned schools' groups is shown in Table 1. It also gives the number of schools selected for a specific group.

<sup>25</sup> T. Strąk, *Public service value jako miernik skuteczności i efektywności realizacji zadań publicznych*, [in:] *Współczesne finanse. Stan i perspektywy rozwoju finansów publicznych*, red. J. Głuchowski, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2008.

#### 4. 6th graders' exam scores and public primary schools expenditure

The analysis indicates that parameters describing the relationship shall be at the level shown in Table 2.

**Table 2.** Parameters of regression function (6th graders' exam results and public schools expenditure per school division)

	Years of 6th graders' exam	
	2007	
	parameters of regression	statistical significance
g	28,010	yes
f	-0,184	no
e	-0,362	no
d	-0,184	no
c	0,248	no
b	-0,308	no
a	-0,180	no

Source: own study.

It can be observed that there is no statistical relationship between the level of expenditure per school division and the average 6<sup>th</sup> graders' exam results (the parameters describing the relationship are not statistically significant). If expenditure is calculated per pupil, the conclusions from the analysis of the regression function are similar.

During the period of research, the general trend in 6<sup>th</sup> graders' exam results achieved by pupils of the schools is elusive. In the primary schools surveyed in the city of Szczecin, out of the 40 points possible, those achieved in subsequent years at the level are presented in Table 3. There is no one-way trend and this causes an inability to identify a trend in the relationship between pupils' exam results and the level of expenditure per school division.

**Table 3.** Weighted average 6th grades' exam result in analysed schools

2002	2003	2004	2005	2006	2007
29,39	29,61	26,76	30,51	26,76	27,27

Source: own study based on source data.

In the case of expenditure per school division, an increase can be observed. This increase should have been examined in the 6-year period. Staff expenditure per school division in Szczecin in 2002-2007 increased by nearly 37%, while in the period 2001-2006 by about 7%. In 2002-2007, the minimum basic salary of a teacher



increased by 16%, and the average salary of a teacher, which is the basis of the average teacher salary dimension of higher levels of career advancement, increased by 12%. In the 2001-2006 period, the growth of an average salary was the same as in the period 2002-2007, while the minimum basic salary increased by 15%. There is therefore an apparent influence of factors other than the amount of salary regulated through legislation. One can presume that the increase observed in 2002-2007 arose from ancillary activities of teachers, for example, or the larger number of extra-curricular activities or ancillary services.

As mentioned earlier, the amount of staff expenditure per school division, as the primary costs' carrier, allows us to assess the average level of professional advancement of teachers in a particular school, as the minimum basic salary of a teacher is dependent on this factor. In addition, the amount of personal expenditure of the school will also be affected by factors related to the additional activity of teachers. If, therefore, primary school extra-curricular activities will be carried out, or if a teacher will carry out some additional functions in school, staff expenditure will be higher.

Similar conclusions arose from the analysis carried out with assuming the use of a public value matrix. From the point of view of diversification, the most important groups are:

- destroying value – low average 6<sup>th</sup> graders' exam results and high staff costs per school division,
- creating value – high average 6<sup>th</sup> graders' exam results and low staff costs per school division.

**Table 4.** Pearson coefficient according to public value – 6<sup>th</sup> graders' exam results and expenditure per school division

Type of primary schools	2005	2006	2007
Szczecin			
High expenditure per school division and high level of average 6th graders' exam result	-0,02	0,31	0,82
High expenditure per school division and low level of average 6th graders' exam result	0,19	-0,07	0,15
Low expenditure per school division and high level of average 6th graders' exam result	-0,23	-0,68	-0,36
Low expenditure per school division and low level of average 6th graders' exam result	0,40	0,38	0,49

Source: own study based on source data.

Analysis of the regression of 6<sup>th</sup> graders' exam results against expenditure per school division in a period of six years prior to the analysis, in those two groups, does not indicate the presence of statistical dependence between the two parameters.

The low strength of the relationship between the average expenditure of the 6-year training period and the average 6<sup>th</sup> graders' exam results is indicated by the Pearson coefficient calculated for each of the four groups listed previously. The strength of these relationships is shown in Table 4.

## 5. Conclusions

The analysis of the literature shows that the measurement of the effects of educational tasks should primarily affect learning outcomes. This means, therefore, that the main objective of education is to educate in order to achieve a certain level of knowledge by pupils. However, there is disagreement on the impact of educational expenditure on the achievements of pupils. A significant part of the research indicated a weak or statistically insignificant relationship. On the other hand, studies show that the level of expenditure per pupil may have an impact on the achievement of a single item or on certain groups of pupils, but does not affect the average level of competence of the exam results.

Research conducted by the author in a big city, among the primary schools which were established by one unit of local government, suggests that, although a dependence can be observed, interestingly they are of a negative nature, they are not statistically significant. Thus there is no correlation between the 6<sup>th</sup> graders' exam results and the amount of expenditure in public primary schools.

The reason for this may be due to three reasons. Firstly, the traditional method of budgeting might be used. This is confirmed by the fact that the amount of the average salary of teachers and the amount of the minimum basic salary of teachers each year are determined at the level of the state budget in an arbitrary manner. Another possible cause is the lack of incentive for teachers' salaries to impact the quality of their work, and therefore an essential prerequisite for the next step in their career in financial terms, but the level of education is not substantially altered. A third possible cause is directing funds to those schools that have achieved low exam scores in order to improve the situation. Due to the fact that the history of competency exams in Polish education is only a few years old (the first was conducted in 2002), the effects of these actions are likely to be visible only in a few more years' time.

## Literature

- Bański J., Kowalski M., Śleszyński P., *Zarys problemów związanych z uwarunkowaniami zróżnicowań przestrzennych wyników sprawdzianu dla uczniów szkół podstawowych w 2002 r.*, Polska Akademia Nauk – Instytut Geografii i Przestrzennego Zagospodarowania im. S. Leszczyckiego, Warszawa 2002.
- Betts J.R., Rueben K.S., Danenberg A., *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California*, Public Policy Institute of California, 2000.

- Coleman J.S., Campbell E.Q., Hobson C.J., McPartland F., Mood A.M., Weinfeld F.D. et al., *Equality of Educational Opportunity*, U.S. Government Printing Office, Washington, DC 1966.
- Czakon W., *Procesowe podejście do badania efektywności*, [in:] *Efektywność – rozważania nad istotą i pomiarem*, Prace Naukowe Akademii Ekonomicznej we Wrocławiu nr 1060, Wrocław 2005.
- Dee T.S., *Expense preference and student achievement in school districts*, "Eastern Economic Journal", vol. 31, no. 1, Winter 2005.
- Eide E., Showalter M.H., *The effect of school quality on student performance: A quantile regression approach*, "Economics Letters" 1998, no. 58.
- Figlio D.N., Page M.E., *Can School Choice and School Accountability Successfully Coexist?*, [in:] *The Economics of School Choice*, ed. C.M. Hoxby, National Bureau of Economic Research – The University of Chicago Press, Ltd., London 2003.
- Fox W.F., *Reviewing economies of size in education*, "Journal of Education Finance" 1981, no. 6.
- Fuchs T., Wößmann L., *What accounts for international differences in student performance? A re-examination using PISA data*, "Empirical Economics" 2007, no. 32.
- Gorzeń-Mitka I., *Skuteczność – próba interpretacji*, [in:] *Efektywność – rozważania nad istotą i pomiarem*, Prace Naukowe Akademii Ekonomicznej we Wrocławiu nr 1060, Wydawnictwo AE we Wrocławiu, Wrocław 2005.
- Häkkinen I., Kirjavainen T., Uusitalo R., *School resources and student achievement revisited: new evidence from panel data*, "Economics of Education Review" 2003, no. 22.
- Herbst M., Herczyński J., *Is Large More Effective than Small is Beautiful? Size and Performance of Primary Schools in Poland*, MPRA Paper No. 6139, Munich 2004.
- Herczyński J., Herbst M., *Pierwsza odsłona. Społeczne i terytorialne zróżnicowanie wyników sprawdzianu szóstoklasistów i egzaminu gimnazjalnego przeprowadzonych wiosną 2002 roku*, Fundacja „Klub Obywatelski”, Warszawa 2002.
- Hoxby C.M., *Introduction*, [in:] *The Economics of School Choice*, ed. C.M. Hoxby, The University of Chicago Press, Chicago and London 2003.
- Nowe Zarządzanie Publiczne – skuteczność i efektywność. Budżet zadaniowy w Polsce*, ed. T. Lubińska, Difin, Warszawa 2009.
- Oświata i wychowanie w roku szkolnym 2007/2008*, Główny Urząd Statystyczny, Warszawa 2008.
- Owsiak S., *Finanse publiczne. Teoria i praktyka*, Wydawnictwo Naukowe PWN, Warszawa 2005.
- Pan D., Rudo Z.H., Schneider C.L., Smith-Hansen L., *Examination of Resource Allocation in Education: Connecting Spending to Student Performance*, Research report, Southwest Educational Development Laboratory, April 2003.
- Śleszyński P., *Ekonomiczne uwarunkowania wyników sprawdzianu szóstoklasistów i egzaminu gimnazjalnego przeprowadzonych w latach 2002-2004*, Polska Akademia Nauk – Instytut Geografii i Przestrzennego Zagospodarowania, Warszawa 2004.
- Społeczeństwo w drodze do wiedzy. Raport o stanie edukacji 2010*, Instytut Badań Edukacyjnych, Warszawa 2011.
- Steele F., Vignoles A., Jenkins A., *The Impact of School Resources on Student Attainment: A Multilevel Simultaneous Equation Modelling Approach*, <http://www.cepr.org/meets/wkcn/3/3525/papers/FVignoles1.pdf>.
- Strąk T., *Public service value jako miernik skuteczności i efektywności realizacji zadań publicznych*, [in:] *Współczesne finanse. Stan i perspektywy rozwoju finansów publicznych*, red. J. Głuchowski, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2008.
- Swianiewicz P., Herbst M., Marchlewski W., *Diagnoza systemu finansowania i realizowania zadań oświatowych na obszarach wiejskich*, [http://www.euroreg.uw.edu.pl/index.php/pl/dokumenty/doc\\_download/15-mherbst-diagnoza-systemu-finansowania-i-realizowania-zada-owiatowych-.html](http://www.euroreg.uw.edu.pl/index.php/pl/dokumenty/doc_download/15-mherbst-diagnoza-systemu-finansowania-i-realizowania-zada-owiatowych-.html).

## **BADANIE ZALEŻNOŚCI WYNIKÓW UCZNIÓW I WYDATKÓW PUBLICZNYCH SZKÓŁ PODSTAWOWYCH**

**Streszczenie:** Analiza literatury przeprowadzona w artykule pozwala stwierdzić, że pomiar efektów realizacji zadań oświatowych powinien dotyczyć głównie efektów kształcenia. Na podstawie analizy literatury postawiono hipotezę o współzależności przeciętnych wyników sprawdzianu szóstoklasisty jako egzaminu kompetencyjnego i wydatków związanych z kształceniem uczniów w publicznych szkołach podstawowych oraz przedstawiono wyniki badań w tym zakresie co do publicznych szkół podstawowych w mieście na prawach powiatu. Badanie przeprowadzone przez autora w mieście na prawach powiatu, a zatem pomiędzy szkołami podstawowymi, dla których organem założycielskim jest jedna jednostka samorządu terytorialnego, wskazuje, iż mimo że pewne zależności można zaobserwować – co ciekawe mają one ujemny charakter – to nie są one statystycznie istotne. Nie istnieje zatem zależność pomiędzy wynikiem egzaminu szóstoklasisty a wysokością wydatków osobowych szkół podstawowych.

**Słowa kluczowe:** finanse samorządowe, edukacja, pomiar wyników uczniów.