THESES OF PHD DISSERTATION

ATTILA MADARAS

UNIVERSITY OF KAPOSVÁR

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PhD Program for Economic and Organizational Science

Head of PhD program:

DR. SÁNDOR KEREKES

Professor, doctor of MTA

Supervisor:

Dr. habil. JÓZSEF VARGA

Associate professor

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Author:

ATTILA MADARAS

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1. ANTECEDENTS AND GOALS OF RESEARCH

Education is a very important strategic area in most countries. To support this statement, I will review the conditions of education funding in several countries. The changes necessary to reach an optimum level (technological development, teacher training, introduction of new teaching methods) require significant financial investment. The primary focus of my analysis is to find out whether Hungary is providing sufficient resources for a high quality public education. I am looking at this question from multiple aspects. I analyze education funding in itself, and in comparison with international trends. I attempt to determine the level of funding taking the results of international competency tests into consideration. I also analyse the competetiveness evaluations of several international institutes.

My goal, as previously mentioned, is to determine the optimum level of public education funding, which makes it possible to provide a high quality education that improves the economic performance and competitiveness of Hungary in the long run. To accomplish this research goal, I endeavor to analyse and compare the level of education funding and the quality of education both nationally and internationally, from multiple aspects.

Considering the state of Hungarian public education and the research goals, I have set up the following hipotheses to be verified in the course of the research:

Hypothesis nr 1: The results of international competency assessments, showing the quality of Hungarian public education, lag behind in international comparison and also compared to our country's own expectations.

Experts had set their expectations regarding international competency tests based on previous IEA[1] results, in which Hungary was among the best in the world. On PISA tests, however, Hungary only ranked in the lower-middle range. My goal is to examine: to what extent the quality of education depends on the level of funding, and to what extent on the pedagogic quality of our education system.

Hypothesis nr 2: Education funding is a vital factor in the quality of education, but over a certain amount it does not have a significant affect on assessment results any more.

The quality of education, even at the international level, is determined based on the results of competency assessments. PISA assessments show that the best results are not always reached by the countries spending the most on education. In the course of my research I would like to determine the amount up to which the results of competency assessment and the level of funding are significantly related.

Hypothesis nr 3: The economic performance and competitiveness of a country is setermined by the quality and efficiency of education. Beside the level of funding, the quality of education is also influenced by the pedagogical work.

As a result of my research, I would like to define those competitiveness indicators that are most likely to influence a country's economic

[1] (International Association for the Evaulation of Education Achievement

performance, and examine how significant pedagogical work is as an influencing factor.

Hypothesis nr 4: In the last decade, based on statistical reports, the level of education funding has been stagnant, while schools report a decrease in financial support.

I would like to find out what the trends in the direct funding of educational institutions have been in the past ten years. I also examine how the changes in the amount of normative per capita grants affect the financial management of schools, and how this impacts the operation of the schools.

Hypothesis nr 5: The economic operation of Hungarian schools greatly depended on the financial situation of the local governments as their proprietors. To eliminate these differences, it was a rational decision for the central government to take over the ownership of public schools (KLIK).

One of the most important elements of the 2013 reform was the centralization of school proprietorship under the Klebelsberg Institution Maintenance Centre. I will examine whether there is an economic rationale for the centralization.

2. MATERIALS AND METHODS

Examining the relationship between education funding and the economic performace of the country, the analysis and evaluation was carried out based on primary and secondary data. Primary data was obtained from in-depth interviews and a survey conducted among public school proprietors. Secondary data was obtained from domestic and international professional literature and the analysis of these.

In choosing the research theme and methods, my work experience of over 14 years in public education played a key role. I have been in almost every kind of position during this period. I was a teacher and administratior in the field of education, and I was a finance manager in the field of economics. As a board chair of a foundation maintaining a school, I even represented the proprietor's side. These positions have provided me with a broad insight on secondary schools. Besides my work-related experience, I also wrote my thesis on this topic for my teacher of economics and master of education degrees. This means that I have over ten years of theoretical and practical background in following the trends and changes of education funding.

The economic performance of a country can only increase if workforce of sufficient quality is available. Chapters 2.1 and 5.5 of my dissertation present my research findings regarding this issue. Training workforce is the task of education, including both public and higher education. Based on the theme of my dissertation, I only concentrate on public education – but in my opinion, public education not only has to provide workforce directly via vocational training, but also effectively prepare students for higher education, giving them a solid base of knowledge.

To determine the expected performance of a country's education system, it is best to look at international practice – primarily focusing on assessments that rise above the differences in the systems of education and are able to measure the skills and competences of students as future workforce. OECD started the tri-annual PISA assessments from 2000 in several countries, including Hungary, for this very purpose. OECD gives a detailed analysis based on the PISA results, and also issues a yearly report on OECD countries, titled Education at a Glance, which provides detailed information on the quality, funding and problems of education in member countries.

The presenttion of the Hungarian education system is based on my own experience and knowledge. Numeric data was obtained from statistical yearbooks, informational materials and analyses issued by the State Secretariat for Education and OECD (Education at a Glance, OECD), with references given at the appropriate places.
The analysis in the international outlook has been put together from international professional literature. The experiences of countries that have a highly developed culture of education have been extremely useful in formulating my suggestions regarding the Hungarian education system. (e.g. Education System in Finland, MEC).

After assessing the quality and state of development of the Hungarian education system, I analysed the economic environment. I examined, at an international level, how much Hungary and other countries spend on education – more specifically, public education – in the proportion of GDP and per capita. For international comparison, I used OECD data (Education at a Glance). From these pieces of data I could draw

conclusions about the level of education funding and the importance of this area in a country.

As I previously mentioned, PISA assessments are carried out among 15-year-old students. This age group is usually equivalent to 9th grade, so I linked the results with the average amounts of education funding in the 9 years preceding the assessment, calculating the correlation coefficients based on these values.

To measure the level of education funding in Hungary, I have set up a school model. After setting the sizes of classes, I calculated the normative per capita support the model school would have received each year, based on the annual Budget Act. Besides presenting the scale and tendencies of funding, I also present the changes and variations and the ways these have been carried out.

The performance of countries can be shown well by competitiveness indicators and rankings. For this reason, my goal was to connect Hungary's education funding with its competitiveness. When analysing the cometitiveness assessments, I found that it was difficult to deduce competitiveness from the quality of public education. On one hand, the quality of public education is only partly responsible for competitiveness results, and on the other hand, almost half of the assessments on education are connected to higher education. Taking this into account, although I do look at the connection between education and competitiveness in my paper, it is not top priority. For this reason, I mainly used secondary data to determine the link between education and competitiveness. My primary focus were the evaluations regarding Hungary, so I used domestic analyses (e.g. analyses of PISA assessments).

When collecting primary data, conducting interviews and surveys proved to be difficult because of the change in school ownership. In a situation not completely clear to them, the directors of KLIK-owned schools refused to be interviewed or answer survey questions. I managed to make in-depth interviews with the leaders of two government offices (Hideg, Polner), but they were only able to tell me about current problems. I also had a lengthy conversation with the financial executive of KLIK (Oláh Gáborné), but she could only outline the new opportunities, she could not inform me about the regulations that were not yet in place. The head of an educational district (Mayerné) gave me information about the structure of KLIK-owned schools, but she was not authorized to share details about financing. I could only carry out truly informative interviews and surveys among the leaders of church-owned schools. I contacted representatives of historic churches. I managed to make three in-depth interviews: one with a leader in the Lutheran church who is familiar with education and education funding within the church (Kolarovszki), the second one with a representative from the school owner's side from a Catholic religious order, who previously worked as a director in one of their schools (Hortobágyi). The third interview was with a nun who represented the Catholic church during the negotiations with the government regarding financing (Németh), but she could only share about plans, as there was no final agreement in place at that time.

Survey questionnaires were sent out to proprietors from the Catholic, Lutheran and Reformed churches. A little less than half of the questionnaires were returned to me, but this means I had answers from the proprietors of 165 schools. This represents 2,5% of the total number of Hungarian schools and 27.6% of church schools. This means the

survey does not provide a representative sample, but I considered the number of answers sufficient for my analysis.

When establishing the education model, where my purpose was to determine the quality of education, I used the competitiveness data from Chapter 5.1.1 of my paper, as well as the data from national statistical yearbooks (Information Yearbook of Educational Statistics – Statisztikai Tájékoztató Oktatási Évkönyv 2012/2013.). Based on these, I set up a linear regression model, where the result variable was the quality of education, and I used the records from the period between 2003 and 2009 found in the National Report on the 2009 National Competency Assessment (Országos Kompetencia Mérés Országos Jelentése, OH, 2009.) as data source. The values of the dependent variable were the average competency assessment scores in reading comprehension and mathematics for 6th, 8th and 10th graders – representing 6 observations because of the lack of competency assessments and the changes in assessment methodology.

17 factors were considered as explanatory variables, including economic indicators, as well as data regarding teachers, students and the availability of information technology in schools. The resource for these data was the annually issued Information Yearbook of Educational Statistics (Statisztikai Tájékoztató Oktatási Évkönyv).

By rule of thumb, the number of components being six called for two explanatory variables. In addition to that, my purpose was to choose logical variables that expain result variables in a significant way – so I aimed to choose the two explanatory variables from the 17 that would best match these expectations.

For this, I first conducted the partial t-tests for each explanatory variable to see which one is most significant in explaining the result variable. Then, if the relation made sense logically, and there were no other variables that would explain the quality of education more directly, I expanded the model with another variable. When adding the second explanatory variable, I took into consideration the empirical p-value of the partial t-tests and the global F-test, 3 information criteria (Schwarz, Akaike and Hannan-Quinn) and the VIF index measuring multi-collinearity.

The specification of the model best matching the above mentioned conditions was tested by Ramsey's RESET test, then I examined whether the applicability conditions of linear regression were met. I measured multicollinearity using the VIF index, homoskedasticity[2] was measured graphically and with the Breusch-Pagan and White tests, and in the end I examined the normality of residuals, using a Q-Q plot and the Shapiro-Wilk test (Hunyadi, Vita, 2008).

[2] The condition of homoskedasticity is that the variance of the error term is costant at different levels of $\acute{y}_i$

3. RESULTS

The purpose of the dissertation was to examine the impact of government expenditures on the quality of education. Based on national and international data, I aimed to investigate the extent to which the amount of government funding influences the quality of education, and whether an optimum level of funding can be determined, which would increase the economic performance of Hungary in the long run.

International examples have revealed that economic performance is high in countries where education is considered an important investment in the future, and governments have dedicated significant funds to it for several decades. From this we can conclude that the economic performance of a country is greatly influenced by the quality of public education. On one hand, public education prepares gifted students for higher education, and on the other hand, it provides well-trained workforce for the labour market through high quality vocational schools and training. An effectively operating education system tries to even out the irregularities of the labour market. This goal, however, can only be accomplished if the students become able to catch up with the development and changes of technology, finding out about new opportunities and acquiring the new skills needed. This ability or skill of the learner is called competence. Students not only need to have the knowledge necessary for their profession, but also the appropriate competences to meet the changing demands and challenges of the labour market. This is what OECD discovered after analysing a large number of developed economies that have a high-quality education system. This discovery birthed the idea of an international competence test carried out every third year, beginning in 2000. The PISA test examines the quality of the participating

countries' public education by assessing the skills and competences of 15-year-old students. For this reason, I used the results of these competence tests to express the quality of education in respective countries. According to the PISA results, Hungary's performance is in the lower mid-range in international comparison. Based on the PISA assessment, in addition to the international testing, Hungary launched domestic competence testing in 2003. Looking at the results of the past ten years, we can see stagnation.

During my research, I first looked at Hungary's education funding. I set up a school model to measure the real values of direct per capita (normative) funding received by schools between 2003 and 2012. My calculations show a sometimes increasing, sometimes decreasing tendency regarding overall education funding. The economic crisis had an effect on education spending as well, leading to a major decrease in 2010, and only a slow increase since then. The tendencies seen in financing are mirrored back in the tendencies of competence test results. The tendencies of direct per capita funding for my model school were similar to the tendencies in the data presented by the statistical yearbooks on education. The tendencies shown indicate that for the past ten years, Hungary has determined the level of education funding based on its current economical performance.

I tried to analyse the financial management of Hungarian schools based on the answers I had received from church proprietors, because – as I mentioned earlier – this was the only group where I was able to successfully conduct a survey. According to church proprietors, an increase in funding would be necessary to reach the desirable quality of

education. The survey reveals there would be a need to increase funding by 50% for personnel expenditures, 20% for material expenditures and 50% for investment and renovation costs. It would be essential to raise teacher salaries in order to increase the quality of education, but there is a need to increase funds in all areas: personnel, material and investment expenditures alike. On the whole, it would be necessary to increase funding for all types of expenditures – personnel, material and investment as well. With the introduction of the teacher carreer model, government support for personnel expenditures has increased significantly, but at the same time there are less funds remaining for material costs and investment. Raising teacher salaries is necessary, but it will not be sufficient in itself to improve the quality of education.

At the international level, I examined the link between the countries' PISA results and their spending on education. We also have to take into consideration the fact that besides education funding, PISA results are also impacted by the education system itself. There are no two countries where the education system would be identical, but it can obviously be shown that countries spending more on education in the long run will have a more advanced education system and usually better results on competence tests. Analysing the 2009 PISA scores of 39 countries and their correlation with education funding[3], I have found a relatively strong link between these two factors. The explanation for this could be that most non-European countries spend little on education, and they also have low PISA scores. I also discovered that increasing the amount of educational spending does not necessarily result in better PISA scores.

[3] For education funding between 2000-2009, I took the average per capita funding in USD based on purchase power parity.

The countries spending the most on education have good competence scores. However, the data reveal that when education spending is already high, increasing it further will not significantly improve assessment results. According to my calculations, the optimum level of education funding – based on the average values of the given period – is around 6500 USD. Finland is among the best performing countries regarding competence results in the world, spending about this much on education. Looking at the results of European countries, we cannot find such a strong correlation. There are not so big differences in the level of financing as outside of Europe.

Hungary's results are fairly good on PISA tests compared to the level of educational funding, but the results are only good considering the low level of financial support. If other countries were spending only as much on education as Hungary does, their PISA score would be less than 465, while Hungary has reached a score of 495. Compared to the rest of Europe, only three countries spend less on education than Hungary does, but nine countries have lower PISA scores than us. Countries having excellent competency results and competitiveness indicators spend more than twice on education than the per capita spending in Hungary.

In international comparison, economic efficiency is shown by assessments and evaluations of a country's competitiveness. The various competitiveness assessments also take into account the countries' education and the quality of that. The important factors influencing the quality of public education are also taken into consideration in assessing competitiveness. Therefore, I tried to identify the factors that have the strongest influence on the quality of education. I made a linear regression model. The result variable of the model is the quality of education. The

data was obtained from the database of domestic competence testing. In the model, as the analysis revealed, the two most important influencing factors are the level of financing (GDP proportionate spending on education) and the number of students learning English. Consequently, the level of educational spending greatly influences the quality of education. The OECD study titled The High Cost of Low Educational Performance also provides evidence that the improvement of PISA scores leads to the increase of GDP in the long run. My model leads to the same conclusion. Based on my model and the OECD study we can conclude that financing affects the quality of education, and the quality of education increases economic performance, which means there is a strong link between educational funding and economic performance.

4. CONCLUSIONS

The central question of my dissertation was how education funding impacts the quality of public education. The quality of education is best measured by competence tests – as these assess the skills and abilities of the students. The following conclusions and suggestions can be made, in light of the goals and hypotheses of my study.

Hypothesis nr 1: The results of international competency assessments, showing the quality of Hungarian public education, lag behind in international comparison and also compared to our country's own expectations.

Before the first competency assessment carried out in 2000, Hungary was considered to be one of the top performers in the world regarding education. The first assessment, however, revealed that our performance was actually below the OECD average, putting us in the lower mid-range. The following 4 assessments brought similar results. These results do not match up our expectations. In the course of my study, I tried to answer the question whether Hungary's competency results can be considered good or bad, taking into account the international level of education funding. Looking at the education funding of the participating countries, I came to the conclusion that Hungary only spends about half the amount of education per student compared to the best performing countries. If other countries spent the same amount on education as Hungary does, they would only reach a PISA score of less than 465, while Hungary has reached 495. Compared to Europen countries, only three of those spend less on education than Hungary does, but nine of them have lower PISA scores (see detailed explanation in the Results

section). Taking a realistic look at the quality of Hungarian education, we can consider our competency results good, with the current level of funding. In the proportion of spending, Hungary would be one of the top performers on international competence tests. Thus, based on my research, I **reject Hypothesis nr 1.**

Hypothesis nr 2: Education funding is a vital factor in the quality of education, but over a certain amount it does not have a significant affect on assessment results any more.

There are no two countries where the system of education would be exactly the same. However, it can be clearly seen that countries spending more on education in the long run have a better developed education system and usually higher competence scores. Comparing the level of funding with the 2009 PISA results, where I looked at the scores of 39 countries, I have found a fairly strong correlation (the correlation was 0,7) between the factors. The main reason for this could be that most countries outside Europe spend little on education, and also have low PISA scores. One can observe that increasing the level of funding does not always lead to better PISA results. Although the counries with the highest level of education spending have good competence results, their scores are not the very best. Within Europe, the correlation between funding and competence results is not so strong, but there are not so great differences in the level of funding, either, as outside of Europe (see chapter 5.4.2. of the dissertation). Considering the average level of funding between 2000 and 2010, we can see that education expenditures unequivocally determine the quality of education up to the amount of 6500 USD per capita spending. Above this amount, the increase of

education spending does not have a significant impact on competency test results. Based on my research, I **accept Hypothesis nr 2.**

Hypothesis nr 3: The economic performance and competitiveness of a country is setermined by the quality and efficiency of education. Beside the level of funding, the quality of education is also influenced by the pedagogical work.

The quality of education is influenced by innumerable factors. As a result of the regression model presented in my paper, the two most important factors turned out to be: the level of funding – that is, GDP proportionate education spending – and the number of EFL learners. The level of funding is considered to be an extremely important factor by both domestic and international professional literature. Learning English – foreign language education – develops skills and competences that can be later used by the learners to find a job and to help further training. The regression model revealed both education funding and pedagogical work to be important contributors to the quality of education, thus I **accept Hypothesis nr 3**.

Hypothesis nr 4: In the last decade, based on statistical reports, the level of education funding has been stagnant, while schools report a decrease in financial support.

The results of the school model set up for the purposes of my study have shown a sometimes increasing, sometimes decreasing tendency in total funding. The economic crisis had its impact on education funding as well, resulting in a major backdrop in 2010, after which the growth has been slow. The statistical yearbooks on education, as well as my own

calculations, confirm an increasing trend in education spending. However, this increase has not been providing sufficient funds for the increasing personnel and operation costs of schools. The introduction of the teacher carreer model resulted in schools ending up with less resources for development and investment after paying for teacher salaries and utilities.

According to the opinion of church school proprietors, an increased support would be needed to reach the desired quality of education. The survey revealed that there would be a need to increase personnel expenditures by 50% (this was before the introduction of the teacher carreer model), material expenditures by 20% and investment and renovation expenditures by 50%. (Theses page 13-14). An increase of teacher salaries is indispensable if we want to improve the quality of education. However, it is not sufficient for achieving the desired quality to only increase personnel expenditures within the framework of the teacher carreer model. At the same time, raising teacher salaries takes much more funds from schools than what was provided for by the increase in government support. This results in schools finding themselves in a more difficult financial situation, even though the government is spending more on education. Based on my research, I **accept Hypothesis nr 4**.

Hypothesis nr 5: The economic operation of Hungarian schools greatly depended on the financial situation of the local goernments as their proprietors. To eliminate these differences, it was a rational decision for the central government to take over the ownership of public schools (KLIK).

The level and the method of education funding impacts the quality of education in various ways. Examining the normative per capita support of the model school revealed several problems. From the year 2003, central funding started to decline in a steady manner, and local governments had to come up with the missing resources. My study revealed that while in 2003, local government proprietors had to contribute 30% of the schools' budget, this increased to 60% by the year 2012. There are major differences in the affluence of local governments. The local governments of poorer regions could supplement the central support with nothing or very low amounts. The local governments in richer areas, however, could contribute with higher amounts or even above the average level of funding. Due to the economic crisis, local governments also received less support. Impoverished local governments could not provide funds for their schools. The other problem is the method of education funding, which is based on enrollment only. This means that the schools operating with large classes have more funds for development. Schools not having sufficient enrollment were united with other schools. This could, on one hand, be considered a rational decision, but crowded classrooms often hurt the quality of education. Becasue of low funding, schools sadly had to put their basic operation as first priority. Centralizing school ownership resolves the regional differences in funding, so I **accept Hypothesis nr 5.**

5. NEW RESEARCH FINDINGS

Based on my research, the following new scientific results have been found, in the order of their novelty value:

Result I: The two most important factors influencing the quality of education in Hungary are the level of GDP proportionate education spending and the number of students learning English.

The result variable was given by the series of results from the domestic competence assessments. The explanatory variables were the factors in education impacting economic competitiveness. Based on the multi-variable regression calculations, the result variable was most significantly impacted by education funding (GDP proportionate education spending) and the number of EFL learners. The model reveals that a 1% increase in GDP proportionate education spending, with other factors remaining the same, results in an increase of average competence scores by almost 11. Based on the results of the model we can conclude that funding impacts the quality of education, and a better quality leads to better economic performance of the country – that means there is a strong link between education funding and economic performance.

Result II: At the international level, for the countries below the average level of funding according to OECD assessments, we found a strong link between the quality of education and education funding .. However, the correlation becomes weaker as funding increases.

Looking at the link between PISA results and per capita education spending, there are areas where we can measure a strong correlation. In the case of the 2009 PISA assessment, we looked at the results of 39

countries. On the whole, we have found a correlation of 0,7 between scores and funding. However, if we only look at the 24 European countries – the education spending of these countries is above the OECD average – the correlation was weak. From this we can conclude that low education spending determines the quality of education, but above a certain amount of funding, an increase in quality is not automatic any more. This treshold is 6500 USD, considering the average level of funding between 2000-2010. Above this amount, the increase in funding has no significant impact on competence test scores.

Result III: Compared to its level of education funding, Hungary shows above average performance on PISA tests.

Hungary, based on the efficiency of its education system, reaches far better scores on PISA tests as could be expected based on the level of education funding. My research reveals that in the period examined, Hungary spent an average of 3137 USD per capita on education, and reached 495 points on PISA tests. Looking at other countries, they would have needed to invest 6000 USD per capita to reach the same PISA score of 495. If other countires had spent 3137 USD on education, they would only have reached a PISA score of 465. This confirms that the quality of Hungary's public education has a positive impact on competence scores. If Hungary spent 6500 USD per capita on education, the same amount Finland spent in the examined period – which is more than double of Hungary's spending – we would probably be among the world's best performers on competence assessments.

Result IV: With the current system of education funding in mind, the state taking over school ownership from local governments can be considered a rational decision.

The data from our school model revealed that while in 2003 the local government had to supplement every 100 HUF of central budget support by 55 HUF, by 2009 the necessary local government contribution jumped to almost 120 HUF. These represent average values of local government contribution. Considering the major differences between the affluence of local governments, it was a rational decision to centralize school ownership, providing equal opportunities at least regarding funding.

Result V: It is indispensable to raise teacher salaries to enhance the quality of Hungarian education, but it is also necessary to increase material and development expenditures to a similar extent.

The current government has announced the introduction of the teacher carreer model, which is likely to establish the foundations of quality workforce in education in the long run. Raising teacher salaries in itself does not lead to a short-term increase in quality, because a higher salary is no motivating factor, but an expected allowance. Primary research has revealed that according to church proprietors, raising teacher salaries is important in preventing educators from leaving the profession. But the surveys also revealed that increasing material and development expenditures would also be necessary. If the government can only provide enough additional resources to fund the teacher carreer model, there will not be sufficient money for improving the other areas, and the quality of education will not increase to the desired level.

6. SUGGESTIONS

My suggestions for the future regarding the system and funding of public education are the following:

- Predictable funding is indispensable for high quality education. The experience of the past ten years shows that education funding depends on the current economic situation of the country. My suggestion would be to pre-determine the education budget and the calculation methods for 3-5-year periods.
- The funding of schools should not depend on the financial situation of the local governments. For this reason, I support centralization, but instead of a national centre, I would establish county or regional centres to exercise ownership. This would maintain the local and regional adaptability of the school system. The reorganization could mean additional resources for schools, because central acquisitions (energy, materials, etc.) can become cheaper with quantity discounts.
- I would replace enrollment-based funding by project-based and group funding, in order to improve the quality of education.
- I would reform vocational training as a thought-through process that would take several years. I would pay special attention to shortage occupations. I would give extra support for schools and students training for shortage professions. However, one has to consider the long-term negative effects of a too quick change in the availability of professions. It is easy to close down schools or trainings, but if the need for said trainings arises again later, it is much more costly to restart them. This kind of flexibility and thoughtfulness is missing from current government plans for this area.

- The rationale behind the teacher carreer model is that in the long run it attracts well-prepared professionals, which leads to a better quality of education. However, if the government dedicates all the increase in funding to teacher salaries, our system of education will not improve in the short run, in fact, it can even get worse. Additional resources should be spent on both teacher salaries and the development of material resources.

7. PUBLICATIONS ON THE TOPIC OF MY DISSERTATION

Foreign language full-length publications

Madaras Attla – Dr. Varga József (2014): Changes in Education Funding in Hungary, Acta Universitatis Sapientiae, Economics and Business, **2,** (ISSN 2360-0047 (online version), ISSN 2343-8894 (printed version), ISSN-L 2343-8894) pp. 59-74.

Madaras Attila (2011): The financing of vocational training in Hungary after the crisis (A szakképzés finanszírozásának helyzete a válság után Magyarországon) Financial and economical problems int he first decade of the 21th century /Katalin Gáspár-Vér – Cluj-Napoca: Scientia (ISBN 978-973-1970-60-8) pp. 161-174.

Hungarian language full-length publications

Madaras Attila – Dr. Varga József (2014): A magyar közoktatás oktatási teljesítményének és finanszírozásának összehasonlítása a 2000 – 2012. között nemzetközi szinten. Kaposvár: Acta Scientiarium Socialium, (ISSN: 1418-7591, No.40 - 2014) pp. 35-50.

Madaras Attila – Dr. Varga József (2011): Az oktatás hatása a gazdasági növekedésre – Gazdasági és üzleti kihívások a Kárpát–medencében, Csíkszereda: Státus Kiadó, (ISBN 978-606-8052-51-9) pp. 387-398.

Madaras Attila – Dr. Varga József (2011): A PISA eredmények és a finanszírozás kapcsolata Magyarországon és nemzetközi szinten- Változó környezet, Innovatív stratégiák – Nyugat-Magyarországi Egyetem, Sopron, (ISBN 978-963-9883-87-1) pp. 849-866.

Madaras Attila (2009): Az oktatás értékteremtő szerepe, In: II. Nemzetközi Gazdaságtudományi Konferencia konferencia kötete, Kaposvár, április 2-3. CD-ROM, (ISBN 978-963-9821-08-8)

Lectures

Madaras Attila: Az oktatás értékteremtő szerepe
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