

To Be or Not to Be a Teacher: Czech Teachers' Salaries from an Opportunity Costs Perspective in a Broader Context

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Abstract:

In this paper we present new evidence on how very low the teaching profession's wage attractiveness is in primary and secondary schools in the Czech Republic. We show that 70-90% of university educated employees receive higher salaries than an average teacher. Teachers with 15 years' experience earn only half of what their university educated peers do. The low financial attractiveness of the teaching profession is reflected in the low interest among young people, especially talented ones, in becoming teachers. We present our findings within a broader and longer-term economic context, showing the causal chain from the level of motivation to become a teacher, to the quality of teachers, quality of education, level of education of the population and, as a result, the long-term growth of the economy and the country's well-being in general.

The very low level of teacher salaries is caused by the relatively low level of expenditure on the school system, which is below the average for comparable countries. In the last decade we have not observed any trend towards changing this situation. The budgetary restrictions and public spending cuts planned for the coming years are unlikely to improve the already relatively low expenditures on the regional school system, very low teacher salaries, especially given the expected increase in the numbers of students in primary schools. The Czech Republic is striving to decide whether to continue on the path of further stagnation or even reduction in education expenditure at the expense of its future level of education and long-term economic growth, or to gradually increase teacher salaries at the expense of other expenditures in the educational system or in other sectors.

¹ We would like to express our gratitude to Vladimir Smolka and other staff at Trexima for help with calculating of salary indicators. We also owe our thanks to Tomas Fertek, Ondrej Steffl and colleagues from CERGE-EI and IDEA, namely Stepan Jurajda and Libor Dusek, who provided us with useful comments on the concept of this paper. The authors of the paper are solely responsible for any potential mistakes and omissions. Some of the empirical results were obtained in connection with research conducted by a team from the Economics Institute of the ASCR, v.v.i. as part of Czech Science Foundation project P402/12/G130.

1. Lost opportunity costs of Czech teachers

The quality of a teacher is a fundamental determining factor for the quality of the results of education. This has been confirmed by a number of foreign empirical studies.² The knowledge and abilities taught by a teacher, which can be used by students in their further education or work are by no means the only aim of education. The educational process should foster enjoyment, will and courage for further learning and discovery in the students. That is why a good quality teacher needs not only to have a university degree, but also to possess both a specific combination of pedagogical skills and experience on the one hand, and personal dispositions and qualities on the other hand. Therefore the prevalence of these talents among people aspiring to the teaching profession is crucial for the quality of education.

An important instrument that the state has, when it comes to influencing the quality of education, is the structure and level of teachers' salaries, since the salary plays a role in an individual's decisions both to become a teacher in the first place, and to stay in the profession in the longer term.³ There are several ways in which salaries can influence the quality of teachers. For example, higher salaries increase interest in the teaching profession among young and talented people; while for experienced teachers, the salary can play a role in their decision whether to continue teaching or not. The structure of salaries meanwhile influences a teacher's effort and willingness to further develop their knowledge and teaching skills.

In this short paper we will present as yet unknown indicators that confirm the very low financial attractiveness of the teaching profession and very low level of interest in the teaching profession among young talented people.

Teachers' salaries are usually assessed by comparison with the national average wage. From this point of view, Czech teachers are at first glance not that badly off. Teachers at primary and secondary school earn on average 10-15% above the national average.⁴ This type of comparison with an average wage, though, doesn't offer a truthful picture of the financial attractiveness of the teaching profession, because the average includes the salaries of unskilled workers; consequently, the result of such a comparison is heavily affected by the salary level of workers with lower than university education.

The financial attractiveness of a profession is much better described by the concept of so called opportunity costs. According to this basic economic concept, the salary offered for a person with certain characteristics has to be sufficiently high that it represents a more interesting alternative than the other work opportunities that this person would otherwise have. Therefore it is the difference between a teacher's salary and the salary of people in other professions with similar characteristics that represents the teacher's opportunity costs.

² For meta summary of the empirical studies see Hanushek and Rivkin (2006). There has been very little attention paid to the impact of the quality of teachers on the educational results of students in Czech research. Therefore there are no available empirical estimates of this impact.

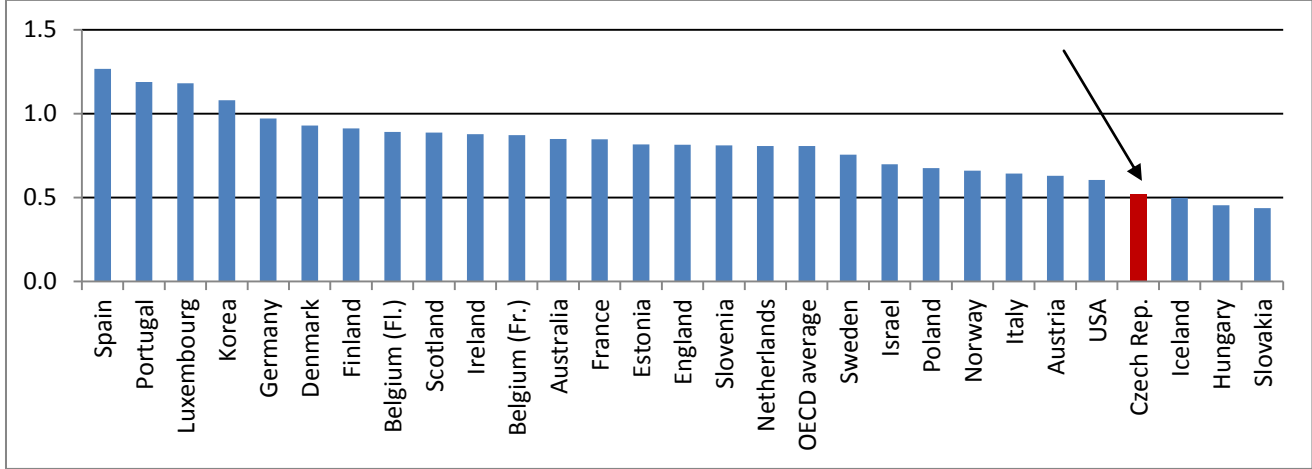
³ There are other factors influencing the decision of a young person to become a teacher and work in the educational sector in a long-term such as the prestige of the teaching profession, the working environment at school, attitude of students in class, non-financial working benefits and last but not least the personal interest and enthusiasm for the profession.

⁴ In 2011 the average gross salary of a primary school teacher was CZK 26 851 and secondary school teacher CZK 28 047

OECD published one of the few international comparisons (Figure 1) of the opportunity costs of teachers. The study showed that Czech teachers aged 25-64 years, with fifteen years' experience, earn only half of what other university educated non-teachers earn. Czech teachers' salaries are among the relative lowest among the countries included in the OECD comparison. In other words, according to these indications, the teaching profession in the Czech Republic is associated with high opportunity costs. These costs are even higher (slightly) in Iceland, Hungary and Slovakia.

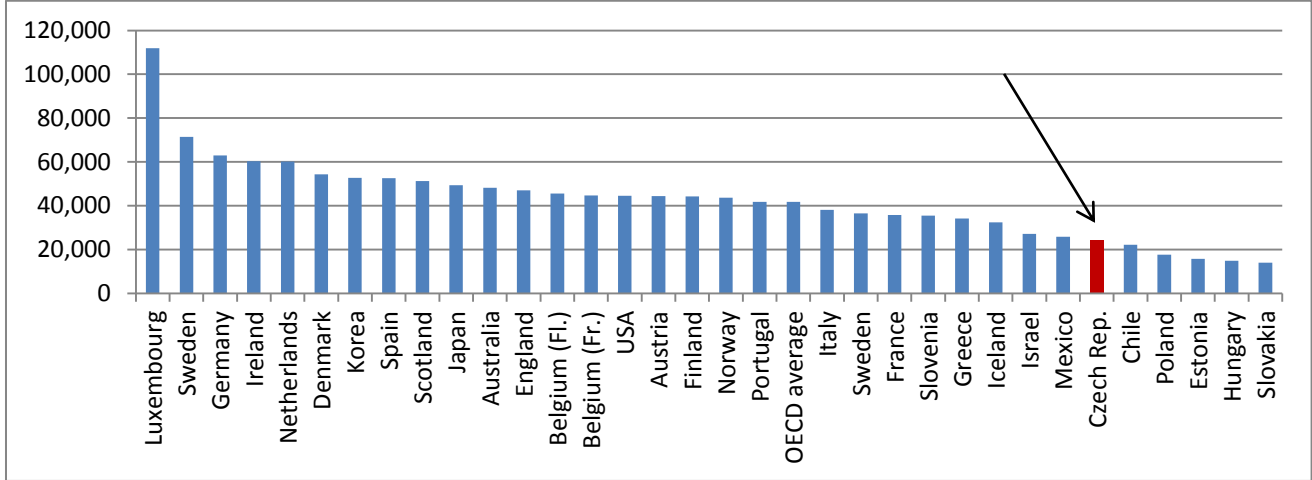
The Czech Republic occupies a similar position in a comparison of teachers' salaries expressed in terms of purchasing power parity (Figure 2).

Figure 1: Ratio of the average salary of a teacher with 15 years of experience to the average salary of other university educated employees (2009)



Source: OECD – Education at a Glance 2011⁵

Figure 2: Salaries of teachers with 15 years of experience in 2009 (USD per year, expressed in purchasing power parity)



Source: OECD – Education at a Glance 2011

⁵ Data is calculated per employee working full time over the whole year, based on the information about working hours.

The data in Figure 1 only show the average salaries of teachers and non-teachers, and do not take into account the range of salaries within these groups. A teacher's specific level of salary is influenced by age, gender, region and the level of school where that teacher works. For example middle aged employees earn more than recent graduates, men earn more than women, and salaries in Prague are significantly higher than in other regions.⁶ That is why we subjected the noteworthy position of the Czech Republic in the OECD comparison to a more detailed empirical analysis, which takes these differences into consideration.

Our preferred indicator for the financial attractiveness of the teaching profession is the share of university educated non-teacher employees whose salary is higher than the average salary of a teacher. The higher this share is, the less financially attractive the teaching profession will be.

To obtain this share, we first of all calculated the average salary for different segments of teachers, as defined by age, region, gender and school level⁷. For each of these segments we then calculated the total number of non-teacher employees (university educated) who earn a salary above the average level for a teacher in this segment. These numbers were subsequently aggregated over all segments and the sum was expressed as a share of all non-teacher employees (university educated).⁸

As in the OECD calculations, our comparison too only includes university educated employees, because a master's degree is a requirement for entry into the teaching profession in the Czech Republic⁹. Our indicator (see Figures 3 and 4) illustrates the development of lost financial opportunities for teachers of primary and secondary schools in the Czech Republic in the years 2006 – 2011. It also reveals some fundamental facts:

- The share of university educated non-teacher employees with a salary higher than the average teacher's salary in the Czech Republic is very high. In 2006 – 2010 it oscillated between 73% and 89% depending on the teacher's age and

⁶ For instance in 2011 the average salary in Prague reached CZK 31 109 while in the Karlovy Vary region it was only CZK 20 952.

⁷ The calculations are based on data from the Average Earnings Information System (ISPV). The ISPV is a system of regular monitoring of the earnings and working hours of employees. The author of the survey is the company Trexima in cooperation with the Ministry of Labour and Social Affairs (MPSV) and the Czech Statistical Office (CSU). The IPSV survey covers around 4900 economic subjects and more than 1,5 million employees in the Czech Republic. There is no suitable data for the period before 2006. <http://www.ipsv.cz/>

⁸ For example the calculations for 2010 are based on data about the total of 346 822 salaried employees. In the sample there are 35 120 teachers at primary schools, 21 369 teachers at secondary schools and 290 333 non-teachers. Within the group of non-teachers, 183 086 work in the private sector and 107 247 in the public sector or non-profit sector. The average teacher salary is calculated using data from teachers only, meaning that for example that school directors, deputy directors, operational staff and other pedagogical staff in the educational system are excluded from this calculation (the profession codes of teachers ISCO are attached). The salary includes all elements of the earnings including, for example, all yearly bonuses. Salaries from part time jobs are recalculated in terms of full time jobs (for example two employees with half time positions are represented in the calculation by 1 employee with a full time salary).

⁹ We do not distinguish between bachelor's and master's degrees because of a lack of data. In view of the fact that in the Czech Republic the share of people with a bachelor's degree and no master's degree is relatively low, this has no substantial impact on the results. Furthermore given that the requirement for teaching is a master's degree, the inclusion of data relating to employees with a bachelor's degree distorts the opportunity costs downwards. The majority of teachers at primary and secondary schools have a master's degree as those who entered the profession previously with only a secondary school leaving exam have, in the past ten years, completed university education.

the type of school (primary or secondary). This means that up to 73-89% of alternative working positions were paying a higher salary than the one the teachers received.¹⁰ These results stand in sharp contrast to the widespread opinion that Czech teachers are not that badly off.

- The earnings situation of primary school teachers is worse than that of secondary school teachers: the average salary of a secondary school teacher is almost two thousand CZK higher than the average primary school teacher's salary. Moreover, primary school teachers' opportunity costs are also significantly higher owing to the significantly higher share of male teachers in secondary education.¹¹ The average income of men in non-teaching professions is significantly higher than the equivalent income of women.¹² In Table A2 of the attachment we provide an overview for 2011 by gender.
- The opportunity costs reach their highest level for teachers aged 30-50 years, in the so-called best years of their working career; the situation is however not so dramatic for the youngest group of teachers aged up to 30 years. The reason for this most probably lies in the fact that in most other professions, a person without experience begins at a relatively low level of pay, which then grows with their years of experience at a much faster rate than is the case in the education profession.¹³ Among teachers above 59 years we observe the impact of retirement, which is more common among teachers with a lower salary. This increases the average teachers' salary and therefore decreases the indicator of opportunity costs for this age group.
- Teachers' financial opportunity costs have been growing slowly but steadily since 2006. In 2011¹⁴ there was an abrupt turn for the better, but only resulting in the situation returning to the state it had been in in 2006. We should also mention that in 2011 there was a slowdown in wage growth in the private sector, due to the impact of the economic crisis.¹⁵
- In 2011 we can clearly observe a significant decrease in the opportunity costs for the youngest teachers in primary schools, which corresponds to the official priorities of the then minister of education.¹⁶ There was also some, albeit disproportionately small, improvement for older teachers.

¹⁰ A large share of employees whose salary is lower than the average teacher's salary are employed in public social services.

¹¹ In primary schools there are c. 14% male teachers while in secondary schools it is c. 36%.

¹² The average salary for a woman in the Czech Republic is around 25% lower than that of men. In the case of teachers these differences are smaller, only in single percentage figures.

¹³ We observe a similar trend when we compare teachers' salaries only with the salaries of university educated employees working in non-private sectors. The opportunity costs of the youngest age category of teachers up to 30 years of age are lower than opportunity costs of their older colleagues. Even though the salaries in non-private sectors are lower than in the private sector, the opportunity costs of teachers are still relatively very high. (Attachment – Table A3)

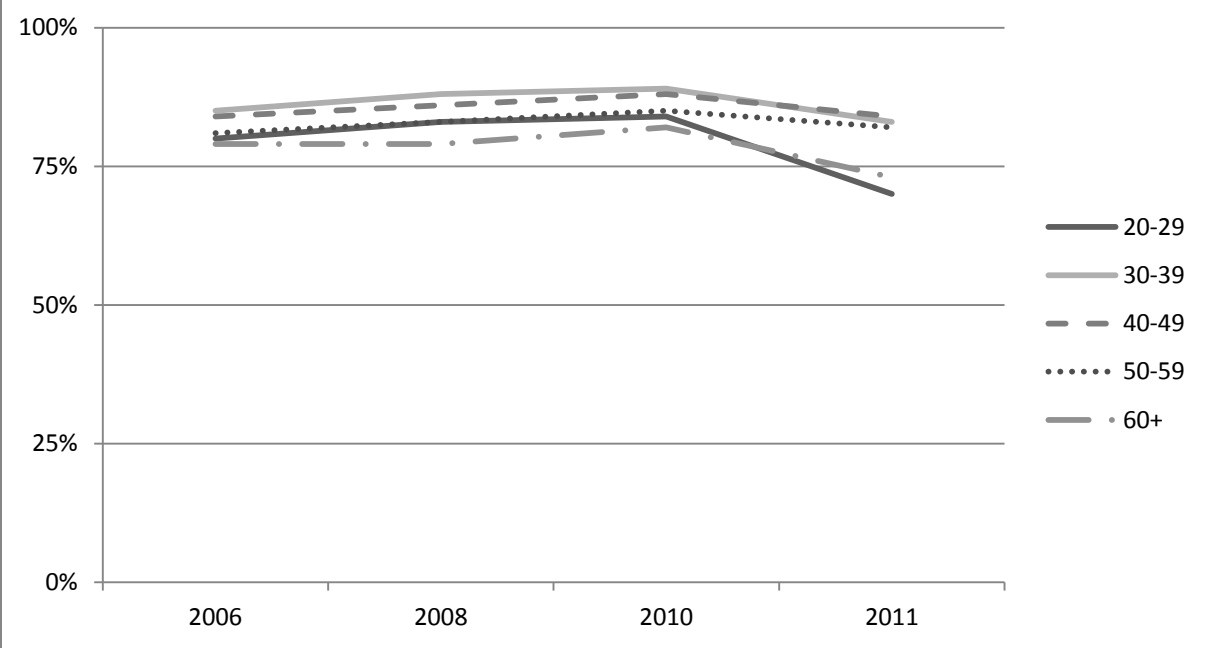
¹⁴ We must treat the data from 2011 with caution, as there was a change in the Classification of Occupations. The calculations for 2011 might therefore not be entirely compatible with the calculations from previous years.

¹⁵ http://www.czso.cz/csu/redakce.nsf/i/pmz_cr

¹⁶ The state of teachers' salaries, and the need for their increase, was given attention by the government in its Statement of Purpose from July 2010 (page 25) and an exceptional approach to this issue was also expressed in the Coalition Treaty (page 2).

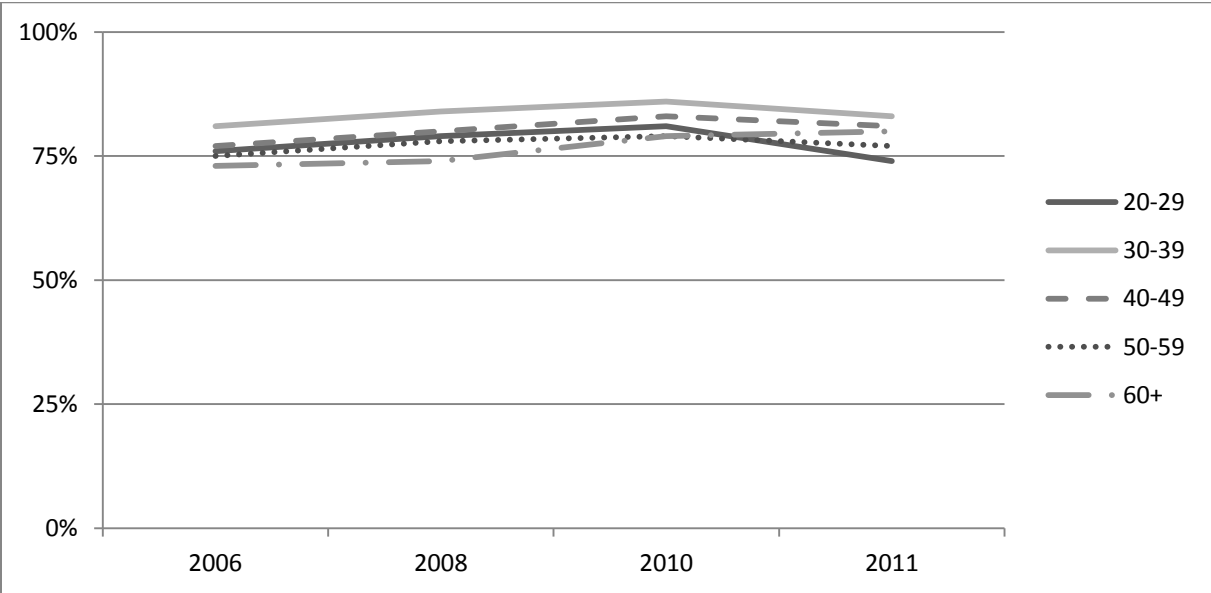
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Figure 3: Share of university educated non-teacher employees whose salary is higher than the average salary of a primary school teacher (by age)



Source: Average Earnings Information System (ISPV), Trexima and own calculations

Figure 4: Share of university educated non-teacher employees whose salary is higher than the average salary of a secondary school teacher (by age)



Source: Average Earnings Information System (ISPV), Trexima and own calculations

Table 1: Salaries of teachers in comparison with other university educated employees

Age	Average salary of teachers in primary and secondary schools (CZK per month)	Average salary of university educated non-teachers (CZK per month) ¹⁾	Ratio of salaries of teachers/n on-teachers	Share of university educated employees with higher salary than the average salary of primary school teachers ²⁾	Share of university educated employees with higher salary than the average salary of secondary school teachers ²⁾
	(1)	(2)	(3) =(1)/ (2)	(4)	(5)
2006					
20-29	19 689	29 115	0.68	80%	76%
30-39	22 227	44 450	0.50	85%	81%
40-49	24 080	43 934	0.55	84%	77%
50-59	25 681	42 230	0.61	81%	75%
60+	26 828	40 126	0.67	79%	73%
2008					
20-29	20 852	32 290	0.65	83%	79%
30-39	23 877	51 154	0.47	88%	84%
40-49	26 061	53 416	0.49	86%	80%
50-59	27 704	49 057	0.56	83%	78%
60+	28 852	45 843	0.63	79%	74%
2010					
20-29	20 550	31 729	0.65	84%	81%
30-39	23 794	49 725	0.48	89%	86%
40-49	26 162	55 604	0.47	88%	83%
50-59	27 925	50 233	0.56	85%	79%
60+	29 039	48 716	0.60	82%	79%
2011					
20-29	23 607	31975	0.74	70%	74%
30-39	25 540	49680	0.51	83%	83%
40-49	27 031	55580	0.49	84%	81%
50-59	28 639	49640	0.58	82%	77%
60+	29 322	48681	0.60	73%	80%

Source: Own calculations based on the data from the Average Earnings Information System (ISPV)

- 1) The salary includes all components of gross salary including bonuses. Salaries are counted based on full time work.
- 2) The comparison is made for every segment given by age, gender and region separately and then summed up.

For the sake of completeness, we also provide below the standard indicators of average salaries for teachers in primary and secondary schools, and for other university educated employees, between 2006 and 2011 (Table 1) These figures,

however, give us less information about professional motivation than our indicator, as they do not reflect regional differences and differences between men and women.

In the period from 2006 to 2010 there was a general increase in salary levels, but the salaries of non-teachers grew faster. Furthermore it is clear that although in absolute terms the youngest teachers are the ones who are worst off, from the point of view of alternative employment it is the group of teachers aged 30-49 years who do not earn even half of what their university educated non-teacher peers do on average. Their decision to continue with the teaching profession is probably influenced in part by the fact that a change of career is more complicated at this later stage than at the beginning of the career.

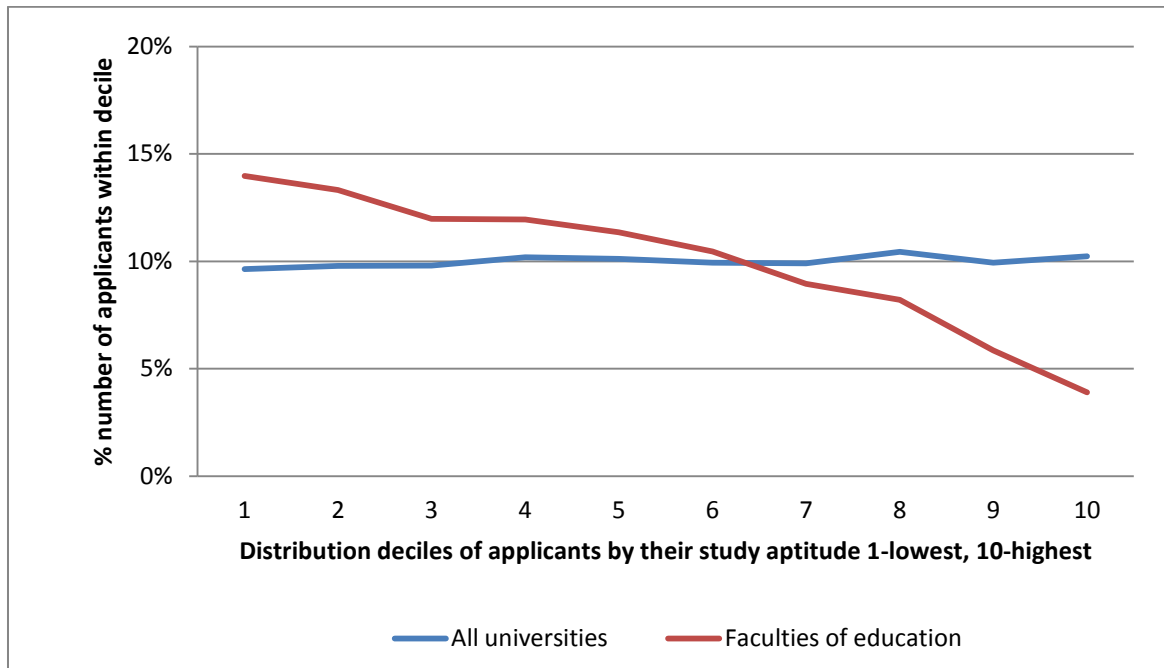
2. Who wants to be a teacher?

Our simple analysis of the opportunity costs of lost wages in the teaching profession takes into account the role of factors such as age, level of education, gender and region, but does not consider the different working abilities and attributes of the teaching profession. These naturally also influence the spectrum of working positions that are real alternatives to teaching. Due to a lack of suitable research in the Czech Republic, we do not have direct information about the abilities of teachers; however, for the sake of this study we have at least collected indirect indications.

The first indication is the study aptitude of current applicants for pedagogical studies. Although this phenomenon has not been systematically monitored in the Czech Republic, we can use data from Scio¹⁷ to give us an idea. From the results of the Scio tests used for entrance exams to a number of universities we can observe (Figure 5) that the highest share of applicants for teaching and pedagogical studies is recruited from among applicants with a lower study aptitude. As many as 73.1% of those applying to study at faculties of education belong to the bottom six deciles of the distribution of study aptitude. In other university study programmes, students from these categories constitute only 9.5% of applicants. At the other end of the spectrum, only 3.9% of applicants who scored within the highest decile in the Scio testing applied to study at faculties of education, compared with 10.2% of this decile who applied to other programmes. (NERV 2011).

¹⁷ The data from Scio testing is not representative of the whole country because not all applicants to all universities take part in the testing.

Figure 5: The share of applicants for studies at faculties of education in comparison with other universities by deciles according to general study aptitude (in %, year 2009)

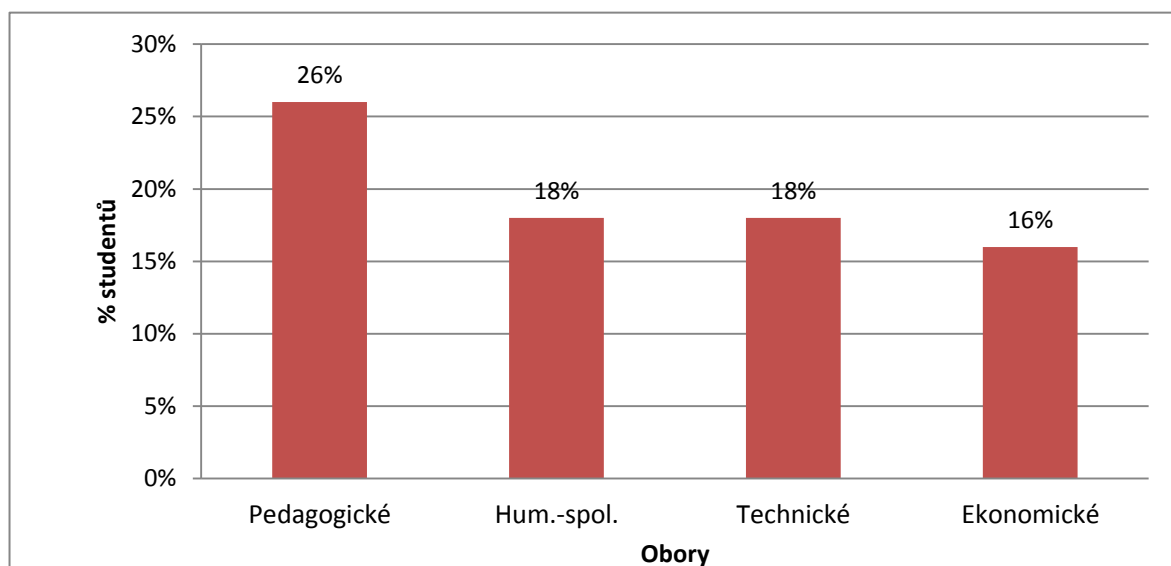


Source: Scio

The newest analysis in the Vector project (Scio 2012), which tested students in the first and last years of secondary school, revealed that applicants to faculties of education are the students with the worst average test results. Between the first and fourth year of secondary school, interest in pedagogy among students with better study aptitude dramatically decreases, and the interest of students with worse aptitude increases. Students who experience an above-average increase in study aptitude during secondary school tend to lose their original interest in the teaching profession.

Another indication of low interest in pedagogical education among students with high intellectual ability is the high rate of failure of newly accepted students of pedagogy who apply to other courses of study, and their great desire to change their course as soon as possible (Figure 6).

Figure 6: Share of students who apply to another university during their first year of university studies (2004)



Source: Matějů, P., Simonová, N., Straková, J.: "Survey of University First Year Students in the Czech Republic". Pages 85-150 in: Simonová N., Matějů, P. (eds.): Czech University education system at a crossroad. Investment approach to the financing of university education in a sociological reflexion. Prague, Institute of Sociology of the Academy of Sciences of the Czech Republic, 2005.

Our international comparison based on data from the PISA 2006 survey also shows a very low interest in the teaching profession among fifteen-year-old Czech students (Figures 7a, 7b, 7c).¹⁸ The share of fifteen-year-old Czech students who want to become teachers in the future is very low (under 2%) compared to the equivalent share in other OECD countries, where the average is about three times higher (7.1%). Interest in the teaching profession is furthermore lower among students with an above-average level of functional literacy and numeracy, although in the OECD countries as a whole the interest of these groups is more or less equal. As we can see, the Czech educational system does not attract talented young people. From the results presented so far, we can conclude that the low financial attractiveness of the teaching profession plays a significant role in this. In the next section, we put these facts in a wider context of macroeconomic indicators.

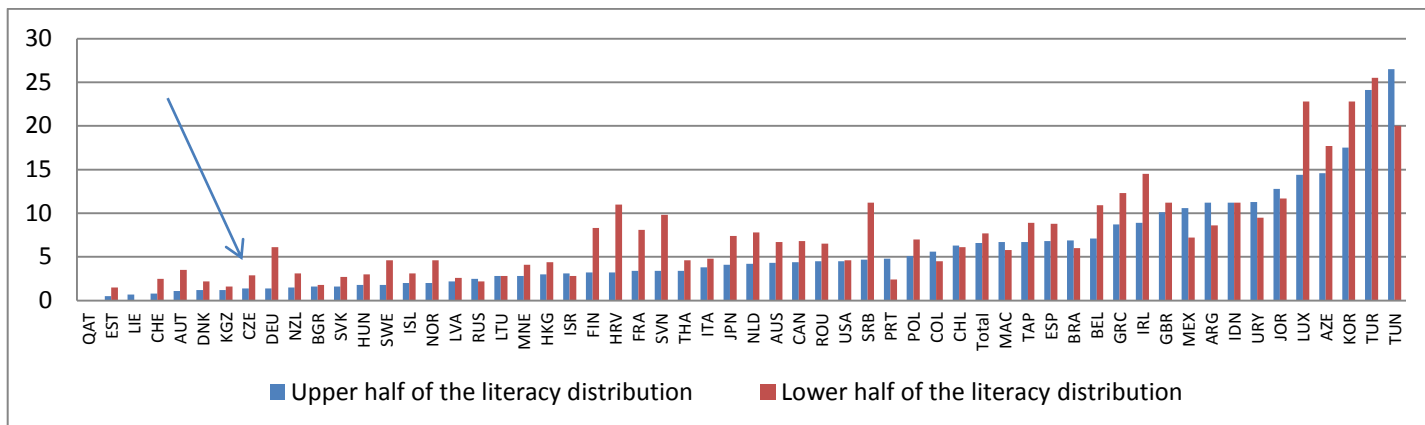
To conclude this section, it is important to note that our short analysis does not take into account the non-financial attributes of different professions, which have an effect on their attractiveness. As far as the teaching profession is concerned, we must consider the flexibility of working hours, the ratio of official to real working hours, the length and timing of school vacations when there are no classes, the extent to which teachers bear responsibility for the health and security of children, the scope of non-financial benefits, and so on. Further analysis in this area would be a desired complement to the analysis of financial attractiveness.¹⁹

¹⁸ PISA – Program for International Student Assessment – is a periodical three yearly assessment of the abilities of fifteen-year-old students in mathematics, reading and natural sciences, and of their ideas about their future career.

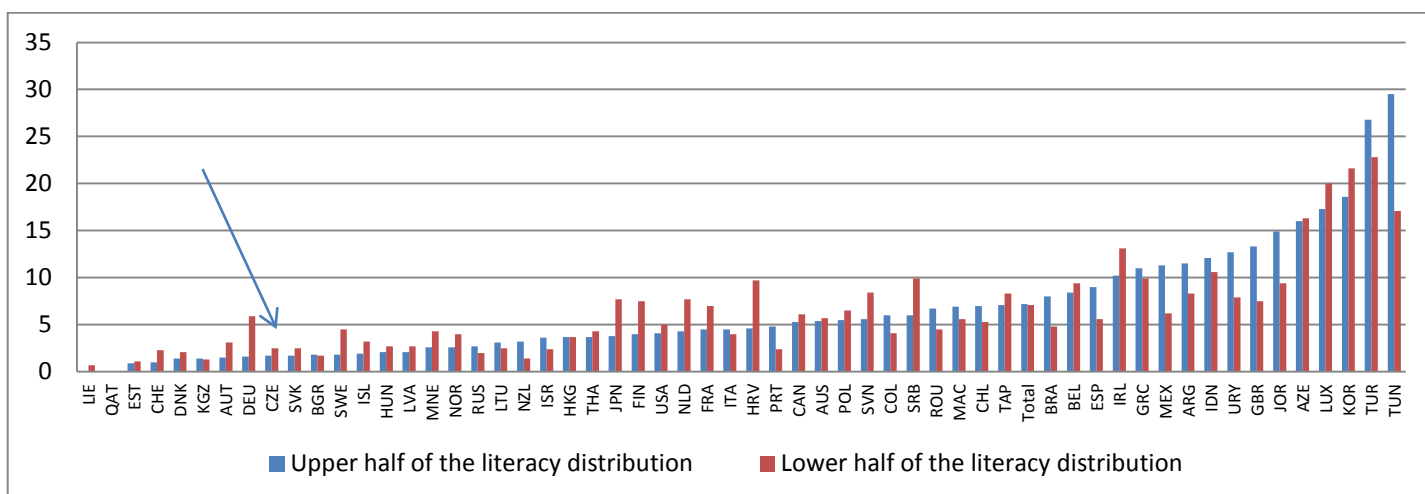
¹⁹ One option to mitigate this is to compare teachers' salaries to the salaries of university educated employees in the public sector only, where the non-financial attributes of the profession are generally closer to those of the teaching profession.

Figure 7: The share of fifteen-year-old students who aspire to the teaching profession (in %) in the upper and lower half of the student population according to literacy

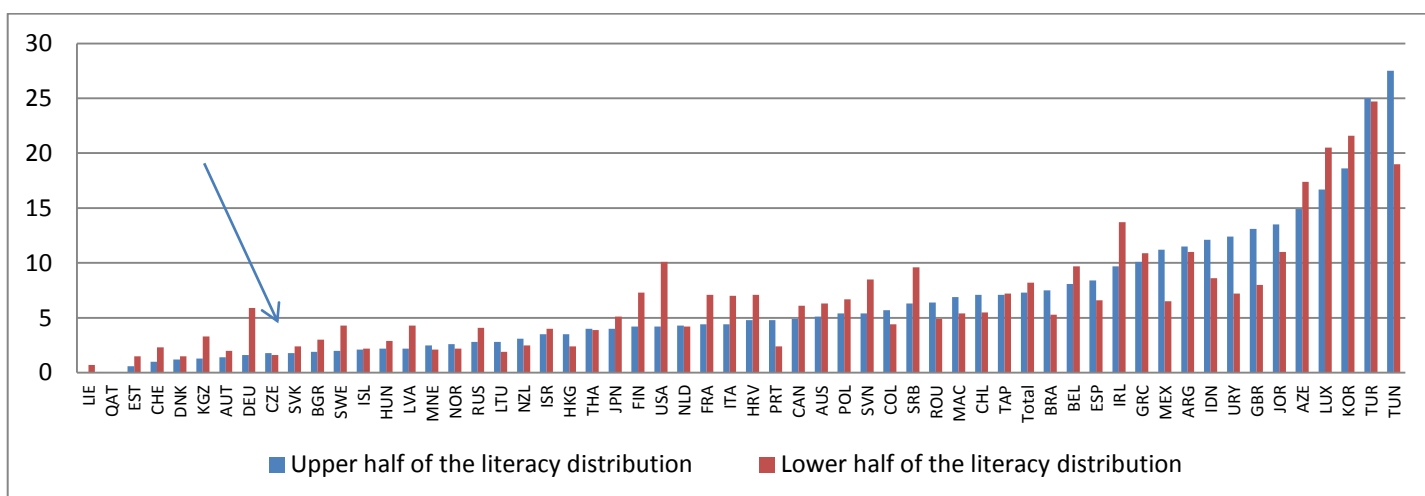
a) Reading literacy



b) Mathematical literacy



c) Science literacy



Source: OECD PISA 2006 and own calculations

3. Education expenditure

The low level of teachers' salaries is in the long term economically and socially ineffective for the Czech Republic. The facts presented in section 2 can be interpreted as indicating that despite the low salaries many teachers, or those interested in the profession, continue in the profession because they do not have as many real job alternatives as suggested by the analysis of lost wage opportunities presented in section 1. Their opportunity cost may in fact be lower because their abilities are not equivalent to other university educated employees (with higher salaries).

Nevertheless, for two reasons, it is difficult to consider the current level of teachers' salaries to be economically optimal. First, the logic explained above deepens the vicious circle: the relatively low quality of teachers justifies their low salaries, which decreases the attractiveness of the teaching profession, which in turn leads to a further decrease in the quality of teachers. Second, the current situation can have long term negative consequences for the quality of life in this country, because teachers' salaries are the starting point in a long causal chain teachers' salary level -> quality of teachers -> level of education -> long term economic growth and quality-of-life improvement.

An estimate of what is at stake with respect to the level of education among the population was calculated in the IDEA paper in 2012. For example, a substantial decrease in the level of education among fifteen-year-old Czech students equates over a period of 80 years²⁰ to an economic loss of up to 169 billion CZK in GDP.²¹ On the other hand, an increase in the educational results of Czech students to match the level in Finland (the country with the best results) would result in an increase of 335 billion CZK per year in GDP.

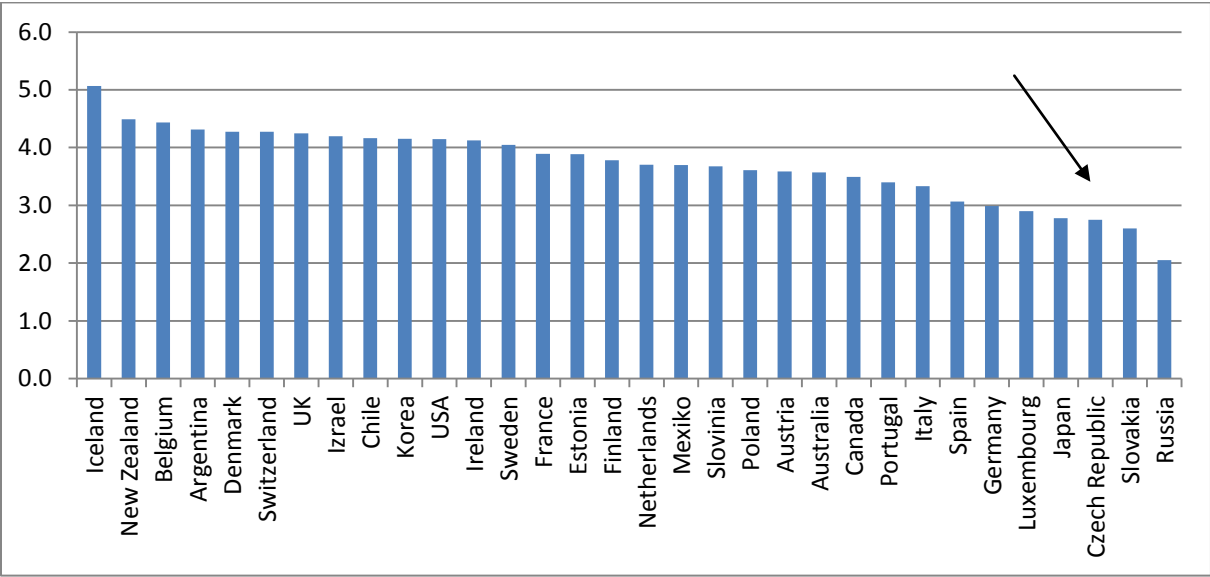
Since teachers' salaries represent a major cost item in public education expenditure, we conclude our short analysis with an international comparison of total education expenditure.

In 2010 the Czech Republic spent 162.9 billion CZK, or approximately 4.3% of GDP, on education, which places it at the lower end of the OECD ranking. Figure 8 compares the expenditure of OECD countries on primary and secondary education. It can clearly be seen that some OECD countries spend the same share of GDP on primary and secondary education alone as the Czech Republic spends on its whole education system.

²⁰ One of the parameters of the model is the length of the time period (80 years) across which we calculated the economic effects of altering today's level of education.

²¹ The stated amount represents hypothetical additional GDP over the next 80 years, counted for each individual year of this period.

Figure 8: Expenditure on primary and secondary education in % of GDP (2008)

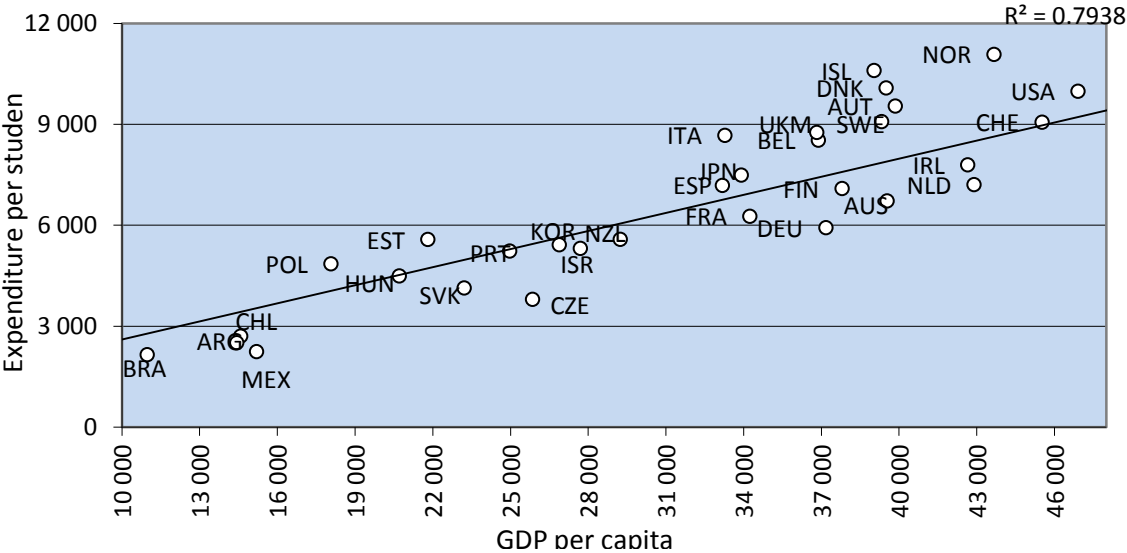


Source: OECD – Education at a Glance 2011

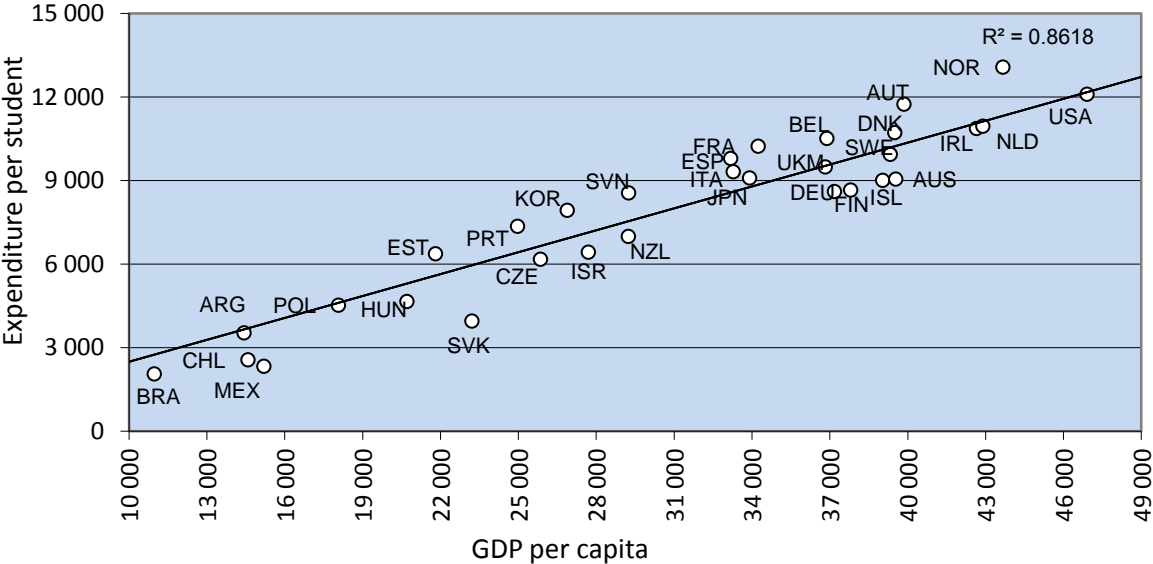
This international comparison shows that it is typical for less economically developed countries such as the Czech Republic to have a lower share of expenditure on education. Therefore it is important to compare expenditure on education in the Czech Republic with similarly developed OECD countries. The amount of expenditure on education is furthermore naturally related to the size of the student population as a share of the total population of the country. Therefore, the comparisons in Figures 9a and 9b, which relate expenditure per student with GDP per capita are a more relevant indicator.

Figure 9: Expenditure per student compared with the GDP per capita in 2008 (in USD per year, expressed in purchasing power parity)

a) Primary education



b) Secondary education



Source: OECD – Education at a Glance 2011

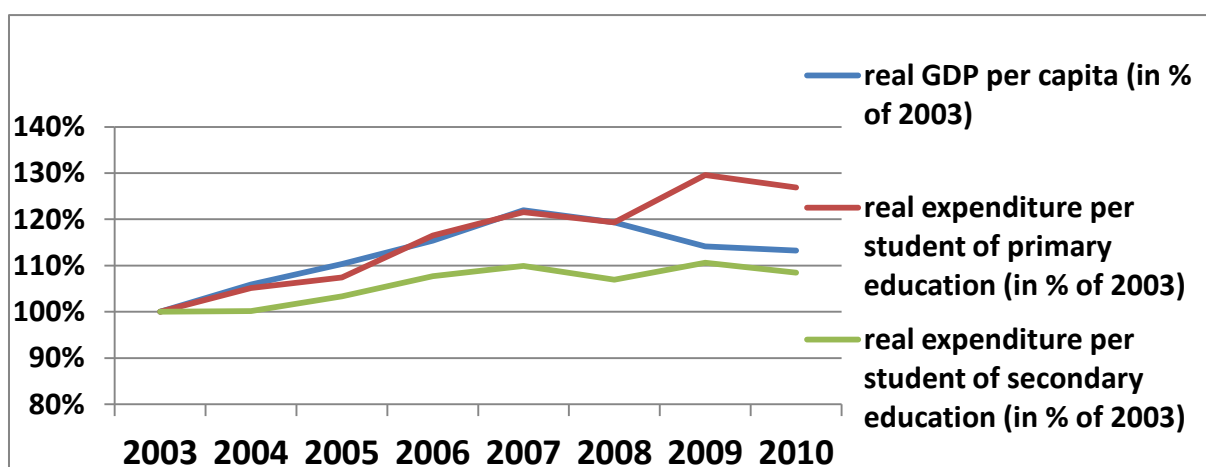
We can see in Figures 9a and 9b that the relatively low level of expenditure per student in the Czech Republic is to a large extent caused by the country’s lower economic development. However, the expenditure per student in the Czech Republic

is still lower than in comparably developed countries. This difference was more significant for primary education than for secondary education in 2008.²²

In Figure 10 we map the development of the relation of GDP and expenditure per student across a longer period, up to the year 2010, and relate this to the situation in 2003.

V Grafu 10 mapujeme vývoj v ČR HDP a výdajů na žáka v delším období až do roku 2010 a vztahujeme ho k situaci roku 2003.

Figure 10: The development of real GDP per capita and real expenditure per student (related to the level in 2003)



Source: Ministry of Education, Youth and Sports and Czech Statistical Office

We can clearly see that the increase in real expenditure per primary school student between 2003 and 2008 more or less responded to the increase in real GDP, while the expenditure per secondary school student lagged behind. In 2009 and 2010 the increase in primary education expenditure exceeded the growth of GDP.²³ This was probably a consequence of relative inertia in education expenditure during a period of rapid decrease and then stagnation of GDP, in connection with the global economic crisis.

²² The fact that the Czech primary education sector seems to be more severely underfinanced than secondary school education relative to other countries may be caused by many factors, and should be subjected to a more profound analysis.

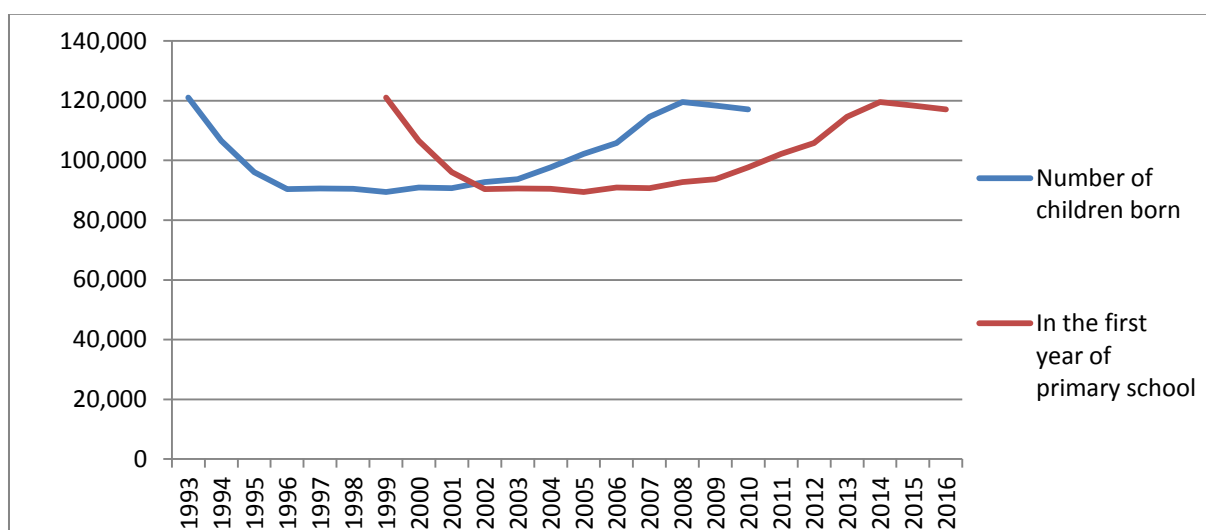
²³ Furthermore in the observed period the number of students decreased. While in school year 2003/2004 there were 1 887 775 students at primary and secondary schools, in 2010/2011 there were just 1 684 376.

Conclusions

The financing of the Czech primary and secondary education system finds itself nowadays in a very complicated situation. Teachers' salaries have been at a very low level for a long period of time, which has had a negative impact on the attractiveness of the profession. Behind the low wages lies the country's relatively low overall expenditure on education, within which salaries are a major cost item. Because the quality of teachers has a significant effect on the level of education among the younger generations and their disposition towards further learning, which is crucial in secondary school, university and professional life, this saving in education expenditure will undoubtedly have a negative effect on the future growth and quality of life in the country.

The situation is further complicated by the fact that in the coming years there will be a significant increase in the number of primary school students (Figure 11) as a result of the number of children born in recent years. In 1999, when the birth-rate in the Czech Republic reached its lowest level, there were 89 471 births (these children entered school in 2005-2006), whereas in 2008 there were 119 570 births (these children are expected to enter primary school in 2014/2015).²⁴

Figure 11: The number of children born and an estimate of the number of students in the first year of primary school in a given year



Source: Czech Statistical Office

In recent years, the government has been under pressure to stabilise public budgets and to lower the state budget deficit. While in 2011 the expenditure of the Ministry of Education, Youth and Sports (on the education system as a whole) totalled CZK 138.9 billion, this year it was only CZK 137.8 billion (in real value only CZK 134 billion) and for the years 2013-2015 further expenditure cuts are being considered. This may of course also further negatively influence teachers' salaries.

²⁴ The number of teachers decreased by about 5% in the period of 2005-2011.

The education budget represents one of the major expenditure lines in the state budget. Therefore even a small percentage decrease in this expenditure represents a large saving. The Czech Republic faces an uneasy decision about how to solve today's dilemma. There are essentially three options:

- I. To leave the ratio between teachers' salaries and the salary levels of other university educated employees at its current very low level, or even further decrease it. Such steps would be taken at the expense of the future population's education level and the long-term economic growth of the country. This consequence will, though, not be obvious immediately or for a few years.²⁵
- II. To increase teachers' salaries, at the cost of dispensable expenditure in other areas of education, if such expenditure exists. The government would need to undertake reliable detailed analysis²⁶ credibly identifying its possible sources of savings. Careful attention should be paid for example to: possibly excessive numbers of teachers, possible inefficient use of their working capacity, high fixed costs caused by a large number of small or partially empty schools, excessive provision of additional publicly funded non-educational services in schools. Implementing savings in these areas is very time consuming and can take a year or more to achieve.
- III. To prioritise education and to increase the teachers' salaries and therefore also education expenditures, at the expense of other areas of the state budget. Or to finance such an increase in education expenditure through an increase in state budget deficit.

²⁵ The processes of how the changes of education system reflect into education level and the economic growth of the country are described in detail in a paper by IDEA (2012)

²⁶ We have not found any information about analyses aimed in this direction.

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Appendix: Occupation Codes of Teachers ISCO

1. Teachers in KZAM-R classification (until 2010)

Primary school teachers

23313

23314

Secondary school teachers

23214

23225

2. Teachers in CZ-ISCO (since 2011)

Primary school teachers

23303

23410

Secondary school teachers

23301

23107

23201

23107

Table A2: Salaries of teachers in comparison with other university educated employees, by gender (2011)

Age	Average salary of teachers in primary and secondary schools (CZK per month)	Average salary of university educated non-teachers (CZK per month)¹⁾	Ratio of salaries of teachers/n on-teachers	Share of university educated employees with higher salary than the average salary of primary school teachers²⁾	Share of university educated employees with higher salary than the average salary of secondary school teachers²⁾
	(1)	(2)	(3) = (1)/ (2)	(4)	(5)
Men					
20-29	21 160	34 477	0.61	89%	87%
30-39	24 539	54 209	0.45	93%	90%
40-49	26 704	64 158	0.42	92%	89%
50-59	28 447	54 653	0.52	87%	83%
60+	28 887	51 062	0.57	84%	80%
Women					
20-29	20 407	29 102	0.7	80%	77%
30-39	23 505	40 245	0.58	82%	78%
40-49	26 058	41 504	0.63	81%	74%
50-59	27 786	41 929	0.66	82%	74%
60+	29 205	40 323	0.72	77%	73%

Source: Own calculations based on the data from the Average Earnings Information System (ISPV)

- 1) The salary includes all components of gross salary including bonuses. Salaries are counted based on full time work.
- 2) The comparison is made for every segment given by age, gender and region separately and then summed up.

Table A3: Salaries of teachers in comparison with other university educated employees in the non-business sector

Age	Average salary of teachers in primary and secondary schools (CZK per month)	Average salary of university educated non-teachers (CZK per month) ¹⁾	Ratio of salaries of teachers/n on-teachers	Share of university educated employees with higher salary than the average salary of primary school teachers ²⁾	Share of university educated employees with higher salary than the average salary of secondary school teachers ²⁾
	(1)	(2)	(3) = (1)/ (2)	(4)	(5)
2010					
20-29	20 718	25 448	0.81	71%	64%
30-39	23 817	33 862	0.7	81%	74%
40-49	26 304	37 642	0.7	84%	74%
50-59	27 985	39 351	0.71	84%	75%
60+	29 290	41 029	0.71	83%	77%
2011					
20-29	23 638	26 294	0.9	55%	52%
30-39	25 490	34 279	0.74	73%	68%
40-49	27 105	38 034	0.71	78%	71%
50-59	28 631	39 459	0.73	79%	71%
60+	29 442	41 864	0.7	81%	76%

Source: Own calculations based on the data from the Average Earnings Information System (ISPV)

- 3) The salary includes all components of gross salary including bonuses. Salaries are counted based on full time work.
- 4) 2) The comparison is made for every segment given by age, gender and region separately and then summed up.

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