Measuring quality and labor market results in education in V4 plus Ukraine

COMPENDIUM OF COUNTRY-SPECIFIC ANALYSES

INEKO and partners

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The document offers a brief overview of the indicators used for measuring quality and other results in education, e.g. the test scores, labor market and other results and characteristics of particular schools and/or their pupils and students in Visegrad 4 countries and Ukraine. Further, it includes information on how the results impact the financing of particular schools; offers an overview of tools informing the public about the results with major focus on published school reports and rankings; and lists some of key lessons learned in measuring the quality in education as well as some of key challenges in this respect discussed in the country.

The document comprises five country-specific analyses presented in a closed webinar "Education, measurement of quality and (labor market) results" that took place on October 2nd, 2015 under the project "Hidden Triggers of Economic Growth in V4 plus Ukraine" supported by the International Visegrad Fund; see also http://www.ineko.sk/projekty/visegrad-fund.

Project partners:

- **INEKO – Institute for economic and social reforms** (Slovakia; http://www.ineko.sk/); leading partner. The INEKO institute is a Bratislava-based non-governmental non-profit organization established in support of economic and social reforms which aim to remove barriers to the long-term positive development of the Slovak economy and society.
- **PISM – Polish Institute of International Affairs** (Poland; http://www.pism.pl/). PISM is a leading Central European think tank that positions itself between the world of politics and independent analysis. PISM provides analytical support to decision-makers and diplomats, initiates public debate and disseminates expert knowledge about contemporary international relations. The work of PISM is guided by the conviction that the decision-making process in international relations should be based on knowledge that comes from reliable and valid research.
- **Centre for Economic and Regional Studies of the Hungarian Academy of Sciences** (Hungary; http://vki.hu/). The Institute of World Economics of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences focuses on global economic trends and their effects on Hungary. It is the oldest and most experienced institute in this field in Hungary. As the successor to the Institute for World Economics founded in 1973, the Institute adopted its current name and structure on January 1st, 2012.
- **CETA – Centre for Economic and Market Analysis** (Czech Republic; http://eceta.cz/). The main goal of the CETA is to analyze the market, socio-economic and political phenomena in the Czech Republic, and point out their impacts. The importance of knowledge in these defined areas is - with the activity of CETA - aimed especially at persons interested in the functioning of markets and economy.
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CONTENT

Introduction

Machines, computers and robots replace ever more routine jobs and push ever more people with low qualification out of the labor market or at least decrease their wages. The only way to remain competitive and to find a decent employment is to offer higher productivity. To be more productive, the existing workers often need to requalify and their children need to get better education. It is quite clear that the countries with qualified labor force are more competitive and better prepared to face technologic changes and their impact on labor markets. In the long-term, the quality of education is one of key determinants of economic growth.

Despite this clear logic, it is often striking how little we know about which school is better and which is not. Without reliable information, the parents and their children cannot make rational choice and effectively press for schools´ improvement. The problem goes even deeper – there is still little consensus on how to measure the quality of particular schools. But how do we want to improve quality of education if we do not know how to measure it?

There are several indicators used for measuring education results in the Visegrad 4 countries and Ukraine. The most frequent for primary and secondary facilities are standardized national tests and rewards for participation in competitions, and for tertiary facilities research and/or artistic results. There are almost no official public rankings of schools; however, there are several private rankings displaying at least top performers. With the exception of Hungary, there is little or no experience in measuring the value-added, i.e. the difference in results at the entry and the exit from the school. With its National Assessment of Basic Competences (NABC), Hungary offers the best example of using standardized testing in primary education. The database offers comprehensive information about particular schools, however, it does not allow for easy comparison in rankings. Similarly, with the exception of Slovakia there is little or no experience in measuring and publishing labor market results of particular schools, e.g. the unemployment rate and salaries of graduates.

The quality is usually not directly reflected in schools´ funding. The primary and secondary schools are funded mostly on "per-pupil" basis which creates indirect link between quality and funding. However, this indirect relation may work only if people know about the quality. The tertiary education is funded mostly on a combination of "per-student" basis and research results but the impact on quality seems to be insufficient.

In every country, there seems to be much room for developing and publishing new performance and efficiency indicators, e.g. value-added, labor market results, rates of return, etc. This might enrich public debates about quality of education and potentially strengthen the "money-follows-quality" principle in school funding formulas.

To improve measuring of quality and labor market results in education, all Visegrad countries and Ukraine have much to learn from each other. By using this opportunity they might improve productivity of their future labor force, gain advantage in fierce international competition and, consequently, secure conditions for higher economic growth and long-term prosperity.

ANALYSIS 1: Measuring quality and labor market results in education – Case of Slovakia

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Summary

In Slovakia, there is rather long tradition in measuring the results of pupils and students by means of standardized national testing at the end of primary and secondary education. However, these results have long been unavailable to the public and later they were published in user-unfriendly format without possibility to rank or compare the schools. This changed in 2012 when INEKO launched its internet portal http://skoly.ineko.sk/. The portal displays a set of various indicators and ranks the schools by rating. The rating of primary schools is based on two indicators: (1) National tests´ results in mathematics and Slovak (or Hungarian) language, and (2) exceptional results rewarded by the Ministry of Education. The rating of secondary schools is based on three indicators: (1) National tests´ results in mathematics, Slovak (or Hungarian) language, and foreign languages, (2) unemployment rate of graduates compared to the regional unemployment rate, and (3) exceptional results rewarded by the Ministry of Education. In 2015, the Ministry of Education started to measure "value added" of secondary schools and informed them internally about the results. There are no links between the results and financing the schools from the state budget. However, publishing the results influences decisions of parents and children to choose particular school which has indirect impact on schools budget as they are funded on basis of "normative" which is a defined financial amount per pupil. Officially, the quality of primary and secondary schools is examined by the State School Inspection with focus on the school management, education conditions, process of education and testing pupils. However, due to limited capacities, this control is implemented only on a selective basis. Moreover, only general results are publicly available without providing data for particular schools. The impact of this official quality monitoring is generally considered to be rather weak.

In tertiary education, the Ministry of Education launched an internet portal http://vs.iedu.sk/ in 2012 displaying a comprehensive set of indicators including graduates salaries and unemployment rates for particular schools and programs. However, this portal has not been updated and, consequently, has not gained sufficient publicity and impact. In 2015 the Ministry of Education launched another portal http://www.lepsieskoly.sk/ offering smaller set of indicators with fewer possibilities to rank and compare schools and study programs. However, the Ministry´s ambition is to develop this portal and to expand and improve the set of indicators. Besides official activities there has long been a project of NGO ARRA (Academic Ranking and Rating Agency) regularly publishing ranking of all tertiary schools in the country based mostly on their academic results: http://www.arra.sk/. The tertiary schools are funded based on a complex formula with most emphasis on their academic results and number of students. Officially, the quality of tertiary education should be guaranteed by the Accreditation Commission, which has its own criteria for measuring the quality and subsequent accreditation of particular schools and programs: http://www.akredkom.sk/en/. However, the impact of accreditation on improving quality of particular schools is generally considered to be rather weak.

Key performance indicators – Overview of indicators used for measuring the results of particular schools

Primary education

1. National tests: The first standardized national testing at the exit from the primary schools was implemented in a school year 2002/2003. Since then all pupils of the 9th grade (at the age of 15) have been writing the tests from mathematics and Slovak language and, if applicable, also from the language of particular ethnic minority (Hungarian or Ukrainian).
2. Exceptional results: Every year, the Ministry of Education rewards the schools financially for their exceptional results in specific competitions (including national Olympic Games in various subjects) and international projects.
3. State school inspection: The official authority State School Inspection provides controls and evaluation at selected schools in following areas: school management, education conditions, process of education and tests of 9th grade pupils from Slovak language and physics, as well as tests of 4th and 9th grade pupils from natural science.
4. Private testing and competitions: On voluntary basis, the schools have the possibility to take part in up to 9 tests and competitions organized by a private firm.
5. Complementary indicators: There are several indicators offering a more detailed picture of particular schools. Among them, following are most widely used – number of teachers per 100 pupils, share of teachers using the information and communication technology regularly in the process of education, and share of qualified teachers.
6. Self-evaluation: Every year, the schools publish reports on their education activities.

Secondary education

1. National tests: The first standardized national testing at the exit from the secondary schools (at the age of 18/19) was implemented in 2000. In 2005 national tests became official school-leaving exams. The tests are written from mathematics, foreign languages (English, German, Russian, French, Spanish, Italian), and Slovak language and, if applicable, also from the language of particular ethnic minority (Hungarian or Ukrainian). The results are monitored separately for internal and external students.
2. Value added: In 2015, the Ministry of Education computed for the first time “value added” of secondary schools based on comparing individual results of school-leaving national tests in primary education and school-leaving national tests in secondary education. This information has not been made public. The Ministry informed the schools internally about their particular results.
3. Unemployment rate of graduates: The Labor Offices monitor the unemployment rate of graduates approximately 16 months after leaving the school (to the 30th of September in the next year after leaving the school). To adjust for regional differences, INEKO divides the unemployment rate of graduates by the unemployment rate in the county where the school is seated.

4. Exceptional results: Every year, the Ministry of Education rewards the schools financially for their exceptional results in specific competitions (including national Olympic Games in various subjects) and international projects.
5. Admission to higher education: The official authorities monitor the share of graduates who are admitted to tertiary education facilities in Slovakia just in the next academic year after finishing their secondary education. They also monitor the share of those who have been admitted on the total number of those who applied for the admission. The reliability of this indicator is limited because there is no information available about those who have been admitted to foreign tertiary education facilities.
6. State school inspection: The official authority State School Inspection provides controls and evaluation at selected schools in following areas: school management, education conditions, and process of education.
7. Private testing and competitions: On voluntary basis, the schools have the possibility to take part in up to 2 competitions organized by a private firm.
8. Other indicators: There are several indicators offering a more detailed picture of particular schools. Among them, following are most widely used – number of teachers per 100 pupils, share of teachers using the information and communication technology regularly in the process of education, and share of qualified teachers.
9. Self-evaluation: Every year, the schools publish reports on their education activities.

Tertiary education

1. Unemployment rate of graduates: In 2012, the Ministry of Education published the graduates´ unemployment rates for particular schools computed as a ratio of unemployed graduates registered at the Labor Offices on the 31th of December and total number of graduates in previous two years. To adjust for regional differences, it is useful to divide the unemployment rate of graduates by the unemployment rate in the "higher territorial unit" where the school is seated. There are eight "higher territorial units" in Slovakia. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the average unemployment rates of graduates for the period 2009-2013.
2. Time to get employment: In 2015 the Ministry of Education published the average time the graduates need to get their first employment after leaving the school.
3. Salaries of graduates: In 2012, the Ministry of Education published the average salaries of graduates of particular schools, faculties and study programs based on the database of the Social Insurance Agency. The salaries were monitored separately for daily and external students as well as for graduates with bachelor, master, and doctorate degrees. The Ministry published the nominal average salaries as well as their percentages of the average salary in economy and in the region where the school is situated. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the average salaries of graduates for the period 2008-2014.
4. Scientific, research and artistic results: There are three institutions evaluating the number and the academic impact of scientific, research, and/or artistic activities of every school: (1) The Ministry of Education, (2) the Accreditation Committee, and (3) the NGO Academic Ranking and

Rating Agency (ARRA). This evaluation usually includes separate section on the number and research productivity of PhD students. The monitoring takes data from the Web of Knowledge database as well as from local databases.

5. Admission rates: In 2012, the Ministry of Education published (1) the ratio of admitted students to all students applying for the admission at particular school (admitted/applying) as well as (2) the ratio of students who really entered the school to all admitted students (entering/admitted). As a composite index reflecting the attractiveness of particular schools, the Ministry published (3) the ratio of students applying for the admission to admitted students (applying/admitted) multiplied by the ratio of students who really entered the school to all admitted students (entering/admitted). The higher the index the higher is the presumed attractiveness of the study at particular school. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the ratio of students who really entered the school to all students applying for the admission at particular school (entering/applying) for the period 2008-2014.
6. Student mobility: In 2012, the Ministry of Education published the shares of students sent out to study abroad and the shares of students coming from abroad to study at particular schools. The higher the mobility, the higher is the presumed attractiveness of the study at particular school. Since 2012, this indicator has not been updated.
7. Feedback from students: All tertiary schools have to regularly collect feedback from students on the quality of education. However, there are no rules unifying the forms (questionnaires) for collecting this feedback. There are also no sanctions for avoiding this duty. Therefore, the results are not complete and comparable among the schools.
8. Research grants: In 2012, the Ministry of Education published the amount of money the school has received from foreign research grants per student. Since 2012, this indicator has not been updated. The NGO ARRA regularly monitors the amounts gained from both domestic and foreign grants and divides the total amount from grants by the number of creative staff.
9. Bachelors continuing at the same school/faculty: In 2012, the Ministry of Education published the share of graduates with bachelor degrees continuing in their master study at the same school or faculty. Since 2012, this indicator has not been updated.
10. Feedback from graduates: In 2015, the Ministry of Education published the results of survey among 15,444 graduates from 2008-2014. The survey includes questions on (1) whether the graduates would choose the same school/program again, (2) if they consider the program they studied to be the most suitable for their current work, (3) to what degree was their study good basis for their professional career, (4) to what degree did the school prepare them for 26 particular skills and competences required in the labor market, and (5) to what degree are the 26 particular skills and competences required/useful in their current work.
11. Other indicators: In 2015 the Ministry of Education published the percentages of graduates employed in different sectors of the economy; the frequency of browsing CVs of graduates of particular schools on the biggest Slovak web portal offering new jobs (http://www.profesia.sk/). The Ministry of Education as well as the NGO ARRA monitors the qualification structure of the teaching staff. The ARRA also monitors the teacher/student ratio, separately for professors as well as the share teachers with PhD on total number of teachers.

Information about if and how the results impact the financing of particular schools

There is no direct impact of the results on financing the primary and secondary schools. Both categories are financed based on a "normative" which is a specified financial amount per pupil. Thus, the total subsidy from the state is calculated as a "normative" given for a particular school category (i.e. primary school, grammar school, bilingual school, vocational school, etc.) multiplied by the number of pupils. Indirectly, the school with better results may be more successful in attracting more pupils and this would be reflected in a higher subsidy. However, this assumption is heavily dependent on reducing the information asymmetry between the schools and the parents of pupils. In other words, the assumption works, if parents get reliable information about quality and does not work if they lack it.

In tertiary education there are two main criteria of funding: (1) number of students, (2) scientific, research and/or artistic results. Small fraction of the state subsidy is also dependent on the unemployment rate of graduates of particular school. As opposed to primary and secondary education, part of funding (approximately one half) is directly dependent on the scientific, research and/or artistic results. However, the criteria for evaluating these results have not allowed for major distinction between high-quality and medium results which has led to rather weak impact on quality. Indirectly, the schools may receive more money for attracting more students. Just like in primary and secondary education, the impact of "normative" financing on quality depends on a degree of information asymmetry.

In the public discourse, the "normative" financing has often been criticized for its impact on schools incentives to accept as many students as possible regardless of their quality as well as of the quality of the education process. In other words, the schools are often motivated to accept any students and not to search for the best students who – in their search for top quality – often leave for studies abroad.

Overview of tools informing the public about the results

Primary and secondary education

Until 2012 the results of national tests have been published in user-unfriendly format without possibility to compare schools easily. This has changed in 2012 when the NGO Institute for Economic and Social Reforms (INEKO) launched its internet portal http://skoly.ineko.sk/ displaying a set of 32 indicators (including national testing results) and ranking the schools by rating.

The rating of primary schools is based on two indicators:

Indicator	Weight
National tests´ results in mathematics and Slovak (or Hungarian – for the ethnic minority schools) language	80%
Exceptional results rewarded by the Ministry of Education	20%

The rating of secondary schools is based on three indicators:

Indicator	Weight	
	Grammar schools	Vocational schools
National tests results in mathematics, Slovak (or Hungarian) language, English and German languages	60%	40%
Unemployment rate of graduates compared to the regional unemployment rate	25%	50%
Exceptional results rewarded by the Ministry of Education	15%	10%

The INEKO rating for both primary and secondary schools is computed from results in previous 4 years with following weights: 4 for the most recent year, 3 for second most recent year, 2 for the third most recent and 1 for the fourth most recent year. Small schools with less than 80 graduates are excluded from rankings; however, it is possible to display their rating on the website.

In 2015 the official authority National Institute for Certified Educational Measurements (http://www.nucem.sk/) responsible for national testing launched the data portals displaying the results of national testing in a more user-friendly way, however, still without possibility to display school rankings:

- Primary school leaving exams: http://dataportal.nucem.sk/Dataportal-web/web/vysledky/testovanie/index.xhtml
- Secondary school leaving exams (maturita): http://dataportal.nucem.sk/Dataportal-web/web/vysledky/maturita/index.xhtml

In 2015, the Ministry of Education started to measure the "value added" of secondary schools and informed them internally about the results. The Ministry computed the "value added" based on the difference between individual pupil results in national tests at leaving the primary school and his/her results in national tests at leaving the secondary school.

The State School Inspection publishes only general results without naming particular schools. However, INEKO required this information based on a Freedom of Information Act and publishes it among other indicators on its school portal.

Tertiary education

Since 2005, on a yearly basis, the NGO ARRA (http://arra.sk/) has been publishing rankings of tertiary schools based on a rating computed from following indicators:

1. Education (teachers/students ratios, professors and PhD teachers/teachers ratios)
2. Attractiveness of the study (applying students/students planned to admit, entering/admitted students, share of foreign students, shares of students sent out to study abroad, unemployment rate of graduates: 3-year average)
3. Science and research (number and impact of publications and quotations, quotations per publication, impactful artistic results)

4. PhD study (share of PhD graduates on PhD first-year students, scientific performance (publications and quotations) divided by the number of PhD students, share of PhD graduates on total number of professors, share of PhD students on total number of Bachelor and Master students)
5. Success in obtaining grants (domestic grants, foreign grants, as well as total grants divided by creative workers)

The ARRA publishes rankings separately for 11 groups of schools based on their specialization, e.g. technical, natural sciences, medical, economic, philosophical, law, artistic, etc.

In 2012, the Ministry of Education launched an internet portal http://vs.iedu.sk/ displaying a comprehensive set of indicators including the salaries and unemployment rates of graduates. However this portal has not been updated. In 2015 the Ministry launched another portal http://www.lepsieskoly.sk/ displaying similar indicators and adding results of a survey among graduates. For more details, see above the overview of indicators for tertiary education.

Current challenges and lessons learned

The biggest opposition to measuring the quality and other results in education is from the side of teachers. Here are the most frequent objections:

1. Most of measurements do not take into account factors beyond education process that influence the pupils' outcomes. The examples of such factors include socio-economic background of pupils, family situation, or differences in quality of students at the entry to the school. This objection partially reflects a lack of measuring the "value added". As a result, the school with better students at the entry will have better results at the exit and vice-versa. Therefore, it is impossible to talk about the school quality based only on the exit results.
2. The measurements cannot objectively assess the real quality because they reflect just a fraction of the education process. For example the national tests cover only a few subjects. Moreover, there is much more to the teaching profession than to teach for the test. In other words, there are things that teachers teach that cannot be assessed by the test, such as interpersonal skills, values, attitudes towards society, etc. Too much emphasis on the tests´ results may be at the expense of other teaching activities that are important but impossible to check by a test.
3. There is still risk that the school will cheat at the test. The more emphasis on the tests´ result the higher is this risk.

The Ministry of Education reacted to the first objection in 2015 by computing a "value added" of the secondary schools. The results have been communicated to particular schools internally without making them public (for more details, see above the overview of indicators for secondary education).

In November 2015, the Ministry will launch national testing of pupils of the 5th grade at primary schools. This will enable to measure "value added" for the second level of primary education (5th to 9th grade,

ISCED 2). The tests will include mathematics, Slovak language, and Hungarian language for ethnic minority schools.

As for the tertiary education, the Ministry of Education tries to develop the methodology for evaluating the success of graduates in the labor market. In 2015, the INEKO institute has taken part in a project proposing such methodology. Among the proposals it recommends to monitor the salaries and the unemployment rates separately for specific sectors of the economy as well as for specific regions.

To improve measuring of results INEKO also recommends:

- Measuring and publishing "value added" based on national testing for every education level of ISCED 1-3
- Monitoring and publishing average salaries of graduates of secondary schools
- Tracking the individual pathways from primary to secondary and tertiary schools – this would enable to assess the school´s performance based on how successful are its graduates in getting to the schools with better results
- Unifying professional school leaving exams at related vocational secondary schools and publishing the results
- Publishing average results of the psychological screening of pupils entering the primary education
- Collecting and publishing schools´ results in broader scope of competitions
- Measuring and publishing efficiency, i.e. results divided by public subsidies in given period, and/or rate of return of public investment in case of secondary vocational and tertiary facilities (based on comparing public funds used for particular school and taxes paid by its graduates)

In a near future, the decline in natality will make many schools redundant. It is crucial that the above-average schools will not be closed. Better measuring and publishing results may help to avoid this. More direct solution would be to link the schools´ public funding to the results. However, the Ministry is cautious in this respect and, before it happens, it will probably take more years to fine-tune the methodology of measuring results.

ANALYSIS 2: Measuring quality and labor market results in education – Case of Hungary

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October 2015

Summary

Hungary has one of the most developed standardized testing schemes in Central Eastern Europe (see OECD 2010). The National Assessment of Basic Competencies (NABC) surveys the full cohorts of 6th, 8th and 10th graders testing their reading and mathematical literacy and asking an extensive set of questions about their family status. While the NABC is low stakes for the students it is medium stakes for schools as no financial incentives are linked to it but school, local and national level results are publicized annually which might press some schools to perform better.

There are several other datasets which could, in principle, offers statistics of schools that relate to quality. The Public Education Information System (Közoktatási Információs Rendszer – KIRstat) collects extensive set of information school characteristics: number of teachers, students, physical infrastructure, teacher qualifications and more. This administrative data is also used to determine the available financial resources to schools, as school funding has been linked to the number of students before 2013 and now it is linked to the number of teachers (with fixed teacher/student ratio).

Previously the national school league tables were based on the Tertiary enrollment database (Felsőoktatási felvételi adatbázis - Felvi) (see Neuwirth and Horn 2007) but due to heavy criticism from the schools and the education profession, and to decreasing funding these tables are now prepared by for profit media only.

While in principle the results of the maturity exam and the secondary enrollment exam (Secondary enrollment information - Középiskolai Felvételi Információs Rendszer, KiFIR) system can be used to indicate the quality of schools, since these exams are high stakes and tests are not standardized across years, it is rarely used for this purpose.

There has also been instances of national Graduate Career Tracking (Diplomás pályakövetés), but with rather low and non-representative response rates, the results from these surveys are rarely used for quality measures.

Overview of the main sources of information on school quality

The National Assessment of Basic Competencies (NABC)[1]

The NABC[2] is a standard based assessment designed similarly to the OECD PISA survey, but conducted annually in May. It measures reading and mathematical literacy of the 6th, 8th and 10th grade students

[1] This chapter was adopted from Horn (2013)

and it is standardized to a mean of 1500 with standard deviation of 200. The mathematics and the reading scores are standardized not only within but also across years. The average score of 6th grade students in 2008 was 1500 (both in math and reading) and each cohort and class is measured to this 2008/6th grade cohort. For instance if the average mathematics score of the 6th grade students in 2010 is 1550, this means that this cohort's average mathematical literacy is quarter of a standard deviation higher than that of the two year older cohort. Similarly, one can compare the scores across years within cohorts.

Table 1 shows who and when was measured within the NABC survey. There are several explicit goals of this assessment. First is to provide more detailed and more frequent feedback for the educational policy than the international surveys. The second is to offer a tool for the school providers and schools themselves to improve. The third goal is to set the grounds for a future accountability system and provide higher transparency. In addition to all this, it offers invaluable data for the researchers to address education related puzzles. Unfortunately up until 2008 the database could only be analyzed on a cross sectional basis, because it had not contained permanent student level identification numbers. From 2008 onwards the biannual datasets are linked on the student level, thus from 2010 more detailed analyses are possible.

Table 1 – The official NABC database

	6th grade	**8th grade**	**10th grade**
2003	20 students from every school	0	20 students from each track from each school
2004	20 students from every school	20 students from every school	20 students from each track from each school
2006	every student from a sample of 195 schools	full cohort	30 students from each track from each teaching site
2007	every student from a sample of 200 schools	full cohort	30 students from each track from each teaching site
2008*	full cohort	full cohort	full cohort
2009*	full cohort	full cohort	full cohort
2010*	full cohort	full cohort	full cohort
2011*	full cohort	full cohort	full cohort
2012*	full cohort	full cohort	full cohort
2013*	full cohort	full cohort	full cohort
2014*	full cohort	full cohort	full cohort

* Permanent individual identification numbers are available

In addition to the mathematics and literacy test scores the database contains extensive information on the student background and on the school site. These questionnaires resemble that of the PISA survey and cover a wide variety of questions about parental education, employment, wealth and information on students' previous education and aspirations.

[2] See the official website (http://www.oktatas.hu/kozneveles/meresek/kompetenciameres/alt_leiras) or Hermann and Molnár (2008) for Hungarian language descriptions of the assessment. A short English description of the system can be found in OECD (2010).

The results of the NABC are made public approximately one year after the assessment. Each school location, each school and each education provider receives a standardized report via mail, while these reports are also put online.[3] Only the student (and her/his parents) and the school can access the individual results, but the anonymized database of the NABC is available for research.

The reports consist of several standardized indicators of school quality including the mean, standard deviation, confidence intervals of the students' test-scores; their comparison to the national measures and to measures of other similar types of schools or settlements. Besides these basic statistics, information on the class level is also available, as well as more complex measures of schools quality. These more complex measures include the expected test-score value of the school, using the students' previous test scores, as well as a more complex value-added measure which corrects for individual family background characteristics and other individual and school level characteristics besides the previous test-scores.

While the NABC might be important for the schools as they are made public and Hungary has a long tradition in free school-choice, no high-stakes measures are linked to the assessment. The progression of students must not depend on the results (especially since the results of the assessment are received only a year after), but schools also have no high-stakes on this testing: no financing or personnel decisions should be made using this. Note, however, that if a school performs below a very low level of expected performance[4] it has to submit an administrative action plan to its provider. Also if a school is three years below this level the ministry should assign a committee to investigate the reasons for the low performance. (Note that this has not happened during the last decade.)

Public Education Information System (Közoktatási Információs Rendszer – KIRstat)

The KIRstat collects extensive information about the schools and school programs. Each school must fill an extensive questionnaire. This includes questions on the number and distribution of students (age, gender, class, program type etc.), teachers (age, qualification etc.), infrastructure (number of classrooms, gyms, computers etc.) programs (vocational, language, specialized or advanced courses) and more. This database provides the basis for the national education statistics and also for the financing of the schools. While previous to 2013 student were financed via per-student lump-sum grants (aka. "normative" financing) post-2013 school receive their "normative" grant based on the number of teachers (while the student/teacher ratio is fixed).

Tertiary enrollment database and secondary enrollment information

The Tertiary enrollment database (Felsőoktatási felvételi adatbázis - Felvi) provides information about the secondary to tertiary level transitions while the Secondary enrollment information (Középiskolai

[3] https://www.kir.hu/okmfit/
[4] Over 25% of students should perform below level 2, meaning they are quasi illiterate.

Felvételi Információs Rendszer, KiFIR) collects the primary to secondary level transitions. These two datasets offer the possibility of providing information on the supply as well as the side of the secondary and tertiary level enrollment. In principle school-continuation rates for both the primary and the secondary schools could be calculated, which could act as a quality indicator for the schools. In practice these indicators were only published for secondary schools until 2006 (for the latest issue see Neuwirth and Horn 2007). Within these school-league tables the tertiary level enrollment rates as well as other indicators (application rates, number of language exams passed, number of students in academic Olympics) were published. These indicators received heavy critique both from the teachers (or schools) side as well as from the education profession, due to their obviously biased nature.[5] The reports were later, quasi, substituted by the official NABC reports, which are considered much more reliable.[6] Nevertheless still today the for-profit media issues the "Top secondary schools" lists, which are very similar to the reports compiled previously by Gábor Neuwirth, but usually report only the top 50 or 100 schools.

Graduate Career Tracking (Diplomás pályakövetés)

During the last half a decade the ministry has tried to set up a Graduate Career Tracking system (Diplomás Pályakövetés Rendszer) in order to assess the school-to-work transition of tertiary graduates. This system, while provides important information on the tertiary level institutions, in itself is not quite suitable to assess the quality of the institutions. The most important problem, in this respect, is the non-response rate and the biased representation of the different fields of studies. Nevertheless, there have been attempts to evaluate the quality of the different fields of studies and the quality of the different institutions (e.g. Varga 2010).

Some reports on school quality

As mentioned above, the National Assessment of Basic Competencies provides school, provider and national level reports on the level of mathematical and reading literacy, as well as several other statistics of the schools. These reports are published online every year in the spring.[7]

Besides these public reports the for-profit media offers top-lists on schools. These lists are usually based on information about tertiary enrollment ratios. These can be considered as the continuation of the officially prepared school league tables. The National Institute for Public Education (today the Institute for Educational Research and Development) has published an annual list of schools and their different statistics, such as: tertiary enrollment ratio, ratio of tertiary applicants, ratio of successful applicants, ratio of high level foreign language certificates, success rates on advanced level academic tournaments etc. (Neuwirth 2002, 2003, 2004, 2005, 2006; Neuwirth and Horn 2007).

Another important series of reports were the Reports on the Hungarian Public Education (Jelentés a magyar Közoktatásról), which were edited volumes of somewhat standardized analyses on the most

[5] They cannot control for the selectivity of the schools. Schools on the top of the school league tables tend to be the most selective (with the best students cream-skimmed), and thus these tables also facilitate the selectivity of the system.
[6] Naturally NABC reports are also very prone to selection bias (Horn 2015), but no school list is available. The reports are provided in a pdf file, thus only a limited number of them can be compared at a time.
[7] see https://www.kir.hu/okmfit/

important issues on the public education. These included education politics, economic and social environment, education governance, education financing, curriculum, school life, teachers, quality of schools, equality and special needs. The chapters all consisted of a longer analysis of the current trends as well as tables on the most important statistics in the given area. The reports were published for 1995, 1997, 2000, 2003, 2006 and 2010 (Halász and Lannert 1995, 1997, 2000, 2003, 2006; Balázs, Kocsis, and Vágó 2011).

The most current report that related to school quality is the System of Indicators on the Public Education 2015 (A közoktatás indikátorrendszere 2015) (Varga et al. 2015). There are four clusters of indicators in this volume: "context", "resources", "process" and "outcome". Within the outcome indicators a sub chapter is devoted to the "results within" while another to the "results outside" the system. The first deals with indicators such as the ratio of high and low performers, or the continuation rates among levels. The second lists indicators such as the ratio of employed graduates or the median income of the differently educated. A revision of this report is under process.

Information about if and how the results impact the financing of particular schools

There is no direct impact of the quality results on financing the primary and secondary schools. Both categories are financed based on a "normative" which is a specified financial amount per teacher. Thus, the total subsidy from the state is calculated as a "normative" given for a particular school category (i.e. primary school, grammar school, bilingual school, vocational school, etc.) multiplied by the number of teachers (while the teacher student ratio is fixed within an interval). Indirectly, the school with better results may be more successful in attracting more pupils and thus would be able to expand and thus receive a higher subsidy.

In tertiary education there are two main criteria of funding: (1) number of students, (2) scientific, research and/or artistic results. As opposed to primary and secondary education, part of funding (approximately one half) is directly dependent on the scientific, research and/or artistic results. However, the criteria for evaluating these results have not allowed for major distinction between high-quality and medium results which has led to rather weak impact on quality. Indirectly, the schools may receive more money for attracting more students. Note also that there are two types of student funding: state funded (tuition waivers) and self-funded (tuition paying). While the institutions receive the same amount after both of these groups, there is a cap on the state-funded group but no strict limit on the tuition paying students.

Current challenges and lessons learned

The Hungarian public education system is in constant reform. Since 2013 the system has been changing greatly: the most important change was the reform of education providers. The previously highly

decentralized system was centralized, and now it is being de-centralized, again.[8] Thus quality issues are currently of secondary importance (at best).

Nevertheless the development of the information on school quality during the last decade or so can be a success story. The previously officially reported raw measures of secondary school performance lists have been substituted by a much more thorough list of information on quality. This list not only includes a value-added measure, but it is also much harder to rank the schools and thus evaluate them one dimensionally. While, apparently, these reports can also be much further improved, it is considered to be a best-practice, at least in the Central-European region.

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ANALYSIS 3: Measuring quality and labor market results in education – Case of Poland

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Summary

In Poland, like in the case of other Visegrad Countries, there is rather long tradition in measuring the results of pupils and students by means of standardized national testing at the end of primary and secondary education. The results of standardized testing were, however "processed" mainly by the private agents, specialized in providing collective information. There are no links between the results and financing the schools and academia from the state budget. However, a public access to information about the pre-tertiary school performance in the particular field (i.e. in science) impact the school management, as there exists a financial allocation to school "per pupil" (the amount depending on the level of education, the region, and the type of school: i.e. the public one or not, the type of pupil: i.e. with some disabilities or not). Similarly, to some extent the mechanism functions in regard to the tertiary education system.

The quality of education in pre-tertiary level basically is assessed by the *kuratoria*, which are local supervisory units (highest - voivodship level). The system of measurement (or maintenance) of quality and labour market results in (notably public) tertiary education is a bit more complex. It consists of the Polish Accreditation Committee (in Polish: *Polska Komisja Akredytacyjna*), but also includes by the law a self-assessment of the academia. The tertiary schools are funded based on a complex formula with most emphasis on their academic results and number of students. But the academia's funds may come from the private donations, and this might encourage the academia to improve the quality of the education, notably in the context of labor market conditions.

The problem with a clear assessment of the overall quality of the education system arises from the fact that the data is dispersed and not collected in one easily to access set of indicators. In order to secure a better oversight of the system (as well as the particular unit) it is important to create such a database, at best by any of the Ministries or by any of their agencies.

Introduction

Since the beginning of the 21st century the education system in Poland has considerably changed. First of all the pre-tertiary education was divided into three stages (excluding pre-school level): lower primary schools (in Polish: *szkoły podstawowe*) which consist of six grades, upper primary schools (in Polish: *gimnazja*) which consist of three grades. Afterwards there are secondary schools (including general or specialised *licea*, *technika* for technicians and vocational schools) which consist of three or four grades, depending on type of class. This raised the opportunity to increase the number of the national testing of pupils (at the end of each stage of education). Prior to this change, there were only two stages of pre-tertiary education: *szkoły podstawowe* and *licea*/*technika*/vocational schools.

In fact, the system of pre-tertiary education is in constant reform. But the most important change has been implemented recently – a decrease of compulsory starting age of primary education. In 2015 it is the end of phasing-in period of this reform: this year each child goes to the primary school at the age of six (previously at the age of seven).

Interestingly, the supervision system (and indirectly a financing system) of pre-tertiary schools is relatively decentralised. Put simply, the primary schools are supervised by local authority units called *gminy* (lower administrative units), while secondary schools are supervised by *powiaty* (medium administrative units). These changes are expected to be positive; however the overall result is unknown and requires time to verify.

The spending on education system in Poland is moderate: the pre-tertiary system costs around 3.9% of GDP in 2011[9] (paid by *gminy* or *powiaty*). Surprisingly, the biggest part of this money (33%) goes to the primary stage of education (*szkoły podstawowe*). The state expenses on tertiary education reached 15 billion PLN.[10]

In general the quality of education in Poland is assessed positively abroad. Regarding the Global Competitiveness Report, Poland is ranked at 53rd position regarding quality of primary education, and 60th position regarding the overall quality of education (50th regarding math and science education).[11] The Polish pupils perform well in PISA tests: in 2012 the 15 age old pupils reached 14th position in mathematics, 10th position in science and in reading. However their problem solving skills were average compared to the pupils from the other countries. In TIMMS/PIRLS for the younger pupils, the results are less positive: Poland holds 36th position in mathematics, 30th position in science and 28th position in reading. Regarding the tertiary education, the Polish universities are not in the top 100 in global rankings, and this is a challenge to the tertiary education to change this disadvantageous picture. However, several Poland's units prepare students to successfully compete in international contests in such fields as robotics (i.e. contest in 2015 organized by NASA,[12] a contest University Rover Challenge in 2015,[13] 3rd place in Robot Challenge in 2015,[14] winners in BlackSea ROV competition)[15] or in programming (i.e. finalists in contest organized by Microsoft in 2015,[16] winners in Hello World Open in 2014)[17] or online marketing (contest organized by Google in 2014),[18] or in logical games (but this includes

[9] http://men.gov.pl/wp-content/uploads/2013/08/dane_2011_2012.pdf
[10] http://naukawpolsce.pap.pl/aktualnosci/news,401733,resort-nauki-w-2015-r-naklady-na-nauke-wyzsze-o-690-mln-zl.html
[11] http://reports.weforum.org/global-competitiveness-report-2014-2015/economies/#economy=POL
[12] http://www4.rp.pl/Edukacja/306309750-Polscy-studenci-wygrali-konkurs-NASA.html
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[18] http://googlepolska.blogspot.com/2014/08/polscy-studenci-zdobyli-pierwsze.html

pupils as well).[19] Some of these trophies were won a consecutive time, showing that selected academic units have an advantage in educating students in particular area.

The definition of quality of education and supervisory bodies

The quality of education has a broad meaning. In the discussions in Poland the experts refer to such definitions as: "compliance to standards", "satisfaction of the needs and expectations of the clients", "a process of improvement, an ability to find the best solutions". But in legal reality, the quality of education is compliance to the requirements included in the law. Regarding the pre-tertiary education these requirements are defined in the attachment to the Regulation on Requirements to the Schools and Other Units (last update entered into force in 1 September 2015).[20] The quality of education according to the Regulation is assessed in 11 dimensions:

- Schools work for the development of the students.
- The education processes help to learn.
- The student gain information and abilities described in the program basis.
- The students are active.
- The social norms are respected.
- Schools help the development of the students with the inclusion of their unique individual situation.
- Teachers cooperate in planning and implementing education process.
- The value of education is promoted.
- The parents are partners of the school.
- Local context is important.
- Schools adjust to the national exams.

The primary and secondary schools are audited by the *kuratorium*, which is the supervisory unit at the level of voivodship. The *kuratoria* basing on the Act on Education from 1997 have a set of measures to control the quality in the pre-tertiary education system. The Regulation on the Pedagogic Supervision from 7 October 2009 defines the supervision in three dimensions:

- Evaluation (of the effects, of the process, of the general functioning of the school in the local environment, and of the management of the school), which takes place in a school. In the case of a negative assessment in one of the fields the director of the school is obliged to prepare an improvement program.
- Inspection, which is a more targeted form of supervision.
- Support (which includes providing the information, best practices in the region, organization of the seminars to the directors of the schools).

Internally the quality of education is supervised by the directors of schools. The director supervises the teachers and supports them in improving the quality of education.

[19] http://scienceinpoland.pap.pl/en/news/news,397100,polish-triumph-in-the-logical-games-championship.html
[20] http://men.gov.pl/wp-content/uploads/2015/08/zalacznik.pdf

The quality of tertiary education system is regulated relatively in a different way. First, the Regulation on Conditions to Conduct Studies in Particular Major and Level of Education updated in 3 October 2014[21] specifies, that academies are required to have their internal self-evaluation systems (which includes as well the opinions of the students) in order to enable a school any functioning.

Second, the only statutory body to supervise the tertiary education units is the Polish Accreditation Committee (in Polish: *Polska Komisja Akredytacyjna*). It is independent institution, but established in 2002 by change of the Act of Law on Higher Education in 20 July 2001. It has powers to conduct an assessment of the studies (1st, 2nd and 3rd cycle, postgraduate programs) in context of compliance to the requirement to provide education, the completeness of the studies program, the relevance of the filed/major/faculty in the mission and the strategy of the academia, the effectiveness of the internal mechanisms improving the quality, the scientific activity, the level of "internalization" of the studies and last but not least the adjustment of the study process to the labor market needs (internships; inquiries among the employers and graduates).

Evaluations conducted by this institution are obligatory and it is crucial to the academia to function. When the committee assesses negatively, the Minister of Higher Education may suspend or withdraw this academia the authorization to educate in a given field of study or in a program and at a given level of study. The committee gives the Minister the conclusions and opinion arising from the assessment of the academia. It also may formulate its opinion on the changes in legal acts on higher education.

Key performance indicators

The most important key performance indicator in the pre-tertiary system is a standardized national testing at the end of each stage of education (at the end 6th grade of lower primary school, at the end of 3rd grade of *gimnazjum* and at the end of 3rd/4th grade of *liceum*).

The standardised 6th graders' test consists of two parts – polish language and math as one part and foreign language as the second part. The results of the test are decisive recruitment made by the *gimnazja*. The better results the higher likelihood to be accepted by chosen *gimnazjum*.

The *test gimnazjalisty* consists of three parts: subjects: humanities (altogether), science (altogether, including math) and a foreign language. The results of the test are decisive recruitment made by the secondary schools. The better results the higher likelihood to be accepted by chosen secondary school.

The *matura* (at the end of secondary school) consists of the set of exams. The set of exams is divided into two difficulty levels (i.e. Polish language basic test and the Polish language). Additionally some of them are obligatory (basic difficulty level of the Polish language, math and foreign language), while the rest (including both difficulty levels of i.e. physics, geography, history etc.) are voluntary. The pupils however generally pick more exams than the obligatory ones. The reason for this is that the academia are obliged to use the test results as a decisive criterion of entry, they however may choose the results of which tests are considered during the recruitment process (for instance the economic faculties generally

[21] http://isap.sejm.gov.pl/DetailsServlet?id=WDU20140001370+2014%2410%2410&min=1

require: basic or advanced math, basic or advanced geography or history and basic or advanced foreign language tests).

There exist rankings of the schools, which somehow reflect their quality of education. They are however private, but publicly available. The ranking of *gimnazja* is prepared by the local specialized websites[22] but also there are some specialized media portals assessing the *gimnazja*,[23] however these ranking do not list all the gimnazja in Poland, abut only the top ones.

The rankings of licea are only published by the private media portals; the most recognizable one is available at www.perspektywy.pl.[24] It mainly takes such criteria as:

- Achievements in „Olimpiada"
- National tests results (obligatory subjects)
- National tests results (voluntary subjects).

The exceptional results, i.e. winners of the *Olimpiada* (in lower, upper primary and secondary schools) in a particular field, only indirectly affect the schools approach towards quality of education.[25] The award in *Olimpiada* (depending on the field) implies the maximum of points obtained by the pupil in a particular type of the standardized national test. In this context there exists a special ranking of *licea*, that "produce" Olimpiada winners (top 200 *licea* in Poland) and winners of the international Olympic challenges.[26]

There exist national (but private) rankings of the academia and faculties (published in www.perspektywy.pl). The methodology of this ranking is much more complex and it consists of the following indicators:

- Innovativeness
- Scientific effectiveness
- Academic prestige
- Scientific publications
- Scientific potential
- Internationalization
- Employers preferences
- Studying conditions

[22] For instance the ranking of Warsaw's *gimnazja*: http://www.nauka.com.pl/gimnazja.htm or http://egzaminy.edu.pl/index.php?option=com_content&view=article&id=1017.

[23] For instance a ranking presented by the Dziennik Gazeta Prawna (http://serwisy.gazetaprawna.pl/edukacja/artykuly/862629,sprawdzian-szostoklasisty-2015-ranking-najlepszych-gimnazjow-w-polsce-w-czolowce-szkoly-katolickie.html) or a subjective and biased by the input of the internet users assessment on the webpage: http://www.ocengimnazjum.pl/ranking,

[24] http://www.perspektywy.pl/portal/index.php?option=com_content&view=article&id=1948&catid=156&Itemid=319&strona=1

[25] http://wyborcza.pl/1,75478,17485119,Olimpijczyk___teoretyczna_tylko_duma_szkoly__Nie_ma.html

[26] http://www.perspektywy.pl/portal/index.php?option=com_content&view=article&id=1946&catid=156&Itemid=339&strona=1

Public financing

In general the public financing is not linked with the quality or labor market results in primary and secondary education. It is more complex regarding the tertiary education. The Polish Accreditation Committee, when assessing the academia and faculties gives one of four notes:

- Outstanding rate: This result is valid eight years and enables the academic unit to apply for special purpose funds to further improve quality for three years.[27]
- Positive rate: this result is generally "expected" and it is valid for six years.
- Conditional rate: the academic unit needs to apply corrective measures, with special regard to internal quality assurance system. The progress is verified usually in one year.
- Negative rate: the Minister responsible for Higher Education may suspend or withdraw a license for a specific field of studies. It thus loses money ring-fenced for a specific field of study.

Less impact on financing have labor market results. In fact, the government is aware of the fact, that it is difficult to transpose the education on the performance of the graduates without considering the variety of the local and regional labor markets. Also, the Ministry of Higher Education cannot prioritize only current labor market results over the long-term effects. Thus including a labor market results into financing mechanism is not priority at the moment. But it somehow exists in a part of funding co-financed by the Structural Funds (higher employment of the young graduates as one of the goals to achieve).[28]

Challenges and lessons learned

A general challenge for measuring the quality and labor market results of entire education system is the lack of one comprehensive database under auspices of the government (i.e. both the Ministry of Education or Ministry of Higher Education), which would consist of the extensive set of indicators. Currently, the data are fragmented, available in several sources instead of a comprehensive one.

Regarding the labor market there is still a potential to enhance cooperation between the academia and employers. The students as well as the employers do not feel that the graduates are prepared to start jobs. The simplest way to do it is to encourage both to offer the students a real value added internships, domestically or abroad.

In this respect, regarding the secondary education, there should be more focus on reviving the vocational schools. The problem with it is that the potential teachers are not eager to work in a school, when they are better rewarded just by working in their specialization (as i.e. car mechanic, electrician). Additionally, there is a problem in inspiring pupils towards entrepreneurship. One of solutions to this was an establishment of an "entrepreneurship" class, but it is only a halfway measure as many of the teachers of this particular major do not have any experience in practical entrepreneurship. The government should attract the entrepreneurs to give at least some occasional speeches or lecture or to invite the classes to the firms to show how the business is conducted.

[27] http://www.nauka.gov.pl/aktualnosci-ministerstwo/stawiamy-na-jakosc.html
[28] http://www.kapitalludzki.gov.pl/power/o-programie/

ANALYSIS 4: Measuring quality and labor market results in education – Case of the Czech Republic

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October 2015

Summary

Q: Overview of indicators used for measuring the results of particular schools. The results may include national testing (mainly for primary and secondary education), but also labor market data (for secondary and tertiary education), plus any other performance indicators that might be used in your country. Particularly we would be interested if there is any system for measuring the value added of particular schools, and if there are any data available about average wages and unemployment rates of graduates of particular school/program.

A: Does not really exist, performance indicators are usually collected. Some schools will publish data on how their former students are doing, but it is usually impossible to verify this (the reporting format is most often like: X% of alumni is employed, the median salary is Y CZK)

Q: Information about if and how the results impact the financing of particular schools.

A: Not at all, schools are financed by the number of students, the only time when performance is looked at are research grants.

Q: Overview of tools informing the public about the results. We would be mostly interested if there are any school rankings in the country. Please, mention also if there is any information about results provided to the schools internally, i.e. without making it public.

A: No comprehensive system exists, while secondary school exams are partly centralized, the reporting system is intentionally made in a way that does not enable the creation of school rankings. Once again, some schools may publish data on how their graduates are doing.

Q: Overview of key challenges discussed in the country. We would like to know if there are any plans to move forward in this respect and what are the main barriers to do so.

A: The greatest challenge is the direction in which the educational system should be moving, i.e. having an educational system that is working in the 21st century. Main barrier to do so is lack of consensus how the educational system should be changed.

Primary education

Compulsory education in the Czech Republic is currently set at 9 years and pupils may spend all of them in primary schools.

There is no formal examination at the end of primary school, pupils receive end of year grades as usual. It probably does not need to be said that chances of someone with only primary school in the jobs market are quite poor.

Secondary education

There is a great range of secondary schools of various types in the Czech Republic. The most prestigious are High schools which students attend for 8, 6 or 4 years (it depends on how early they leave the primary school).

State leaving exams (maturita)

Since 2010 there is a partly unified secondary school leaving exam. Part of the tests is unified for the entire country; part is done by the schools. There are two levels of this exam, but since very few students take this option, it is quite irrelevant (a few universities have promised admission without exams for students passing this exam with good marks, but very few students are willing to take the risk).

Passing this exam is a mandatory condition for being accepted at a university. However, since one exam is used for a wide spectrum of schools starting from various craft schools, to grammar schools, the test is simply too easy to serve as anything more than that.

The results are published online which allows to look for specific schools or a set of other results, the system however is intentionally designed as to make a creation of a “top list” of best schools very difficult. In fact the head of the exam authority has called any attempts to rank schools as deeply misleading.

National comparative exams, commonly called Scio tests

Scio is a private company that focuses on the educational sector, it offers various courses, tutoring, etc. but for the purpose of this study, the most interesting the company does are these tests.

By now, this is the most common method used by universities for admissions, test takers are sorted by their percentile rank and individual faculties will then decide their admission criteria according to their needs. Scio offers several variants of the test, most universities base their admission on the common study aptitude test, which is supposed to not test for knowledge but the general ability to think and solve problems.

Tertiary education

Both public and private universities exist, but unlike many other countries, the public ones are considered a good deal more prestigious than their private counterparts. In fact quite a few of the

private schools are considered to give nothing more than a degree to their students. To explain the existence of such schools, it should be noted that having an academic degree is considered highly prestigious socially in the Czech Republic (many people will put all of their academic degrees on their doorbells for example) and having a degree is also condition sine qua non for almost any non-menial employment by the state.

There is no tuition at public universities now, there have been attempts to introduce it, but those attempts have been met with strong protests which have prevented the adoption of tuition fees. Private universities are of course free to set their tuition as they wish.

Study at university is ended by a comprehensive exam which differs by schools, but there is always a thesis defense and usually an oral exam. The marks received on this exam are completely irrelevant, employers do not usually ask about them. This can be said about school marks in general, employers simple do not care; there is no equivalent of the all-important GPA as it is in the USA for example.

There are several variants of the tests, some test knowledge of particular areas, but most faculties use the common study aptitude test which is supposed to measure the ability to study, not knowledge.

Oversight of educational system

There are two institutions that monitor the individual schools. Oversight over primary and secondary schooling is done by the Czech School Inspectorate. The Inspectorate is supposed to evaluate the quality of education, monitor the use of state grants and compliance with laws. In reality, the inspections usually focus on easy to check formal compliance with various laws and ministerial edicts. While parts of the results are available online, they are meant primarily as feedback for the school. The Inspectorate does not have direct power over schools, but it can make suggestions to institutions ranging from dismissing a teacher or headmaster to closing down the entire schools.

Universities are monitored by the Commission of Accreditation. Like the inspection, its monitoring is based mostly on formal grounds, for example it checks whether individual universities have sufficient number of full time professors and lecturers, not whether the teaching is actually any good or whether the graduates manage to find employment. The key difference is that the Commission is much more powerful, it decides which branches of study individual universities can offer and its decisions cannot be appealed. The Commission publishes the results of individual schools on its website.

Public funding

<u>Primary and secondary education</u>

For the purposes of this study, the most important fact is that performance on the job market plays no role in determining public funding for schools.

Schools on this level are financed both by the central government and regional authorities.

Schools are allocated lump sum of money for every student enrolled. The Czech constitution guarantees free primary and secondary education for every student. Consequently, there is no tuition in public schools. Private schools do charge for education, but receive less money per student than their public counterparts; this income is guaranteed for private schools.

Tertiary education

For the purposes of this study, the most important fact is that performance on the job market plays no role in determining public funding for schools.

Most of the funding is allocated on the basis of per capita payments. There is a modifier based on how expensive it is to teach the particular study branch (for example, a medical faculty gets more money per student than say philosophical faculty).

Small parts of the funding are research grants, which make them the only part of public funding that is at least a little performance based.

Unlike at the previous levels of education, private schools are not entitled to any public funding; they may, like public universities apply for various grants.

There is currently no tuition. One of the previous governments attempted to introduce tuition, but the proposal was widely opposed and the government was forced to shelve the plans. The current government has no plans to revisit this matter.

Challenges

There are many, some more significant, some less so. Many of them are political; there is no consensus on where the Czech educational system should go between different political parties and sometimes not even inside one party. The average tenure of minister of education is only 17 months and their replacement, even if he/she comes from the same party often has very different ideas. For example the last minister wanted to introduce mathematics as a compulsory subject at maturita as fast as possible, but the current one has postponed it several times and has even stated that she is against it. Also not helping is the tendency of most ministers to make radical changes in order to “build a monument for themselves”. There are fairly frequent structural changes which tend to make things worse, not better.

Speaking of visions, the lack of consensus extends beyond politics. Many employers have been lobbying for more practical education, especially on the level of secondary schools. This has been opposed by most experts on education. This is a clash of two mindsets, one which claims that schools should primarily prepare students for work in a narrow field, the second claims that schools should primarily educate students and make them “better people” since narrow work qualifications can always be acquired later.

There is also the issue of inefficiency, most university students study for at least 5 years, since undergraduate study alone is still not considered by many to be “real university”. Since master’s degree

does not add anything of significant value to many students, increasing the number of people who study at university for just 3 years has been one of the goals of the ministry of education for some time.

Devaluation of university degrees is another commonly voiced concern, many members of the public and educational experts alike have expressed. On the other hand this has not been helped by the attitudes of both state and private sector, which tend to demand a university degree as a prerequisite to apply for any non-menial job and even for some menial ones. Universities also make this issue worse by taking as many students as possible in order to get as much state funds as possible.

Most important data sources (all regrettably only in Czech)

Analysis of the Czech statistical office on the importance of education on the jobs market: https://www.czso.cz/documents/10180/23203246/analyza_vzdelani.pdf/885d8a85-75a6-4c5b-961e-787aea2eb39e?version=1.0

Employability of the Czech university graduates: http://www.strediskovzdelavacipolitiky.info/download/Zam%C4%9Bstnatelnost%20a%20uplatn%C4%9Bn%C3%AD%20absolvent%C5%AF%20vysok%C3%BDch%20%C5%A1kol%20na%20pracovn%C3%ADm%20trhu%202013.pdf

Unemployment rates by types of secondary schools: http://www.infoabsolvent.cz/Temata/ClanekAbsolventi/5-1-04

Results of maturita exams: http://vysledky.cermat.cz/graf/Default.aspx

ANALYSIS 5: Education system in Ukraine: financing, ranking and reform directions

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Ukraine's education system requires an overhaul since it does not meet the needs of society, socio-economic development and global trends. Although the vast majority of Ukrainian population has higher education, the quality of education in Ukraine is inferior. Inadequate implementation of educational programs impedes and discourages education reform, which results in low ratings of Ukraine compared with other countries.

The quality of education in Ukraine and international rankings

According to the Global Competitiveness Report by the World Economic Forum, Ukraine ranks 31st out of 144 countries with regard to primary school enrolment, 41st in secondary education, and 13th in higher professional education.

By their nature, these indicators are quantitative and demonstrate that Ukrainians are highly educated compared with other countries. However, the international rankings that assess the qualitative aspects of education and labor, including productivity, indicate a low position of Ukraine in comparison with other developed countries.

In the global human capital index, which measures the countries annually on their standard of living, literacy, education and longevity, Ukraine ranked 84 among 187 countries in 2014, 83 among 187 countries in 2013, and was among the countries with high human capital endowment (50 – 102 places). In 2013, the Human Development Index in Ukraine reached 0.733. It should be noted that in comparison with 2012 Ukraine held steady in the ranking but it lost seven notches compared to 2011, also as many in 2011 compared to 2010 (when it was 69th).

The ineffectiveness of Ukrainian educational policy is confirmed by international world competitiveness ranking, which is calculated by the International Institute for Management Development (IMD). The competitiveness of each country is calculated by combining four factors and 312 criteria. One of them takes into account the development of education system on the basis of the share of education expenditure in GDP, expenditure on education per capita, percentage of adult illiteracy and others. According to the IMD, in 2014 Ukraine took the 49th place among 60 countries. Interestingly, its ranking has not changed compared to 2013. The highest competitiveness level is in the US, Switzerland and Singapore while the lowest one is in Croatia and Venezuela.

In Ukraine, an average salary is meagre and currently stands at about UAH 4000 per month (less than US $200), which claims Ukraine as a country with the lowest salary in Europe. Other indirect productivity indicators are also low. According to the World Bank assessment, Ukraine's GDP per capita is about US $3000 and the gross national income of Ukraine is about US $3500. This level of GDP per capita allows the World Bank to classify Ukraine as "a country with lower-middle income", equating it to countries such as Mauritania, Bolivia and Mongolia.

Despite the aforementioned high Ukraine's positions in international education rankings, the quality of education and its impact on productivity are marginal.

The reasons that negatively affect the development of Ukrainian education system and its quality are:

- Political instability in the country
- High level of corruption
- Reduction of GDP
- Inadequate funding for the education sector (protected items are mainly funded)
- Inefficient use of available resources and leverage
- Imperfect legal framework
- Outdated material and technical base
- High cost of credit
- Unfavorable investment climate
- Ineffective functioning of social and legal institutions
- 'Brain drain abroad' and others

Rating system of educational institutions

At present, there is no uniform system of rating educational institutions in Ukraine enshrined in law.

However, until February 2015, there had been "Regulations on the national rating system of secondary education" for two years. Rating evaluation results provided by the regulation were made public in the media. Under this provision, the rating system included two levels:

- Ranking of general educational institutions according to the results of external evaluation of their performance was not funded by state or local budgets and was conducted on a purely voluntary basis. It applied criteria formed in terms of secondary school participation in nationwide systematic monitoring research of secondary education quality, external testing of graduates' knowledge as well as other expert opinions.
- Ranking of secondary schools according to the results of internal monitoring of their activities, which was based on the official data of secondary school activities introduced by the Unified State electronic database on education and implemented by a special automated information system.

Currently, there are several unofficial rankings of universities in Ukraine. The consolidated rating of Ukrainian universities complied by the informational educational resource "Osvita.ua" is among them, as well as national rating "Top-200 Ukraine", international rankings "Scopus" and "Vebometryks", each of which uses different criteria for evaluating higher education institutions.

The consolidated rating of higher education institutions of Ukraine has used the most authoritative (among experts and media) national and international rankings of Ukrainian universities as the initial

data: “Top-200 Ukraine”, “Scopus” and “Vebometyiks”, each of which applies different assessment criteria. The consolidated rating summarizes universities’ ranking on the version of “Top-200 Ukraine”, “Scopus” and “Vebometryks”.

“Top-200 Ukraine” uses aggregate indicator (integral index) to assess higher education institutions. The index is based on indicators of direct measurement (80%), expert evaluation of the quality of graduates’ training by employers and academic community (15%), and international scientometric and web metric data (5%).

There are a number of information resources ranking secondary schools in Ukraine (edumeter.com.ua, osvita.ua, etc.). However, all these ratings are based on the results of the external independent testing (hereinafter - EIT), which are published by the Ukrainian Centre for Educational Quality Assessment (http://testportal.gov.ua/).

EIT aims to determine the level of academic performance of secondary school graduates during their admission to higher education. The results of external independent testing are counted as the results of the state final attestation and examinations for admission to higher education institutions. EIT system has been actively promoted in Ukraine since 2004. In 2015, tests included the following subjects: Ukrainian language and literature, French, German, Spanish, English, mathematics, Russian, biology, history of Ukraine, physics, geography, and chemistry.

Therefore, the EIT results allow school ranking by regions as well as in the context of individual disciplines.

The system of secondary school funding

Over the last two decades, Ukrainian system of secondary education has profoundly lacked financing. Under such circumstances all other issues, including updating educational content, quality of education, and teachers’ professional development, inevitably recede into the background. All these problems are generally thought to stem from insufficient funding.

Given the formal ratios, the level of education funding in Ukraine is one of the highest in the world. However, in spite of the fact that Art.61 of the Law of Ukraine “On education” defines budget allocations for education in the amount not less than 10% of the national income, it has never been applied in twenty-four years of independence. Ukraine follows traditional in crisis practice of limited use – meeting standards of education legislation to the extent that available funds allow. It is primarily due to rather inflated level of the indicator since there are few countries which spend so much on education and mostly these are island states in the Pacific Ocean: Cuba - 12.9%, Lesotho - 13.1 % of GDP).

In Europe, the highest level of education funding accounts for Scandinavian countries: Denmark – 8.7% of GDP, Sweden – 7.0% of GDP, Norway – 6.9% of GDP, Finland – 6.8% of GDP. Compared to European countries, the level of financing in Ukraine is significantly lower than in the Scandinavian countries but is about the same level as in Poland and Germany, even though the level of education funding in these countries is much higher in absolute terms.

Given absolute indicators, schooling costs to taxpayers an average €80-85 thousand in Western Europe (USD 104.7 thousand in the USA) per child. In Ukraine, where annual cost of education per pupil is about UAH 7-8 thousand, in 11 years the number amounts to UAH 77-90 thousand (given the recent devaluation of the hryvnia, this is $4 thousand).

Thus, despite the high level of expenditure on education expressed as a percentage of GDP, the cost of education per pupil in Ukraine is more than 20 times less than in Europe.

It should also be noted that there are imbalances in financing various stages of education in Ukraine, which historically originated in Soviet times. It is specifically related to relatively low share of costs of secondary education. For example, in 2014 the share of the budget for secondary education in Ukraine was 41.5% of the budget allocation for education, for higher education – 30.9%, for pre-school education – 11.7% and for vocational education – 6.2%. The remainder (9.7%) was spent on funding postgraduate education, adult education and other activities in education.

International experience suggests that secondary education is a priority object of funding in most leading countries of the world. Share of the costs of schooling there is twice as much as in Ukraine and is approximately 70-80% of the total expenditure on education.

Another problem related to secondary education financing is imbalance in funding within the system of secondary education, which leads to inefficient use of relatively small funds available. Specifically, chronically underfunded large urban schools are short-changed as proportionally much money is spent on smaller rural schools.

The significant factor causing this discrepancy is a small class size in rural areas. Existing stereotypes (like “no school – no village”) and politicians’ unwillingness to lose the rural electorate retain a highly inefficient network of rural schools.

Let us closely examine how expenditure on secondary education is set. According to Ukrainian legislation, the costs of secondary education are made up of current and capital ones. Current expenditures include salaries of employees, payroll taxes, purchase supplies and materials, etc. Capital expenditures involve acquisition of fixed assets, capital transfers, acquisition of land and intangible assets, etc. Two indicators define financing of educational institutions: the number of pupils and the number of classes. These indicators are reflected in the estimates for the two dates – January 1 and September 1. The number of pupils on January 1 is considered a contingent on September 1 of the current year. Number of students scheduled for September 1 of the planned year is based on the admission plan (pupil census in the area), grade progression and school completion.

Teaching staff salaries are based on approved payroll lists for each educational institution. Teachers’ workload, experience, professional status etc. are taken into consideration. Salaries undergo revision twice a year with quarterly indexation considering inflation. Approval of payroll lists for the new academic year is carried out until September 5 and the changes for the second half of a school year are made and improved before January 10.

Financing expenditure on secondary education is as follows. Secondary schools are municipal property and accountable to the local council. The local council approves its local budget and projects education expenditure. Then the local government budget is allocated to the treasury account of district state administration, which is subject to this local council. The budget money is sent to the district financial management through the treasury system. District department of education, which is subordinate to the district administration, receives budgetary funds from district financial management through the treasury system, which are distributed to schools in the future. District department of education is the main manager of budgetary funds for educational institutions. All educational institutions are served in the district department of education. It means that they do not have their own accounts in the treasury system. Schools have both budgetary and extra-budgetary accounts in the district department of education. So, it means that a process of school management and financing is centralized, as well as accounting schools. District department of education funds all schools that are subordinate to the department. Extra-budgetary activities of educational institutions are practically non-existent.

After Ukrainian revolution of dignity, along with other reforms, education reform accelerated. The change in the system of secondary school system is one of its outcomes. Consequently, in 2015, financial support for Ukrainian schools is based on the principle of providing **education subvention**. The need to ensure equitable funding for all schools, regardless of region, has caused changes in the system of school funding.

Previously, schools were funded from local budgets. By and large, local budgets allocated available funds and they obtained additional funds as a subvention to finance what they lacked. The situation varied in different regions as some of them could fully fund schools and some received grants at 80% or even 90%. At the same time, providing school education is the state's responsibility. School funding and a child's right to quality education cannot depend on whether they live in a rich or poor region.

School funding will now be provided through an education subvention. Specifically, all school funds will be channeled from the Ministry of Education and Science directly to regions and districts, where they will be distributed under the proper formula. The same principle of state subvention applies to personnel training.

The changes in the education reform also influenced the following financial aspects of secondary education:

- *School closures.* The local council will be able to close rural schools without the consent of general meeting of territorial community or referendum as it was before. Also, at least five pupils are necessary to form a class in rural schools. However, the Budget Law allows for this provision and group size in kindergartens, given the available funds.
- *Salary.* The sequence of bonuses and additional payments is cancelled.
- *Pension.* The pension of scientific and teaching staff drops from 80% to 60% of the relevant income, which is calculated in accordance with pension legislation.
- *School meals.* School meal provision is the responsibility of local budgets or, in fact, pupils' parents. Parents will pay more for children's meals in kindergartens: at least 60% in urban areas

and 40% in villages. Previously, these indicators constituted less than 50% and not more than 30% respectively. In primary and vocational schools, school meals are free only for orphans, disabled children, children deprived of parental care and children from poor families.

- *Reduced fares.* Since June 1, 2015, free travel for preschool children, pupils and teachers in rural areas has been cancelled. Instead, local authorities may provide reduced fares for pupils, students and teachers to their places of study. Cutting reduced fares does not apply to disabled children, orphans, children deprived of parental care, pupils from low-income families and those who accompany them.
- *Purchasing textbooks.* Complimentary provision of textbooks at school is guaranteed only for orphans, disabled children, children deprived of parental care and children from low-income families.
- *Bureaucracy.* The ministry of Education and Science, like other central executive authorities, have to fire 20% of their employees and take other austerity measures.
- *Reallocation of expenditures between budgets of different levels.* Since 2016, village and town budgets will not provide funding for primary education (for pre-school education since 2015). Alternatively, they will be referred to a higher level – district budgets, budgets of regional significance and budgets of united local communities. Funding for methodological and logistical support of educational institutions has been cut by more than a half.

Future directions of reforming the school system

The central issue in the context of school reform is enhancement of cost efficiency. Above all, it is necessary to begin to count return (profitability) of expenditure on education otherwise economic efficiency of schooling is unlikely to be achieved. The most common indicators of internal economic efficiency of schooling are set out below:

- Overall costs and share of spending on a particular level of education
- Spending per pupil
- Average cost per class and average class size
- Ratio of students and teachers

The chosen indicators are seen as the centerpiece in the course of school education reform in order to achieve European level. In general, financing education in Ukraine does not meet the purpose of its existence due to only line-item budgeting and lack of budgeting aimed at the result. The introduction of program budgeting will enable educational institutions to submit their draft budgets as draft business plans.

The major directions in school reform are the following:

1. Transition to direct school funding per capita – “money follows a child”. The ratio of financing per pupil determined by the average of last year and adjusted to inflation is only a method of calculating the overall city or district budget. Financing system based on the total subsidization

of city or district is ongoing in Ukraine, so the “channelled” money does not go to school. Private schools do not receive budget money in accordance with the number of children, although the funds are allocated to all school age citizens of Ukraine by the regulation.

2. The changes in the system of remuneration of teachers and school heads and the growth of stimulating factor. As long as an archaic “lesson” system to calculate the amount of salaries (wage rates) operates, there is virtually no difference in principal and teacher’s payment.
3. Promotion of school autonomy in financial and economic sphere and decentralization of education systems.
4. Encouraging public participation in school management and transition to a socially-state model of education management. In Ukraine, formally existing public bodies still play a purely decorative role.
5. Consolidation of school network. So far, optimization of the network in Ukraine implies closing schools, which is rapid enough. The school system continues to irrationally use financial resources (half-empty rooms, payment to too many teachers, etc.).