

INCREASE OF POLES EDUCATION AS IMPROVEMENT THEIR VALUE ON THE JOB MARKET - SHORT TERM FORECAST

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Abstract: Article takes up the issues of education, especially at a tertiary level - of up-skilling of workers in Poland. The other countries in the European Union and countries associated with it as a point of reference was adopted. The aim of this study is to assess the accuracy of the changes in Poland in relation to educational policy, which translates directly to the attractiveness of the Polish labor market. The study was based on information from Eurostat and national publications. Spatial – historical analyses were used as a basic research and forecasting tool.

Key words: spatial – historical analyses, tertiary education, forecasts.

Introduction

In an environment of continuous economic growth and increasing growth in the use of modern technology, knowledge possible to use in the creation and in the absorption of these solutions is of great value. This knowledge is often defined as the source for all kinds of innovations, news and any new solutions to facilitate people's lives in terms of usability but also complicated due to the advancement of processes creating these solutions. On the one hand, consumers of those products or services do not try to understand the mechanisms of their formation - often limit their benefit to only a fraction of the possibilities provided by the product. On the other hand, the demand for people with a high level of expertise in the respective field - professionals - who help resolve possible problems or create a new product for the market in response to emerging needs increases. Thus, the role of knowledge in the development of society grows. What is more, this knowledge is widely used in the work, which is more often the "a scarce good". Not only is the result of the work itself a technology that requires having the knowledge. In a much greater extent, the knowledge is needed to produce this product. It not necessarily have to be the knowledge itself, but rather a collection of highly specialized information which, in conjunction with the general knowledge and experience determine the success of an employee on the job market.

Status and development of science and education of the society, are factors which determine the quality of human resources. The level of scientific culture can be a decisive factor in the competitiveness of our economy. For years, the resources devoted to educational development are limited. It is known that the funds disbursed for this purpose do not give a rapid payback. Science and education can give effects even after many years. Progress in science and education is the beginning of progress in all other areas of the nation. The twentieth century,

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especially its second half, was a period of increasing importance of science and techniques. Material goods, which formed fortunes and prestige of classes, have passed into history. Science practiced to satisfy curiosity of previous centuries now is forged into practical application for the development of social and economic wellbeing.

The aim of this study is to assess the accuracy of the changes in Poland in relation to educational policy, which translates directly to the attractiveness of the Polish labor market. The study was based on information from Eurostat and national publications. Spatial – historical analyses were used as a basic research and forecasting tool.

Development of human resources in the Polish educational system

Human society is constantly developing and specialization of production becomes more and more extensive. Along with this go the increasing requirements for potential employees. The period of favorable industrial society passes and gives way to the information technology society based on services sector, and sectors of modern technology. This means that the transition to a different, higher quality of life is based on the new challenges of the knowledge society. Currently the information in conjunction with the modernity exacerbates human capabilities, thanks to surpluses intended for development. These opportunities increase as modern solutions to achieve unprecedented business results are provided. This is possible through the continuous development of science and knowledge of what policy makers should not forget even when the state is struggling with some difficulties. Additionally, requirements for institutions training future employees, especially universities grow and change in response to the rapidly transforming labor market.

Observed increase in the number of higher education institutions in Poland, particularly at the end of the twentieth century, translated into a prominent expansion of the educational offer. Non-state universities have been established, and almost all state universities launched part time, weekend and extramural courses. This trend, together with some saturation of the market, the pauperization of society and increasingly noticeable demographic decline and the aging of population, has reversed. Today we see the continued reduction in the number of higher education institutions, their liquidation or merger. Development of higher education (public) was done at the expense of very low expenditures on education. Expenditures per student in Poland are still several times lower than in the old EU countries and tens of times smaller than in the best American universities.

Training of human resources is one of the methods of elimination of social inequalities and therefore society must save maximum funds for this purpose. European Union member states attach great attention to the quality of staff and therefore both education and research are supported by far greater financial resources, which brings the corresponding effects in the form of increased prosperity and the level of civilization development.

One of the key determinants of the development of education and science is the way, as well as the size and structure of financing of science and education. In the case of European countries, we meet with a great variety of approaches to this topic.

Relatively the lowest funding for education in the analyzed European countries was allocated by Greece, while the highest by Finland. The imbalance increases even more if we take into account the number of inhabitants of a country and the level of GDP.

Even the most similar to Greece concerning the level of affluence of the state - Spain spends 30% more on education. It is worth noting that Poland, despite of its low level of GDP in general, seems to finance education similarly to Germany. However, it should be noted that in this respect, Germany is not a leader in Europe - mainly due to catching up in the eastern states - resulting from past conditions in the former GDR areas and the need to liquidate them. Of course, taking into account the expenses also the age structure of a country, which plays a major role in allocating funds for education, should be analyzed. To some extent it depends on the number of "young people" - undertaking education in schools from the lowest level to tertiary education.

Subjects taught in the EU countries are basically the same, but their contents differ. For instance in the Latin countries humanities have greater importance because of their cultural tradition. The exception is France, where mathematics was awarded a special rank and serves as a criterion for the selection of a school. In contrast, pragmatism in education, which finds its expression in a particular rank granted to sciences, is visible in the Northern European countries: Denmark, the Netherlands and Germany.

Strengthening the current system of career guidance and counseling and evaluation of existing solutions in this area requires the creation of linkages between systems, guidance and counseling, and vocational education and training, as well as greater involvement of the social partners. Due to the different levels of development of services in this field in the member states of the Union, it is necessary to examine existing structures in order to develop a reform of vocational guidance. Advisory services should cover the whole Europe and provide information about opportunities to study and work at the European level. Attention should be drawn to the role of cooperation between private and public in the field of career counseling.

Another concept is the introduction of new technologies NT into schools aimed at preparing young people for independent, creative work and to lifelong learning. An important element is the reform of orientation and pedagogical counseling and training related to the preparation of young people for more effective and accurate choice of profession, in accordance with their own aspirations in life and society.

Between 2007 and 2011 a study on among other things, identifying barriers to access to education was conducted. In 2007 IV and VII barriers (23 indications) were the most frequently mentioned and those with the largest share (as measured

by median) were VII, VI and IV - respectively 20.9%, 19.5 %, and 16.9 % of respondents. In studies repeated after four years there have been new categories - I and II, which took over large part of indications. The median for the category was almost 38.3% and for the next VII 12.55. In total, these two barriers currently cover more than half of the indications in the European countries. This means to a large extent reaching certain - high - level of qualifications/education in the studied countries, or lack of awareness, or discouragement in this regard. This confirms that the old EU countries (15) indicate this barrier in 29.7 % of cases on average, while EU members, which joined later in 51.8 % of cases. This may also be the result of lack of adjustment of the education system, training, studies to the requirements of the labor market, which translates into a lack of understanding of the needs of education.

Higher education shall be treated as a starting point towards a career for young people. Increasingly, attention is drawn to the need to use the knowledge and experience of technical staff in research and implementation (Marek and Białasiewicz, 2008). The analyzes of the level of staff training, especially in the field of adult education, the rate of people with tertiary education in the group 25-64 years (until recently treated universally as economically active) is taken into account.

Human Resources for Science and Technology

It is assumed that human resources for science and technology (HRST) represent quite a large percent of people employed in highly developed countries. In the European Union is about 40.4% and the percentage is slowly but steadily increasing. This results first of all from the increase in the level of education, second from the development of R & D sector in all countries. Moreover, it should be noted that as the service sector at some point began to displace the production sector, so called high-technology industries slowly displace more traditional and somewhat outdated production departments and services. In the European Union average of HRST employment in the sectors of high technology is already 61.3 % and in some countries - Sweden - 75.4 %, Finland - 71.8 %. In practice, all countries observe an increase in this indicator (Szajt, 2010). The exception is Lithuania. While Estonia and Bulgaria observe the slight decline of that share (treated as a short-term correction), whereas in the case of Lithuania, the decline is 2.3% per annum and also concerns - which is surprising - the share of employment in high technology sectors , where it declines by 1.5 % per annum and is now one of the lowest - hardly 48.0 %. Only in the knowledge-based services, this share is 69.6 %, which is higher than the EU - 64.9 % (Evangelista and Sirilli, 1998). However, it is a non-specific situation, because this ratio is relatively diverse in EU countries and ranges from 60.1 % in Austria to 73.0 % in Greece.

Regarding the place of work, among employees qualified for HRST up to 45% were employed in education, health care and social assistance. People employed in education were counted for HRST in 74.0% (EU average). The highest

employment in this group is assigned to Luxembourg - 92.75, and the lowest in United Kingdom - 58.7%. In the group of countries that joined the EU in recent years, only four - have rates higher than the EU average - Slovenia - 80.0% as well as Cyprus, Malta and Romania (Meri, 2008). In the health sector and social assistance an average of 53.6% of people belonging to the HRST were employed. The highest employment rate was observed in this case in Poland 70.6%, and the lowest in Portugal - 33.6%.

Short-term forecast the level of education in Poland

Thanks to information regarding the formation of the level of education, measured by the share of people with tertiary education, in a population of European countries, it is possible to estimate the likely size of the variable for Poland. 19 European countries where there has been most comparable course of changes of the share of people with tertiary education in the 15-64 age group served as analogous states. As for Poland, the period 2004-2013 was adopted as a reference point. As a result, figures for the other countries for the period 2000-2009 were compared. Data from the years 2010 - 2013 will be used to create exposure forecast for the years 2014-2017 for Poland.

The average age of initiation of study both general and industrial is highly diversified in Europe. It varies from 19 years in Belgium for 25 years in Portugal, when it comes to first degree studies - theoretical and nearly 20 years in Romania to 34 in the UK in relation to professional studies. Interestingly, in some countries (Greece, Cyprus, Malta and Romania) the average age of students beginning vocational studies is lower than people taking up scientific studies.

Selected countries were analyzed because of the similarity with Poland in the shaping of the tested variable in time. A careful analysis of the data reveals the similarities of selected countries in terms of number of students. As a measure of comparison were used Pearson's correlation coefficient and the Theil index (coefficient of discrepancies) (Szajt, 2006). The latter was determined assuming that the empirical values for the dependent variable for Poland y_t are actual values of the variable y in the period " t " while the empirical values of the particular states y_{ip} are accepted as forecasts for the period " t ".

The most important component of this error in our analysis are indicators I_3^2 - which is responsible for the lack of shape similarity between the level of the studied phenomenon in Poland and the proposed states in the studied periods of time, and I_2^2 - which is responsible for lack of adjustment of projections flexibility to actual fluctuations in forecasted variable (Kukuła, 2000).

These coefficients (Table 1) for all countries are at a reasonably low level.

The following form of model was proposed:

$$SPTE_t = \sum_{k=1}^{19} [w_k \cdot (X_{k,t-i} + \Delta_k)] \quad (1)$$

when:

$SPTE_t$ - share of people with tertiary education (aged 15-64) in Poland,

$X_{k,t-i}$ - share of people with tertiary education (aged 15-64) in the country i in the period $t-i$,

w_k - the weight of the participation values of the individual countries in the global forecast for Polish.

Table 1. Fit time series for individual countries and Poland

Measure Country	r_{xy}	I^2_1	I^2_2	I^2_3
Belgium	0,984	0,02587	0,00059	0,00006
Czech Republic	0,974	0,01383	0,00119	0,00006
Estonia	0,966	0,02491	0,00069	0,00011
Ireland	0,997	0,01968	0,00017	0,00002
Greece	0,979	0,00003	0,00034	0,00009
Spain	0,979	0,01524	0,00037	0,00009
France	0,991	0,00912	0,00054	0,00003
Italy	0,992	0,01627	0,00065	0,00003
Cyprus	0,954	0,02656	0,00005	0,00026
Latvia	0,942	0,00000	0,00026	0,00026
Hungary	0,984	0,00378	0,00058	0,00006
Malta	0,930	0,01904	0,00031	0,00030
Netherlands	0,953	0,01631	0,00005	0,00026
Portugal	0,972	0,01586	0,00046	0,00011
Romania	0,983	0,02278	0,00119	0,00004
Slovenia	0,964	0,00093	0,00005	0,00020
Slovakia	0,985	0,01503	0,00067	0,00005
Finland	0,974	0,03783	0,00100	0,00007
Switzerland	0,984	0,01451	0,00002	0,00009

Predictions marked with using linear trend give slightly more optimistic results. However the forecast by analogy, use a lot more hypothetically more reliable, information. Based on these forecasts (Table 2) can be assumed that in 2016 the share of people with tertiary education (aged 15-64) in Poland will exceed 25%. The forecast has been prepared on the assumption that education policy is shaped like in similar (in this respect) economies of other European Union countries. This result is more cautious than forecast resulting from the trend. Indicates that the next few years the share of people with tertiary education in Poland will grow at a rate of 3.7 % per year (instead of 4.2% as a result of the trend analysis).

Table 2. Forecasts by analogy and with the use of a linear trend for the share (%) of people with tertiary education (aged 15-64) in Poland in 2014-2017

year	Forecasts:	
	By trend	By analogy
2014	23,46	23,33
2015	24,52	24,22
2016	25,59	25,15
2017	26,66	26,18
average annual growth rate	4,22%	3,74%

Summary

Past trends in educational policy in Poland, especially in the first years of transition, despite some chaos, went in the right direction. The emerging competition in the market of educational services in conjunction with their extension in general, influenced the development of the level of education in the country. Access to higher education with increasing supply definitely improved. Unfortunately, sometimes the quality of education began to decline. One reason was a lack of adjustment of already existing courses to the realities of the market. We are seeing a continuing adjustment of training and education offers to market needs. However, due to legal impediments, some of the solutions are being implemented too long, causing on the one hand, deficiency of education industry while offering a high level of education of part of unemployed.

The results of forecasts - for the participation of people with tertiary education in society - indicate its slow growth in the coming years. It can be assumed that it will increase in the direction of education in the fields for which demand from the labor market continues to grow. However, taking into account the macroeconomic situation in Europe and in the world, and the system of education in Poland, one should be skeptical about future. Barrier to the development of human resources are constantly limited financial resources from the interested parties, as well as from the state, which is a coordinator of the whole system.

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WZROST POZIOMU WYKSZTAŁCENIA POLAKÓW JAKO POPRAWA ICH WARTOŚCI NA RYNKU PRACY – PROGNOZA KRÓTKOTERMINOWA

Streszczenie: Artykuł podejmuje kwestie kształcenia - zwłaszcza na poziomie wyższym - jako formy podnoszenia kwalifikacji pracowników w Polsce. Jako punkt odniesienia przyjęto pozostałe państwa Unii Europejskiej i z nią stowarzyszone. Celem opracowania jest ocena prawidłowości zmian w Polsce w odniesieniu do prowadzonej polityki edukacyjnej, która przekłada się bezpośrednio na atrakcyjność Polaków na rynku pracy. W pracy wykorzystano informacje pochodzące z Eurostatu i opracowań krajowych. Jako podstawowe narzędzie badawcze – prognostyczne – wykorzystano analizy przestrzenno-historyczne.

Słowa kluczowe: analizy przestrzenno-historyczne, wykształcenie wyższe, prognozy.

增加的两极教育作为改善他们的价值在就业市场上-短期预测

摘要: 文章占用问题的教育，特别是在第三级在波兰的工人提高技能。通过在欧洲联盟的其他国家和作为一个参照点与它关联的国家。这项研究的目的是评估的准确性波兰就转换为直接向波兰劳动力市场的吸引力的教育政策的变化。研究基于来自欧盟统计局和国家出版物的信息。空间—历史分析被用作一种基础研究和预测工具
关键字: 空间—历史分析、专上教育、预测