

## **EDUCATION OF PEOPLE WORKING IN POLAND VERSUS OTHER EUROPEAN UNION COUNTRIES**

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### **A b s t r a c t**

Education plays a special role in the construction of a modern knowledge-based economy. The increase in the educational level of the population is a chance for a faster social and economic development of any economy. The level of education also determines the quality of the individual and is important for their position in the labor market.

The aim of this study is to show the role of education in shaping employment in Poland compared to other European Union countries in the years 2005–2014. The analysis makes it possible to positively assess qualitative changes in the structure of the employment stock in Poland. In the period under study, the share of employees with low educational attainment decreased in a fundamental way, while the share of employees with higher education increased significantly.

## **WYKSZTAŁCENIE OSÓB PRACUJĄCYCH W POLSCE NA TLE INNYCH KRAJÓW UNII EUROPEJSKIEJ**

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### **A b s t r a k t**

Wykształcenie odgrywa szczególną rolę w budowie nowoczesnej gospodarki opartej na wiedzy. Wzrost poziomu wykształcenia społeczeństwa jest szansą na szybszy rozwój społeczny i gospodarczy każdej gospodarki. Poziom wykształcenia decyduje także o jakości kapitału jednostki i ma znaczenie dla jej pozycji na rynku pracy.

Celem opracowania jest ukazanie roli wykształcenia w kształtowaniu zatrudnienia w Polsce na tle innych krajów Unii Europejskiej w latach 2005–2014. Przeprowadzone analizy pozwalają na pozytywną ocenę jakościowych zmian zachodzących w strukturze zasobu pracujących w Polsce. W badanych latach w sposób zasadniczy zmniejszył się udział pracujących o niskim poziomie wykształcenia oraz wzrósł udział pracujących z wykształceniem wyższym.

## Introduction

The level of education of society plays a special role in the construction of a modern knowledge-based economy. The increase of this level is a chance for faster social and economic development of any economy, and improves its competitiveness. The level of education, along with the qualifications and professional skills, determines the quality of the individual and is important for their position in the labor market.

The aim of this study is to show the role of education in shaping employment in Poland compared to other European Union countries in the years 2005–2014. The analyses conducted will make it possible to assess qualitative changes in the structure of the employment stock from the point of view of the level of education in Poland in relation to other Member States, particularly those who are highly developed. The analysis will verify the hypothesis that in modern economies the demand for workers with a high level of education, knowledge and skills is increasing, due to their adaptive qualities in conditions of dynamic changes in the labor market, high productivity and creativity, while the demand for people with a relatively low level of education and professional qualifications is falling.

To verify this hypothesis, Eurostat data were used for the years 2005 and 2014, showing the share and changes in the share of employed persons aged 15–64<sup>1</sup> in the overall employment stock in Poland and the other 28 EU countries, having three different levels of education: low, medium and high.

The structure of the study is as follows. After introductory remarks, the second part discusses the main assumptions of the human capital theory, which in particular stresses the importance of education in shaping the position of people in the labor market. The third part contains an analysis of the statistical data showing the relationships between particular levels of education and employment in Poland and the other EU 28 Member States.

The conclusions section presents the most important findings of the conducted analysis and determines the direction of further research.

### Education in human capital theory

The human capital theory<sup>2</sup> was conceived and developed in the United States in the 1960s. It emphasized the importance of the quality of this capital

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<sup>1</sup> The age 15–64 sets a working age limit as defined by Eurostat and used for international comparisons (*Aktywność ekonomiczna...* 2016, p. 22).

<sup>2</sup> The birth of the human capital theory was announced in 1960 by T.W. SCHULTZ (BLAUG 1995, p. 303).

in the process of socio-economic development and for the situation of individuals in the labor market. The creators of the theory of human capital, T.W. SCHULTZ (1961), J. MINCER (1958), and G.S. BECKER (1962), stressed the heterogeneity of the workforce, which is reflected in the diverse productivity of employees, due to a different state of ownership of human capital variables. These variables include, according to T.W. Schultz, primarily the education level, but also knowledge, skills, health and the vital energy of individuals and society as a whole. According to J. Mincer, the length of the education period and training at the workplace are important for the growth of human capital and these elements affect the differentiation of income from work.

G.S. Becker stressed the importance of investment in human capital, i.e., taking such measures which will increase the stock of this capital. Investment in human capital may, according to Becker, take various forms, e.g., learning in school, higher education, postgraduate studies, continuous training during the course of professional work, as well as health care. BECKER (1975, p. 17, 18) distinguishes general training and firm-specific training. General training increases the universal skills of workers and their productivity for the company for which they are employed, as well as for other companies. Firm-specific training leads to an increase in the so-called stock of job-specific human capital, which increases productivity only in the company organizing the training, which is to ensure an increase in its profits and further development. According to Becker, investments in human capital are taken in a conscious way by people, with the aim of future higher incomes and greater opportunities to find work, as well as a smaller probability of the outflow from employment to unemployment (KWIATKOWSKA 2007, p. 30).

Subsequent further theoretical and empirical research has shown that investments in human capital are also essential for the level and dynamics of economic growth, which is the basis for increasing the prosperity of the entire society (KRYŃSKA, KWIATKOWSKI 2013, p. 145–157).

The high quality of human capital and its continuous development along with the increasing propensity of economies to generate progress, investments in the sphere of science, the research and development sector, in the development of a modern system of education and teaching, adapted to the new socio-economic requirements, enable the implementation of a higher developmental stage known as the information society, i.e., a knowledge society (DRUCKER 2002, p. 441–471, KRYŃSKA, KWIATKOWSKI 2013, p. 160–166, DWORAK 2014, p. 13–20).

## **The impact of the level of education on employment in Poland and other EU countries**

The above theoretical concepts will provide the basis to present and assess the impact of the quality of human capital, measured by the educational level of employees, on their share and the changes in the share in employment stocks in Poland and other European Union countries. This begs the question: Does a high level of education increase people's chances of employment and provide them with more stable jobs?

In line with international standards and the standards of the European Union, the level of formal education is related to a certain level of professional qualifications essential to implement the tasks and responsibilities within a particular profession and specialty<sup>3</sup>. Although these relations are not the subject of this study, it is worth noting that the high level of professional qualifications is determined by having higher education, knowledge and skills, and also depends on the professional experience of employees. In modern economies, these factors affect the development of the demand for work on the part of employers and determine the situation of employees in the labor market. Therefore, it seems appropriate to compare what changes took place in the years under study in the employment structure by level of education.

Table 1 contains data showing the percentage of workers with a lower educational level in Poland and the other 28 EU countries. This level includes incomplete primary, completed primary and lower level secondary education. Qualifications of persons with a low, first or secondary level education, according to the ISCED, are defined as elementary<sup>4</sup>.

The data in the table show that in both years under study Poland was among the Member States with the lowest (below 10%) share of workers with low levels of education. In 2005, Poland ranked fifth, with a share of 9.5% of the total working population aged 15–64 after Slovakia (the lowest percentage 4.6%), the Czech Republic, Lithuania and Estonia. In 2014, Poland moved up in the ranking to fourth place, due to a decrease in the share of these workers to 5.7% and was behind the Czech Republic, Lithuania and Slovakia, where the percentage of workers with low education stood between 4.1–4.4%. In 2014,

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<sup>3</sup> The International Standard Classification of Education (ISCED) distinguishes six levels of education, and 4 levels of professional qualification, based on the classification of professions and specialties for the needs of the labor market, Minister of Economy and Labour, Journal of Laws No. 82 of 17 May 2010 Item 537.

<sup>4</sup> The first level of education and elementary qualifications concerns incomplete primary and primary education while the second level of education and elementary qualifications is associated with lower secondary education.

Table 1  
The share of workers with a low level of education as compared to the total number of employees aged 15–64 in Poland and other European Union countries (in%)

Country	2008	2014	Changes in percentage points 2014/2008
EU28	25.2	18.2	-7.0
EU15	28.2	20.3	-7.9
Euro area (19 countries)	29.0	21.0	-8.0
Austria	16.6	13.5	-3.1
Belgium	24.0	17.8	-6.2
Bulgaria	17.5	11.0	-6.5
Croatia	18.7	10.2	-8.5
Cyprus	28.0	16.9	-11.1
Czech Republic	5.7	4.1	-1.6
Denmark	20.1	20.5	+0.4
Estonia	9.0	8.0	-1.0
Finland	18.0	11.5	-6.5
France	26.7	17.1	-9.6
Greece	33.6	26.1	-7.5
Spain	44.7	34.5	-10.2
Netherlands	25.7	21.7	-4.0
Ireland	26.5	13.6	-12.9
Lithuania	8.5	4.2	-4.3
Luxembourg	29.8	15.4	-14.4
Latvia	13.0	7.9	-5.1
Malta	58.8	43.3	-15.5
Germany	16.0	12.2	-3.8
Poland	9.5	5.7	-3.8
Portugal	70.7	49.8	-20.9
Romania	22.9	22.7	-0.2
Slovakia	4.6	4.4	-0.2
Slovenia	15.3	10.4	-4.9
Sweden	14.8	13.5	-1.3
Hungary	14.0	11.2	-2.8
Great Britain	23.3	15.5	-7.8
Italy	40.2	31.7	-8.5

Source: author's own calculations based Eurostat: <http://epp.eurostat.ec.europa.eu> (access: 25.08.2016).

this group also included Latvia and Estonia, with the share of workers with low education respectively at 7.9% and 8%. None of these countries became members of the European Union until 2004.

It is worth noting that Poland at the beginning of the transition period, in 1992, had a percentage of workers with low education reaching 26.9%, which means that the percentage was more than 21 percent higher than it was in 2014. Those with less education generally have greater problems in finding a job due to their elementary qualifications, which represents a significant employability barrier for them due to the low demand of employers for such workers.

The highest percentage of workers with a low education level was in the member countries with a medium level of development, led by Portugal (70.7%) in 2005 and (49.8%) in 2014. Among these countries are also Malta, Spain and Italy, where the share of those with less education in 2014 stood at the level of 43.3%, 34.5% and 31.7%.

In highly developed countries of the European Union, the percentage of workers with primary education, incomplete primary education and lower secondary education was lower than 20%, e.g., in both years under study the percentage was: (16% and 12.2%) in Germany, (18% and 11.5%) in Finland, (16.6% and 13.5%) in Austria, (14.8% and 13.5%) in Sweden, while in 2014 these countries were joined by others such as the United Kingdom (15.5%), Luxembourg (15.4%), Belgium (17.8%), and France (17.1%)<sup>5</sup>.

It is worth emphasizing that all EU28 countries demonstrated a downward trend in the share of employment of people with a lower education level (only in Denmark, there was a slight increase in the share of these persons by 0.4 pp). The largest decrease in the share of these workers was in Portugal (by about 21 percentage points), Malta (15.5 pp), Luxembourg (14.4 pp), Cyprus (11.1 pp), Spain (10.2 pp) and Italy (8.5 pp). Therefore, these are also the countries which occupied the first places in the ranking in terms of the highest percentage of people with lower education, significantly exceeding the average share of the EU28 and the EU15. Much weaker downward trends were demonstrated in the countries with the lowest share of workers with lower educational levels in employment, e.g., in Poland, the decrease was 3.8 pp, 1.6 pp in the Czech Republic, 4.3 pp in Lithuania, while in Slovakia it was 0.2 pp.

Generally, the declining trend in the share of the employment stock of people with a low level of education should be regarded as beneficial and obvious in terms of the construction of the knowledge economy. This is also consistent with the principles of the human capital theory, which, as mentioned earlier, emphasizes the importance of education and qualifications for the position of people in the labor market.

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<sup>5</sup> The relatively higher percentage of people with low education in some countries (e.g., in Germany, Austria, and the Benelux countries) is due to classifying the lowest level of professional education as a second ISCED level (RANGUELOV et al. 2012, p. 27–31).

Table 2

The share of workers with primary vocational education, secondary and post-secondary non-tertiary education as compared to the total number of employed persons aged 15–64 in Poland and other European Union countries (in %)

Country	2005	2014	Changes in percentage points 2014/2005
EU28	49.3	48.8	-0.5
EU15	44.8	45.4	+0.6
Euro area (19 countries)	45.3	46.8	+1.5
Austria	64.7	54.4	-10.3
Belgium	39.1	39.0	-0.1
Bulgaria	56.8	57.4	+0.6
Croatia	61.9	63.2	+1.3
Cyprus	40.1	37.7	-2.4
Czech Republic	80.0	73.1	-6.9
Denmark	47.4	43.5	-3.9
Estonia	55.2	52.9	-2.3
Finland	46.8	46.5	-0.3
France	44.5	44.9	+0.4
Greece	42.5	40.2	-2.3
Spain	22.8	23.5	+0.7
Netherlands	43.1	42.5	-0.6
Ireland	39.4	38.0	-1.4
Lithuania	60.8	53.5	-7.3
Luxembourg	40.3	34.6	-5.7
Latvia	64.2	58.2	-6.0
Malta	25.2	31.7	+6.5
Germany	58.0	60.1	+2.1
Poland	69.1	61.9	-7.2
Portugal	15.2	25.2	+10.0
Romania	63.8	58.1	-5.7
Slovakia	79.0	73.1	-5.9
Slovenia	62.9	57.4	-5.5
Sweden	54.9	48.1	-6.8
Hungary	64.9	62.3	-2.6
Great Britain	45.4	41.6	-3.8
Italy	45.1	48.0	+2.9

Source: as for Table 1, author's own calculations.

The second group comprises the people with primary professional education, upper secondary education (ISCED level 3) and post-secondary non-tertiary education (ISCED level 4) in the EU28 employment stock.

The data in Table 2 show that in most countries the share of workers with this kind of education in total employment has been falling. The largest decrease was recorded in Austria (over 10 pp in the years 2005 to 2014), Sweden (6.8 pp), Luxembourg (5.7 pp), and in certain countries in Central and Eastern Europe, in the range from 5.5 pp (Slovenia) up to 6.9 pp (Czech Republic). The percentage of these workers increased in those countries where it was relatively low, especially in Portugal (10 pp), Malta (6.5 pp), Italy (2.9 pp), and Germany (2.1 pp), while in France, Spain, and Bulgaria the growth trends were weak and accounted for less than 1 percentage point.

In Poland, there was a fairly significant decrease in the share of people with the ISCED3 and ISCED4 levels of education (by 7.2 percentage points in the years under study), and the percentage of these persons was higher than the average percentage of the EU28 by 19.8 pp in 2005 and by 13.1 pp in 2014. Larger differences in the percentage were seen in the EU-15, where the percentage in Poland was higher by 24.3 pp in 2005 and by 16.5 pp in 2014.

Among the Member States with the highest, over 60% share of workers with primary vocational education, secondary and post-secondary education, Poland ranked third in 2005 (69.1%), after the Czech Republic (80%) and Slovakia (79%), and in 2014 moved to fifth place (61.9%), behind the Czech Republic (73.1%), Slovakia (73.1%), Croatia (63.2%) and Hungary (62.3%). In the case of the Polish economy, this decline was due to a decrease in the percentage of workers with primary vocational education (from 30.7% in 2005 to 26.4% in 2014). This was in connection with the limited development of vocational education, and limited learning in vocational secondary schools (technical schools, vocational secondary schools), which provided better employment opportunities, but also increased the emigration of people who sought after professional qualifications. In addition, people with primary vocational education dominated the stock of the unemployed (e.g., about 32% in 2015) (*Aktywność ekonomiczna...* 2016, p. 113), hence their share in employment was also decreasing.

Some people, especially after upper secondary school, but also those with post-upper-secondary education decided to continue their education in tertiary education to acquire skills and vocational training, which also contributed to a reduction in the percentage of workers with secondary education in the general employment stock.

In other EU28 countries, the share of workers with secondary education stood between 34 and 46%.

The third employment group consisted of persons with higher education, comprising the fourth and the fifth ISCED levels of education. The fourth level of education included employees with bachelors and engineering titles, and the



Table 3

The share of employees with higher education in the total number of employed persons aged 15–64 in Poland and other European Union countries (in %)

Country	2005	2014	Changes in percentage points 2014/2005
EU28	25.3	32.6	+7.3
EU15	26.8	33.8	+7.0
Euro area (19 countries)	25.6	32.0	+6.4
Austria	18.6	32.1	+13.5
Belgium	36.8	43.2	+6.4
Bulgaria	25.7	31.6	+5.9
Croatia	19.4	26.6	+7.2
Cyprus	31.9	45.3	+13.4
Czech Republic	14.4	22.8	+8.4
Denmark	32.3	34.1	+1.8
Estonia	35.8	39.0	+3.2
Finland	35.2	42.0	+6.8
France	28.8	37.7	+8.9
Greece	23.9	33.7	+9.8
Spain	32.5	42.0	+9.5
Netherlands	30.3	34.9	+4.6
Ireland	31.7	45.1	+13.4
Lithuania	30.7	42.3	+11.6
Luxembourg	29.8	48.7	+18.9
Latvia	22.8	33.8	+11.0
Malta	16.0	25.0	+9.0
Germany	26.0	27.6	+1.6
Poland	21.4	32.4	+11.0
Portugal	14.1	25.0	+10.9
Romania	13.2	19.1	+5.9
Slovakia	16.4	22.4	+6.0
Slovenia	21.9	32.2	+10.3
Sweden	29.5	38.2	+8.7
Hungary	21.1	26.5	+5.4
Great Britain	30.6	41.5	+10.9
Italy	14.7	20.3	+5.6

Source: as for Table 1, author's own calculations.

fifth – those after master studies and postgraduate studies<sup>6</sup>. The shares of employees with higher education in total employment in Poland and the other EU28 countries are presented in Table 3.

Data in Table 3 show that the share of the employed in the labor stock increased in all EU28 Member States in the years under study. These people are highly qualified, hence the increased interest of employers in hiring workers with higher education.

In Poland, the percentage of employees with higher education increased in the years 2005–2014 by 11 pp and was larger than the average in the EU28 (an increase of 7.3%) and the EU15 (an increase of 7%). The largest increase in the share of the highly educated took place in Luxembourg (18.9 pp), which was relatively high and above 13 pp, in countries such as Austria, Cyprus and Ireland, and over 10–11 pp in Great Britain, Slovenia, Portugal, Latvia and Lithuania. The lowest increase in employment of those workers took place in Germany (by 1.6 pp) and Denmark (1.8 pp).

Despite the considerable increase in the share of highly educated workers in the Polish economy, neither in 2005 nor in 2014 was Poland among the countries which were characterized by the highest percentage of these people in employment. However, the distance between our country in relation to the average share of these workers in the EU28 decreased significantly. Back in 2005, the difference was 3.9 pp, in 2014 the percentage of employees with higher education in Poland (32.4%) came close to the average of the EU28 (32.6%).

In 2005, Belgium was the first in the ranking of the Member States with the highest proportion (36.8%) of highly educated employees, followed by a group of 9 countries with a high percentage (30–37%). These were: Estonia and Finland (with a share above 35%), Spain and Denmark (over 32%), Cyprus and Ireland (over 31%) and Lithuania, the United Kingdom and the Netherlands (over 30%).

In 2014, due to the growing trends in the share of workers with a higher education level in the general labor force, there were 8 Member States with the highest percentage of those employees, within the range of 41–48%. Luxembourg ranked first with a share of 48.7% (the largest increase in the share, from the level of 29.8%). Cyprus and Ireland had shares over 45%, followed by Belgium, above 43%, Lithuania, Finland and Spain at more than 42%, while in the UK the share of these workers was 41.5%.

In 2005, the difference between the countries with the highest percentage of workers with higher education and Poland was 15.4 pp, and in 2014 it

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<sup>6</sup> There is also the sixth level of ISCED education for people who have completed doctoral studies, but it is not included in the analysis.

increased to 16.3 pp. It should be assumed that the requirements of the knowledge-based economy will contribute largely to the increase in the number of people interested in improving their skills and the difference between Poland and the leading countries in the ranking will gradually decrease in subsequent years.

It is noteworthy that Poland is not included in the group of the countries with the lowest share of workers with a higher level of education, i.e. in the category of countries below 20%. In 2005, Romania ranked lowest in this group of countries, as its share of workers with a higher level of education totaled only 13.2%. Among the Member States in this category were also Portugal, the Czech Republic and Italy (with a share over 14%), Malta and Slovakia (with a share of 16% and 16.4%), Austria (18.6%) and Croatia (19.4%). In 2014, only Romania remained in this category of countries, i.e. those with a share of workers with a higher level of education below 20%, and its share had risen to 19.1%. The other countries in this category in 2005 had moved up to the group with the medium share, i.e. in the range of 20% to 40% of workers with higher education. This group of countries also includes Poland, thanks to its fairly substantial increase of educated people in the employment stock.

Changes in the share of people with higher education and qualifications in Poland should be assessed very positively. According to the human capital theory, the demand for knowledge and higher qualifications is the result of undergoing improvement in innovation for the Polish economy through the implementation of the process-technological progress and the product-technological progress, as well as progress in organization and management. It also results from the inflow of foreign direct investment together with new techniques and technologies which require the involvement of employees with higher and the highest education and qualifications. Also, integration processes, enforcing an increase in productivity and competitiveness of enterprises and the economy as a whole, are an essential prerequisite for the growth in demand for knowledge and skills. On the other hand, the employees invest in themselves, raising the value of their human capital, by continuing their studies through to higher education and further continuing education in postgraduate studies, specialized training and professional courses, professional development and accumulating professional experience (DOMAŃSKI 1993, p. 3–5, WELFE 2001, p. 39–43).

## **Conclusions**

The analysis conducted in Poland and the other EU28 countries, against the background of the basic assumptions of human capital theory on the

employment structure by level of education, confirmed the study's main hypothesis concerning the direction of these changes. In the years examined, the share of workers with a lower educational level in the employment stock in Poland decreased significantly (down to 5.7% in 2014), while the share of employees with a higher level of education demonstrated quite a significant upward trend (up to 32.4% in 2014, and up by 11 pp compared to 2005).

The process of growth in the demand for labor with higher education and higher qualifications in the Polish economy is in line with the trends of the other EU28 Member States. In relation to those countries ranking high in terms of the share of workers with a high education level, in 2014 Poland still trailed by 16 pp.

However, the percentage of workers with primary vocational education, secondary and post-secondary education in the employment stock in Poland is still high (about 62% in 2014), despite its decline by 7.2 pp in the period 2005–2014. Therefore, the high, although declining share of workers with secondary education, as it is believed, can be explained by the tendency of these people to move to a higher level of education, which gives better opportunities in terms of employment and income.

The presented changes reflect the already ongoing, gradual qualitative transformations in the structure of the employment stock by level of education. The workers themselves are becoming more aware of the relationship between the level of education, professional qualifications and their position in the labor market.

Another study will present the employment structure by occupation in Poland and in other EU28 Member States to indicate the impact of the level of education and qualifications on their occupation.

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