

EDUCATION LEVEL AND COMPETITIVENESS OF ECONOMY - CASE OF POLAND

ÚROVEŇ VZDELANIA A KONKURENCIESCHOPNOSŤ EKONOMIKY - PRÍPAD POĽSKA

TWAROWSKA Katarzyna

Abstract

The aim of the paper is to assess education as a factor of economic development and competitiveness. This article presents both theoretical considerations on education as a factor of competitiveness and empirical analyzes. In the context of selected socio-economic rankings, the position of Poland was discussed and the basic sources for building of a competitive advantage of the economy were described, with particular emphasis on changes in the education level of Polish people.

Key words: education, competitiveness, economic development

Abstrakt

Cieľom príspevku je zhodnotiť vzdelávanie ako faktor hospodárskeho rozvoja a konkurencieschopnosti. Tento článok prezentuje teoretické úvahy o vzdelávaní ako faktore konkurencieschopnosti a empirické analýzy. V rámci vybraných socio-ekonomických rebríčkov pojednáva o postavení Poľska a popisuje základné zdroje pre budovanie konkurenčnej výhody ekonomiky, s osobitným dôrazom na zmeny v úrovni vzdelania Poliakov.

Kľúčové slová: vzdelávanie, konkurencieschopnosť, hospodársky rozvoj

INTRODUCTION

Over the last two centuries, economists contended that economy functions on the basis of three factors of production: labor, capital and land (natural resources). At the end of the twentieth century, they began to talk about the knowledge-based economy. Knowledge-based competition within a globalizing economy is prompting a fresh consideration of the role of education in development and growth. Previously it was sometimes considered as an expensive and inefficient public service, especially higher education. Now it is understood to make a necessary contribution, in concert with other factors, to the success of national efforts to boost productivity, competitiveness and economic growth. There is no doubt that education at the primary level is a necessary condition for functioning of society. People believe that primary and secondary schooling are more important than tertiary education for poverty reduction, but in recent times higher education becomes an essential complement to educational efforts at other levels as well as to national initiatives to boost innovation and performance across economic sectors. As Lester Carl Thurow said: economic success will

depend on the willingness and ability to make long-term social investment in skills, education, knowledge and infrastructure.¹

The purpose of the paper is to present the relationship between education and competitiveness of the Polish economy. To illustrate that relationship, the following tasks were taken:

- to present a theoretical discussion of the role of education in economic development,
- to present Polish position in global competitiveness ranking, especially in terms of education, which is the basis for taking decision what action, system solutions or tools used to improve the competitiveness of the economy.

1 COMPETITIVENESS

1.1 The concept and factors of competitiveness

There is no unique definition of competitiveness and the concept still seems to be elusive.² Its understanding depends, among others, on the level of analysis (macro- level, mezzo- and micro- one). Taking into account different approaches toward competitiveness³, it can be defined as the ability of an element of a general environment (a company, a cluster, a region, a country or a group of countries, etc.) to operate efficiently and productively in relation to other similar elements of this environment.

The official OECD definition of a nation's competitiveness is as follows: "the degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term".⁴

National Competitiveness Council (NCC)⁵ postulates that national competitiveness is a broad concept that encompasses a diverse range of factors and policy inputs including education and training, entrepreneurship and innovation, economic and technological infrastructure and the taxation and regulatory framework.

The NCC uses a framework model, illustrated by the Competitiveness Pyramid (graph 1), to understand national competitiveness. It distinguishes between the 'inputs' to national competitiveness – over which policymakers can have greatest control – and the essential conditions for national competitiveness.⁶

¹ L.C. Thurow, *Przyszłość kapitalizmu. Jak dzisiejsze siły ekonomiczne kształtujących świat jutra*, Wydawnictwo Dolnośląskie, Wrocław 1999, p. 422.

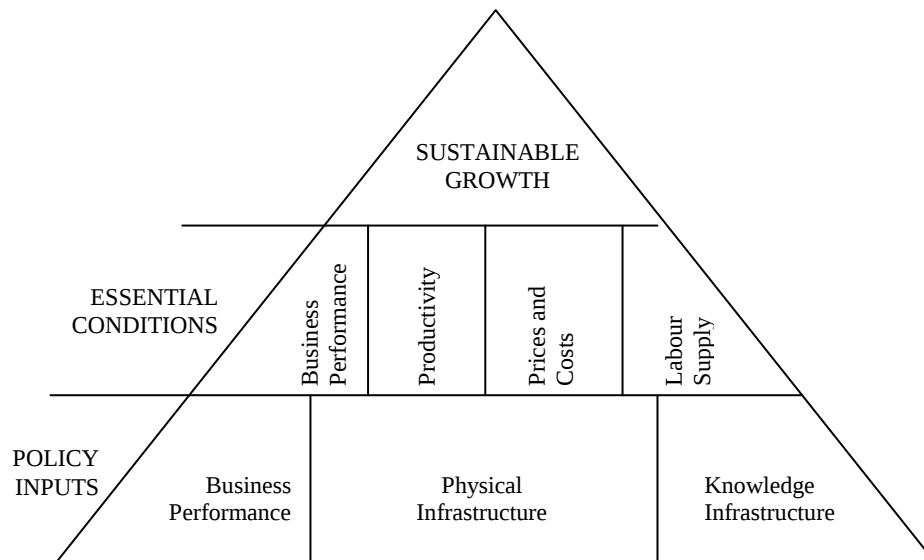
² M. Lubiński, *Konkurencyjność gospodarki. Pojęcia i sposób mierzenia*, [in:] *Międzynarodowa konkurencyjność gospodarki Polski – uwarunkowania i perspektywy*, Instytut Rozwoju i Studiów Strategicznych, Warszawa 1995, p. 10-11.

³ F. Fajnzylber, *International Competitiveness: Agreed Goal, Hard Task*, "CEPAL Review", no. 36, 1988, p. 7–23; J. M. de Vet, *Striving for International Competitiveness: Lessons from Electronics for Developing Countries*, "Working Paper", no. 84, OECD Development Centre, 1993; J.M. Fanelli, R. Medhora, *Finance and Competitiveness: Framework and Synthesis*, [in:] J.M. Fanelli, R. Medhora (eds.), *Finance and Competitiveness in Developing Countries*, Routledge, Ottawa, 2002; S. Garelli, *Competitiveness of Nations: The Fundamentals*, [in:] IMD Competitiveness Yearbook, 2006.

⁴ J. M. de Vet, *Striving for International Competitiveness: Lessons from Electronics for Developing Countries*, "Working Paper", no. 84, OECD Development Centre, 1993.

⁵ The National Competitiveness Council was established by Irish Government in 1997 as part of the Partnership 2000 Agreement. It reports on key competitiveness issues facing the Irish economy and offers recommendations on policy actions required to enhance Ireland's competitive position.

⁶ P. Misztal, *Wykorzystanie rankingów konkurencyjności do oceny konkurencyjności międzynarodowej gospodarek*, [in:] M. Noga, M. Stawicka (ed.), *Globalizacja a konkurencyjność w gospodarce światowej*, Wyd. CeDeWu, Warszawa 2009, p. 24.



Graph 1. The Competitiveness Pyramid

Source: National Competitiveness Council, <http://www.competitiveness.ie/aboutus/ourwork/>

The World Economic Forum (WEF)⁷ define competitiveness as “the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be reached by an economy. The productivity level also determines the rates of return obtained by investments in an economy, which in turn are the fundamental drivers of its growth rates. In other words, a more competitive economy is one that is likely to grow faster over time”.⁸ To measure the competitiveness, the WEF uses the annual changes in GDP *per capita*, since “country’s competitiveness as the ability of a national economy to achieve sustained rates of economic growth, measured by the annual changes in GDP per capita”.⁹

The assessment of a country’s competitiveness can be conducted by means of two different approaches:¹⁰

- the first relates to the comparative dynamic analysis of economic indicators, identified in economic literature as proxies of a country’s competitiveness.¹¹ These indicators characterise changes in countries’ GDP and living standard, labour market (costs and productivity), foreign trade and prices;
- the second approach is based on the comparative dynamic analysis of composite competitiveness measures. These measures are created by using many quantitative (statistic data) and qualitative (perception of the economy and business environment) data which distinguish given economies and aggregate them into one measure of performance, e.g. WEF with Global Competitiveness Index (GCI) and International Institute for Management Development – IMD.

⁷ World Economic Forum is a Swiss nonprofit foundation, based in Cologny, Geneva. The forum was founded in 1971 by Klaus Schwab and from 1979 WEF has launched *Global Competitiveness Report* - one of the Forum’s greatest and most unique contributions.

⁸ World Economic Forum, 2014. *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 4.

⁹ World Economic Forum, 2007. *The Global Competitiveness Report 2007–2008*, Geneva.

¹⁰ T. Kowalski, M. Pietrzykowski, *The Economic and Monetary Union vs. Shift in Competitiveness of Member States*, [in:] B. Jankowska, T. Kowalski, M. Pietrzykowski (eds.), *Dimensions of Competitiveness*, Poznań University of Economics, Poznań 2010.

¹¹ J.E. Fagerberg, M.S. Knell, M. Srholec, *The Competitiveness of Nations: Economic Growth in the ECE Region*, “Economic Survey of Europe”, no. 2, 2004, p. 51–66.

2 HUMAN CAPITAL AS A FACTOR OF ECONOMIC GROWTH AND COMPETITIVENESS - THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 The main trends in research

A wide range of studies analyses the human capital as a factor underlying economic growth and competitiveness of nations. Human capital is the main source of growth in several endogenous growth models as well as one of the key extensions of the neoclassical growth model. Since the term 'human capital' refers principally to workers' acquisition of skills and know-how through education and training, the majority of studies have measured the quality of human capital using proxies related to education, such as school-enrolment rates, tests of mathematics and scientific skills.¹²

A large number of studies has found evidence suggesting that educated population is key determinant of economic growth. These conclusions were reached by such scientists as R. Barro and X. Sala-I-Martin¹³, E. Hanushek and D. Kimko.¹⁴ However, there have been other scholars who have questioned these findings and, consequently, the importance of human capital as substantial determinant of economic growth.¹⁵

Researchers also carried out studies that analyzed the importance of education at different levels. Conventional rate of return analysis shows higher education in a less favorable light than it shows primary and secondary schooling. G. Psacharopoulos and H. Patrinos¹⁶ reviewed 98 country studies from 1960–1997 and found that the typical estimates of the rate of return from primary schooling were substantially higher than those for advanced schooling. The average public rate of return for the former was 18.9 per cent, while for tertiary education it was just 10.8 per cent. Such studies have had a major influence on international development policy.

More recent studies cast some doubt on the applicability of these findings. Traditional rate of return analysis focuses solely on the financial rewards accrued by individuals and the tax revenues they generate. It neglects the broader benefits of advanced education manifested through entrepreneurship, job creation, good economic and political governance, and the effect of a highly educated cadre of workers on a nation's health and social fabric. It also ignores the positive impacts of research – a core tertiary education activity – on economies.¹⁷

¹² G. Petrakos, P. Arvanitidis, S. Pavleas, *Determinants of Economic Growth: The Experts' View. Dynamic Regions in a Knowledge-Driven Global Economy Lessons and Policy Implications for the EU*, „DYNGER Working Papers“ 20/2007, p. 7.

¹³ R. Barro, X. Sala-I-Martin, *Economic Growth*, New York, McGraw-Hill, 1995.

¹⁴ E. Hanushek, D. Kimko, *Schooling, Labor-Force Quality, and the Growth of Nations*, „American Economic Review“, 90, 2000.

¹⁵ R. Levine, D. Renelt, *A Sensitivity Analysis of Cross-Country Growth Regressions*, „American Economic Review“ 82(4), 1992, p. 942-963; J. Benhabib, M. Spiegel, *The Role of Human Capital in Economic Development: Evidence from Aggregate Cross-Country Data*, „Journal of Monetary Economics“, 34, 1994, p. 143-173; R. Topel, *Labor Markets and Economic Growth*, [in:] O. Ashenfelter, D. Card (eds.) *Handbook of Labor Economics*, Amsterdam 1999, Elsevier, 2943-2984; A. Krueger, M. Lindhal, *Education for Growth: Why and For Whom?*, „Journal of Economic Literature“ 39(4), 2001, p. 1101-36; L. Pritchett, *Where has all the education gone?*, „World Bank Economic Review“, 15, 2001, p. 367-91.

¹⁶ G. Pasacharopoulos, H. Patrinos, *Returns to Investment in Education: A Further Update*, „World Bank Policy Research Working Paper“ 2881, September 2002.

¹⁷ D.E. Bloom, M. Hartley, H. Rosovsky, *Beyond Private Gain: The Public Benefits of Higher Education*, [in:] J.F. Forest, P.G. Altbach (eds.), *International Handbook of Higher Education*, 2006.

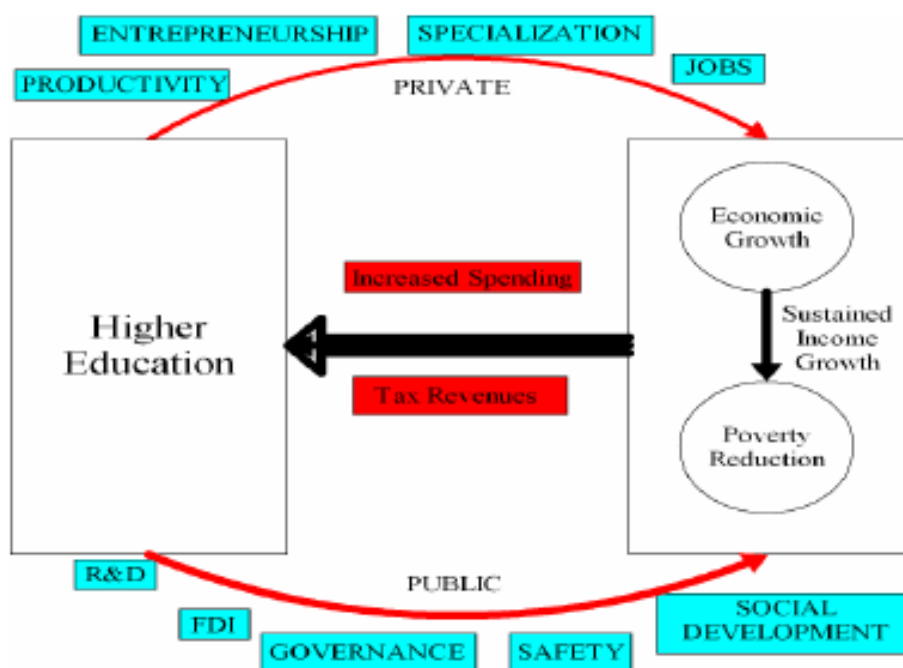
2.2 The conceptual links from education to economic growth

Most of research indicates that education has a positive impact on economic development. However, that impact varies depending on the level of education and the (primary, secondary, higher education), the form of organization, accessibility and source of financing (public and private education). In this section a conceptual framework outlining the positive effects that education can have on economic development is presented.

As graph 2 shows, education can lead to economic growth through both private (benefits for the individual) and public channels (benefits for the whole society). The private benefits for individuals are well established and include better employment prospects, higher salaries, and a greater ability to save and invest. These benefits may result in better health and improved quality of life, thus setting off a virtuous spiral in which life expectancy improvements enable individuals to work more productively over a longer time further boosting lifetime earnings.

By contrast, public benefits are less widely recognized, but individual gains can also benefit society as a whole. Higher earnings for well-educated individuals raise tax revenues for governments and ease demands on state finances. They also translate into greater consumption, which benefits producers from all educational backgrounds.¹⁸

In a knowledge economy, tertiary education can help economies keep up or catch up with more technologically advanced societies. Higher education graduates are likely to be more aware of and better able to use new technologies. They are also more likely to develop new tools and skills themselves. Their knowledge can also improve the skills and understanding of non-graduate coworkers, while the greater confidence and know-how inculcated by advanced schooling may generate entrepreneurship, with positive effects on job creation.¹⁹



Graph 2. The conceptual links from education to economic growth

Source: own work based on: D. Bloom, D. Canning, K. Chan, *Higher Education and Economic Development in Africa*, Harvard University, February 2006, p. 14-16.

¹⁸ D. Bloom, D. Canning, K. Chan, *Higher Education and Economic Development in Africa*, Harvard University, February 2006, p. 15-16.

¹⁹ *Ibidem*, p. 14.

3 ASSESSMENT OF THE COMPETITIVENESS OF POLISH ECONOMY

3.1 Poland in competitiveness ranking

Competitiveness and productivity are driven by many determinants. Understanding the factors behind this process has occupied the minds of economists for hundreds of years, engendering theories ranging from Adam Smith's focus on specialization and the division of labor to neoclassical economists' emphasis on investment in physical capital and infrastructure,²⁰ and, more recently, to interest in other mechanisms such as education and training, technological progress, macroeconomic stability, good governance, firm sophistication, and market efficiency, among others. While all of these factors are likely to be important for competitiveness and growth, they are not mutually exclusive—two or more of them can be significant at the same time, and in fact that is what has been shown in the economic literature.²¹

The competitiveness research conducted by the IMD includes four groups of factors: economic performance (domestic economy, international trade, international investment, employment, prices), government efficiency (public finance, fiscal policy, institutional framework, business legislation, societal framework), business efficiency (productivity and efficiency, labor market, finance, management practices, attitudes and values) and infrastructure (basic infrastructure, technological infrastructure, scientific infrastructure, health and environment, education).

In 1998 Poland was ranked 44. In subsequent years, the position of the country has deteriorated and in 2006 Poland was 58. Since 2007, Poland achieves gradual improvement (from 52 in 2007 to 32 in 2010 and 36 in 2014; see table 1).²²

Table 1. Poland in competitiveness ranking

Rank	2010	2011	2012	2013	2014
Overall Competitiveness	32	34	34	33	36
Economic Performance	24	31	30	36	36
Government Efficiency	36	35	36	27	30
Business Efficiency	38	41	39	35	36
Infrastructure	36	34	36	36	36

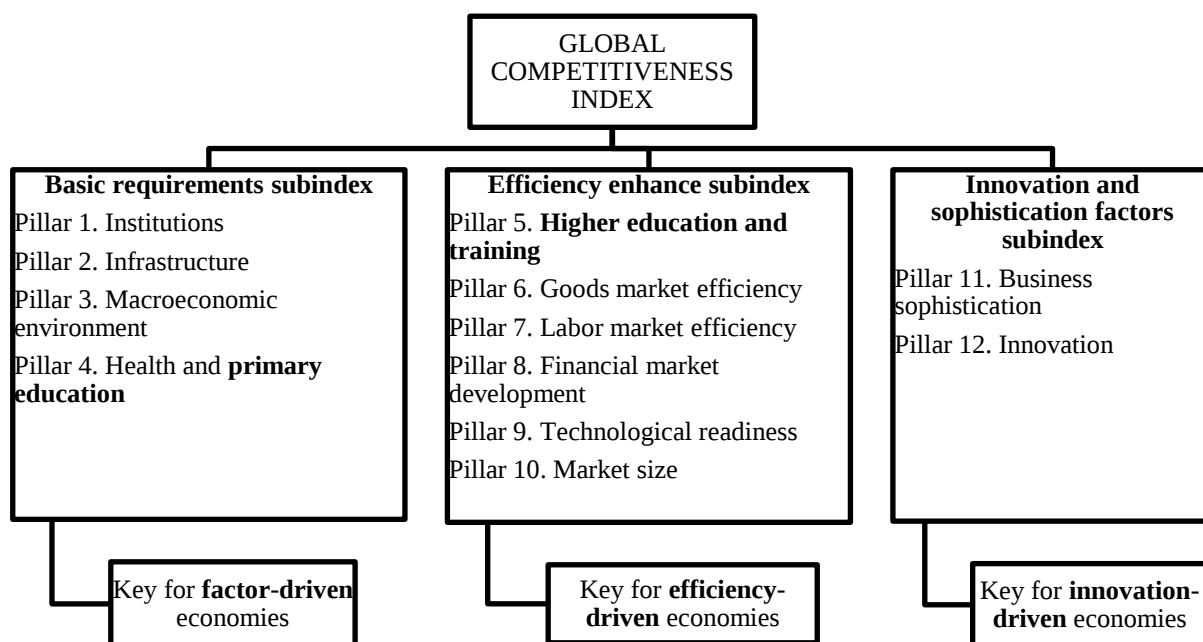
Source: IMD World Competitiveness Center, *World Competitiveness Online*,
<https://www.worldcompetitiveness.com/OnLine/App/Index.htm>

Global Competitiveness Index, published by the WEF, includes a weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into 12 pillars of competitiveness (graph 3), two of which are directly related to education (pillar 4 and 5) and some are related indirectly.

²⁰ See, for example: Schumpeter 1942, Solow 1956, and Swan 1956. World Economic Forum, *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 4-9.

²¹ See, for example: Sala-i-Martin et al. 2004 for an extensive list of potential robust determinants of economic growth. World Economic Forum, *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 4-9.

²² IMD World Competitiveness Yearbook, years 1998–2014.



Graph 3. Global Competitiveness Index

Source: World Economic Forum, *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 9.

Poland notes the steady improvement in competitiveness. According to the WEF 2013 report Poland belongs to the group ‘transition from stage 2 to stage 3’ (between efficiency-driven and innovation driven economies) and is ranked 42 out of 148 countries (table 2). Notable strengths include its large market size (20th) and high educational standards, in particular its high enrollment rates (it is ranked 18th on the quantity of higher education subpillar).

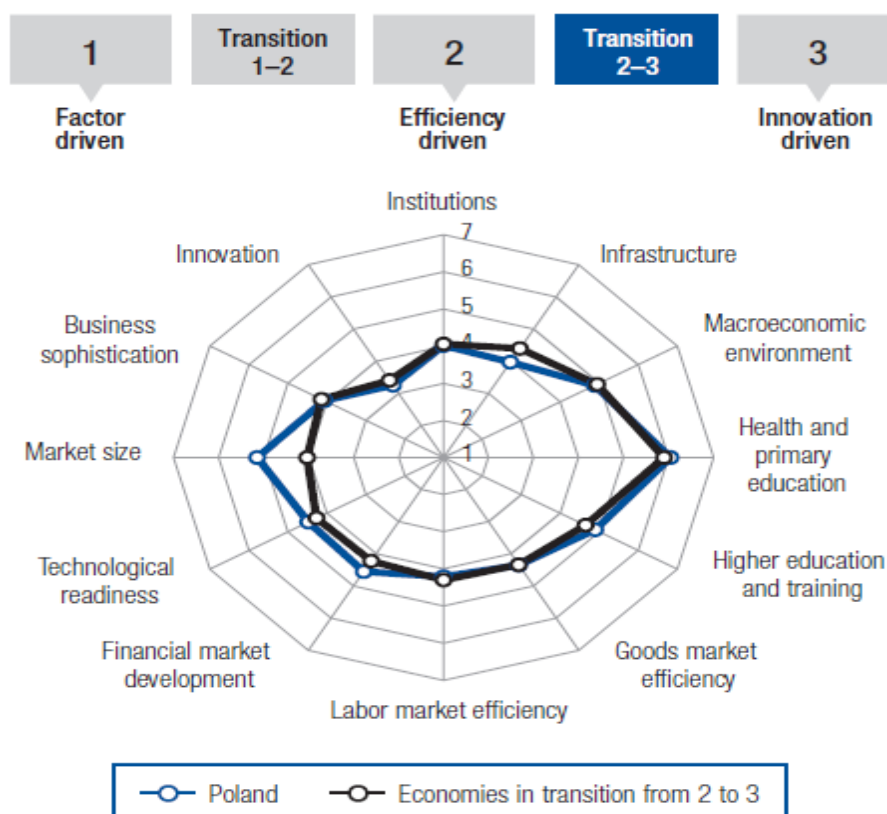
Table 2. The Global Competitiveness Index

Pillar/ Country	Overall index	1	2	3	4	5	6	7	8	9	10	11	12
Poland	42	62	74	65	42	37	57	80	38	43	20	65	65

Source: World Economic Forum, *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 16-22.

3.2 Education as a factor of the Polish economy competitiveness

All rankings of competitiveness include issues related to level of education. This proves that it is an important factor affecting the growth of economy competitiveness. In the Polish case it is a factor which significantly improves the competitiveness. The profile of Polish economy is showed on the graph 4.

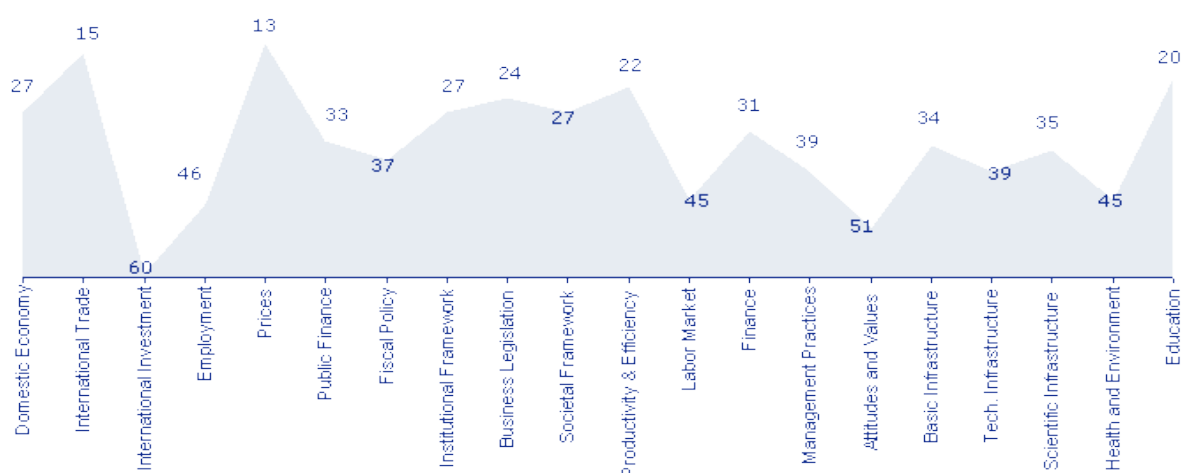


Graph 4. Stage of development

Source: World Economic Forum, *The Global Competitiveness Report 2013-2014. Full Data Edition*, p. 316.

The graph shows that the condition of education in Poland (higher education and training and health and primary education) is better than in other countries (average) in the group (economies in transition from 2 to 3).

IMD also assesses the education as one of factors of competitiveness. The graph 5 shows, that education is one of the highly rated factors.



Graph 5. Polish Competitiveness Landscape in 2014

Source: IMD World Competitiveness Center, *World Competitiveness Online*,
<https://www.worldcompetitiveness.com/OnLine/App/Index.htm>

CONCLUSION

In the era of knowledge based economy, knowledge has become the fundament of the development of the present-day world. Well-educated and qualified personnel, which constitutes a new quality in a broadly understood human capital, is decisive for a larger economic potential of a state and an increase of its innovation and competitiveness.²³ People are aware of the fact that good education and an intention of continual improvement of the skills obtained translate into their measurable prosperity; they are rational and they take care of their education. In this way, they build the basis for a faster economic development of the state. Therefore, Poland has new challenges connected with building information based society that uses mainly knowledge and modern techniques of obtaining information and data processing at work. This article presents changes in the education level of Polish people. In the context of selected socio-economic rankings, the position of Poland was discussed and the basic sources for building of a competitive advantage of the economy were described.

References

1. BARRO, R. SALA-I-MARTIN, X. 1995. *Economic Growth*, New York, McGraw-Hill.
2. BENHABIB, J. SPIEGEL, M. 1994. *The Role of Human Capital in Economic Development: Evidence from Aggregate Cross-Country Data*, "Journal of Monetary Economics", 34.
3. BLOOM, D. CANNING, D. CHAN, K. 2006. *Higher Education and Economic Development in Africa*, Harvard University, February 2006.
4. BLOOM, D.E. HARTLEY, M. ROSOVSKY, H. 2006. *Beyond Private Gain: The Public Benefits of Higher Education*, [in:] J.F. Forest, P.G. Altbach (eds.), *International Handbook of Higher Education*.
5. FAGERBERG, J.E. KNELL, M.S. SRHOLEC, M. 2004. *The Competitiveness of Nations: Economic Growth in the ECE Region*, "Economic Survey of Europe", no. 2.
6. FAJNZYLBER, F. 1988. *International Competitiveness: Agreed Goal, Hard Task*, "CEPAL Review", no. 36.
7. FANELLI, J.M. MEDHORA, R. 2002. *Finance and Competitiveness: Framework and Synthesis*, [in:] J.M. Fanelli, R. Medhora (eds.), *Finance and Competitiveness in Developing Countries*, Routledge, Ottawa.
8. GARELLI, S. 2006. *Competitiveness of Nations: The Fundamentals*, [in:] IMD Competitiveness Yearbook.
9. HANUSHEK, E. KIMKO, D. 2000. *Schooling, Labor-Force Quality, and the Growth of Nations*, "American Economic Review", 90/2000.
10. IMD WORLD COMPETITIVENESS CENTER, *World Competitiveness Online*, <https://www.worldcompetitiveness.com>
11. KOWALSKI, T. PIETRZYKOWSKI, M. 2010. *The Economic and Monetary Union vs. Shift in Competitiveness of Member States*, [in:] B. Jankowska, T. Kowalski, M. Pietrzykowski (eds.), *Dimensions of Competitiveness*, Poznań University of Economics, Poznań.
12. KRUEGER, A. LINDHAL, M. 2001. *Education for Growth: Why and For Whom?*, "Journal of Economic Literature" 39(4).
13. LEVINE, R. RENELT, D. 1992. *A Sensitivity Analysis of Cross-Country Growth Regressions*, "American Economic Review" 82(4).

²³ M. Wojtas, *Wpływ kryzysu na innowacyjność gospodarki*, [in:] B. Mucha – Leszko (ed.), *Gospodarka i polityka makroekonomiczna strefy euro w latach 2008 – 2010. Skutki kryzysu i słabości zarządzania*, Wydawnictwo UMCS, Lublin 2011, p. 79.

14. LUBIŃSKI, M. 1995. *Konkurencyjność gospodarki. Pojęcia i sposób mierzenia*, [in:] Międzynarodowa konkurencyjność gospodarki Polski – uwarunkowania i perspektywy, Instytut Rozwoju i Studiów Strategicznych, Warszawa.
15. MISZTAŁ, P. 2009. *Wykorzystanie rankingów konkurencyjności do oceny konkurencyjności międzynarodowej gospodarek*, [in:] M. Noga, M. Stawicka (ed.), *Globalizacja a konkurencyjność w gospodarce światowej*, Wyd. CeDeWu, Warszawa.
16. NATIONAL COMPETITIVENESS COUNCIL, <http://www.competitiveness.ie>
17. PASACHAROPOULOS, G. PATRINOS, H. 2002. *Returns to Investment in Education: A Further Update*, „World Bank Policy Research Working Paper“ 2881, September 2002.
18. PETRAKOS, G. ARVANITIDIS, P. PAVLEAS, S. 2007. *Determinants of Economic Growth: The Experts' View. Dynamic Regions in a Knowledge-Driven Global Economy Lessons and Policy Implications for the EU*, „DYNGER Working Papers“ 20/2007.
19. PRITCHETT, L. 2001. *Where has all the education gone?*, „World Bank Economic Review“, 15, 2001.
20. THUROW, L.C. 1999. *Przyszłość kapitalizmu. Jak dzisiejsze siły ekonomiczne kształtujących świat jutra*, Wydawnictwo Dolnośląskie, Wrocław.
21. TOPEL, R. 1999. *Labor Markets and Economic Growth*, [in:] O. Ashenfelter, D. Card (eds.) *Handbook of Labor Economics*, Amsterdam, Elsevier.
22. VET, J. M. de 1993. *Striving for International Competitiveness: Lessons from Electronics for Developing Countries*, „Working Paper”, no. 84, OECD Development Centre.
23. WOJTAS, M. 2010. *Wpływ kryzysu na innowacyjność gospodarki*, [in:] B. Mucha – Leszko (ed.), *Gospodarka i polityka makroekonomiczna strefy euro w latach 2008 – 2010. Skutki kryzysu i słabości zarządzania*, Wydawnictwo UMCS, Lublin 2011.
24. WORLD ECONOMIC FORUM, 2014. *The Global Competitiveness Report 2013-2014. Full Data Edition*, Geneva.
25. WORLD ECONOMIC FORUM, 2007. *The Global Competitiveness Report 2007–2008*, Geneva.

Contact information

Katarzyna, TWAROWSKA, M.Ec.
 Faculty of Economics
 Maria Curie-Skłodowska University
 Pl. M. Curie-Skłodowskiej 5
 20-031 Lublin
 Poland
 E-mail: k.twarowska@poczta.umcs.lublin.pl