
HUMAN DEVELOPMENT AND ECONOMIC GROWTH AS DETERMINANTS OF OECD COUNTRY'S COMPETITIVENES

ABSTRACT The competitiveness is often accentuated and its definition in the economic literature review depends on the object. It is evident, that an ability to succeed in the international market is influenced by several factors. Therefore, it is necessary to apply a multidimensional approach to the investigation of a country's competitiveness and comparing their international position in a competitive ranking. The paper focuses on verification of measured impact of economic growth and also human development of OECD countries on their competitiveness and on the ability to be successful in economic competition. Multivariate classification of OECD countries according selected indicators confirmed a positive relationship between the human development of OECD countries and their competitiveness in the world market. However, the significant impact of economic growth was not confirmed.

KEY-WORDS

competitiveness, economic growth, human development, OECD countries

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INTRODUCTION

An economic success as well as country's prosperity is determined by the positive development of a wider range of indicators. Due to the variety and extent of the economic process, and for the evaluation of the country's economic development, it is necessary to monitor the complexity of quantitative and qualitative indicators. Economic development is determined by a positive trend in other areas such as social-political status (democracy, liberty and security), social situation (living standard and quantitative changes in living conditions, health and nutrition of the population), or education and cultural level, etc. Therefore, development of countries is not just about ensuring the economic growth, but also the fulfillment of the social, environmental and sectoral priorities. The measuring of relevant indicators of economic development is difficult, hence, the assessment of the issue of economic development narrows to the evaluation and quantification of economic growth. This paper focuses on investigating the relationship between economic growth in OECD countries and their global competitiveness, as well as their level of human development. A database is created by available OECD statistical sources, as well as reports of the World Economic Forum and the United Nations Development Programme in the time period from 1995 to 2009.

COMPETITIVENESS - SUCCESS IN THE WORLD SCALE

In general, the competitiveness includes a complex features, which create conditions for success in mutual comparisons of countries or in the other fields as industry, business or products (micro or macroeconomic approach). The first form of the competitiveness term leads to the mercantilism; the ability to succeed at international level based on the definition of the country's wealth, which has its origins in international trade. A. Smith, a classical economist, considers a national product as nation's wealth and the source of growth as a social division. The issue of the comparative advantage of countries discussed by D. Ricardo highlights the need for goods production and their comparative advantage in international trade markets. OECD (1992) considers the competitiveness as a measure of the ability of an open economy to produce goods and services and to stand up to foreign competition and contribute to the country's expansion. The fact, that some countries grow much faster and their trade balances are better than other countries, encourages the definition and enforcement of policies leading to the country's prosperity. Country's given priorities to go and raise the path of the living standard are a center of interests in economic research and still will be despite their criticisms.

The Global Competitiveness Report (2009) published by the World Economic Forum (WEF) defines competitiveness as a set of institutions, policies and factors that determine the level of productivity of a country that provides a sustainable economic prosperity. Both levels of connectivity are simple: the stability of the macroeconomic

environment creates a presumption of wealth creation in the country, and its formation depends on the microeconomic capability of the economy to produce goods and services needed. A competitiveness evaluation and the countries ranking include 12 pillars which present the individual areas of economies. Another attempt for competitiveness measurement is available in the study from the Institute for Strategy and Competitiveness at Harvard University. There it is possible to find the following results: the prosperity of countries is determined by the countries' competitiveness depending on their productivity in consequence seen as the ability to make use of human capital and natural resources. The growth of welfare depends on productivity and utilization of national resources. Considering the mentioned, it is important to understand the fundamental source of countries prosperity and the efficiency of manufactured goods and services. According to the OECD's, the competitiveness is perceived as a success to sell products on the international market. In a broader context, it is possible to look at the competitiveness at the national level as on the macroeconomic performance reflecting the increase of living standard of citizens. In recent years, increased attention is focused on regional competitiveness. Regional performance is considered as key success for achieving economic growth. Hence, the regional competitiveness is interesting not only for professional researchers but also for the European Commission in order to evaluate the competitiveness of European regions in the context of the implementation of the Lisbon strategy for growth and jobs.

The problem of global poverty and the importance of economic growth for poverty elimination is highlighted in the World Development Report published by the World Bank (WB) in 1990. Available studies show noticeable differences in the results of achieving sustainable economic growth. While some countries have achieved higher income levels, many countries remained at lower levels. Recent years confirm the fact that while some economies are able to achieve very high economic growth rate and thus catch up with the richer countries, another's are typical of a low or negative economic growth rate. Accordingly, the identification of the causes of economic differences and exploring their implications are important not only from the theory's point of view but also from empirical aspects.

IS AN ECONOMIC GROWTH THE ASSUMPTION FOR COMPETITIVENESS RAISING?

Long-term economic interest in the definition of the main factors that affect the economic growth rate, as well as differences in countries wealth led in new approaches for the perception of economic growth. The economy falls into a new environment and under the influence of new factors, writes Stiglitz (2003), and it has not been that long ago when everyone talked about the new economy. The slowdown in the global economy stimulated a widespread interest and debate on the new economy, which some authors considered a precursor to the end of the cycle.

Modern growth theory devoted considerable attention to the determinants of economic growth through aggregate models. Chenery (1986) urges the inadequacy of neoclassical balanced approach in the case of developing countries and the important role of factors influence the cause of imbalance, as restrictions on domestic demand, external markets, savings rates, imperfect factor markets, and learning by doing. The models outline of modern economics has its fundament in the Harrod-Domar growth model (Domar (1946), Harrod (1939)) and the neoclassical growth model (Solow (1956)). Research based on the neoclassical growth theory tends to find that the economic convergence of countries in the long term exists regarding the mechanism of capital spillover from richer countries to poorer countries as well as reducing the disparity in technology availability. The importance of technological change and investment in the human capital in the context of economic growth are captured by Romer (1986) or Grossman and Helpman (1991). The endogenous growth theory allows not only convergence tendencies but also the divergence tendencies depending on the similarity and differences in structural condition of individual economies. Conditional convergence is typical only for similar regions as Baumol (1986) pointed out. The accelerating force of national growth that are considered as industrialization beginners led to the long-term convergence of countries products. Technological transfers are accelerating the convergence power and create a natural tendency to converge less developed countries to more de-

veloped countries. To be a poorer country means potential export opportunities and benefits to the richer countries, Elmslie (1995). Zind (1991) distinguishes two groups of factors of the poor convergence in case of developing countries. The first group creates the size and structure of government, population growth and investment. The second one is a human capital as the advantage of rich countries and reflecting economic disparities between countries at the same time.

Richer countries have higher levels of human capital and so it is necessary to find their linkage with externalities as a result of higher production and creating savings and investments (Sach and Larrain (1993)). According to Romer (1996) countries converge for three reasons: firstly that production differences associated with different countries' positions in the direction of balanced growth and secondly that capital returns are lower in countries with a higher share per worker and stimulates the flow of capital from rich countries to poorer countries. Thirdly, quite serious reason is the availability of new and modern technologies. An important factor of country's convergence is income and thereby the examination of the income convergence of countries has been given considerable attention. To examine the economic convergence as well as to define its relevant factors it is possible to research the studies of many authors-(Baumol (1986), Dollar and Wolff (1988), Barro and Sala-i-Martin (1991, 1992), Obstfeld and Rogoff (1996), Durlauf and Quah (1999) and Temple (1999), Friedman (1992) and Quah (1993)). However, if structural parameters

are changed and their level is different (e.g. technological level, the population, savings) it will not be possible converging to the common income level, but only in its own steady state. The mutual relations between the economy, ecology and human development, as well as analyze their dependence were devoted by Moldan (1996), which followed the Qizilbash (1996), who contributed to the literature following the impact of changes in environmental quality and welfare. A group of research papers focusing on economic growth, which consider the environment as one of the important factors, belong to Mederly et al. (2002). Rational exploitation of the country's potential leads to the quality of life and its quantification and studying from four dimensions point of view (health, psychological, socioeconomic and family background) deal Ferrans and Powers (1985).

HUMAN DEVELOPMENT AND ECONOMIC GROWTH

Sen (2000) considers the income as one of the main determinants of human ability and hence, the human development of the country. The gross domestic product is a condition for the success of the development of human capacity which is reflected not only in the level of private spending, but also in literacy and population health. Higher income is a prerequisite for the achievement of the key tasks of human development. The one of the preconditions for improving the living standard of countries is a convergence

productivity at the regional level, wrote Melachroinos and Spence (1999). A benefit in examining the social dimension of economic development of the country and in the definition of the role of social capital in its economic development is Making democracy work with explaining the inter-regional disparities in economic and institutional performance of Italian regions and the impact of social capital on their existence, Putnam et al. (1993). The economic success of northern Italian regions attributed to the rich social life, mutual cooperation and their solidarity. The opposite view presents a study pointing to the possibility of the negative impact of social activities on economic growth as rent-seeking activities. Research studies devoted to the investigation of social capital in the context of the economic development of the country reduced to economic growth are ever increasing. The interrelation of the institutional environment and culture of the country with the economic progress describe Temple and Johnson (1998).

The first attempt to record the complexity of human life through socio-economic indicators and the international classification of countries in terms of their human development can be found in Human Development Report (HDR) published by UNDP in 1990. An approach based on socio-economic indicators (Human Development Index (HDI)) extended by Srinivasan (1994) who emphasized the need for measuring political freedom of the countries and income inequality. However, in connection with the assessment of the human development, a discussion of partial weight com-

ponents of the indicator can be found in the literature review.

The World Health Organization (WHO) in an effort to increase the significance of the mentioned index added an extra dimension of public health evaluation and took into account the survival time of illness and disability, which resulted in the creation of a new indicator "Disability-adjusted life expectancy (DALE)." Thus, considering only the period of human life survives in full health. An ethical dimension in human development, measurement taking into an account the work Dar (2004), included socio-economic changes such as freedom, confidence, environment, and family. Increasing the explanatory capabilities by extending the index and socioeconomic point of view is called "socio-economic development index" and presents two basic attributes of the country: social (demographic, employment, education level, population health, infrastructure, etc.) and economics (branch structure and fiscal policy). Despite the attempts to improve its reporting ability, the human development index is now often criticized. However, its limitations obscure the fact that there is no available and no existent "better" alternative in present time. Due to data availability, attempts to define and measure human development are only at national or regional levels. The

impact of economic growth on the country's level of human development are described by Anand and Ravallion (1993) and they emphasize the impact of the state budget financial flows at various levels and their intensity depend on recipient efficiency and distribution process. An important role is played by the governance quality in the effectiveness of public spending and income distribution in the country, and for all, it is necessary to take into account the importance of government accountability.

To verify the convergence trends in OECD countries in terms of their achieved income level, the methodology of Barro, Sala I Martin (1992) is applied. The function is non-linear in the parameters and the estimation of the regression coefficients are based on the Marquardt algorithm. Compliance with the conditions of beta-convergence is not a sufficient convergence condition, hence, the standard deviation of the natural logarithm of gross domestic product is calculated and verified by the validity of sigma convergence¹.

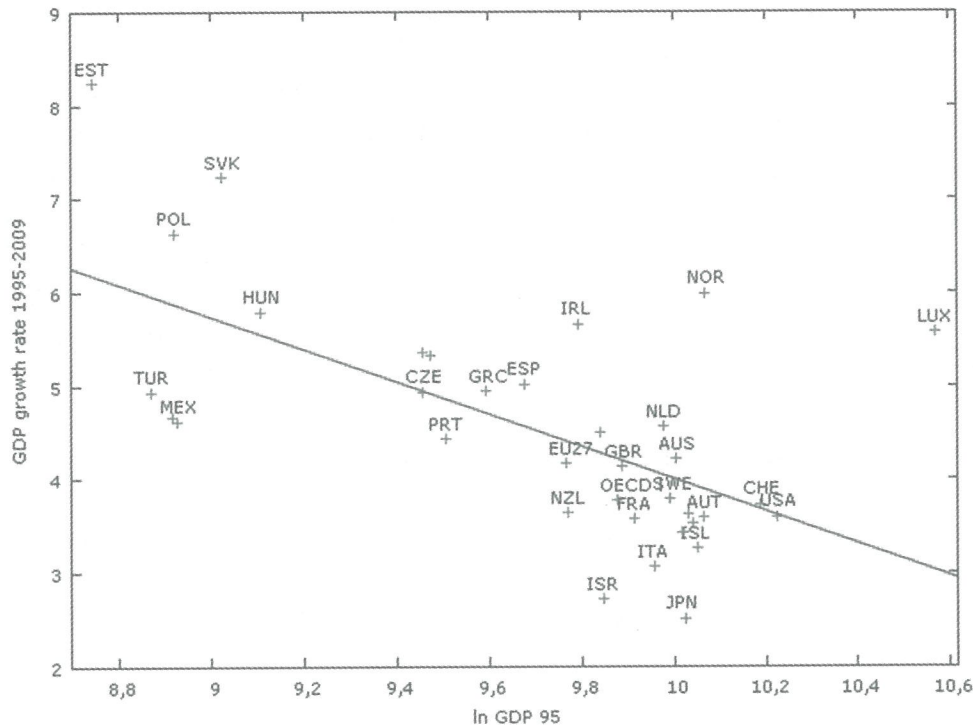
The graph presents the economic convergence of OECD countries and it is evident that beta convergence validity is confirmed by the estimation of the coefficients of the non-linear function Marquardt algorithm ($\beta = 0.017$), which is also significant ($P\text{-value} < 0.05$). The coefficient of de-

¹ Sigma convergence is expressed by the following:

$$\sigma_{y_t} = \sqrt{\frac{\sum_{i=1}^n (\log y_{it} - \log \bar{y}_t)^2}{n-1}},$$

where:

y_{it} - GDP i - country in US\$ PPS per capita and year in time t

Graph 1 Linearized form of β convergence of OECD countries

Source: author's calculations, WEF, UNDP

termination presents by reducing the freedom degrees 38.44% of explaining variability of the average growth coefficient in GDP fluctuations in OECD countries in the period 1995-2009. The regression model is significant (P -value = $4.5 \cdot 10^{-5}$). It is visible that OECD countries with low GDP growth rate reached higher coefficient compared with the economically more developed countries, i.e. OECD countries with a high initial GDP level in 1995. This creates a presumption of compliance with the conditions of similar development of countries, the poorer countries could converge

to richer countries. The graph shows that the country situated on the left side of chart recorded a faster economic growth between 5.8% - 8.2% (Estonia, Slovak Republic, Poland, Hungary) during the period. The high economic growth rate reached Estonia (8.2%), which is typical for the lowest GDP level in the initial year (6272 U.S. \$ per capita in PPS). The Slovak Republic position is in terms of GDP growth and the initial GDP level slightly lower (GDP growth rate is 7.2% in 1995 and 8310 U. S. \$ per capita in PPS). A similar situation can be seen in countries as Turkey, Chi-

le and Mexico and their economic level is compared with previous group slightly lower (4.9% to 4.9%). Specific position has Luxembourg and characterizes the highest level of GDP within OECD countries in 1995 (38 923 U.S. \$ per capita in PPS) and the GDP growth rate of 5.6%. More than half of OECD countries are above average GDP growth rate. Among OECD countries which have higher growth rates than the OECD average (3.8%) belong the UK, Australia, Portugal, Finland, the Netherlands, Mexico, Chile, the Czech Republic, Turkey, Greece, Spain, Slovenia, Korea, Luxembourg, Ireland, Hungary, Norway, Poland, Slovak Republic and Estonia. The results point to the fact that the majority of OECD countries, which belong to a group which reaches above the average GDP growth achieves below average GDP values in 1995, i.e. less than 19 482 U.S. \$ per capita in PPS. The exceptions create New Zealand and Israel with GDP level a lower initial GDP level and below average economic development. In comparison with the countries of the European Union, it is necessary to be mentioned that while the average initial GDP level of European countries (EU27) is lower (17 456 U.S. \$ per capita in PPS) and their GDP growth rate in the period 1995 to 2009 is higher (4.2%).

Some studies emphasize the importance of economic growth in the context of their success in the international market. However, developed countries show that a major factor in the success of the economy is just increasing their productivity. It is clear that the country's competitiveness thus becomes a synonym of prosperity and suc-

cess of each country. Therefore, the attention should be given to the use of national income for the area, which will be reflected in the level and quality of human capital of the country. Government expenditure on human capital creates a prerequisite for a longer, better and more productive lives. Creating better conditions for human capital and the support of social capital leads to a permanent source of competitive advantage of each country. Therefore, the lag in productivity and the level of human development is the lack of competitiveness on a global scale.

Multidimensional classification allows the investigation of mutual relationships and dependencies between the OECD country's competitiveness and their economic growth and human development. It helps to classify OECD countries into similar countries in terms of the above-mentioned indicators. From a methodological aspect, there have applied multivariate methods (cluster and discriminant analysis). To verify the effectiveness of OECD countries clustering in the similar groups measured by the Euclidean metric (furthest neighbour method) a discriminant analysis is used. Multidimensional classified OECD countries based on the selected indicators and significant between group differences presents Table 1. OECD countries are classified into four groups by cluster analysis on the base of available data and it is possible to identify their membership to the groups given.

Table 1 Multidimensional classification of OECD countries and basic statistic

Cluster	OECD countries	Absolute frequency	Relative frequency		Global competitiveness index (GCI)	Growth rate (GR)	Human development index (HDI)	Initial GDP level (GDP)
1	<i>Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Luxembourg, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, USA</i>	18	62%	average	5,257	0,041	0,871	10,024
				SD*	0,220	0,009	0,025	0,180
2	<i>Czech Republic, Greece, Italy, Portugal, Slovenia, Spain</i>	6	21%	average	4,397	0,048	0,814	9,540
				SD	0,224	0,009	0,025	0,257
3	<i>Estonia, Hungary, Poland, Slovak Republic</i>	4	14%	average	4,400	0,074	0,783	8,896
				SD	0,139	0,008	0,011	0,142
4	<i>Turkey</i>	1	3%	average	4,160	0,049	0,650	8,871

*standard deviation

Source: author's calculations, WEF, UNDP

It is evident that the first country's group is created by the most competitive OECD countries in the OECD in 2009. The mentioned group includes 18 countries (GCI = 5.257) with highest GDP initial level (GDP U.S. \$ 22,561 per capita in PPS) and also human development (HDI = 0.871). The most competitive country in the OECD is Switzerland (GCI = 5.60), which reached in 1995 GDP initial level 26 613 U.S. \$ per capita in PPS, and from the human development aspect given country reaches 11th ranking position (HDI = 0.864). Evidently, the most competitive OECD country in the period achieves GDP growth rate in 1995-2009 GDP only 3.7%, which is comparable to countries such as Sweden (3.8%) with higher human development (average HDI = 0.864), and others as France, Austria, USA, Canada, and New Zealand (3.6% GDP growth).

To the second group belong 21% of the total OECD countries characterized by a visible lower

competitiveness (GCI = 4.38). Their GDP growth in analyzing years is comparable with the previous country group about 0.7% higher (average growth rate is 4.8%), the initial GDP level and human development is noticeably lower. The most competitive country in second cluster is the Czech Republic (GCI = 4.67) and its GDP growth rate is indeed comparable to Greece (4.9%), but the economic level in 1995 is the lowest (GDP = U.S. \$ 12,809 per capita in PPS). In terms of human development, the Czech Republic is the most developed together with Spain and Greece. Although the GDP formation in Italy is the highest in the second group (GDP = 21,104 U.S. \$ per capita in PPS), the growth rate in the period 1995-2009 is the lowest (3.1%). In the context of the competitive ability in the global market, the economic growth of countries is considered as a significant factor. But Slovenia is a European country characterized by the highest GDP growth

rate (5.3%) and its ability to be successful in international competition is noticeably lower (GCI = 4.55). Its GDP formation per capita in 1995 is after the Czech Republic the second lowest (GDP = 13,027 U.S. \$ in PPP).

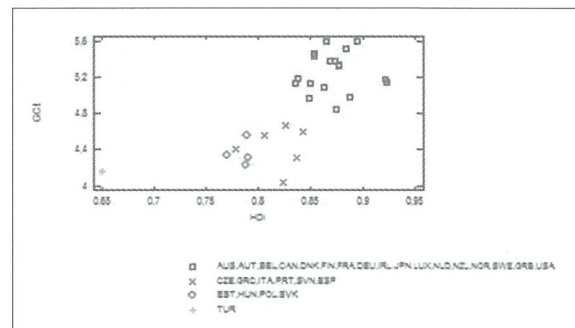
Third group includes three V4 countries together with Estonia. A major characteristic of these OECD countries is the low initial GDP level (average GDP = 7 305 U.S. \$ per capita in PPS). Lower human development is typical for the mentioned country group (HDI = 0.783) and competitive position comparable to the second group, however, as it has been mentioned above, in terms of GDP growth they significantly overtake them. The highest growth rate has Estonia (8.2%) and the Slovak Republic (7.2%), although the income per capita in 1995 is the lowest just in Estonia (GDP = 6272 U.S. \$ per capita in PPP). Both OECD countries are from the human development point of view at a comparable level (HDI = 0.789). The growth rate of GDP formation per capital in the time period is 1.4% in Hungary, i.e. a lower than in the Slovak Republic but the initial economic situation is better (GDP = U.S. \$ 9,014 per capita in PPS). Poor developed country of human capital is Poland (HDI = 0.769) with the lowest level in the OECD countries after Turkey. Its position in competitive ranking is higher than than in Slovak Republic (GCI = 4.31), and Hungary (GCI = 4.22).

Considering above mentioned, Turkey has a visibly different position in the OECD countries, because the different characteristics create the fourth group. The competitiveness of Turkey is higher than in Greece (GCI = 4.04) and income

per capita is higher than in Estonia as the development of human capital among OECD countries is at the lowest level.

The following Graph 2 shows the relationship between the country's competitiveness and human development level. Location of OECD countries in the graph is approximately diagonally suggesting a positive correlation between human development countries and their ability to compete with other countries in the world.

Graph 2 OECD countries locations according human development and competitiveness



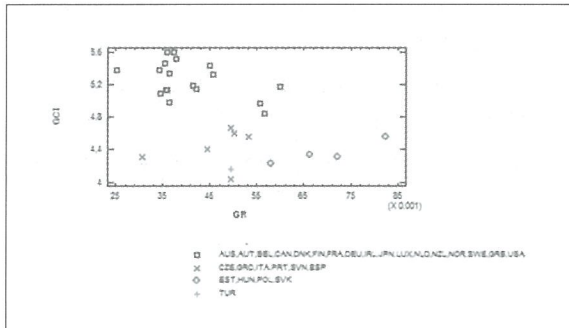
Source: author's calculations, WEF, UNDP

While the question of human development includes areas outside of the economic and education levels and day to day care about human health, its impact on competition in economic competition is visible.

Regarding the results interpretation, it should be remarked, that in the general interpretation there must be a careful approach. Just multi-dimensional classification of countries based on partial selected indicators identified more coun-

tries where statement mentioned above does not apply, e.g. New Zealand, and Ireland.

Graph 3 OECD countries locations according economic growth and competitiveness



Source: author's calculations, WEF, UNDP

On the other hand, a multi-dimensional view (Graph 3) allows to define the countries confirming that the success on the international market and the income growth have no significant dependence (Switzerland, OECD, USA, Denmark, and Finland significantly higher rate of GDP growth).

CONCLUSION

It is evident, that the good prosperous economy is affected by the wider spectrum of factors in a qualitative or quantitative form. The multidimensional fundament of economic processes determines to take a complex approach to the state economy assessment. Under the influence of integration pressures as economies find themselves in the position of continuing economic uncertainty. In order to succeed in an environment pressures and un-

certainities of the world economy will become part of the everyday fight for competitiveness and enforcement of the international market.

As already mentioned above, the economic development of the each country as a prerequisite for success in the international competition is determined by the desirable development of many economic and no-economic indicators and reflects the positive direction in the areas of the economy. Significant impact on the prosperity of the economy has also the political and social situation and education level. In the economic research can be found a number of attempts to define the relevant factors that would help to keep the country on the path to success. Hence, the paper was then aimed to investigate and verify the relationship between economic growth and human development in OECD countries and their global competitiveness.

However, a more detailed view was devoted to examining the impact of the human development measured by the human development index which includes not only economic but also social status (education and health) of countries. The economic growth as well as verification of the convergence trends OECD methodology was tested by Barro, Sala i Martin (1992). From the results it can be concluded that the validity of the convergence tendency was confirmed and thus the OECD countries with a lower economic level (as "poorer") are closer to countries with a higher economic level (as "richer") in the years 1995-2009. Multivariate classification of OECD countries hasn't confirmed a significant effect of the

economic growth on their ability to succeed in the global market. On the other hand, on the base of results can be expected positive impact of the level of human capital on the competitiveness of OECD countries and hence success in the competition in the international market. Considering the comments above, it is necessary to create better conditions for human capital and the support of social capital, because it leads to a permanent source of country's advantage of their competitiveness. Therefore, a low support of human capital means low productivity and low level

of human development and to be less competitive on a global scale.

As Bobakova and Heckova (2007) wrote that benefits cannot be expected without the continuous improvement of the institutional framework and without the motivation of a balanced foreign direct investment.

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