

HUMAN CAPITAL AND INNOVATIVENESS AS MEANS TO BRIDGING DEVELOPMENT GAPS. POLAND AND THE CZECH REPUBLIC AS CASE STUDIES

Teresa Bal-Woźniak

Rzeszow University of Technology, Department of Enterprise, Management and
Ecoinnovation, al. Powstańców Warszawy 8, 35-959 Rzeszów, Poland, e-mail:
wozniakt@prz.edu.pl

Abstract: The aim of this article is to analyze the innovative achievements of selected economies: Polish and Czech. This issue is of fundamental significance for all post socialist countries. Post communist heritage in form of homo sovieticus is really far from innovative performance. The author assumed that innovativeness is the component of human capital whilst the conceptions of innovativeness were dealt with as the development challenge and the criterion of efficiency for contemporary economies, creating the opportunity to speed up the pace of narrowing the development gap. It is reflected in the title of the study. The methodological basis and data source are Knowledge Assessment Methodology (KAM 2009) and European Innovation Scorecard (EIS 2009). The fulfillment of this aim, in the author's opinion, relied on presenting the coordination of innovative actions of managing entities and underlining the growing significance of network structures. On the basis of the conducted empirical analysis encompassing the years 2003-2008, there was observed, mostly in Poland and to smaller extent in the Czech Republic, a low level of innovativeness and its unsatisfactory dynamics, as well as poor use of relatively numerous human capital for attaining goals. In the conclusion part of the article, there were presented problems connected with the necessity of consequent impact on the quality of human capital and level of innovativeness. In order to overcome barriers, the author postulates to establish a pro-innovative institutional order and indicates the need for systemic attitude towards these reforms.

Key words: innovation, innovativeness, human capital, development gap

JEL Classification: J24, O31

DOI: 10.2478/v10135-009-0011-6

HUMAN CAPITAL AND INNOVATIVENESS AS MEANS TO BRIDGING DEVELOPMENT GAPS. POLAND AND THE CZECH REPUBLIC AS CASE STUDIES¹

Teresa Bal-Woźniak²

Introduction

Innovations and innovativeness were emphasized by Joseph Schumpeter (1912) as key factors of socio-economic development. At present, they are often perceived as tools for establishing an international position of a country, gaining a competitive advantage and reaching business goals by enterprises, as well as providing the basis for human success. Specific expression of a considerable interest in the problems of innovativeness and cooperation in the scope of innovation has been observed since the 1970s. It results from a new wave of modernization based on Information and Communication Technology (ICT) and globalization of liberalization.

As for the European Union, research on innovativeness is also connected with the development gap in relation to the US and certain obstacles to be overcome on the basis of the Lisbon Strategy adopted in 2000. The accession of Poland, the Czech Republic and other countries to EU in May 2004 raised hopes regarding the perspectives of overcoming the technological gap inherited from the centrally-planned economy. There were also questions regarding the effectiveness of mechanisms, instruments and procedures adopted in the Lisbon Strategy for building a creative and innovative economy.

The issues concerning innovativeness and narrowing of the development gap between EU and the US have been the domain of many authors. The analyses contained in the reports by European Commission (2004), Lewis (2005) and Bieńkowski and Radło (2006) are widely known in Poland. There is, with respect to Poland, vast literature on the createability and absorption of innovation and development of knowledge-based economies (K-bE) inspired i.g. by A. Kukliński (2001, 2009), as well as by the opportunities of EU membership as well as intensification of technological competition while increasing popularity of global capitalism mechanisms (Weresa, 2006; Report on capital..., 2008). The aim of this article is to analyze the innovation performance of two economies: the Polish and the Czech. The level of innovation is of great significance for all post-socialist countries as the historical heritage in form of homo sovieticus is far distant from innovative behaviors.

In order to fulfill the aim, a certain manner of conduct has been applied. The main part is preceded by the depiction of innovation as the role of innovative challenge and the

¹ This paper was prepared as a research project financed through funds earmarked for scientific activities for 2007-2009.

² Rzeszów University of Technology, Department of Enterprise, Management and Ecoinnovation, al. Powstańców Warszawy 8, 35-959 Rzeszów, Poland, e-mail: woźniakt@prz.edu.pl

efficiency criterion for contemporary economies. It relied on the urge to provide the cohesion of theoretical discussions and those of empirical and applicable character. Due to these reasons, mechanisms of innovative coordination of the actions taken by the entities within economy were provided, underlining the increasing role of networking structures. In the main part, as the methodological basis and source of data, standard solutions in form of Knowledge Assessment Methodology (KAM 2009) and European Innovation Scorecard (EIS 2009) are applied. In the concluding part of the article, there are presented the problems connected with the necessity of a consequent influence on the quality of human capital and the level of innovativeness.

1. Innovativeness as a present day developmental challenge and criterion for efficiency of contemporary economies

Innovativeness means the ability to create or seek new knowledge based solutions, adapting them to given organizational conditions (e.g. family, household, company, region or country), their practical implementation followed by their popularization. This way of comprehending innovativeness makes it a part of human capital. Without the human capital of proper quality, aimed at creativity and activity i.e., innovations that enhance the realizations of business aspirations, it is difficult to narrow economic development gaps as well as coping with changes in the functioning of markets, nations, companies, individuals and societies as a whole. The modernization of human capital has become the main factor to increase the importance of innovativeness and its acceptance as the key challenge of development and a criterion for evaluating efficiency of economic systems in establishing K-bE.

Innovativeness in the context of competition is rather of a synergically positive character. Its name defines novelties and changes. Its dynamic and creative functions are adequate to the increasing turbulence of environment. In this environment, only introduction of product, technological and management innovations may give the opportunity to narrow the development gap. Intensification of innovative processes requires, though, the introduction of natural (market) mechanisms of selection and creation, i.e. Schumpeterian creative destruction that is not possible without competition.

Focusing on innovativeness as a factor affecting competitiveness relies on different reasons. This is due to the dual character of innovativeness as observed within various systems. Innovativeness as a resource connected with other factors does exist in any organization (company) as a cost determinant at first. It can also be found in its initial stage as a reflection of a company's organizational efficiency, including economy in general. This dual role of innovativeness as an input and output factor emphasizes the aim of its inclusion into a criterion for evaluating the efficiency of economic systems. The use of standards of innovativeness in creating international ratings of development within particular countries serves as the practical justification for the argument favoring the application of innovativeness as a criterion of efficiency (achievement of targets) and productivity of economic systems.

Descriptive forms are often applied in defining innovations based on the model of J. Schumpeter (1960), the precursor of innovation theories, who named occurrences which were later to be known as innovations. However, due to technical and scientific achievements over the centuries, as well as the state of the environment and human position since the beginning of the 21st century, there has been an existing need to

develop attitudes towards innovation. The following definition seems to be adequate to development challenges: innovation is an implemented change that brings certain benefits (economic, social, ecological, etc.), result of which constitutes a positive number. Structural elements of this definition consist of three components: change, implementation, benefits with regard to all walks of human life.

Change indicates the fact of replacement of a former state with a different one. It means the introduction of something new into any walk of human life. This can therefore refer to every phase of human development and not only to economic aspects. Such an approach determines wide areas of opportunities to influence the innovativeness of attitudes. Prior to the attainment of "professional maturity," which is understood as the ability to actively participate in an economic activity, man can be "trained in the implementation of innovation" in the areas of his present life activity. A change should never be left at its conception stage. The best, and perhaps the most original idea for replacing current states with a new one which has not been implemented, has no chance to become an innovation. The previous five-year economic plans of former Soviet Union countries were filled with varied ideas for modernizing production. Non-effective tender mechanisms that were characteristic of hierarchical, centralized co-ordination of command governance practically eliminated innovativeness at the microeconomic stage.

Implementation, a structural component of innovation, is a necessity for its existence, though not yet satisfactory. The necessity and satisfactory conditions are fulfilled by the sum of benefits. This does not however refer to economic benefits. They do not ensure full utility in the understanding of the theory of individual or social welfare. Focusing solely on economic effects, indeed as economic fetish, constitutes an expression of tendency towards the dominance of the position of an economic entity over others which can result in social inequalities. Disregard of ecological, social, genetic, axiological, political and other consequences is a proof for the lack of corporate responsibility no matter whether it is the responsibility of an individual, a particular company or business as a whole.

It should therefore be emphasized, that a positive sum of benefits in all walks of human life is a prerequisite for the acknowledgement of applied changes as innovations. The non-acceptance of a widely understood meaning of benefits being a structural component of innovation leads to situations in which implemented changes result in microeconomic benefits, yet at the same time they could lead to external negative effects, such as in ecosphere, social capital, human biological potentials, and in other spheres of human life. Focusing on the varied nature of benefits, both cultural and spiritual, renders to be expedient as innovation in its traditional understanding is often associated only with technical aspects and economic benefits.

Innovations are products as well as the carriers of knowledge which are considered as a means of production, component of prosperity, growth facilitator, article of trade and an instrument for competition, as well as an instrument for creating or obtaining new knowledge (Whitley, 2008).

Economists have always paid attention to the gravity of roles played by knowledge in economic processes but majority of them treated it as something too risky to be dealt with. Until the times of ICT revolution, knowledge in its role as an economic resource was seen as the factor complimenting traditional factors of production. Its significant

role in the development of technology and by means of economic growth was proven by R. Solow (1956). However, innovations have been still perceived exogenically “like manna from heaven”. Finally, it has been proven in the scope of endogenic growth theory that the development of knowledge is a factor that continuously opens the barriers for economic growth (Romer, 1986) and decreases poverty of nations.

This approach, towards knowledge as a prosperity factor, points out a view for creating material wealth, i.e. individual, social group or national wealth from non-material knowledge. The studies performed by leaders in the development of K-bE confirm the appropriateness of P. Drucker’s presumption that information and knowledge are the main producers of wealth since it is no more possible to attain huge incomes either through production and transfer of goods or monetary control (1999, p. 149). Advances in ICT along with liberalization have made information and knowledge the key wealth producers. It is impossible to achieve success in the global market, without knowledge that allows for acting in keenly competitive environments of open markets, especially within transnational corporations (TNC), as well as complete, reliant and immediate information (Stiglitz, 1999).

No matter the case, individual or organization, it is only the knowledge that allows for yielding benefits to its users that can become tools of competition. If it finds itself useful in key competences, in most cases it can become “the only source of a comparative advantage”. This being the case since we, in contemporary economies, have been facing the unprecedented expansion dynamics of industrial sectors based on human intellectual potentials. Rapid economic growth of some raw material supplying countries does not even negate this opinion. The progressive exhaustion of non-renewable resources that has gathered momentum due to intense expansive development in China and India provided for further arguments for innovative based strategies and acceleration of economic dynamics in the ICT sector. Hopes for resolving issues of globalization, climatic changes, energy crisis, problem of hunger and poverty, high mortality rate depend on the development of human capital and new technologies. No further arguments are required to know that this is of crucial importance to Poland and other countries that are less equipped with most efficient means of energy carriers.

One of the functional aspects of knowledge relies on the role of a tool for the creation or attainment of new knowledge in accordance with the principle of “the richer and more varied the knowledge one possesses, the better tool it becomes” and capable of self-improvement by the mere fact of its application. This is an unparalleled feature that does not occur in any other form of resource. However, the OECD report has revealed that the capacity for consistent application of knowledge in the creation of further knowledge has not been fully accomplished (2007). Nonetheless, it has been explained that making knowledge which allows for acting and gaining benefits for its users is strictly connected with its proper facilitation with other components of intellectual capital (Edvinson, Malone, 2001). Thus knowledge is the building block of intellectual capital, as well as all of its component elements such as patents, innovative potentials, customer loyalty, reputation, desire to be active, being involved, organizational culture etc., existence of which is attributable to a form of knowledge. Knowledge is the outflow of human mind and it is through it that it can become applicable and yield profits, too. Hence its being termed intellectual capital since it has been observed that certain non-material assets are often difficult to define but for sure associated with

knowledge or perhaps are the result of knowledge application resulting in profits much higher than traditional, i.e., material or financial, forms of capital.

Knowledge as contained in human mind is also in form of constructive thoughts, imaginations, feelings, intuition, opinions, conceptions, beliefs, ideas and in other forms such as documents, standards, procedures, processes, as well as in practice. In essence, however, it can be articulated and utilized through people. Human beings can create capital out of it. They can transform it into intellectual capital. It can as well be wasted while remaining unutilized. In order to protect societies and economies against such eventualities, it is pertinent to efficiently manage the process of creating knowledge, its popularization and application. There is also the need for complex systems of creation, attainment, processing and storage of knowledge based on such solutions that presume supply of knowledge resources; functional knowledge banks that offer sharing and transmission of required information; skills in grasping, applying and use of available knowledge, as well as its associated with relevant information and communication technologies.

Finally, the development of information and communication technologies opened the perspective of common use of knowledge in many functions. Basing on that, there emerged views regarding the expansion of knowledge based economy. This sector has become an important branch of theoretical thought and political activities at global, continental, national and even regional levels. In the definitions contained in eEurope and ePolska, K-bE is often defined as a new economic model whose functionality relies on the comprehensive utilization of knowledge and innovation resources, as well as of universal access to information. Having in mind the role played by companies in multiplying national wealth and knowing that this is dependent on the degree of success of a company's activities, meaning the contribution dependent on the success of enterprising actions, it needs to be clearly stated that a knowledge based economy is such, in which knowledge serves as the competitive advantage factor for the majority of companies. Knowledge based economy is characterized by a higher average long-term economic growth rate than in traditional economies. The causative factor for this rapid long-term growth is a group of quality factors that are closely related with knowledge, its creation, transfer and popularization: such as institutions (Williamson, 1998) and social capital (Zak, Knack, 2001).

If a knowledge based economy is understood as presented above, then it is currently only applicable to developed countries. Less developed countries cannot, however, hope that their economies will become knowledge based through the activities of market forces. Thus, it is assumed in EU that it is needed to assist market forces in creating knowledge based economy at local, macroeconomic and global levels. The strategic goal of EU is the creation of institutional climate, instruments and mechanisms favorable to innovativeness, development as well as applying human capital in fostering competitive harmony including conducive conditions for harmonious development of all spheres of human existence. A much greater role of creating an innovative economy that relies on narrowing the development gap rests on science, education and technique. They constitute the pillars of K-bE and is visible in national and international statistics to reflect qualitative socio-economic transformations.

The aforementioned arguments rested upon the basis for using the research methods that have been popularized in the 21st century so as to explain the similarities of changes in innovativeness and human capital with narrowing the development gap of countries.

2. Mechanisms for coordinating corporate innovative activities

Despite the imperfections of market mechanisms, in the theory of economics they remain the best methods of organizing economic endeavors (Woźniak 2008), and consequently, they ought to be mechanisms preferred in creating economic activity. There are theoretical and empirical proofs that economic efficiency is self-determined during demand – supply interplay. Thus it is necessary for the state to guarantee free flow of capital and labor, freedom in contracting agreements and in keeping to terms of such contracts. Guaranteeing these conditions of efficiency is not possible without properly defined property rights, eliminating asymmetry of information and creating institutional conditions which would allow for protection against risk and the unknown. In practice, the logics of markets are rooted in egoism of individualists. It is reflected in individualistic income motivation. It is treated as a common and the strongest force of success of an individual and the society. It shall not be forgotten that there is also a mechanism of global threats. A visible outcome of this is the current global financial crisis. In order to limit these threats, it is necessary to spell out new roles for the state, a new international economic order, as well as in relation to technological issues and popularization of innovation in order to minimize global threats.

Transactional costs, *ex ante* and *ex post* do occur as part of market coordination of transactions. *Ex ante* costs are connected with gaining information and their processing that lead to signing contracts, as well as negotiating conditions for the limitation of transactional risks. On the other hand, *ex post* costs relate to monitoring of behavior, renegotiations, disputes including settlement costs. Transactional costs are decisive as to whether transactions should be organized in-house using hierarchical relations or between autonomous companies (Williamson, 1998). The transfer of coordination processes to the company, using hierarchical relations does not always result in lowering of transactional costs. If it turns out that market costs of coordination mechanisms (price component) will be lower or equal to management costs, then it becomes economically unwise to set-up a company, and if it exists, it will not be for long.

In keeping with the principles of alternative cost accounting, the optimum limit to the size of operations coordinated hierarchically (in-house) is such a point where the costs of organizing marginal transactions in-house either equals the costs of such coordination from outside through market mechanisms or equals the costs of its organization by external providers since they incur lower managerial costs (Coase, 1937), i.e. by means of a market mechanism. Attempts to point out positive aspects of hierarchical relations do not diminish the scale of unfortunate consequences, especially in cases of maladministration, for example in case of undue bureaucracy that frustrates grass-root initiatives. Attempts at decentralization in the functioning of existing companies may result in new difficulties in the coordination of activities. The replacement of hierarchical controls within market relations is an unacceptable solution if it generates additional transactional costs. It must be remembered, however, that companies with their specialized management structures can influence the stability of horizontal

relations in such a way that they would protect against the weight of hurried impulsive contracting.

The aforementioned issues of stability of relations and reduction of transactional costs lend credence to the need for other means of coordinating activities. Besides, increasing globalization and the availability of advanced technical developments permit the assumption that large hierarchical corporations will be replaced with new less formalized, self-organizing forms of coordination (Castells, 1996), otherwise known as networks (Fukuyama, 2000). Economic networks in the role of a mechanism coordinating the activities of economic entities are often treated as an intermediate form between traditional and hierarchical markets, which means identifying the characteristic features of new methods of coordinating activities. They are partly the outcome of positive experiences with the functioning of market systems and also from experiences of hierarchical structures. They have been augmented with new components of an increasingly complex and information saturated economic life that had been expected by participants.

Since the relations within a network are often defined in categories of standards and values, any economic change within its framework takes place as a result of self-involvement, i.e. due to the internalization of own goals using the same standards and values. Market transactions can, on the other hand, also exist between anonymous parties. It is necessary to add that currently this is most often the case as it is facilitated by globalization. Just as in the previous times when companies were assigned the function of defending parties against conflicts, so as networks being likewise currently considered. For example, clusters which are seen as a structure controlling effects of lack of cooperation, dearth of coordination and inadequate differentiation in mutual relations as the principle of “outward competition as against cooperation and partnership within clusters” is being respected.

National Systems of Innovation (NSI) are also network like. The pro-innovative tool in such systems may be clusters. NSI as institutional systems are based on models of coordination focused on development of innovation, as well as technologically modern economy. As a result, they constitute the basis for developing new potential for economic development in many highly developed countries.

The clusters in the role of networks as an economic structure of coordination in form of NSI have only begun to gain popularity in the economies of less developed countries. Other varied forms of interposing structures, often referred to as layers have, however, been in play for long. At present, a good example of an interposing network is the Internet or social networks within industrial clusters. The clusters that attain their critical mass, i.e. the minimum number of companies or institutions indispensable to reveal agglomeration effect and also attain substantive competitive success in certain fields of business activity, are surprisingly characteristic of practically each economy to be national, regional, state as well as huge urban areas especially in more developed countries (Porter, 1990). It may be stated, along with the appearance of clusters, that new layers of networks have emerged in the economy of the United States of America. In the majority of developed Europe, that is financially supported with EU funds, the idea of clusters is observable in all countries both in practice and theory (Skokan, 2007). New forms of mutually interposing cluster systems are also being observed in Poland

and other post-socialist countries. The idea of cluster initiatives is also being observed in the Ukraine (Antoniuk et al., 2003). As a result, partnership and co-operation within networks are contributory to the attainment of synergy effects. The achievement of similar effects in other structures is hampered as their component entities lack the necessary competence and other resources essential to manage processes and coordinate systems on their own.

Clusters are the product of innovation of coordination processes. Globalization creates the pressure on creating hybrid structures of coordinating actions and innovative processes. Market mechanisms continue to play dominant roles in hybrid structures constituted of elements of market, hierarchical and network coordination. Hence, there is success of such structures such as innovation, which is dependent on the degree of advancement in competitive harmony. Poland, upon becoming EU member, accepted and adopted principles of free economy along with its associated load of regulations that are hierarchical in nature being part of centrally regulated strategies.

The efficiency of coordination mechanisms, often understood as the initiation of certain processes to attain set goals in an effective way, depends on several factors. The internal cohesion of instruments, which function with the logic framework of market mechanisms and are often varied in nature, is of significant importance. It is important to note that markets are self-regulatory. Network structures also display spontaneous reactions aimed at eliminating incoherency. On the other hand, there exists a high risk of lack of internal cohesion, especially in the logic coherency of market practices in hierarchical structures created through state-initiated coordination. This means that the application of market instruments is only purposeful where there exists a risk of malfunctioning or where these do not function at all. Moreover, ensuring the fulfillment of other than market objectives would require support of a central hierarchy of coordination. Since both human capital and innovativeness possess features of public goods their development requires support from hierarchical coordination as well as macroeconomics. Consequently, network structures that are of great importance in the Lisbon Strategy seem to be the most adequate in developing innovations.

3. Czech Republic and Poland's economy from the view point of convergence models in comparison with global and European measures of human capital and innovativeness

One of the most common research methods known in the 21st century regarding quantitative human resources and innovativeness was the World Bank methodology, Knowledge Assessment Methodology – KAM. It was drawn up in 1999 as a part of the Knowledge for Development - K4D project. A synthetic Knowledge Economy Index – KEI has been established for 140 countries under KAM 2008. The KAM methodology envisages the update of the base data from 1995 for comparative analysis for subsequent years applying progressive analysis in K-bE development as can be observed in the graph.

According to KAM 2009, KEI encompasses 109 structural and qualitative variables. The former edition encompassed 84 measures. They have been grouped in the so-called four pillars of K-bE, as follows:

- education and human resources (narrowly understood as human capital),

- innovation system imaged by means of indices of resources and innovativeness,
- ICT and
- economic stimulants and institutional regime.

In order to present sources for the development of KbE, certain selected variables of this index can be used. Thanks to relative approach to KEI (e.g. per 1000 people) statistic deformations connected with the size of a given country can be eliminated. The first three pillars of K-bE (see: table 1) are included in the methodology of KAM in form of a knowledge index (KI). They reflect the qualitative side of human resources. KI allows concluding what a level of intellectual capital development is, as all measures of index are directly or indirectly connected with this resource. KI allows assessing, on the basis of GDP, how knowledge is used for economic growth.

Vast range of analytical indices is aimed at presenting the complexity of innovative processes. This complexity of partial indices may include discrepancies in the scope of technological and non-technological innovations. To compare the indices that are incommensurable, their standardization is essential. There are problems with elimination of the stress on measurable indices which lose, under analysis, qualitative aspects of resources and innovativeness of indices. The improvement in the scope of grouped indices proves the changes towards normative models of widely understood innovations as the changes that are mostly non-technological. It may be satisfactory for political elites who do not appreciate proper efforts and costs necessary for technological innovations as they are more interested in fulfillment of social aims and neoliberal ideologies or even particular political interests.

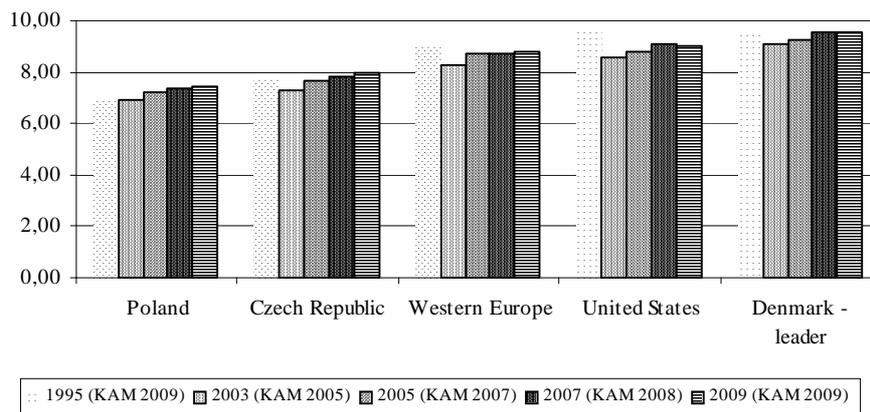
Synthetic KEI based on partial indices has other weaknesses. If it is equally dependent on partial indices, it simplifies the image of sources of the catching-up processes. It may abolish both weakness and strengths of partial indices. Paying attention at each level of measurement of innovativeness and human capital, it is possible to decrease weaknesses of this methodology. As a result, the article considers these indicators which are reviewed favorably and are referential to the specificity of post socialist countries. In order to expose the specificity of space time determinants, conclusions encompass observations resulting from some of the partial indicators and information being beyond such indices.

The models of economic development based on human capital resources and innovation for Poland and the Czech Republic could be Western Europe countries,¹ US and Denmark, the global leader among 145 countries contained in KAM 2009 report.

There was a regular increase in synthetic measures in form of KEI in particular countries over the period of 2003–2007. For countries like Poland or even the Czech Republic that were narrowing the development gap, it meant chasing a moving object. That is why, despite relatively high dynamics of transformation in Poland, the development gap was difficult to narrow. Certain symptoms of a change in this situation in the countries leaders (mostly in the US) were registered in the report KAM 2009 (Figure 1).

¹ According to KAM, Germany, France, Great Britain and Italy are presented separately. However, Western Europe encompasses other countries of EU 15 as well as Cyprus, Iceland, Norway and Switzerland.

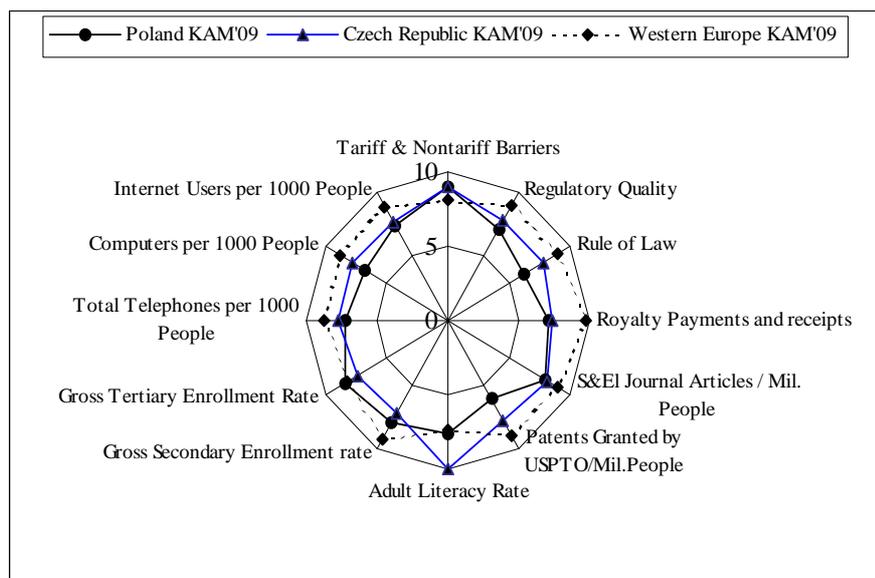
Figure 1: International comparison of changes in KEI index



Source: (KAM 2005), (KAM 2007), (KAM 2008), (KAM 2009a)

Selected variables (part of 109 parameters), that formed the so-called Basic Scorecard, served to illustrate the distance between Poland alongside to the Czech Republic and Western European countries. Since indicators were dealt with relatively (in relation to 1000 people), it was possible to eliminate statistical distortions due to the size of countries (Figure 2).

Figure 2: Development gap between Poland, Czech Republic and Western Europe



Source: (KAM 2009b)

The Basic Scorecard allows for the formulation of the following conclusions for the development of K-bE:

1. A very high level has been achieved in the area of illiteracy elimination in the Czech Republic, while similar figures for Poland exceed the average for West European countries.
2. There were, for both Poland and Czech Republic, significant improvements in reducing tariff barriers with their indicators close to set models. Undeniably, this was due to their membership of WTO, OECD as well as accession to EU.
3. Poland has achieved good results in the area of scholastic achievements, with its indicators higher than in the Czech Republic, as well as Western Europe.
4. In respect of Patents granted, there is a great divide between Poland and Czech Republic in favor of the latter.
5. There is much of catching-up to be done by both countries in areas of institutional climate for development expressed in terms of quality rule of law and governance.

The KAM methodology is based on pillars of which two are distinguished titles, i.e., human capital considered in a narrow understanding to mean education and human resources, as well as innovativeness mirrored through such values as resources innovation system. The other two pillars of K-bE i.e., ICT together with economic incentives and institutional practices which do significantly affect bridging development gaps rely on human capital and economic innovativeness (Table 1).

Table 1: KEI index and components in KAM 2009

Country	Position among 145 countries	Knowledge Economy Index	Knowledge Index	Pillars of K-bE			
				Education and Human Resources	Resources Innovation System	ICT	Economic Incentive Regime
Denmark	1	9,52	9,49	9,78	9,49	9,21	9,61
United States	9	9,02	9,02	8,74	9,47	8,83	9,04
Western Europe	x	8,76	8,78	8,29	9,27	8,78	8,71
Czech Republic	28	7,97	7,9	8,23	7,78	7,7	8,17
Poland	37	7,41	7,38	8,02	7,03	7,09	7,48

Commentary: Gray color means a decrease in comparison to the previous period.

Source: (KAM 2009a)

The huge disproportion between countries in their KEI index levels, as well as in their knowledge index (KI), indicate that although the EU *acquis communautaire* and priorities contained in the Lisbon Strategy were necessitated, they do not guarantee automatic advancement in K-bE development or high innovation performance. The disproportions are maintained despite the decrease in the level of almost all indices for the leaders: Denmark and the USA (gray color in the table 1).

Western European countries far exceed Poland and the Czech Republic in innovation systems and in other parameters, likewise. The gap between them and the US and Denmark is even wider. A more optimistic approach especially to human capital in Poland is possible within a deep analysis of selected detailed parameters in accordance

with KAM methodology as it has been already signaled in the Basic Scorecard in figure 1.

Innovation resources in form of variables that constitute the National System of Innovation are decisive about the chances of incorporating a country into the global knowledge resource, its assimilation and adaptation to local needs, as well as in creating new technologies. Poland and the Czech Republic's innovation potentials considered synthetically, and contained in the Custom Scorecards, indicate the existence of a huge development gap. The positive changes in the Czech Republic in the scope of narrowing the development gap, in comparison to Poland, is confirmed by shifting within the ranking positions of KAM 2009 upwards (up to the position 28), while the Poland's position has decreased (see: table 1).

The universally applied parameters of the nation's economic innovation potential are expenditures on R&D as a percentage of GDP. Expenditures on R&D are one of the main priorities in the development of K-bE and catching-up on the US. Research and Development is to consume 3% GDP in accordance with priorities for 2010. This index has witnessed a decreasing tendency in Poland and has, in fact, remained at the critical threshold level of 0.57% as against the almost 2% for Western Europe since 2005. International comparisons show that in order to protect national economies against widening technological gaps, expenditures on R&D ought to equal at least 2% GDP. This level has never been attained in post-war Poland. The meager expenditures on R&D constitute a negation of popular declarations of the readiness to facilitate K-bE development. After Poland's accession to the EU, this issue attracted much attention in the Development Strategy plan for 2007-2015 in which, according to its assumptions, the share of R&D in GDP would rise to 2% in 2015. ICT technologies serve as infrastructural support for the development of human capital and innovation, especially the degree of their popularization and the dissemination of new solutions. The gap of the synthetic index of ICT popularization in Poland as against Western Europe is almost 18% but a little less for Czech Republic.

Lapses in institutional provisions could turn-out to be development snares which would not permit proper utilization of potentials existing in human capital, innovation and ICT technologies that constitute a nation's intellectual capital resource (Report on capital..., 2008). Mere membership in EU does not guarantee that the acquired *acquis communautaire* will eliminate incompetency in institutional infrastructures and several other problems inherited from the communist system. Sheer accession to EU does not ensure automatic economic growth convergence and improvement in living standards to the level obtainable in more developed countries. Institutional guarantees for formal coherence with competitive harmony constitute the first indispensable, though not sufficient, requirement for market efficiency. These norms must be incorporated in human thought principles and performances. The process of incorporation is long-term and takes place over generations. Poland has gone through one generation stage of learning how to function in open market situations. The Czech Republic is more experienced in this as it was the most industrialized part of Austria-Hungary before the WWI and after the attainment of independence it successfully continued its good industrial traditions and was subsequently referred to as "machine factory" of the COMICON bloc after WWII. In spite of these historic achievements, the centrally planned economy severed the process of rapid technological development. As for less

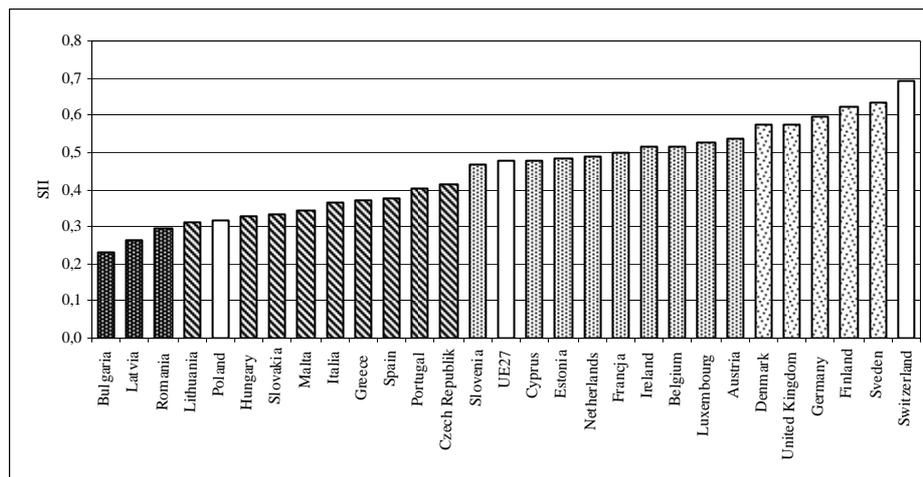
developed countries, it is even more problematic hence they, as a matter of necessity, based their development on dissemination of technologies. Poorer access to global financial capital makes the technological catch-up even more difficult to achieve.

Since 2000 in EU, there has been introduced a similar but more simplified, in comparison to KAM procedure of the evaluation of changes within innovativeness. It is included in (European Innovation Scoreboard – EIS). EIS has been formulated for identification and analysis of instruments regarding the influence on the policy of social and economic cohesion allowing for narrowing development gap. EIS emphasizes the diagnosis of creating human capital and molding innovativeness, according to requirements and expectations that have been formulated by the EU Parliament. This method also has analogous faults as KAM.

According to EIS 2009 (Summary Innovation Index – SII), whose values range from 0 for the least innovation to 1 for the highest, Poland and the Czech Republic are Moderate innovators, with innovation performance below the EU27 average. The EIS 2009 Moderate innovators are a mixture of five Member States which were Moderate innovators in the EIS 2008 (Czech Republic, Spain, Portugal, Greece, Italia) and five Member States which were Catching-up countries in the EIS 2008 (Malta, Hungary, Slovakia, Poland, Lithuania).

Poland's development gap in relation to the average level for EU27 as provided by data provided in accordance with SII, is higher than 1: 1.5 in relation to EU leader, Sweden and amounts to 1: 2 (Figure 3).

Figure 3: Poland's innovation gap in relation to UE27 average and Switzerland – the European leader



Source: European Innovation Scoreboard (EIS) 2009

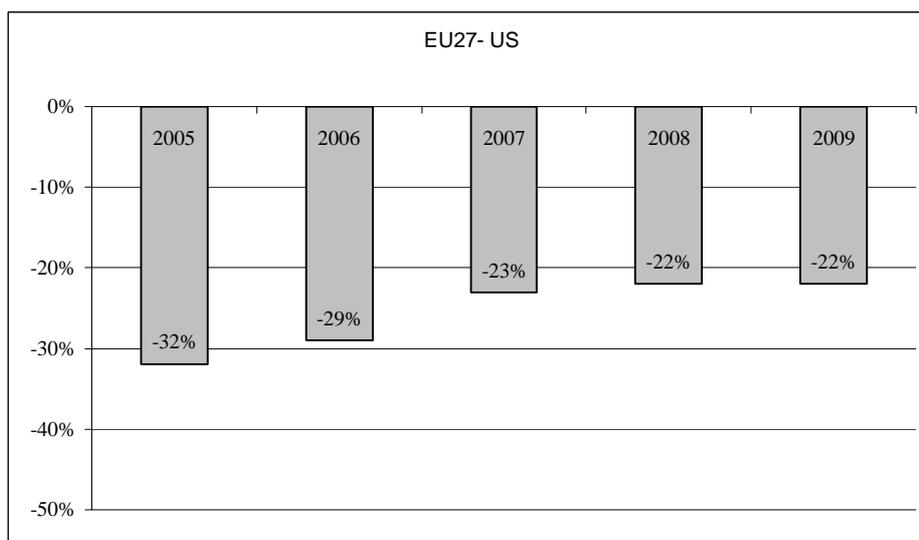
The Czech Republic, with an SII index of 0.415, has been classified as the thirteenth from the bottom of EU27 countries. Countries with innovation performance higher than the average for EU27 are divided into two sub-groups of innovation followers and innovation leaders. Switzerland, which is a non-EU member, is the European leader in innovation. The latest 2007 report show that it became a leader with an SII index of

0.681 which is quite close to the Japanese of 0.600 but higher than that of the US (0.550).

The aforementioned data, especially the medium values including those of other 14 countries classified below the EU27 average, depicts that EU economy is not growing as was expected by the European Parliament. In comparison to the US and Japan, Europe is to be innovative although the EIS 2009 report was more optimistic than the previous one.

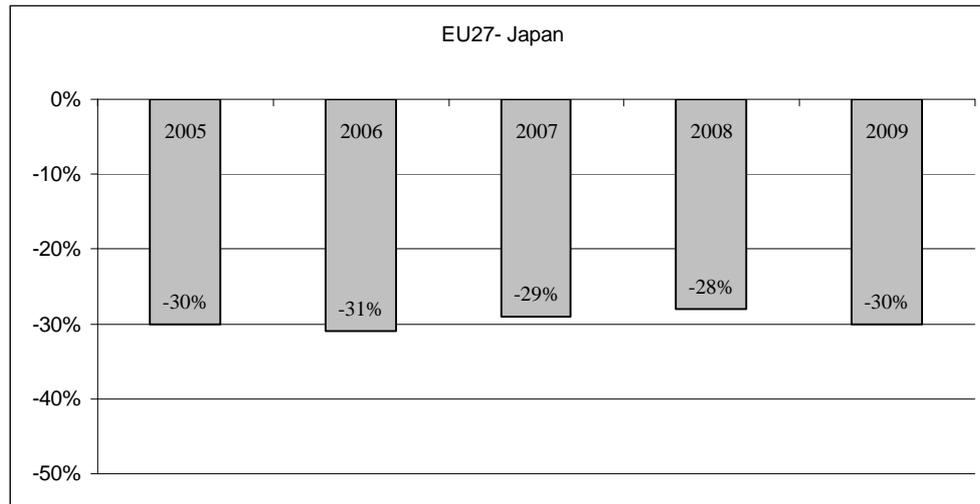
EU ambitious plans provided for in the Lisbon Strategy have been fulfilled by half. Nevertheless, the development gap measured as Summary Innovation Index SII for 2009 has dropped by 10% when compared with four years earlier. Conclusions from the evaluations are that bridging of the gap between EU and the US is not particularly due to EU innovation performance but more due to diminishing dynamics of innovation in the US (Figure 4).

Figure 4: EU27 Innovation gap towards US measured as an innovation index



Source: *European Innovation Scoreboard (EIS) 2009*

Due to the stable Japanese economic situation during 2005-2009 the development gap between EU27 and Japan did not reflect significant changes (Figure 5).

Figure 5: EU27 innovation gap towards Japan measured as innovation index

Source: *European Innovation Scoreboard (EIS) 2009*

If these trends were to remain unchanged then EU27 would have had the chance of catching-up with Japan technologically within one generation and perhaps even earlier in respect of the USA. However, it should be noted that the current global financial crisis has set new challenges in areas of technological advancements. The EU, burdened with the task of realizing policies of socio-economic coherence, will find it more difficult to face-up to post-crisis regimes of competition and innovation.

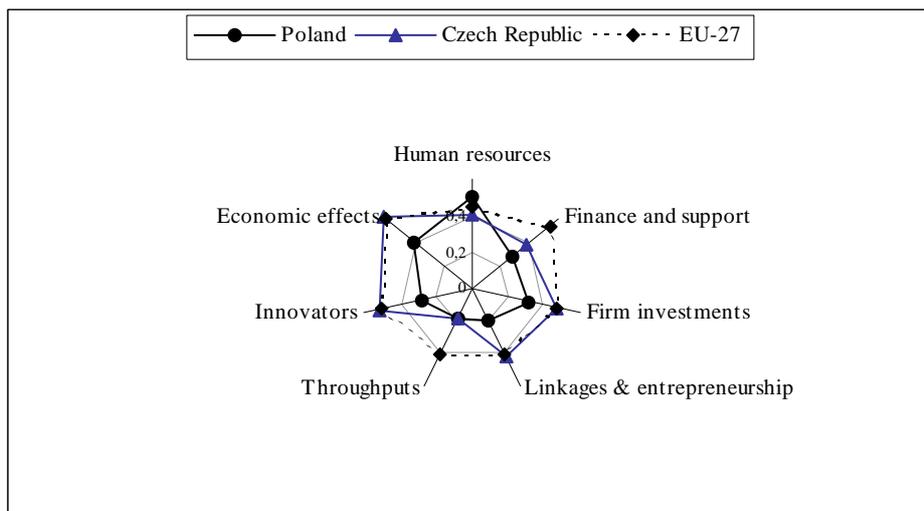
Changes in levels of Summary Innovation Index (EIS 2009) did not lead to any significant movements in classification among EU countries. There is therefore the tendency to maintain distances in innovation levels between nation groups, classification of which was based on the synthetic index values SII, its growth rate as well as the average for EU27. Analysis of EIS reports show that the way to bridging innovation gaps in case of the least innovative new EU member countries might last decades, if current trends were to be maintained. In the case of Poland, despite improvements in given parameters, it is forecasted that attaining European averages in innovation might take at least 18 years. Czech Republic, due to a high degree of transformation, can together with Cyprus and Slovenia attain the EU SII average in 10 years.

Partial descriptive indicators in the European Innovation Scoreboard feature as input and output indicators. The EIS 2009 report was prepared, based on an improved methodology with an updated set of indicators. This new approach assigns greater importance to the service sector, non-technological innovations, as well as economic effects of innovations. The synthetic innovation index is determined using 29 indicators that cover seven dimensions of innovation. The indicators were dealt with in three main blocks covering chances (innovation potentials), corporate innovative performance and results. The details covered include the following (EIS 2009, p. 5):

- Enablers captures the main drivers of innovation that are external to the firm such as:
 - Human resources – the availability of high-skilled and educated people;
 - Finance and support – the availability of finance for innovation projects and the support of governments for innovation activities;
- Corporate activities which capture innovation efforts that firms undertake recognizing the fundamental importance of firms’ activities in the innovation process:
 - Firm investments – covers a range of different investments that firms make in order to generate innovations;
 - Linkages & entrepreneurship – captures entrepreneurial efforts and collaboration efforts among innovating firms and also with the public sector;
 - Throughputs – captures the Intellectual Property Rights (IPR) generated as a throughput in the innovation process and Technology Balance of Payments flows;
- Outputs captures the outputs of firm activities as:
 - Innovators – the number of firms that have introduced innovations onto the market or within their organizations, covering technological and non-technological innovations;
 - Economic effects – captures the economic success of innovation in employment, exports and sales due to innovation activities.

The dimensions mentioned refer to Poland, Czech Republic and EU countries and illustrate mutual dependences, thus showing that Poland has more to do to catch-up with EU27 average than Czech Republic.

Figure 6: Innovation performance Poland and Czech Republic per 7 dimension



Source: European Innovation Scoreboard (EIS) 2009

Poland and Czech Republic's position in EIS 2009 reflects their positions in ratings in each indicator group and thus confirm the fundamental difference existing between these countries (Table 2).

Table 2: Innovation performance Poland and Czech Republic per 7. dimension

Dimension	UE27 leader	Europe Leader	Poland	Czech Republic	EU27
Human resources	Finland	Switzerland	21	13	19
Finance and support	United Kingdom	Iceland	4	9	21
Firm investments	Finland	Finland	15	24	22
Linkages & entrepreneurship	Belgium	Iceland	4	16	18
Throughputs	Denmark	Switzerland	9	12	24
Innovators	Germany	Switzerland	8	18	17
Economic effects	Denmark	Denmark	9	32	27

Source: European Innovation Scoreboard (EIS) 2009

Human resources are Poland's strong point. This is the only innovation dimension where Poland scores higher than the EU27 average. Other strong points of Poland's economy in comparison with EU averages are in areas of company investments. Areas of weakness include financing and supporting innovation and level of entrepreneurship.

Czech Republic surpasses EU27 averages in as much as in three dimensions. Czech Republic's strength in this respect is in economic effects of innovation, firm investments and number of innovators. Relative weaknesses of Czech Republic are in financing and support for innovation, practical utilization of knowledge, as well as human resources.

Conclusions for the future

The presented statistics of human capital and innovativeness depict that the EU (including the Czech Republic and Poland) is becoming more and more attractive to foreign scientists and investments in the scope of research and development. However, there are still many barriers and threats to the development of innovative and creative Europe. In Poland and the Czech Republic, as well as in the majority of EU countries, there is a barrier to establishing creative and innovative knowledge-based economy which relies on the stagnation in expenditures on research and development. The percentage rate of R&D investments in GDP for EU27 remained at the level of 1.88%. Despite increases in absolute values of funds spent on the said investments, most EU countries do not implement the assumed standards in this capacity set in the Lisbon Strategy (3% GDP). In this area of investing, the main problem relies on insufficient private investments. Another issue that shall be solved regards better accommodation of the R&D sector to a pro-innovative structure of economy as well as better use of the results of a domestic innovation base. Many experts indicate excessive dispersion; they sometimes identify mutually contradictory goals.

In a new financial perspective for the years 2007-2013, EU still undergoes the crisis of innovative breakthrough. Unfortunately, its overcoming is highly complicated by the results of the global financial crisis for public finance of particular countries. It deteriorates the perspective of overcoming the issue of international and regional polarization regarding innovative projects. This issue is particularly significant for

Poland and the Czech Republic, similarly for the whole EU7. In the EU7 countries non-technological innovations are emphasized, as well as investments in the cohesion policy. In case of Poland, due to very low GDP and a low percentage rate of R&D in GDP, the national policy does not fill in the gap with EU funds, as well as the private sector does not fill in the gaps with public financial resources. A low level of domestic technological investments causes that almost the entire burden of product modernization (technology and products) is borne due to imitating processes and innovation diffusion. Similarly in Europe, imitative innovation is dominant more than original innovation (Acemoglu, Aghion, Zilibotti, 2006).

An extremely important issue to be solved regards regular supply of an education process by means of the research and development sphere, along with an inflow of new knowledge. Holistic direction of a didactic process shall be indispensable. It is about the equipment of the society with human capital adequate to the civilization challenges of market network structures, information society and globalization. As a result, education has to be directed not only to innovative attitudes, creativeness, activeness instead of passiveness and demanding attitudes but also to self-responsibility connected with social responsibility. Network structures also require global competences, i.e. the ability to interact within the global society, as well as establishing the sense of responsibility for global problems and honest globalization. It cannot be achieved without understanding the complexity of the world, diversity of cultures, various views and reasons for social stratification and the possibilities of their limitation. It does not mean cultivation only humanistic attitude towards education. EU7 countries as well as entire Europe concurrently need stronger emphasis on polytechnic knowledge.¹

Formal schooling at all levels shall serve for determining the quality of human capital as the main intellectual capital of the nation (see: Report on capital..., 2008), including in-house training, curricula for adults, people's migration among institutions, scientific fields, economic sectors and countries.

Human capital, modernized in the aforementioned directions, shall provide innovating processes with other goals, i.e. introducing them to harmonization of the development of all walks of human life. In particular, there is an expression of the content of subject-based attitudes towards innovativeness and modernization of the mechanism of functioning of the markets. It is about their inclusion into the implementation of strategic cohesion goals. They cannot effectively fulfill this function, tainted with the pressure for the improvement of the EU image and attempts to connect the market with the central strategic coordination by means of the Lisbon Strategy. Obvious weaknesses of innovativeness management within EU are: emphasis on quantitative indices, not qualitative, at the level of EU and national decision making centers, excess of goals and priorities; lack of effective instruments as well as the procedures and institutions of enforcing priorities; bureaucratized procedures of open coordination methods. The attempts made to eliminate national conflicts of interests and demanding attitudes end in a fiasco. If the actions of EU organizational structures motivated by political and ideological goals are to be effective while stimulating the narrowing of developmental gap, they shall not run counter to the logics of markets.

¹ Deficit of engineering and technical human capital resources is estimated to be more than 700 K vacancies in the EU.

In order to speed up the modernization processes, it is indispensable that the state should regularly care for preserving the competitive order. In particular, it is about the improvement of markets; flow of information and competition at an institutional level, their support by means of instruments, procedures and mechanisms of central strategic coordination that are cohesive with the logics of markets. The needed level of innovativeness is possible to be achieved within hybrid structures, made of various, reciprocally completing mechanisms; market, hierarchal and networks ones, even in the time of crisis. However, it shall be remembered that networking structures depict receptivity to transformation of democracy into mediocracy which promote information fuss around mock problems, particular goals of media corporations and the political class. Lack of a competent dialogue on the mechanisms of establishing innovative and creative economy causes the attempts of connecting the market and non-market coordination by means of SL to be ineffective.

Narrowing the development gap based on human capital and innovativeness require the recovery of a demographic stability. Depopulation, by nature, means that economy is endangered with depreciation of human capital. Ageing societies are diverted mostly at the protection of acquired rights and they seem to be less vulnerable to active adjustments. These processes are connected with a decrease in an ability of innovativeness and creativity. Ageing society means an increased emphasis on an increase in taxes, weakening the stimuli to reform the public sphere, entrepreneurship and, as a consequence, a weaker economic increase and decrease in the quality of life.

Liberalization of the labor market in case of the EU7 countries provides strong stimuli for emigration of human capital. The strength of these stimuli is proportional to the diversification of pay, working conditions and the quality of life among old and new EU countries. It leads to the lack of labour supply, also in the fields connected with the development of knowledge-based economy and innovativeness, despite the fact that a less developed country incurs the costs of investment in human capital. In fact, immigration may solve short-term problems, though; it might be connected with the costs of social disintegration.

Moreover, certain influences on human capital are also important, by means of improving financing systems and well-coordinating research programs and priorities as well as protection of intellectual rights or processing capital by means of increasing the productivity of actions. Traditional resources of infrastructural capital require some completion by investing in new generations of electronic communication infrastructures. Effects (benefits) from these directions of actions may be discounted provided that there are resources of social capital (local, national with special emphasis on neighboring countries), which level in all systems is still not satisfactory.

Historical, political, geographical, economic and particularly institutional conditions in the aforementioned areas cause that hybrid structures may be organized in many different manners, constituting a certain combination of elements of market mechanisms, hierarchy and a networking mechanism. Patterns for using the development of human capital and innovativeness that exist in many more developed countries require all the time, proper correction to the specificity of two factors. One of them is the availability of own resources (local, national). The second one relies on the scope of possible combinations of mechanisms that are favorable towards innovativeness along with the

instruments directed at motivating the activity, creativeness, cooperation, mobility, taking and calculating risk as well as just rewarding of such attitudes, adjusted to hybrid structures of the market.

References

- ACEMOGLU, D., AGHION, P., ZILIBOTTI, F. (2006). Distance to Frontier, Selection and Economic Growth, *Journal of the European Economic Association*, Vol. 4, No. 1, pp. 37-74.
- ANTONIUK, L.L., PORUCZNIK, A.M., SAWCZUK, W.S. (2003). *Innowacj: teoria, mechanizm rozrobki ta komercjalizacji*. Ministerstwo Oswiti i Nauki Ukrainy, Kijow: Kijwskij Nacjonalnij Ekonomicznij Uniwersytet. ISBN 966-574-514-X.
- BIENKOWSKI, W., RADŁO, M.J. (red.) (2006). *Amerykański model rozwoju gospodarczego: Istota, efektywność i możliwości rozwoju*. Warszawa: Szkoła Główna Handlowa. ISBN 978-837378-222-8.
- CASTELS, M. (2008). *Spółeczeństwo sieci*. Warszawa: Wyd. Naukowe PWN. ISBN 978-83-01-15148-5.
- COASE, R. (1935). The Nature of the Firm, *Economica*, Vol. 4, No. 16, pp. 386-405.
- DRUCKER P.F. (1999). *Spółeczeństwo pokapitalistyczne*. Warszawa: Wyd. Naukowe PWN. ISBN 83-01-12799-6.
- EDVINSSON, L. MALONE, M.S. (2001). *Kapitał intelektualny*. Warszawa: Wyd. Naukowe PWN. ISBN 83-01-13509-3
- European Commission. (2004). *Facing the challenge, The Lisbon strategy for growth and employment*. Report from the High Level Group chaired by Wim Kok. Luxembourg: Office for Official Publications of the European Communities. Retrieved April 20, 2010 from http://ec.europa.eu/growthandjobs/pdf/kok_report_en.pdf.
- European Commission. (2008). *European Innovation Scoreboard 2007–Comparative Analysis of Innovation Performance*, Brussels: Pro Inno Europe. Rertieved from <http://www.proinno-europe.eu/metrics>.
- European Commission. (2009). *European Innovation Scoreboard 2008–Comparative Analysis of Innovation Performance*, Brussels: Pro Inno Europe. Rertieved from <http://www.proinno-europe.eu/metrics>.
- European Commission. (2010). *European Innovation Scoreboard (EIS) 2009*. Brussels: Pro Inno Europe. Rertieved from <http://www.proinno-europe.eu/metrics>.
- FUKUYAMA, F. (2000). *Wielki wstrząs. Natura ludzka a odbudowa porządku społecznego*. Warszawa: Politeja. ISBN 83-7227-481-9.
- KAM (2005). *The Knowledge for Development (K4D)*. Global Ranking. Washington: The World Bank Group. Retrieved September 19, 2006 from http://info.worldbank.org/etools/kam/kei_table.asp.

- KAM (2007). *The Knowledge for Development (K4D)*. KEI and KI Indexes. Washington: The World Bank Group (August). Retrieved December 18, 2007 from http://info.worldbank.org/etools/kam2/KAM_page5.asp.
- KAM (2008). *The Knowledge for Development (K4D)*. KEI and KI Indexes. Washington: The World Bank Group (Oktober). Retrieved January 5, 2009 from http://info.worldbank.org/etools/kam2/KAM_page5.asp.
- KAM (2009a). *The Knowledge for Development (K4D)*. KEI and KI Indexes. Washington: The World Bank Group (July). Retrieved April 21, 2009 from http://info.worldbank.org/etools/kam2/KAM_page5.asp.
- KAM (2009b). *The Knowledge for Development (K4D)*. KEI and KI Indexes. Washington: The World Bank Group (July). Retrieved April 21, 2009 from http://info.worldbank.org/etools/kam2/KAM_page3.asp.
- KUKLIŃSKI, A. (red.). (2001). *Gospodarka oparta na wiedzy*. Wyzwanie dla Polski XXI wieku. Warszawa: KBN. ISBN 83-85557-87-3.
- KUKLIŃSKI A., PAWŁOWSKI K., WOŹNIAK J. (red.) (2009). *Kreatywna i innowacyjna Europa wobec wyzwań XXI wieku*, Kraków: Urząd Marszałkowski. ISBN 978-83-61355-31-1.
- LEWIS, W.W. (2005) *Potęga wydajności*. Warszawa: CeDeWu. ISBN 83-87885-92-4.
- OECD. (2007). *Giving Knowledge for Free: The Emergence of Open Aducaational Resources*. Paris: Centre for Educational Research and Innovation. Retrieved April 20, 2010 from www.oecd.org/dataoecd/35/7/38654317.pdf.
- PORTER, M. E. (1990) *The Competitive Advantage of Nations*. New York: The Tree Press. ISBN 0-684-84147-9.
- Report on capital..., (2008). Raport o kapitale intelektualnym Polski 2008. Warszawa: GUS, SGH. Retrieved April 20, 2010 from <http://www.nf.pl/News/13387/>.
- ROMER, P. (1986) Increasing Returns and Long-Run Growth, *Journal of Political Economy*, Vol. 94, No. 5, pp. 1002-1037.
- SCHUMPETER, J.A. (1960). *Teoria rozwoju gospodarczego*. Warszawa: PWN.
- SKOKAN, K. (2007). *Klastry v transformaci regionu – pet let pote*, MPRA Paper, No. 12379, pp. 14.
- SOLOW, R. M. (1956). Technical Change and the Aggregate Production Function, *Review of Economics and Statitics*, Vol. 39, pp. 312-320.
- STIGLITZ, J.E. (1999). *Knowledge for Development: Economic Science, Economic Policy, and Economic Advice*, [in:] Annual World Bank Conference on Development Economics 1998, (eds.) PLESKOVIC, B. STIGLITZ, J.E. Washington: World Bank 1999 (April), pp. 9–58. ISBN: 978-0-8213-4321-0.
- WERESA, M.A. (ed.). (2006). *POLAND Competitiveness Report 2006. The Role of Innovation*. Warszawa: Szkoła Główna Handlowa. ISBN 978-83-7378-234-1.

WHITLEY, R. (2008). Varieties of Knowledge and Their Use in Business and Management Studies: Conditions and Institutions. *Organization Studies*, Vol 29, No. 4, pp. 581-609.

WILLIAMSON, O.E. (1998). *Ekonomiczne instytucje kapitalizmu*, Warszawa: Wydawnictwo Naukowe PWN. ISBN 83-01-12392-3.

WOŹNIAK, M.G. (2008). *Wzrost gospodarczy. Podstawy teoretyczne*. Kraków: Uniwersytet Ekonomiczny w Krakowie. ISBN 978-83-7252-419-5.

ZAK, P.J., KNACK, S. (2001). Trust and Growth, *The Economic Journal*, Vol. 111, No. 470 (April), pp. 295-321.

HUMAN CAPITAL AND INNOVATIVENESS AS MEANS TO BRIDGING DEVELOPMENT GAPS. POLAND AND THE CZECH REPUBLIC AS CASE STUDIES

Teresa Bal-Woźniak

Rzeszow University of Technology, Department of Enterprise, Management and Ecoinnovation, al. Powstańców Warszawy 8, 35-959 Rzeszów, Poland, e-mail: wozniakt@prz.edu.pl

Abstract: The aim of this article is to analyze the innovative achievements of selected economies: Polish and Czech. This issue is of fundamental significance for all post socialist countries. Post communist heritage in form of homo sovieticus is really far from innovative performance. The author assumed that innovativeness is the component of human capital whilst the conceptions of innovativeness were dealt with as the development challenge and the criterion of efficiency for contemporary economies, creating the opportunity to speed up the pace of narrowing the development gap. It is reflected in the title of the study. The methodological basis and data source are Knowledge Assessment Methodology (KAM 2009) and European Innovation Scorecard (EIS 2009). The fulfillment of this aim, in the author's opinion, relied on presenting the coordination of innovative actions of managing entities and underlining the growing significance of network structures. On the basis of the conducted empirical analysis encompassing the years 2003-2008, there was observed, mostly in Poland and to smaller extent in the Czech Republic, a low level of innovativeness and its unsatisfactory dynamics, as well as poor use of relatively numerous human capital for attaining goals. In the conclusion part of the article, there were presented problems connected with the necessity of consequent impact on the quality of human capital and level of innovativeness. In order to overcome barriers, the author postulates to establish a pro-innovative institutional order and indicates the need for systemic attitude towards these reforms.

Key words: innovation, innovativeness, human capital, development gap

JEL Classification: J24, O31

DOI: 10.2478/v10135-009-0011-6