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Intellectual Capital Paradox: The case of Hungary and Ukraine

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Abstract

The authors have analysed the economic growth and its determining factors in countries of the European Union, particularly in Hungary and Ukraine. We applied quantitative methods by analysing topic related database. We have found that the Central-Eastern European Periphery has not finished its transition, and this change is heading in the direction of the Southern Periphery of the European Union. As the Southern Periphery is the area of economic crises right now, it is obvious that something should be done in order to avoid falling to the same fate for the Central-Eastern European Periphery. The authors introduced a new production function and with its help they identified the bottlenecks of growth in Hungary and Ukraine, namely the organizational and human capital that in its present development stage, do not correspond to the needs of creating state of the art larger companies. The present crisis pushes both countries to postpone long-term developments, such as investments into human capital, and in this way makes the solution of the crisis more difficult.

Keywords: Intellectual Capital, Growth, Southern European Periphery, Central-Eastern European Periphery, Enterprise Demography, Competitiveness

1. Introduction

Two decades have passed since the transition from centrally planned economies into market economies in Central and Eastern Europe began. Experiencing our everyday economic difficulties, the public opinion is inclined to evaluate this transition period as unsuccessful. This is dangerous, because it does not take into proper account the significant development that has been achieved and instead of completing the achieved half results the prevailing pessimism could everything destroy what we have positively done. At the same time it must be acknowledged that something went wrong and patience alone is not enough to be successful.

The central message of the study is that we are behind a painful, but unavoidable structural change that in many respects has corrected the former distorted development and the achieved one mostly corresponds to the present economic development level of our countries. However we cannot be satisfied with the evolved status quo. To get a positive balance we must continue the transition and we must make further investments, especially there, where our weakest point is, into our knowledge capital.

This statement is somewhat of a paradox. The Central and Eastern European countries are not wrong in knowledge indicators. Their education system, their scientific life each stands in international comparison; notwithstanding, it does not appear in their economic performance. In this article we try to find some facts that could partially explain this paradox.

There is one phenomenon that makes the picture more complex and more difficult to explain: the present worldwide economic crisis that erupted in 2008. Nevertheless, we are convinced that the main bottlenecks that are restraining our growth are not of short-term character. So, in this study, we will focus on those long-term factors that already worked prior to the present world crisis and which will determine our development in the future when the crisis is over. The present crisis only magnifies the difficulties that are the result of those determining factors that we will reveal.

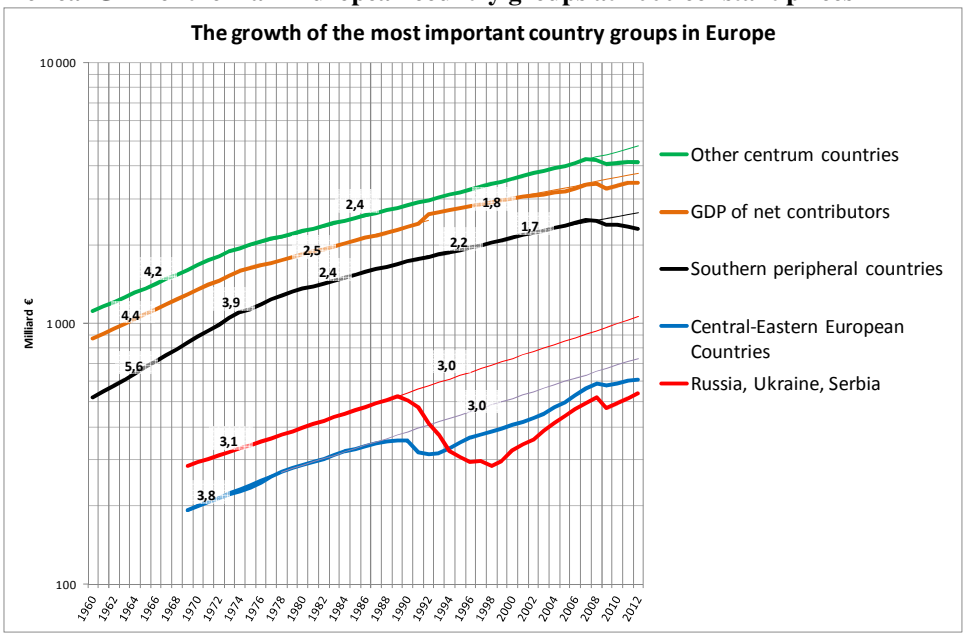
The structure of our article is the following: first we will describe the growth that has evolved during the transition; then we will summarize those factors that determine the growth; next we will examine those factors in detail, which we regard as bottlenecks of our growth; after that we will analyse those structural changes that can dissolve these bottlenecks and finally solve our paradox. In our analysis we will focus mainly on Hungary and Ukraine, but we will try to generalize the results obtained this way for all of Central and Eastern Europe.

2. The European growth

Economic growth could be measured in many ways, but we will apply the traditional GDP based measurement, even though we are well aware of its shortages. We accept the message of the Stiglitz-Sen-Fitoussi report, i.e. GDP growth reflects acceptable growth only, if the resulting assets are grown at a sustainable way. (Stiglitz-Sen-Fitoussi [2009]) In addition to GDP measurements we rely on WEF and IMD competitiveness data to overcome the above-mentioned imperfection of GDP data.

To get an overview about the European Growth we aggregated the EU countries into four country groups and compiled a non EU country group of Russia, Ukraine and Serbia. The growth of these country groups are shown on Figure 1.

Figure 1.: The real GDP of the main European country groups at 2000 constant prices



Source: Authors' calculation from AMECO and World Bank databases. Other central countries: Belgium, Denmark, France, Ireland, UK; Net contributors 1 : Austria, Finland, Germany, Luxemburg, Netherlands, Sweden; Southern Peripheral countries: Cyprus, Greece, Italy, Malta, Portugal, Spain; Central-Eastern European countries: Bulgaria, Czech Republic, Hungary, Poland, Rumania, Slovakia, Slovenia, Croatia, and the Baltic states.

Since the magnitude of the compared aggregates is very different, instead of an arithmetical scale on the vertical axis, we used a logarithmic scale. The logarithmic scale not only shows the different aggregates in a comparable way, but also makes their growth comparable. The slope of the curves in a given period is rather constant and is proportional to the average growth of those years. The figures above the curves indicate the exact average growth rate of that period. Important restriction: in this study we do not deal with the last decline due to the world financial crisis in 2008 that is observable in each curve.

There are some very characteristic tendencies in the European Growth. If we disregard the present economic crisis, whose general outcome we do not yet know, we will witness a long-term growth scissor: the net contributors and the other central countries had a relatively quick, 2,5 percentage average growth, while the growth of the peripheral countries gradually slowed down. This delay was relatively gradual in the countries of the Southern European Periphery, while in countries of Central-Eastern European periphery it was rather dramatic and accompanied by a transition from the centrally planned economic system into a market economy[2]. In the focus of our research we shall concentrate on the growth of the later country group in a more detailed manner.

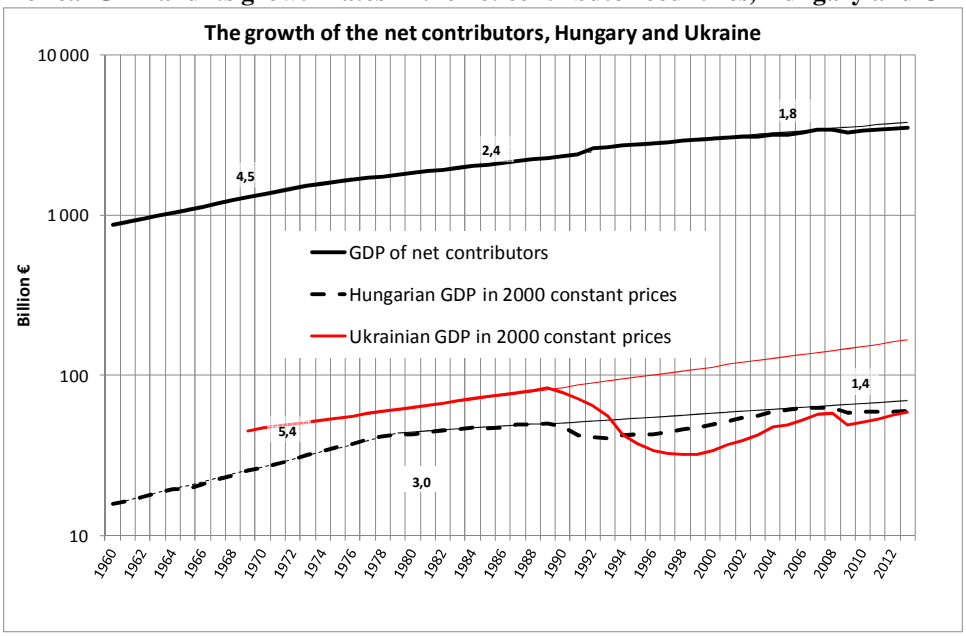
3. The Hungarian and Ukrainian growth

The Central and Eastern European growth can be well characterized by the description of the Hungarian and the Ukrainian growth.

[1] These countries are the most advanced in the European Union and they are quasi cross-financing the southern EU countries and the central-eastern countries.

[2] There is a slow down in the growth rate of the net contributors as well, but it is a consequence of the German reunification. If there were no reunification, the growth rate of this country group would have remained around 2.5 percentage averagely instead of 1.8.

Figure 2.: The real GDP and its growth rates in the net contributor countries, Hungary and Ukraine



Source: Authors' calculation from AMECO and World Bank databases

As one can see on Figure 2, from 1960 to 2008 the real GDP of the net contributor countries – if we disregard statistics from the German reunification effect – was steadily growing while Hungary's and Ukraine's GDP had some ups and downs.

Until the 1973 oil crises Hungary had a very significant growth. The annual growth rate in Hungary was around 5,4%[3] and the rate in the net contributor countries was roughly 4,5%. After the oil crises the growth slowed down to 2,4% in the net contributor countries and to 1,4% in Hungary. The large, unbearable difference was the consequence of the inefficient centrally planned economic system that had to be changed into the market economy. The transition brought some changes, but did not significantly change the scissor. In Hungary the growth at first plummeted into a significant decline, as the economic systems transition begun, but after the recovery from it in 2005, only the previous 1,4% rate was restored.

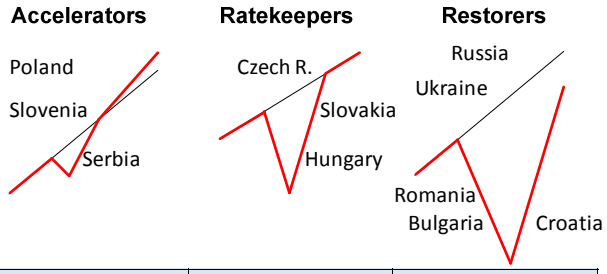
The Ukrainian curve in many aspects follows the same path that the Hungarian curve followed, i.e. the pre-crisis development was also broken by a deep transition crisis and after that a quick reconstruction period was begun with significant acceleration of growth. The required time for the reconstruction seems to be longer in Ukraine. Hungary had 4 years of decline, and Ukraine required about 10 years. Hungary needed 10 years to restore to its previous growth and Ukraine likely would have needed more time, but the Ukrainian reconstruction phase was disturbed by the 2008 world financial crisis and therefore it is difficult to guess when the Ukrainian reconstruction phase would have ended. It is even more difficult to forecast exactly how the long-term trend of Ukraine will be restored. The 3 percentage average growth rate before 1989 was very high, higher than that of the most developed countries. First one must check whether this rate was real and sustainable; only after having done that could someone dare to predict anything for the future.

4. The Central and Eastern European growth

The transition itself is not yet successful in many post-socialist countries. Currently there are 3 scenarios as can be seen in Figure 3.

[3] Although Hüttl (2011) states that the Hungarian GDP growth are overstated from the socialist times. (Hüttl (2011))

Figure 3.: Transition scenarios of post-socialist countries



Decline due to transition	Small	Significant	Big
Restoration of long term growth	Done	Done	Not yet done
Accelerating lomg term growth rate	Done	Not done	Unknown
Magnitude of long term growth rate	Big	Small	Unknown

Source: Authors' calculation from Hungarian Statistical Office, AMECO and World Bank databases with the methodology of Jánossy (1975)

There are the countries that could accelerate their former long-term GDP growth – Poland, Slovenia and Serbia or the ***accelerator countries***. These countries experienced only a minor transitional decline, they have restored the decline already, and they could even accelerate their growth. The ***ratekeeper*** countries had a completely different scenario, as their transitional decline was significant – what they could restore, but they could not yet accelerate their long-term growth. These countries are Hungary, Czech Republic and Slovakia. The third group of countries are the ***restorers,*** who had a major transitional decline, which they have not yet restored and as we do not have the information as to when they will restore it and it is unknown whether they can accelerate their growth or not.

Regardless, if we accept the assumption that the better economic performance measured in larger GDP means a better life, we should tackle the issue of how to fall in line with the net contributor and other central countries. In the beginning of the transition the post-socialist countries had high hopes of closing up, but most of their hopes were dashed. The transition did not meet their expectations and the net contributors are now cruising away. We should analyze the reasons behind the not so successful transition to gain some insight as to why the growth failed to accelerate and whether there are some bottlenecks that could be treated to help in a leap to a better growth course.

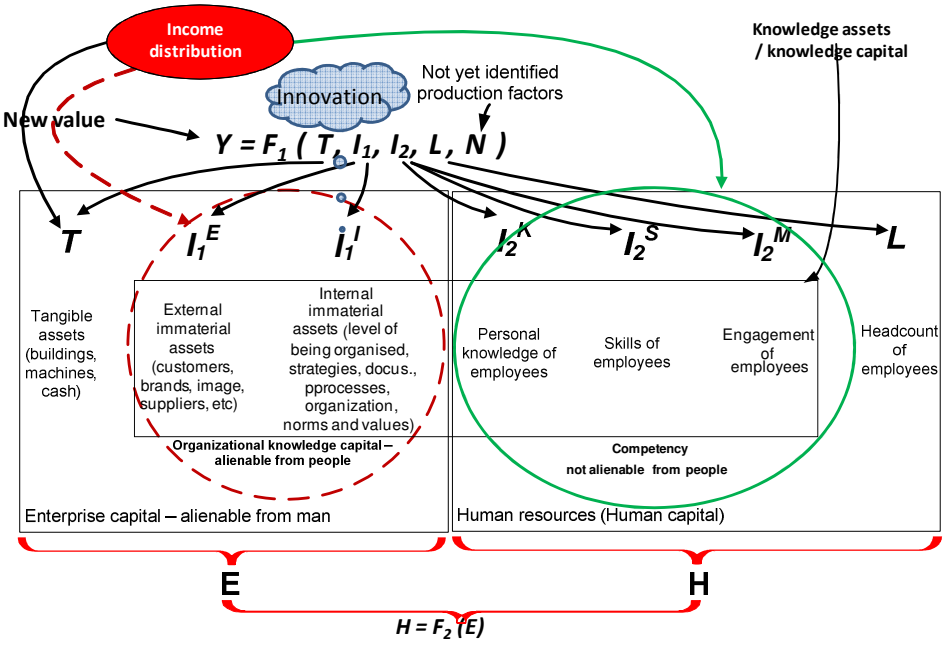
5. The production factors behind the growth

These economic trends raise two very important questions:

- What really determines the new value of creation?
- Where should we intervene to avoid further crisis in the Central European Periphery?

To answer these questions we rely on a new production function illustrated in figure 4.

Figure 4: The new production function



Source: Boda – Virág (2010), Bacsur – Boda – Virág (2010)

New value cannot be produced without assets or capital! To produce new value we need real estates, buildings, machines, equipments, working capital, etc. Let us call this group of assets the **tangible production factors**. Then we shall denote this group of assets by ***T***. However, these assets only represent a fragment of those production factors that are needed for a successful value creation. What kinds of production factors are still required?

First we need **relationship assets or capital**. Here the asset side refers to our customers, brand, and suppliers. Investments are required in order to have reliable and working relations with our customers, with the authorities and organisations in our environment, and with society. For that system of relationships to occur, somebody must invest. This way an asset will be created and it will be owned by the investor. This asset works exactly as the tangible assets do. Henceforth this asset group, our relationships or our customers, will be denoted by I_1^E. The denotation shows that these assets do not have material forms, they are immaterial assets; therefore is the letter ***I*** used. The letter ***E*** as an upper case letter indicates their external content. Namely these assets are ours, but are carried by people outside of our domain (physical or psychic). The meaning of the under case index ***1*** will be explained later.

In order to produce new value we need strategy, know-how, databases, well-organized working processes, organization structures, values, and expected norms, i.e. **organisational assets or capital**. This also is an asset that requires investment from somebody, i.e. it is a capital of somebody. This asset group, our being organized, we shall denote by I_1^I. The upper case ***I*** expresses the internal character of these assets. These assets do not belong to those we would like to sell our products and services to, but to us.

Each of the listed assets – ***T***, I_1^E, I_1^I –- can be owned unambiguously. The ownership rights are transferable, sellable, and can be determined. This common characteristic is denoted by the under case index ***1***.

However, this is not the case with the further assets that are also needed. The further assets that we also need are **personal knowledge** (I_2^K), skill (I_2^S), and **engagement** (motivation - I_2^M). These assets we shall call as **human assets**. When denoting them, ***I*** indicates that they are all immaterial, ***K*** means personal knowledge, ***S*** means skill and ***M*** means engagements (motivation). Here the under case index is ***2***. It indicates an essential difference. It indicates the fact that, these particular assets, can only be owned by the human beings who carry them. The ***K***, ***S***, and ***M*** are each strictly bound to the physical body of the owners. At the same time these asset items could be less dependent from each other. Somebody can have personal knowledge without also having serious skill. It is

also possible that something destroys someone's motivation, although he still has both the personal knowledge and the skill. These elements are the product of different investments that are done by different actors. The investor may be the firm, or the carrying person, or the society. The ownership right of the investment is given to whoever the investor is, it is non-transferable and it is under the control of the carrying individual.

N denotes those assets that cannot be identified exactly, because we do not know precisely how they work or what kind of nature they have; so these are the **non-identified** elements. At the same time they could be very coincidental in a certain production situation in which the social capital elements mainly belong. These factors are necessary in grasping the totality.

With the help of Figure 1 we can further define the asset/capital items. Elements T-I_1^E-I_1^I together create the **enterprise assets / enterprise capital**. Elements I_2^K-I_2^S-I_2^M-L together create the **human assets / human capital**. As one can see, the human assets are not equal to the headcount, but to the headcount plus the knowledge assets / knowledge capital carried by it. Where the human capital is significant, the carrier is also beyond its flesh and blood nature, carrying a significant amount of knowledge capital. In this case, for the carrier, the wage is not enough. The carrier, as capital owner, would like to have the appropriate share from the produced new value as capital income; the larger the role of human capital, the grander the role of the distribution of the produced new value. In other words, the wages must shift to capital incomes. These laws are denoted by the arrows starting from the eclipse of income distribution.

Finally, let us define the **knowledge assets / knowledge capital**, as the sum of the immaterial asset / immaterial capital elements. **This is the item that we will call intellectual capital**.

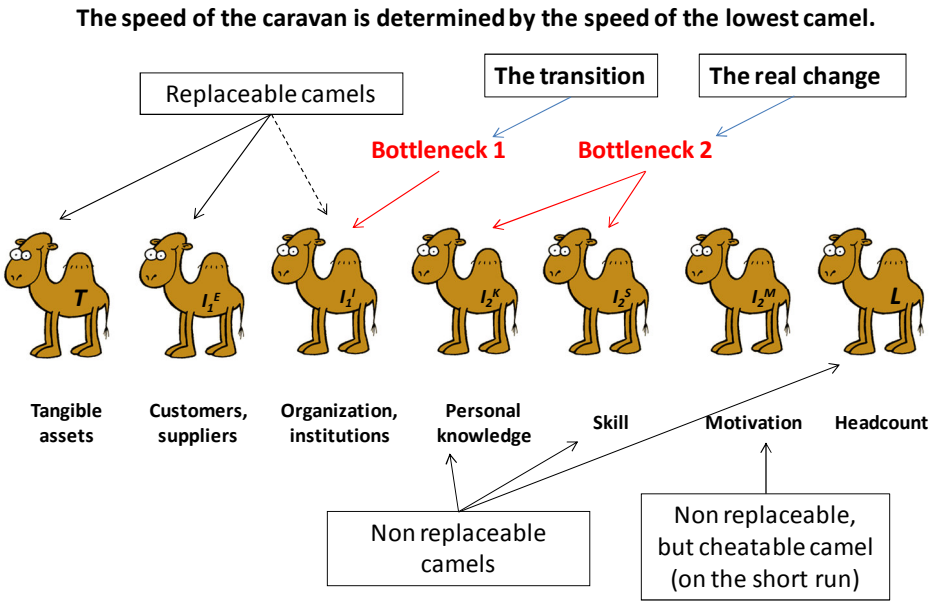
The production function on Figure 1 has a serious background. Its scientific origins are rooted in the Cobb-Douglas production function of literature and in its renewal by Solow and others.[4] Additionally, it also has a serious practical background. This function has been tested in several enterprise projects. The experience of this testing has led to the second equation that also can be seen at the bottom on Figure 1. During our enterprise testing we had to come to the conclusion that the factors in the above production factors are not independent. Among them serious interrelationships exist and the new value production declines if these additional interrelationships are hurt. This second equation is the $H = F_2(E)$ equation. It says that maximal new value can be produced only, if H corresponds in both magnitude and structure to requirements defined by E. **If the real human capital is smaller or greater than the technically required one, then the new value is below the optimal value.** If people of inadequate competency, skill, motivation, and number produce a product or a service, then either the cost level of production increases or, for quality problems, the turnover declines. Both are currently leading to the decrease of new value. **This point will be crucial to solve our paradox later.**

There is still one factor we must speak about – **innovation**. Innovation literature and the vastly used innovation manuals differentiate among product innovation, process innovation, and many other kinds of innovation. According to our opinion, the **innovation is equal to the change that increases the efficiency of one or several production factors**. This can happen if an employer increases the efficiency of the production factors that are under her or his control alone. The innovation spark is ignited when a company with a new combination of the elements of the enterprise and human capital increases the total efficiency of the production factors; from the enterprise and national economy viewpoint, the latter is more important. **In our view, the most likely place where the innovation may evolve is the organizational capital**. However, it is not the only place where it could evolve and therefore we never would regard it as a separate production factor. Nevertheless, although the innovation can be sparked at every production factor, its impact must have its footprint on the organization capital, i.e. on internal immaterial assets, because it determines the final combination of assets as a result of successful innovation. To inspire innovation one needs a huge amount of common knowledge, more common work, a receptive environment, and a big dose of coincidence. All these will come together in the internal structure, i.e. within the internal immaterial assets.

[4] About the origins see the summary in the world bank edition (Aubert, 2010). Also an important summary can be found at Pirjo Ståhle and Sten Ståhle: We regard their research as one of the most advanced proceedings the famous Skandia school has developed under the supervision of its big guru, Leif Edvinsson. we regard ourselves also as followers of this famous school.

The economic development is like a caravan in the fact that its speed is determined by the slowest camel (Jánossy 1971; 1975). We have identified the "camels of the caravan" with the new production function and the "caravan" which can be seen in figure 5. The slowest camel actually means the bottleneck(s) of growth.

Figure 5. The bottlenecks of the Central and Eastern European development



Source: Authors' source

What would a caravan owner do if he were unsatisfied with the speed of his caravan? He would change the slowest camel of course! The problem with this solution is that the camels are not equally changeable. The changeable and so replaceable camels are equivalent with the tangible and relationship assets. By the way, the Central and Eastern European countries have changed the majority of their tangible assets and markets. The personal knowledge, the skill, and the headcount are each partially replaceable on the enterprise level, but not replaceable on the national level. The organizational capital (organizations, institutions, etc.) is only partly replaceable, because it is seriously interrelated with the human capital. Motivation can be influenced on the short run, but not on the long run. Based on these characteristics it is obvious that the weakest points of the caravan are the non-replaceable or the partly replaceable production factors, i.e. the organizational capital and the human capital.

According to our hypothesis in the development of central and eastern European countries, there are two major bottlenecks, i.e. the internal immaterial assets and the personal knowledge and the skills nowadays. Within the internal immaterial assets however, the management capabilities and the strategic partnerships are not utilized enough. The personal knowledge and skills are more problematic. Although, in the transitional countries, the education system has changed a lot, these changes have not yet met the criteria of the long-term needs of these countries. The skills and knowledge have both adapted to the requirements of multinational companies, but it seems they have failed to create any cutting edge in creating new industries or establishing new domestic multinational companies.

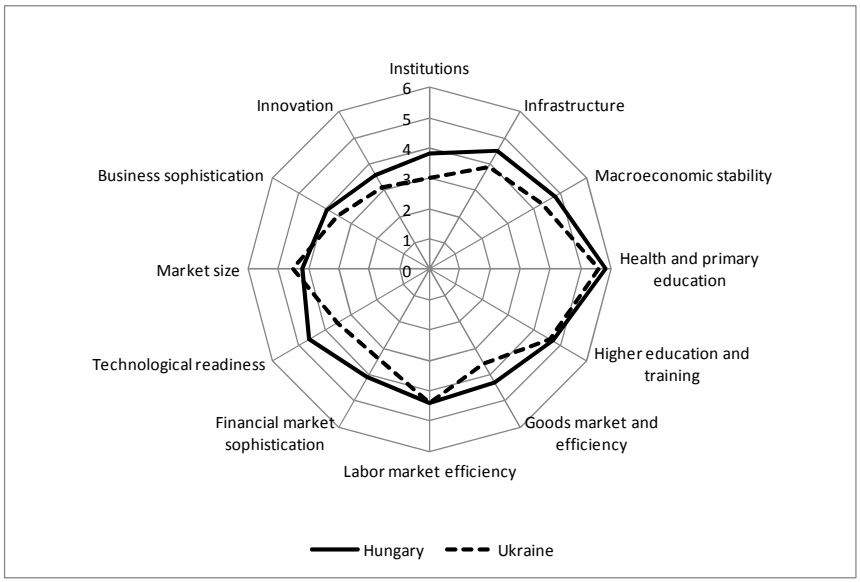
6. The production factors in Hungary and in Ukraine

As we mentioned earlier, the GDP does not express everything. Therefore, we completed the GDP analysis with an analysis of the WEF and IMD measurements.

The rank of Ukraine in 2011-2012 Global Competitiveness Index rankings, computed by World Economic Forum (WEF), is 82 with a score of 4.00. It's important to note that it is currently 7 points better then the last years ranking which is considered great progress after the steep decline of many countries. By using the WEF methodology behind the rapidly increasing Ukrainian GDP, we can see the well-educated population, flexible and efficient labour markets, large market size as Ukraine's competitive strength and base for future growth

performance (Figure 6). However, weak institutional framework (131st place), highly inefficient market for goods and services (129th), and undeveloped financial sectors (116th) were not improved regardless of declared reforms and caused the weak position of Ukraine in this ranking.

Figure 6. Global Competitiveness Index 2011-2012 of Hungary and Ukraine



Source: WEF (2012)

For comparison, Hungary is ranked at 48 with score 4.36. In 2010-2011, Hungary's GCI[5] rank was 52, so the country improved its position by 4 points during the last year (WEF, 2012). We'd like to stress that Hungary's competitive strong factors are almost the same as Ukrainian ones – health and primary education, higher education and training, and macroeconomic stability. So, both countries are competitive in terms of human capital development factors according to the WEF Global Competitiveness Index. At the same time, the weakest factors are almost the same for both Hungary and Ukraine: institutions, financial market sophistication, business sophistication, and innovation (see the bright gray cells, in table 1., where both county is good compared to their scores, and the dark grey cells in table 1., where both countries are weak compared to their scores).

[5] Global Competitiveness Index

Table 1.:Hungary's and Ukraine's performance in the WEF measurements

	Pilar values		Deviation form score	
	Hungary	Ukraine	Hungary	Ukraine
Institutions	3,8	3	-0,56	-1,00
Infrastructure	4,5	3,9	0,14	-0,10
Macroeconomic stability	4,8	4,3	0,44	0,30
Health and primary education	5,8	5,6	1,44	1,60
Higher education and training	4,7	4,6	0,34	0,60
Goods market and efficiency	4,3	3,6	-0,06	-0,40
Labor market efficiency	4,4	4,4	0,04	0,40
Financial market sophistication	4,1	3,4	-0,26	-0,60
Technological readiness	4,6	3,5	0,24	-0,50
Market size	4,2	4,5	-0,16	0,50
Business sophistication	3,9	3,5	-0,46	-0,50
Innovation	3,6	3,1	-0,76	-0,90
Score	**4,36**	**4**		

So according to WEB measurements **both countries are relatively strong in human capital related factors while relatively weak in organizational knowledge capital related factors.**

Table 2. Competitiveness Indicators Rankings of Hungary and Ukraine in 2007-2011

Country	Indicators	Rank				
		2007	2008	2009	2010	2011
HUNGARY	Overall Competitiveness	35	38	45	42	47
	Economic Performance	38	39	33	40	44
	Government Efficiency	40	47	50	51	52
	Business Efficiency	41	45	52	47	50
	Infrastructure	25	27	33	35	35
UKRAINE	Overall Competitiveness	46	54	56	57	57
	Economic Performance	43	50	55	55	45
	Government Efficiency	48	52	56	56	58
	Business Efficiency	46	52	53	54	55
	Infrastructure	47	46	48	41	48

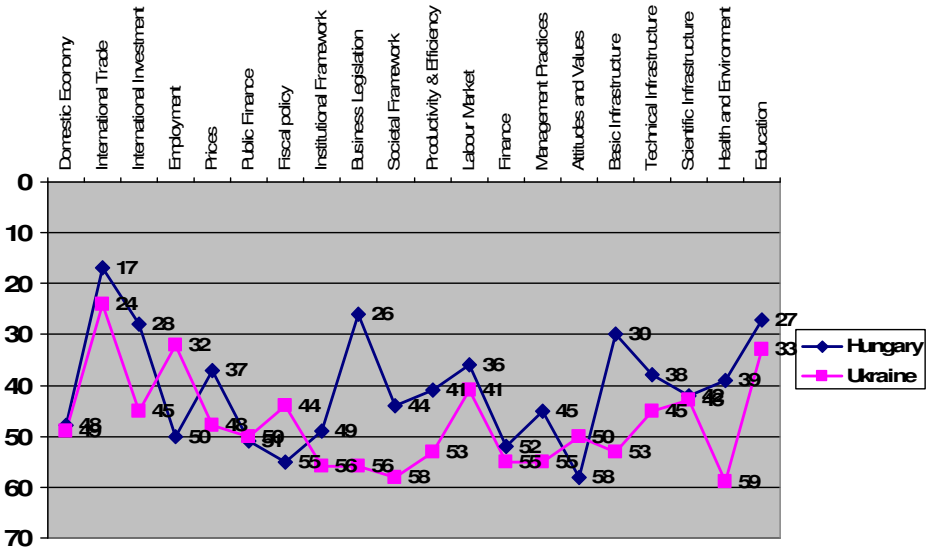
Source: *IMD (2012)*

The International Institute for Management Development (IMD) conducts another respected country competitiveness ranking. Its report includes 16-year time series from the IMD World Competitiveness Yearbook and covers 59 countries. It analyzes the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people (IMD, 2012). Table 2 demonstrates the Competitiveness Indicators Rankings of Hungary and Ukraine. Let's pay attention to Ukraine's overall competitiveness decrease from the 46th position in 2007 to the 57th position in 2011. All competitiveness components also decreased during this period. **The sharpest decrease was demonstrated by government and business efficiency**.

Figure 7 presents analyzed countries' detailed competitiveness landscape (IMD, 2012). Numbers on this chart show countries' ranking in the specific sphere – so, "the higher hills the better the competitiveness ranking". According to this ranking, strong sides of Hungarian and Ukrainian competitiveness are international trade, labor market, and education. **Again the factors which influence human capital development level (for instance education and labor market) are among strong points**. **From the other side, Ukraine has "the lowest hills"**

of health and environment, societal framework, and management practices which are also of great importance for human capital development. Hungary is also relatively weak in these items.

Figure 7. Competitiveness Landscape of Hungary and Ukraine in 2011



Source: *IMD (2012)*

So, international competitiveness rankings indicate that human capital is an important factor of competitiveness in both Hungary and Ukraine. The United Nations Development Program (UNDP) collects international human development indicators and calculates Human Development Index (HDI) provided in table 3. HDI is an alternative indicator of countries' developments which also demonstrates a broader understanding of peoples well-being and includes three basic dimensions of human development: health, education, and income. From table 3 we can see that Hungary's HDI is 0.816, which gives the country a rank of 38 out of 187 countries (UNDP, 2012).

Table 3 International Human Development Indicators of Hungary and Ukraine in 2011

Area	Indicator	Hungary	Ukraine
Human development	HDI, rank	38	76
Human development	HDI, score	0.816	0.729
Health	Life expectancy at birth (years)	74.4	68.5
Education	Education index (expected and mean years of schooling)	0.866	0.858
Income	GNI per capita in PPP terms (constant 2005 international $)	16 582	6 175
Inequality	Inequality-adjusted HDI	0.759	0.662
Poverty	Multidimensional poverty index (%)	0.016	0.008
Gender	Gender Inequality Index	0.237	0.335
Sustainability	Adjusted net savings (% of GNI)	4.5	5.6
Demography	Population (thousands)	9 966	45 190

Source: *UNDP (2012)*

Ukraine takes 76th place out of 187 countries with the score 0.729. It is considered to be high in the human development level as the as world average HDI score was 0.682 in 2011. So, high levels of development characterize the human capital of both countries. **Again we can see that the education index of these countries is almost the same and is actually rather high when compared with the other countries of the world**.

Let us now summarize the messages of the non-GDP measurements! They have validated our preliminary assumptions about bottlenecks only in the case of organizational capital! Hungary and Ukraine:

- have achieved remarkably good relative ranking positions regarding education, i.e. in the building of knowledge capital,
- while regarding their institutions, or organizational capitals, they have obtained their relatively weakest appraisal.

According to formal measurements, both countries have high intellectual capital performances that do not correspond to their economic and social performances. The question is why. That is what we would call an intellectual capital development paradox. But one cannot forget how we defined intellectual capital in our production function. In it, the organisational capital, i.e. the internal immaterial assets or capital is also the part of the intellectual assets or capital. So, one element of it seems to be positive, while the other one appears as a serious bottleneck. Behind the paradox the real question is how to implement this potential in practice; how to turn this bottleneck into the mainstream and a key development force of the countries' competitiveness.

7. Obstacles making knowledge capital ineffective, or idle

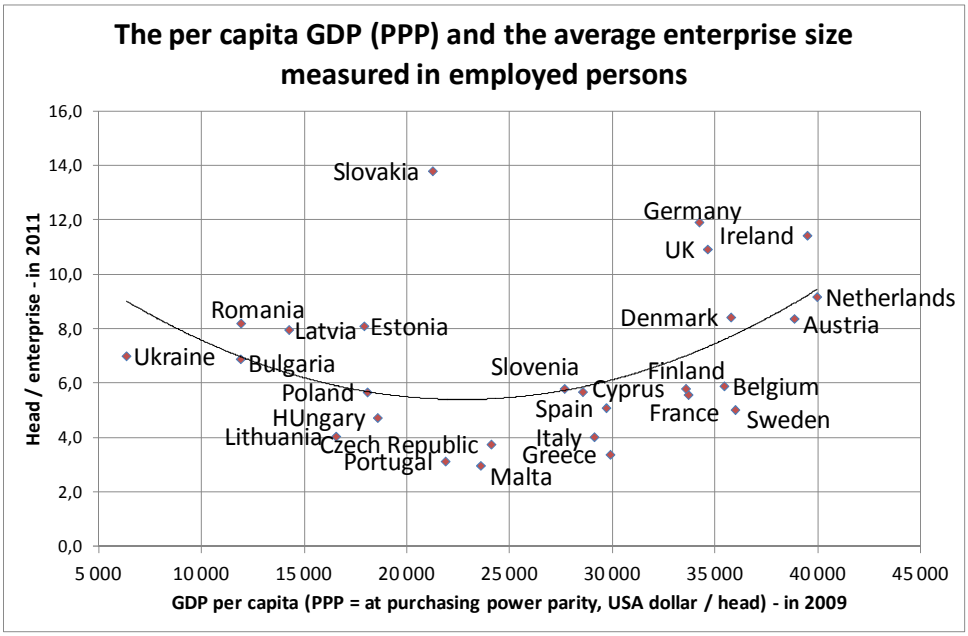
The social transformation of Central-Eastern European countries was extremely deep and almost addressed each element of these societies, to examine all of them is impossible. Only through the analysis of the most important units and processes can success be promised. Relying on our production function, we think that the first units that should be examined are operated according to our production function. These units are the **enterprises**.

We could significantly reduce the task without endangering satisfactory results if we concentrate only on the **competitive sphere**, i.e. the enterprises that are the driving force of the market economy. The manufacturing, the energy producing industries, the construction, the trade, and the so-called economic services all belong to this sphere[6]. This sphere does not contain the agriculture, the financial enterprises, the households, the non-profit institutions helping households, or the government institutions. This sphere produces around 60-70 percent of the GDP. The less developed a country, the larger this share. For this group of enterprises we downloaded an EU database which contained various data, such as the *number of enterprises*, the *number of employed persons* within these enterprises, *the value added at factor cost* produced by them, and much more.[7]

[6] According to EU statistics the following industries are parts of the competitive sphere: Mining and quarrying (NACE Rev.1.1 C), Manufacturing (NACE Rev.1.1 D), Electricity, gas and water (NACE Rev.1.1 E), Construction (NACE Rev. 1.1 F), Distributive trades (NACE Rev. 1.1 G), Hotels & catering (NACE Rev. 1.1 H), Transport, storage & communications (NACE Rev. 1.1 I), Real estate, renting & business activity (NACE Rev. 1.1 K).

[7] The database is as follows: ANNUAL REPORT ON EUROPEAN SMEs : DATA, Exact definitions for the indicators can be found at http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/sbs_esms.htm and in the below box.

Figure 8: The per capita GDP (PPP) and the average enterprise size



Source: Authors' calculation from Hungarian Statistical Office and AMECO databases

The first indicator that we would like to analyse for each European country and for Ukraine is **the average enterprise size**. The average enterprise size as a function of the per capita GDP (PPP) can be seen in figure 8. The picture is striking. The assumption, **the larger the enterprise size the more efficient the country** only partly stands true. As can be seen in the figure, when developed countries have a larger average enterprise size the productivity is better, but in post-socialist countries it is opposite, the larger the average enterprise size, the less the productivity.

The rationale behind this phenomenon can be found in the transition from the centrally planned economic model to the market economy. In the previous socialist countries unemployment did not exist, which meant large state owned companies employed everyone regardless of skills, competencies, or motivation. At the same time economic activities in small private firms were constrained. This resulted in highly inefficient companies as efficiency was only ad hoc and not a system requirement. **This enterprise structure we call as *quasi developed enterprise structure*. This structure seemed to be developed only in its artificial enterprises size because in its performance it was quite underdeveloped.** Therefore we will use the 'quasi' adjective.

If we put ownership, rivalry and competition into play, efficiency becomes a requirement. In the transition period the post socialist countries wear in the process of tearing down their inefficient large companies. **Only those competitive units where the efficiency has increased remained alive**. So this restructuring resulted in less large companies in number, but each of them became more efficient. At the same time the tearing down resulted in a significant decrease of average enterprise size. This is the reason why the Czech Republic, Hungary, Poland, and Slovenia are at the bottom of the U trend and this is also the way that the quasi-developed enterprise structure was broken down.

The different enterprise characteristics of Germany, the Netherlands, Hungary, Ukraine, and some other counties of the Visegrád cooperation show the different components behind the aggregated enterprise size (table 4.). According to economic strength Germany could be the role model country, but, according to size and added value, the Netherlands should actually be the role model country for the smaller central European post-socialist countries.

According to the data of Hungary, Ukraine, and Slovakia we see the different alternatives as to how the transition was realized. Slovakia did not tear down the large company size structure. On the other hand, Hungary

and Ukraine downsized their large companies. Ukraine is moving the same way that Hungary did. In 1991 the average company size in Ukraine was 25 employees per firm. In 2010 this figure reduced to 5.[8]

Each international comparison is a timely comparison as well. The less developed countries depict the past and the most developed ones indicate the future. The middle developed Slovakia, by it's extreme development path, also depicts the past. The U trend curve shows that the transition process probably stands somewhere in the middle. **Past quasi-developed structures have been broken down in the majority of the post socialist countries and it is clear that these countries should devlop more large companies, which employ more people who can then add more value. The future development should increase the average enterprise size once again**.

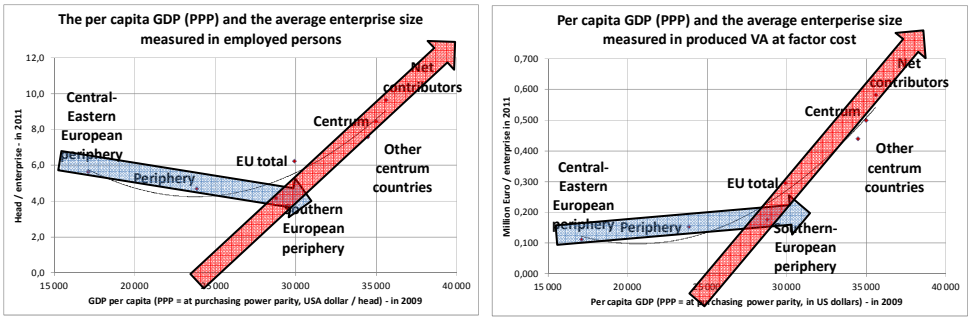
Table 4.: Enterprise characteristics of several European countries

	Germany	Netherl.	Hungary	Poland	Czech R.	Ukraine	Slovakia
Number of enterprises in total number of enterprises (%)							
0-9 head	83,3%	89,7%	94,2%	96,1%	95,6%		71,3%
10-49 head	13,8%	8,6%	4,8%	2,7%	3,5%		25,3%
0-49 head	97,1%	98,2%	99,0%	98,8%	99,1%	93,7%	96,7%
50-249 head	2,4%	1,5%	0,8%	1,0%	0,7%	5,7%	2,6%
SMEs total	99,5%	99,7%	99,9%	99,8%	99,8%	99,4%	99,3%
Above 250 heads	0,5%	0,3%	0,1%	0,2%	0,2%	0,6%	0,7%
Enterprises total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Number of persons employed / number of enterprises (Head per enterprise)							
0-9 head	2,8	3,1	1,8	2,2	1,1		2,8
10-49 head	18,9	23,8	19,0	22,6	19,8		12,6
0-49 head	5,0	4,9	2,6	2,8	1,8	2,3	5,3
50-249 head	100,0	97,5	96,9	105,5	103,4	105,5	106,5
SMEs total	7,3	6,3	3,4	3,8	2,5	3,1	8,0
Above 250 heads	935,4	1057,2	920,1	862,4	796,0	1086,0	841,9
Enterprises total	11,9	9,2	4,7	5,7	3,8	4,9	13,8
Value-added at factor costs / number of enterprises (1000€ / enterprise)							
0-9 head	133	127	16	28	19		86
10-49 head	845	1 360	287	542	439		282
0-49 head	234	235	29	43	34	12	137
50-249 head	5 731	8 695	2 075	2 787	2 472	1 201	2 402
SMEs total	366	362	46	70	52	41	197
Above 250 heads	63 327	79 998	26 389	27 147	27 162	15 110	25 664
Enterprises total	678	581	84	128	94	94	374
Labour productivity (1000€ / head)							
0-9 head	48	41	9	13	17		31
10-49 head	45	57	15	24	22		22
0-49 head	46	48	11	15	19	5	26
50-249 head	57	89	21	26	24	11	23
SMEs total	50	58	14	18	21	13	25
Above 250 heads	68	76	29	31	34	14	30
Enterprises total	57	63	18	23	25	19	27

Source: Authors' calculation from Hungarian Statistical Office and AMECO databases

[8] Iaroslava Stollachuk's own estimates derived from enterprise databases of the Ukrainian CSO.

Figure 9.: Employment and Added Value in EU countries



Source: Authors' calculation from Hungarian Statistical Office and AMECO databases

In figure 9, it can be seen to what point the transition countries could fare so far and what kind of typical performance groups exists in the EU. The net contributor countries have the highest performance in all aspects, namely in the average number of persons employed, in the added value per enterprise and in the GDP per capita. Other central countries (Belgium, Denmark, France, Ireland, and the UK) are only a little bit behind the net contributors in every aspect, which clearly shows that this should be the path for development.

The problem becomes visual when we look at the Southern European Periphery (Cyprus, Greece, Italy, Malta, Portugal, Spain) and the Central Eastern European Periphery (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia). This problem appears to be twofold, first the Southern European Periphery's performance is so low in respect of added value, average employment, and per capita GDP, that they can not solve the problems of the crisis, as it can be seen in the current news; secondly, the Central Eastern European Periphery in its transition is clearly headed to the point where the Southern European Periphery is right now. For the time being, it is difficult to see how the Central-Eastern European Periphery will make a shift in its transition and move toward the central countries or towards the net contributors to avoid the crisis of the Southern Periphery from its own strength.

It is quite obvious that the average enterprise size is proportional with the average value added producing ability of enterprises. The addition of more value can be produced only by bigger enterprises, because only the bigger enterprises are able to make the investments necessary for higher efficiency and higher volume. The profitability is strictly determined by the enterprise size. If the rejuvenation of the competitive sphere in Central and Eastern Europe has led to the decrease of the enterprise size, then the slowdown of the increase of income producing ability is inevitable. **So, the rejuvenation had two effects: the structural change broke down the quasi-developed structure and has increased the productivity this way, but at the same time it decreased the average enterprise size and through it withheld the increase of the income producing ability**.

The solution to this trap could be that the Central and Eastern European countries could strengthen their enterprise structure in the middle (increase the shares of small and medium companies) and slightly increase the share of their large companies. That would then produce a shift towards the German and Dutch enterprise structure. Then the larger enterprises could employ relatively more people and produce more value added, this shift could also improve the employment and accelerate the GDP growth (see the share data and the employment and productivity coefficients in table 4). Of course, a shift of this kind produces serious capital, especially knowledge capital requirements.

By suggesting this kind of structural shift we are not going against smaller businesses. The micro and small enterprises, and the medium and large enterprises are equally important workshops of development of knowledge capital. The Slovakian economic policy, which does not take seriously enough the proper development of SMEs, is very risky. If the pressure for higher efficiency will drive a significant part of large companies into lower wage countries, then Slovakia will lack a serious amount of important knowledge that could be obtained only in the practice of micro and small enterprises. The larger companies need the innovations of micro and small enterprises are like the hungry man a slice of bread. At the same time the real innovations of the micro and small enterprises can be tested and turned into true inventions only in medium and large companies. As the German and Dutch structures show, there must be an equilibrium among the different company types. Small and large companies should live in harmonic, organic unity.

This relationship has obviously been distorted in Hungary in the direction of the so called necessity entrepreneurship (look at the very high share and very low productivity of micro companies in the Hungarian column of table 4). We regard an enterprise as a necessary enterprise if the struggle for survival is the reason why the enterprise was created and not only for the profit. If a society is unable to organize an efficient division of labour, then its citizens are forced to look for some money earning activities in the legal and illegal economy and this will never result in efficient companies. If people will only extrude into necessary entrepreneurships and nobody cares whether they will be able to exist in the niches of the larger ones, then their knowledge capital will degenerate, and turn back to the natural economy and to the lower level of division of labour. This will cause the development of the knowledge capital of a nation to unfold it into certain fields, but will detain it as a whole. So in Hungary, there is still a reserve to improve its distorted enterprise structure. When the share and the number of small, medium, and large companies increase, the necessary entrepreneurs will flow back into them.

Ukraine should not only increase the average size of enterprises, but should also enhance their capacity to the European level through cardinal changes of entrepreneurship climate as well as through the improvement of national policy in the field of industrial innovation through development of breakthrough industries of national economy. This will allow the creation of essentially new conditions for SMEs development, which will orient their activities in line with the technical, technological, and managerial potential formed by the large enterprises and which are adequate to meet the world competitive challenge. In the world today, large enterprises continue to occupy a leading role in the general entrepreneurial system, as they became a key organizational form of production within which the radical innovations evolved and spread, which in turn allowed the transition to the new technological organization of extended creation of social production.

If the enterprise structure is distorted, then the accumulated knowledge capital could be parallelized, and could remain idle. It is not enough to accumulate knowledge capital; it must be mobilized by an appropriate enterprise structure. This is a mutual relationship. A given structure requires appropriate knowledge capital, while given knowledge capital only allows the creation of a structure that corresponds to it. If an engineer cannot find a well-equipped job in a modern enterprise and must rather tinker around in a lean-to workshop, then the country's good education performance indicators are in vain. The knowledge capital will remain idle and the economic performance will fall back. This problem will be magnified by the presence of the multinational firms. Having too large a share of necessary entrepreneurship has actually become a hindrance in taking part in the development of top products and technologies and has left this terrain to multinationals.

If, in the life of a nation the most developed products and the state of the art technologies are mainly in the hand of the multinational capital, then one of the most important elements of knowledge capital, the spreading of innovations, their transformation into products, services, and procedures, disappears from the life of the country and only the knowledge necessary to the supplier role and the repetitive and non-innovative knowledge will be developed. That country that gives up the self-reliant development of top products and top technologies in mass production falls behind and leaves this terrain for others. If a country gives up this endeavour, then the average enterprise size could remain low. If not, this is what will happen, the country will, at all circumstances, create its pulling with large and medium enterprises that will increase the average enterprise size.

What we said about multinationals does not mean that we are against multinationals! It is very important to note that the endeavour to get into the centre of development of top products and technologies does not mean that the country doing it could create only pure domestic enterprise types. The domestic capital will have less of a chance if it only tries to accomplish these goals alone, in complete competition with the multinational capital. Here those joint solutions will have a very serious role in which the share of domestic capital grows compared to the shares of the past, but the nature of the relationship remains within the borders of partnership.

Conclusion

We have analyzed the economic growth and its determining factors in countries of the European Union, particularly in Hungary and Ukraine. We have found that the Central-Eastern European Periphery has not finished its transition, and that this change is heading in the direction of the Southern Periphery of the European Union. As the Southern Periphery is the area of economic crises right now, it is obvious that something should be done in order to avoid falling to the same fate for the Central-Eastern European Periphery. We introduced a new production function and with its help we identified the bottlenecks of growth in Hungary and Ukraine, namely the organizational and human capital that, in its present development stage, do not correspond to the needs of creating state of the art larger companies. The present crisis pushes both countries to postpone long-

term developments, such as investments into human capital, and in this way makes the solution of the crisis more difficult.

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