Relationship between the Consumption and the Capital Involvement in Central and Eastern European Countries

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Abstract

The Central and Eastern European countries (CEE countries) began to restore or more precisely establish a market economy in the nineties of the last century. Domestic capital resources were mobilized in the privatization processes and the sector of small and medium enterprises was being developed. In that period, which was characterized by an increasing rate of global product network formation, the CEE countries could also represent an interesting market for foreign capital searching for the environment for a high level appreciation. The market was distinguished by a relatively low-cost but concurrently educated workforce.

The focus of the research presented in this article is the link between the capital involvement and the impact on the consumption price level. It is generally assumed that the capital seeks the regions with a relatively lower wage level. It is related to the lower purchasing demand which may be only saturated if the lower price level of consumer commodities is provided.

Based on the development of selected indicators on the one hand of the capital involvement and the level of wages and consumer prices on the other hand, the relations between economic phenomena are analysed in the group of selected CEE countries. The level of differences is evaluated within researched countries in the given trend.

The aim is to verify the hypothesis related to the main allocation factors of the capital with an emphasis on the relationship: low labour costs evoke low level of consumption prices in the country and/or region.

It is important to see that the capital involvement is not only dependent on the economic factors but on non-economic ones as well, e.g. on political stability.

Key words: investments, parameter of market size, CIP index, wage level, consumption price level, evaluation model.

JEL Classification: O52, R39

1 Introduction

The economic situation in different countries is different (Kraftová, Applová, 2013), and according to the conclusion of the economic theory it depends on production factors available. It is a complete immobile land which is fatally given and whose mobility is often very strongly limited by language, cultural or other barriers, and it is capital which has basically no natural

barriers (Fárek, Kraft, 2012). The Central and Eastern European countries (CEE), on which this paper is focused, do not represent an exception (Kudriavceva, 2011). It is therefore relevant to ask on which of these factors is the capital position of CEE countries dependent.

Of particular importance - if we strip from non-economic factors such as political stability of the area, the level of corruption, etc., but also from economic ones, mainly differing interest rates, but being essential for the movement of mainly indirect foreign investment - will be the price of labour. It represents the essential cost factor of the given territory (Wiliński, 2012). Much importance will also have the qualitative level of production (Zdražil, 2014), hence its current competitiveness, reflecting the quality of available human capital (Matěja, 2011). The relevant factor in deciding on the implementation of foreign direct investment, however, is undoubtedly the size of the country and its population.

1.1 Goal and methods

The goal is to choose by means of a simple model until now non-emphasized factors of allocation of foreign capital in the form of foreign direct investment (FDI) in 10 selected CEE countries, representing 8 countries from EU enlargement in 2004 and two countries of the EU enlargement in 2007, i. e. countries which after 1990 began with the transformation to a market economy, and to assess the relationship between the capital involvement and capital consumption parameters selected in the group of countries.

There are established two hypotheses:
H1: The model includes the main factors of allocation (MFA) when the correlation coefficient between the reality of FDI countries and MFA model exceeds 0.8, respectively. $r_{(FDI, MFA)} > 0.8$.
H2: Low labour costs (measured by the average monthly labour costs MLC necessitate a lower level of consumer prices (CPL) and the bond between MLC and CPL is stronger than the bond between the FDI reality and the MFA model, respectively $r_{(MLC, CPL)} > r_{(FDI, MFA)}$.

To achieve the intended goal, first are characterized the CEE countries, both a parameter describing the size of the market has been developed, as well as the developing countries have been classified by stages in the reporting period (for a specific period). Simultaneously, the competitiveness index of the manufacturing industry has been applied in accordance with the methodology of the World Economic Forum (WEF).

To describe the capital involvement in the countries under review, attention is focused on two areas: first, on the development of investment as part of the gross domestic product (GDP) as indicators of gross fixed capital formation (GFCF) - and using the average level of the index and the growth of the share of GFCF to GDP but also by using a relative indicator of involvement GFCF per capita - first by the level of FDI into the country during the years 1993-2012 - again using the average level of FDI, but also the determination of the minimum and maximum values for the individual CEE countries.

The evaluation of the group of CEE countries according to labour costs and the consumption price level precedes the actual design of the MFA model, which is a comparative and evaluation synthetic model with an additive base that works with standardized values of variables and is designed as a classification one. Its design is then followed by validation of the hypotheses.

2 Central and Eastern European Countries on the Turn of Centuries

To assess the ten analysed CEE countries the parameter of market size PMS was designed as presented in equation (1), which takes into account, on the one hand, the population of the country, and its size on the other hand, with not even one of the factors attributing greater significance.

$$PMS_i = \sqrt{I_i * A_i} \qquad (1)$$

Explanatory notes:
PMS = parameter of market size *I = number of inhabitants in millions*
i = i-the country *A = size in km²*

PMS can be understood as an expression of the market potential of the country. According to the values achieved, the ten countries analysed can be divided into three groups: 5 small countries (SI, EE, LV, LT, SK); 3 medium-sized countries (BG, CZ, HU) and two large countries (PL, RO).

This purely quantitative parameter will still be used for its significance in the MFA model, but for the attraction of investments it is not sufficient. Invested capital requires appreciation and for its possible involvement the development phase is also relevant, in which each country is, and also a level of competitiveness of its production, which the country in comparison with other economies achieved and that in itself presents the advancement of human capital.

To determine and compare a country's development phase the WEF methodology was used, which according to the achieved level of GDP per capita divides countries into three groups based on factors that drive their economic development and which are represented by a) the basic factors of development (institutions, infrastructure, macroeconomic environment, health and basic education); b) effectiveness factors (higher education and qualification, goods market efficiency, labour market, financial market, technological advancement) and c) factors of innovation (business sector sophistication, innovation) (Schwab, 2011). Allocation of CEE countries into groups, respectively subgroups is shown in the table 1, and separately between 1995 (the period of building a market economy), 2004 (entry 8 of them in the EU) and 2012 (latest available data).

Tab. 1 Classification of CEE countries according to their development stages in selected years

Groups and criteria	1995	2004	2012
Development driven by basic factors GDPPC < 2000	BG, LV, LT, RO		
Subgroup I GDPPC ∈ (2000;3000)	EE, PL, SK		
Development driven by factors of effectiveness GDPPC ∈ <3000;9000>	CZ, HU, SI	BG, LV, LT, PL, RO, SK	BG, RO
Subgroup II GDPPC ∈ (9000;17000)		CZ, EE, HU, SI*	HU, LV, LT, PL, SK*
Development driven by innovations GDPPC > 17000			CZ, EE, SI
Note.: GDPPC = gross domestic product per capita measured in USD			

Source: author´s calculations and using(Schwab, 2011)

The information presented in Table 1 illustrates quite significantly the shift of CEE countries to the higher stages of development, and the best position still held by Slovenia and the Czech Republic. (It should be noted that the value of the decision criterion in the case of SI* and SK * is

just below 17000 USD). In addition, Bulgaria and Romania is still lagging behind, while two Baltic countries - Latvia and Lithuania - have managed their position improved from baseline. The relative economic performance of the CEE countries shows the accentuation of intensifying development factors, which is a positive development for domestic capital, but for foreign capital seeking connections with low wage levels, this may not be an overwhelmingly positive signal.

And just for foreign investment, specifically for FDI, the competitiveness of production, mostly linked to the manufacturing industry, is an important moment. An interesting characteristic of the country in that direction is the competitive industrial performance index, the CIP index, which includes the added value of the manufacturing industry (MI) per capita; MI export per capita; intensity of industrialization – expressed both by the proportion of the added value of the manufacturing industry on the total GDP, and by the proportion of medium and high tech added value on the overall added value of the MI, as well as MI export quality evaluated both by the share of the MI export in the total export, and by the proportion of the medium and high tech export in the total export (UNIDO, 2011). CIP index is thus a synthetic indicator; its global average in 1995 with a level of 0.10 over time shows a slight downward trend (in 2010 it reached the level of value 0.8). It should be noted that the three most developed countries - Japan, Germany and USA - achieve CIP index values over the years 1995-2010 above 0.5 (except the USA between 2009 and 2010, when its value CIP index fell just below the mentioned level). In terms of the CIP index the CEE countries showed a very different outcome in 1995 compared to other values measured in five-year intervals. In general, CEE countries with their values move rather around the global average, than that they would compete with the above mentioned most developed countries. In 1995, the global average was met or slightly exceeded in only two countries of the former Czechoslovakia, i. e. in the Czech Republic (CIP index 0.11) and in Slovakia (CIP index 0.10). In the subsequent reporting years - 2000, 2005, 2010 - already five CEE countries, namely - in descending order according to the results of 2010 - Czech Republic, Poland, Slovenia, Hungary and Slovakia have reached or exceeded the global average (even more than double the value). CIP index can be understood as the qualitative characteristics of the production capacity of the country, which complements the purely quantitative indicator PMS, and therefore will also be considered in the model MFA.

3 Capital Involvement in the CEE countries

The capital involvement in CEE countries is assessed, first through the development of investment in fixed capital, either through inward FDI flows, for the past two decades, i.e. for the period 1993-2012.

3.1 Evaluation of the Gross Fixed Capital Formation

Investments in the form of the GFCF indicator are evaluated in the period by the average share of GDP, a rate of growth between 1993 and 2012, and then the comparison using relative indicator GFCF per capita has been carried out, in the last year of assessment, i.e. in 2012. The resulting values are compared in the Table 2. Besides the CEE data it contains also data for the strongest country in the EU - Germany including the former GDR.

Tab. 2 Comparison of GFCF in CEE countries in the time period 1993-2012

country	GFCF share of GDP		GFCF per capita in 2012 (USD)
	Average 1993-2012 (%)	growth index 2012/1993	
Bulgaria	20	1.647	1 488
Czech Republic	27	0.891	4 340
Estonia	28	1.002	4 262
Hungary	22	0.894	2 183
Latvia	23	1.657	3 163
Lithuania	21	0.762	2 356
Poland	20	1.267	2 433
Romania	23	1.517	2 252
Slovakia	27	0.677	3 399
Slovenia	24	0.894	3 922
For comparison:			
Germany	20	0.800	7 387

Source: author´s calculations based on data from (EUROSTAT-a, 2014); (UNSTAT, 2014)

To illustrate this it can be mentioned that the average share of GFCF to GDP was during the year in the U.S. 21 % with an index of 0.93; in Japan 24 % with an index of 0.73. The table shows that the usual share of GFCF to GDP - in comparison with other CEE countries, but also against the three most developed countries in the world – has been exceeded in Estonia, Czech Republic and Slovakia, while Estonia stagnates in the direction and in the former Czechoslovakia a decreasing trend can be observed. Yet the relative investment indicators per capita are currently in the Czech Republic and Estonia top. The largest observed two countries - Poland and Romania - are characterized by the growth index value of 2012/1993, which exceeds the "weakest" Bulgaria and Latvia that - together with Estonia and Slovakia - in the reporting period several times exceeded the limit of 30 % of GFCF to GDP. In terms of the indicators GFCF per capita in this group of countries Bulgarian values are beyond the limits with its remarkably low level of this indicator, and at the same time it can be said that even Czech Republic and Estonia as two advanced countries in this respect are not able to come close to Germany which is the most developed country in this region.

3.2 Evaluation of the FDI inward flow development

Inward FDI flows are compared for CEE countries by their average values observed for twenty years, i.e. in the period 1993-2012, and then the ranking of countries has been established – see Table 3. In parallel, minimum and maximum values of this type of FDI in individual countries are given, and for the maximum value of FDI also the year of its implementation is given.

Tab. 3 Evaluation of the FDI inward flows in CEE countries in the time period 1993-2012

	FDI average in the latest 20 years *	Ranking of countries according to the average value of FDI	Minimum value of FDI *	Maximum value of FDI *	Year with a maximum FDI
Bulgaria	2 652	5	40	12 389	2007
Czech Republic	4 952	2	653	11 653	2005
Estonia	963	7	151	2 869	2005
Hungary	4 354	3	1 143	13 469	2012

Latvia	633	9	44	2 322	2007
Lithuania	723	8	-14	2 015	2007
Poland	9 221	1	1 715	23 561	2007
Romania	3 580	4	94	13 909	2008
Slovakia	2 358	6	-6	5 865	2002
Slovenia	500	10	-653	1 947	2008

Source: author´s calculations based on data from (UNCTAD, 2014)
*Note.: * US Dollars at current prices and current exchange rates in millions*

Again, only for a rough comparison, the average values of this type of investment during the reporting period in the USA are the following: 156,869 million USD, in Germany: 37,309 million USD and Japan: 5,619 million USD. As it can be seen, only Japan, famous for its non-preference approach related to inward FDI flows, corresponds with the level of CEE countries in this respect. The most successful country in terms of allocation of FDI flows is Poland followed by the Czech Republic and Hungary, its ranking resulting from significant investments in 2012. The large Romanian economy holds 4th place, then the fifth position held by the medium-sized Bulgaria. In terms of classification according to PMS the last rankings are held by small countries, which lead to the conclusion that the parameter of market size is not a negligible characteristic for FDI.

4 Labour Costs and the Consumption Price Level

Comparison of wage levels across the states in time is faced with the problem of data availability, especially because they are usually reported in national currencies, which makes it difficult for comparison. But in what equity holders are more interested than in wages, are total labour costs. Starting in 2008, Eurostat makes available data on labour costs in EUR (Eurostat-b, 2014), but the statistics do not include all countries and not at all in the time series. For these reasons, the comparison of the level of average monthly labour costs (MLC) in the CEE countries has been done for one year (2011) for which data are available, with the exception of Poland. The calculation of this indicator for the land was carried out as a simple arithmetic average of the relation between the average annual income in PPP CZ / PL, SK / HU and PL / PL using data from the OECD (Gola, 2011).

CEE countries in terms of MLC can be divided into two groups and two extreme values. The highest extreme is represented by Slovenia with a value of 2066 EUR, the lowest extreme by Bulgaria with a value of 435 EUR. The remaining countries form a group of five countries with higher labour costs on average around 1202 EUR per month (CZ, EE, HU, PL, SK); secondly, a group of three countries with lower labour costs average around 744 EUR per month (LV, LT, RO). It is necessary to take into account changes that are attributable to long-term trends and also economic fluctuations, for instance labour costs between 2008 and 2009, respectively. 2009 and 2010 in most of the countries dropped, but in the subsequent interim period 2010 and 2011 in all of the countries surveyed they increased slightly.

4.1 Development of the consumption price level in the last decade

To assess the development of the consumption price level (CPL), which does not necessarily correspond to the wage level, hence labour costs in the individual economies, the relation to the level in the EU-28 has been used, as illustrated in Figure 1, which presents not only the development of CEE countries in the years 2003 to 2012, but compares their situation (as well as the situation of EU-28) with three most advanced countries of the world, Japan, Germany and USA.

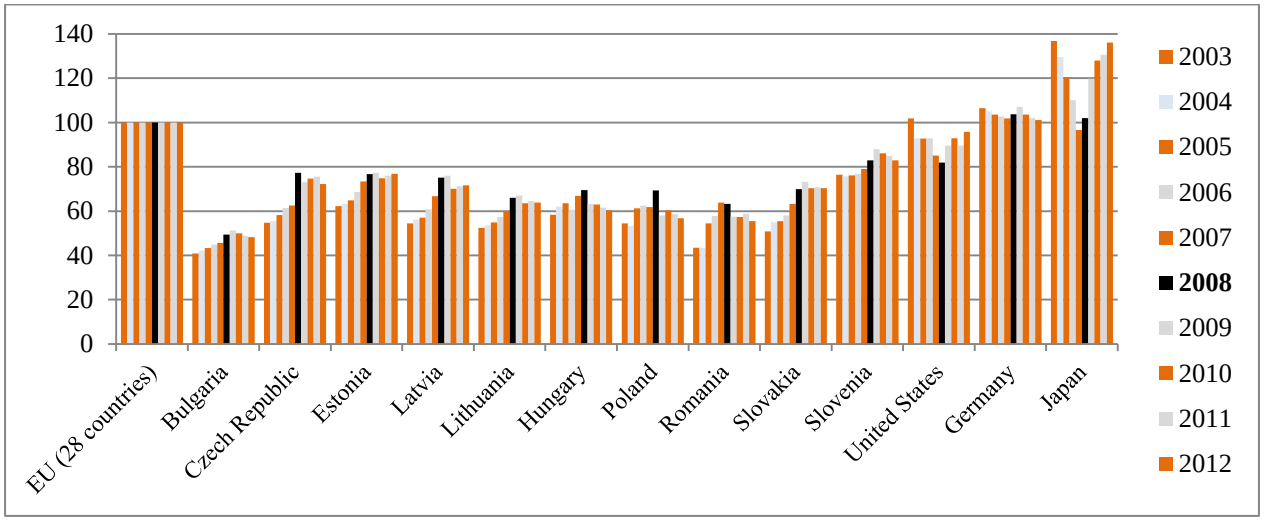

Fig. 1 Comparison of the comparative price levels (CPL) in selected countries in the years 2003-2012
Source: author´s calculations based on data from (EUROSTAT-c, 2014)
Notice: Comparative price levels are the ratio between Purchasing Power Parities (PPPs) and market exchange rate for each country. The ratio is shown in relation to the EU average (EU-28 = 100)

It is worth noting that between the price levels in the EU-28 there are significant differences, for instance Eurostat shows the variation range of 92 percentage points, from 48 % of the EU-28 value in the case of Bulgaria, to 140 % of the EU-28 value achieved in Denmark (Eurostat-d, 2014). In the CEE countries in 2008 (the year of crisis decrease) the consumption price level increased while in the compared USA, Germany and Japan an inverse development has been recorded. After 2008 then, the development in each country has certain specific characteristics. Taking into account the overall view on the evaluated decade, CPL confirm the extreme values found in labour costs in Slovenia (maximum) and Bulgaria (minimum). The remaining eight countries, however, could be divided somewhat differently: four EU-28 country significantly exceed 60 % of CPL, namely CZ, EE, LV and SK, while the remaining four countries - LT, HU, PL and RO - exceed this limit only in exceptional cases, or slightly only.

5 Main FDI Allocation Factors and Bonds between the Capital Involvement and the Consumption

The evaluation MFA model, whose purpose is to assess the main allocation factors of capital in the country compared with others in the group, is designed as a classification, i.e. it is subject to the concept of "the lower the resulting value, the better."

It is a synthetic model, which consists of four sub-indicators whose values are standardized using the equation (2):

$$S_{ij}^{k} = \frac{x_{ij}^{k} - min\left(x_{ij}^{k}\right)}{max\left(x_{ij}^{k}\right) - min\left(x_{ij}^{k}\right)} \qquad (2)$$

Explanatory notes: *X = variable*
S = standardized value *k = indicator*
i= country *j = time period*

The following sub-indicators must be specified, for which a value with a longer time horizon is being preferred in order to eliminate possible momentary fluctuations:

- the parameter of market size PMS according to formula (1), respectively according to the substantive meaning of the indicator, is within the model MFA considered as a complementary value to 1, i.e. 1-PMS; the stretch of a country is considered constant, the population is considered average for the time period 2003-2012;
- the CIP index, again with respect to the content of this indicator, is in the framework of the MFA considered its complementary value to 1, i.e. 1-CIP; the variable before standardization represents the average of the available data from the year 1995 to 2010;
- only the level of labour costs in the form of MLC (covering besides the wage costs also the so called personal costs per full-time equivalent employee) is applied as instantaneous - using data of 2011 due to a lack of consistent time series;
- the CPL consumption price level is determined as average over the last decade, 2003-2012, related to EU-28.

The resulting value of the model is constructed on the unweighted additive base as shown in the relation (3):

$$MFA_i = \sum_{i=1}^{n}\left(S_i^{1-PMS} + S_i^{1-CIP} + S_i^{MLC} + S_i^{CPL}\right) \qquad (3)$$

Explanatory notes: *see (2), and/or in the text, respectively*

Tab. 4 Standardized values of the main allocation factors

country	S(1-PMS)	S(1-CIP)	S(MLC)	S(CPL)
Bulgaria	0.780	0.957	0.000	0.000
Czech Republic	0.785	0.000	0.587	0.583
Estonia	0.987	0.870	0.441	0.724
Latvia	0.947	0.304	0.221	0.566
Lithuania	0.922	1.000	0.239	0.404
Hungary	0.766	0.848	0.391	0.478
Poland	0.000	0.261	0.482	0.383
Romania	0.381	0.848	0.107	0.264
Slovenia	1.000	0.304	1.000	1.000
Slovakia	0.905	0.348	0.451	0.502

Source: author´s calculations

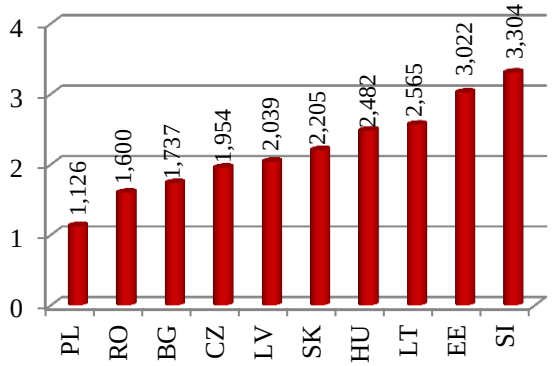

Fig. 2 Calculated MFA values in the CEE countries
Source: author´s calculations

MFA indicator for the *i-th* country takes values in the interval <0, 4>. As already indicated, the lower the value, the more attractive is the country for capital allocations. The fact that individual countries are making in selected parameters (expectable) different results, evidenced Table 4 associated with the Figure 2, which illustrates the overall result of the CEE countries in order from best to worst in terms of the reporting criteria.

To verify the hypothesis the Spearman's rank correlation coefficient was used to test the correlation sequence of values of variables. The correlation coefficient relating to the variable FDI and MFA in individual CEE countries achieved positive values of 0.867, i.e. it can be stated that the MFA model contains the main allocation factors of foreign investment. Hypothesis H1 is therefore accepted. The correlation coefficient for the relationship between MCL and CPL reached the value 0,873, the relationship r (MCL, CPL)> r (FDI, MFA) is valid and the relationship between labour costs and consumption parameters is greater. Involved capital of the country has only a limited ability in the direction of increasing the level of consumer prices in the territory. Therefore, also hypothesis H2 is confirmed.

6 Conclusions

The desirability of foreign capital inflows, i.e. the inflow of foreign savings applicable to wealth creation in the host economies is generally known. What is relevant is the answer to the question which of these factors has a significant capital allocation effect. Such factors are many, but some are not yet sufficiently visualized, which is the reason why the paper highlights one of them. Namely, it is the consistency of involvement of foreign capital in the form of direct investment and consumer price level of the host economy, and indirectly through wage levels, respectively cost level of labour.

CEE countries were divided by the designed parameter of market size in three size groups and their shift within the defined development phases from 1995 to present was shown, together with the development of the competitiveness of the manufacturing industry compared to the world average and to the three most advanced economies of the world.

Areas of investment in the CEE countries in the past twenty years has been described by selected characteristics such as gross fixed capital formation on the one hand, and by foreign direct investment flowing into the country on the other hand. The comparative analysis of the consumption area was focused on the consumption price level in relation to the group of EU-28 countries with an emphasis on the last decade while the wage level in the analysis was replaced by the indicator of average monthly labour costs due to inconsistencies in the available data. With respect to the fact that the consumption price level indicator is not the sole relevant indicator, it was connected in the fourth-dimensional evaluation model of classification type with three other factors.

Based on the verified hypotheses, it was possible – applying this model - to evaluate the CEE countries according to their attractiveness for foreign capital, whose goal is the required appreciation, taking into account the fact that it has only a limited opportunity due to the likely

increase in consumer prices in the host country, specifically in connection with the inflow of foreign capital.

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