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FACTORS AND PROBLEMS OF ECONOMIC GROWTH IN HUNGARY, RUSSIA AND SERBIA

ABSTRACT

The paper presents an analysis of the main characteristics of growth mechanism in three transitional economies – Hungary, Russia and Serbia. The author searches for an answer to the question what fundamental factors, internal and international, determined the long-term growth of the national economies in these countries from the early 1960s to the present global crisis. Wherever it was possible, he made comparisons between the pre-transition and transition periods. Applying the models of mathematical economics, the author carried out an econometric investigation to prove his hypothesis on the system effect of market reforms. He pointed out that market reforms, which were implemented consequently and combined with a growth-oriented economic policy, could substantially contribute to the attainment of better performance.

Key words: Economies in transition, economic growth, main determinant factors, international comparisons, Hungary, Russia, Serbia.

In this paper, an attempt will be made to describe the main characteristics of economic growth in the transitional economies of Hungary, Russia and Serbia. The timeliness of this subject is underscored by the fact that the celebration of the 20th anniversary of the fall of the Berlin wall, which took

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place in November 2009, demonstrated a firm consolidation of Eastern Europe around Western values. The three countries mentioned above had tried to introduce elements of market socialism already in the 1960s. But the measures aimed at partial reform, announced in Yugoslavia and the Soviet Union in 1965 and in Hungary in 1968, had failed to raise efficiency, largely because they were too limited to affect incentives. Radical economic reforms proved to be easier when political changes became rapid and fundamental in the late 1980s and early 1990s.² All the economies of the region, after surmounting severe transformational recessions, generally more or less benefited from these changes begun in 1989. Some of them, such as Hungary, managed to become immediately champions of market reforms, attracting formidable amounts of foreign direct investment (FDI).³ Others, like Russia, began with a prompt shock therapy but later on were not consequent in the implementation of reform measures and thus fell behind more successful rivals. At the same time, after the default of 1998, the Putin recovery succeeded in strengthening the Russian economy, benefiting from favourable international trends primarily in the energy carrier markets. However, not all the transition countries have been beneficiaries of the end of the bipolar world from the very beginning. Thus, as a negative consequence, the decades-long special status of Yugoslavia in the “grey zone” between the two Cold War blocs was irreversibly lost. In this context, the modernisation and transition of Serbia, the largest republic of former Yugoslavia, has been an especially complicated and contradictory process with repeated setbacks. It was not just protracted but also of a different quality than in other transitional economies, receiving a decisive impetus only after the downfall of the Milošević regime in October 2000. Although Serbia had actually begun transition twice, in 1989 and 2000, many authors deem its late accession to the assembly of market economies as an advantage helping not to repeat the mistakes made by others. Indeed, it is quite impossible to repeat the developments of the 1990s, both due to dramatic changes in international socio-economic environment and to the heritage of the past leaving its mark on the mentality of a large part of society.

2 Cf. World Development Report 1996: From Plan to Market, Published for the World Bank by Oxford University Press, New York, 1996, pp. 10-11.

3 Overall, Hungary attracted USD 70.7 billion of FDI in the period from 1980 to 2008, compared to USD 219.1 billion flowed in Russia from 1990 to 2008 and USD 16.7 billion flowed in Serbia from 1992 to 2008. In these inflows, the average share of manufacturing made up 44.4, 26.3 and 15.8 percent, respectively. Calculated from: UNCTAD, FDI/TNC database and national statistics.

In the specialist literature, Stephan⁴ examined Hungary's gradual transition to a market economy that had begun in the 1960s. Methodologically, he used the experience of East Germany's immediate and full integration to define a set of necessary conditions of catch-up development which were subsequently reflected against the developments of the 1990s in Hungary. Schweitzer,⁵ who surveyed long-term changes in Hungary's investment since the early 1950s, stated that it was the massive inflow of FDI that had mostly determined the acceleration of economic growth from the mid-1990s. Erdős⁶ found that sustainable growth in the Hungarian economy could not exceed 3.5-4 percent, with economic policy directly affecting not the rate but the factors of growth.

Suvorov⁷ presented the methods and results of parameter estimations of a model of technological changes for the Russian economy in the period 1970-1990, including an estimated macroeconomic production function. He concluded that economic growth in Russia would have inevitably decelerated and declined even if the Soviet system had been retained. Trofimov⁸ estimated a 3.5-4.7 percent average annual rate of technical progress which would be necessary for Russia to achieve in the next 15-20 years the American level, assuming that the latter remained twice higher than the Russian one. Braguinsky and Myerson⁹ elaborated a macroeconomic model of Russian transition which by emphasising the role of oligarchic property rights can adequately explain both the steep decline suffered by the Russian economy at the first stage of transition and the subsequent turnaround.

Palairret¹⁰ has pointed to a protracted secular decline in the Serbian economy between 1978 and 2000, which antedated the ascendancy of

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- 4 Johannes Stephan, *Economic Transition in Hungary and East Germany: Gradualism and Shock Therapy in Catch-Up Development*, Macmillan, Basingstoke, 1999.
 - 5 Schweitzer Iván, "A hazai beruházások alakulása, aránya a GDP-ben és szerkezete", *Műhelytanulmányok*, 35. sz., KOPINT-DATORG, Budapest, 2002.
 - 6 Erdős Tibor, *Növekedési potenciál és gazdaságpolitika*, Akadémiai Kiadó, Budapest, 2006.
 - 7 Nikolay Suvorov (Суворов, Н.В.), *Макроэкономическое моделирование технологических изменений*, ГУ ВШЭ, Москва, 2002.
 - 8 Georgy Trofimov (Трофимов, Г.Ю.), *Факторы и темпы экономического роста России*, Институт финансовых исследований, Москва, 2002.
 - 9 Serguey Braguinsky and Roger Myerson, "A Macroeconomic Model of Russian Transition: The Role of Oligarchic Property Rights", *Economics of Transition*, Vol. 15, No. 1, 2007, pp. 77-107.
 - 10 Michael Palairret, "The Economic Consequences of Slobodan Milošević", *Europe – Asia Studies*, Vol. 53, No. 6, 2001, pp. 903-919.

Milošević, but was intensified thereafter. Stefanović¹¹ has emphasised the role of FDI as an essential incentive for development and transition. He has stressed that Serbia's economy faces an acute problem of lacking capital, without which no major development issue can be resolved and which necessitates a more active attraction of FDI. Cerović and Nojković¹² investigated the relationship between economic growth and transition. The results obtained by them showed a significant impact of initial conditions on economic performance and the outcome of the whole transition process.

This paper has the following structure. Within its theoretical framework, the neoclassical production function as well as a world model explaining the mechanism of economic growth and development will be presented. Thereafter, the attained levels of development, as well as problems of catching-up with more developed countries and intensification of production will be analysed. This will be followed by special sections on the growth mechanism in Hungary, Russia and Serbia, respectively, which will help to draw the relevant conclusions. The author's main contention is that market reforms should have made some positive contribution to economic growth, which could be revealed by an econometric investigation. Regarding transition, the author believes that even the most successful early starters have not yet managed to complete that process, creating instead a peculiar regime of regime change.¹³

SOME THEORETICAL CONSIDERATIONS

Many factors affect economic growth but only two are of key importance. First, this is physical or human capital accumulation per person employed or per inhabitant. Second, there are changes in the economy's technological level expressed by the indicator of total factor productivity (TFP). These changes

11 Milenko Stefanović, "Uticaj stranih direktnih investicija na razvoj nacionalne ekonomije", *Ekonomске teme*, God. 46, br. 2, 2008, str. 131-145.

12 Božidar Cerović and Aleksandra Nojković, "Transition and Growth: What Was Taught and What Happened", *Economic Annals*, Vol. 54, No. 183, 2009, pp. 7-31.

13 This statement can be proven by the fact that between 1989 and 2008, the overall indicator of economic transition increased from 1.33 to 3.96 in Hungary and from 1.00 to 3.04 in Russia, respectively. At the same time, in Serbia, the indicator at issue declined from 1.52 in 1989 to 1.48 in 2000, but then rose to 2.85 in 2008. As seen from these data, none of the three countries has yet achieved the 4+ level of a developed capitalist economy, although Hungary has come very near to it. Source: EBRD, Transition Indicators database.

reflect the rate of technical progress and structural shifts. All the other factors, such as public policies, consumer preferences and market institutions determining the investment climate or the development level of infrastructural sectors, exert a positive or negative influence on the rate of economic growth through these two processes.¹⁴

In this context, the standard neoclassical model¹⁵ can be written down in the following form:

$$Y = A_0 K^\alpha L^{1-\alpha} e^{\lambda \Delta t}, \quad (1)$$

where Y is output, A_0 is a multiplier of efficiency, K is capital, L is labour and t is time. In the case variables, for the sake of simplicity, the t index was not written out. Δt is the number of years ($t-t_0$) elapsed from some initial moment (t_0), α , $1-\alpha$ and λ are the elasticity of output by fixed capital, labour and time, respectively. The model assumes that, in a situation of equilibrium, the parameter α corresponds to the profit share, including the share of consumption of fixed capital in the gross domestic product (GDP), which regarding the developed countries is usually taken as 1/3. We are to proceed that way in the course of our investigation, too. For its purposes, we rewrite relation (1) as follows:

$$\Delta \frac{\dot{Y}}{Y} = \alpha \Delta \frac{\dot{K}}{K} + (1-\alpha) \Delta \frac{\dot{L}}{L} + \Delta \frac{\dot{A}}{A} \quad (1a)$$

where Δ symbolises growth and A can be regarded as technical progress, or TFP.

Economic growth is essentially an interaction of fundamental production factors, which results in the emergence of output. Setting off from this definition, Simon¹⁶ elaborated an econometric model which can map three fundamental types of technical progress and thus economic growth and development, based on immobile, mobile and creative effects. In the general form of this model, Y is the volume of output (GDP or value added), K is fixed

14 See e.g. Georgy Trofimov, op. cit.

15 Robert M. Solow, "A Contribution to the Theory of Economic Growth", Quarterly Journal of Economics, Vol. 70, No. 1, 1956, pp. 65-94.

16 See György Simon, "Basic Questions of Economic Growth Mechanism", Economic Annals, Vol. 53, No. 176, 2008, pp. 7-37.

capital, L is employment, M means working and H schooling years, R is the number of researchers, i.e. scientists and engineers engaged in research and development (R&D), Z is arable land, O is oil and gas resources and t is time in years. We assume that at an annual level, $M = L$.¹⁷ All these variables are a function of time. The time index is put out in the case of retarded effects. In the formulas, a capital letter denotes a function and a small letter a parameter (except the variable t).

Intensity functions:

$$F_K = \ln(1 + n_K K/L) \text{ (capital intensity function);}$$

$$F_H = \ln(1 + n_H H/L) \text{ (education function);}$$

$$F_R = \ln(1 + n_R R_{t-2}/L) \text{ (research intensity function);}$$

$$F_Z = \ln(1 + n_Z Z/L) \text{ (arable land intensity function);}$$

$$F_O = \ln(1 + n_O O_{t-1}/L) \text{ (mineral resource intensity function).}$$

The normalising coefficients are $n_K = 1/385$, $n_H = 1$, $n_R = 1$, $n_Z = 1$ and $n_O = 1/1000$, where the parameter n_K refers to the 2000 dollar prices. These are rounded values, which do not differ significantly from the estimated ones.¹⁸

Basic model:

$$Y = gM \exp[F_K (G_I + G_M + G_{KR})]. \quad (2)$$

Augmented model:

$$Y = gM \exp[F_K (G_I + G_M + G_{KR} + G_O)]. \quad (3)$$

The parameter g is the output produced without fixed capital during a working year that approximately corresponds to an economy's initial productivity level. Among the components in parentheses, G_I is a function concerning the immobile, G_M the mobile, G_{KR} the creative technical progress and G_O is a function pertaining to the effect of oil and gas resources. In formulas:

$$G_I = 1 - \exp\{-g_I F_K - g_Z F_Z\};$$

$$G_M = g_M F_K \exp(-g_{KM} F_K - g_{ZM} F_Z);$$

$$G_{KR} = G_H G_R G_T,$$

17 Ifj. Simon György, "Növekedélmélet: kritikai áttekintés", OTKA tanulmány, MTA KTK, Budapest, 2002, 48-49. old.

18 György Simon, "Basic Questions of Economic Growth Mechanism", op. cit., p. 16.

where $G_H = g_H F_H \exp(-g_{KM} F_K)$, $G_R = 1 + g_R F_R^2$ and $G_T = \exp(g_T \Delta t)$, where $\Delta t = t - 1950$;

$$G_O = g_O F_O \exp(-g_{HO} F_H - g_{OO} F_O - g_{ZO} F_Z).$$

The parameter g_O of the oil factor is positive, the other parameters are related to negative effects. Education (F_H) negatively affects the return to oil factor because the creative activity in mining is mostly absorbed by the exploration of oil and gas resources. Therefore, the latter's separately accountable result is relatively smaller. In the approximate formula for national economy, this relationship appears in an inverse form. Among the two other negative effects, the first ($g_{OO} F_O$) is connected with the fact that countries immensely rich in oil and gas annually extract relatively less of their reserves, the second ($g_{ZO} F_Z$) indicates that in agrarian countries the economic importance of oil and gas production is usually smaller. A positive feature of relation (3) is that it makes easily measurable the effect of oil and gas resources on economic growth. However, at a national economy level, the formula G_O yields realistic results concerning the role of the oil factor only in the case of countries having great oil and gas resource intensity. Therefore, for the other countries, it is expedient to apply relation (2).

The growth model described above is homogeneous of degree one in both of its variants, similarly to the neoclassical production function. It can be used to compare economic development to the international level, to the results that would be ensured by some factor combination in the case of world-level efficiency, since the parameters of the model, assumed to be universally valid, were determined on the basis of a worldwide investigation using data on 131 countries (see Table 1). In this sense, a world model supposed to be applicable for any country is at issue.¹⁹

19 See Simon György, "Növekedélmélet – világmodell – gazdaságfejlesztési stratégia", *Külgazdaság*, 49. évf., 3. sz., 2005, 31-51. old. Here the list of investigated countries, comprising Hungary, the USSR and SFRY, can be found. Russia and Serbia do not explicitly figure among them.

Table 1. Parameters of the world model

No.	Denotation	Estimated value	t statistics
<i>Basic model</i>			
1	g	522	22.46
2	g _I	0.0781	22.45
3	g _M	0.319	22.42
4	g _H	0.273	22.29
5	g _R	278	17.44
6	g _T	0.0065	20.28
7	g _Z	0.082	20.95
8	g _{KM}	0.34	-22.52
9	g _{ZM}	0.30	-19.14
<i>Function G_O</i>			
10	g _O	1.94	16.45
11	g _{HO}	1.54	-19.04
12	g _{OO}	0.47	-19.34
13	g _{ZO}	0.45	-8.46

Source: György Simon, "Basic Questions of Economic Growth Mechanism", Economic Annals, Vol. 53, No. 176, 2008, p. 20.

Table 2. Fit of the world model for Hungary, Russia and Serbia
(Dependent variable: Y/M)

Sphere	Number of observations	R		Standard error (%)	
		Annual	Cumulative	Annual	Cumulative
<i>Hungary</i>					
National economy*	294	0.9310	0.9998	5.1	10.4
Manufacturing	196	0.9342	0.9879	7.5	10.9
<i>Russia</i>					
National economy*	343	0.9624	0.9994	4.1	9.7
Manufacturing	196	0.6847	0.9933	5.9	10.1
<i>Serbia</i>					
National economy*	294	0.6983	0.9938	4.8	9.1
Manufacturing	196	0.7086	0.9947	5.2	9.6

*Aggregated.

Note: Here R^2 is the uncorrected coefficient of determination, considering that the parameters of the model were not estimated specially for Hungary, Russia and Serbia. Here and below, data for Serbia exclude Kosovo.

Source: calculated from the Appendix.

The returns to factors of economic growth can be written down in an additive form by a logarithmic conversion of both sides of relation (2) and, in an analogous way, relation (3). For this investigation, the following forms of the basic and augmented models, respectively, were used with the parameters listed in Table 1:

$$\Delta \ln Y = \Delta \ln M + \Delta F_K G_I + \Delta F_K G_M + \Delta F_K G_{KR} + \Delta \varepsilon \quad (2a)$$

$$\text{and } \Delta \ln Y = \Delta \ln M + \Delta F_K G_I + \Delta F_K G_M + \Delta F_K G_{KR} + \Delta F_K G_O + \Delta \varepsilon, \quad (3a)$$

where ε is the estimation error and $\Delta \varepsilon$ characterises the deviations from the world level. Here we applied the basic model for Hungary and Serbia and the augmented one for Russia.

As seen from Table 2, the relatively high determination fits the actual productivity values of all the three countries, and the estimation errors are also acceptable. The cumulative results are better than the annual ones, i.e. the estimation errors do not cumulate but decrease in time. This is a general feature of the fit of this, an essentially development model. However, the worse but still acceptable coefficient of determination for Russia's manufacturing, especially at the level of annual data, seems to be presumably connected with data quality and methodological problems regarding primarily the Soviet period. For Serbia, the lower determination for the annual results may primarily reflect data problems related to the fact that it is difficult to investigate this country's economy with the generally used tools and methods of analysis. The main reasons are specific conditions of a Communist dictatorship combined with workers' self-management and later a decade-long war economy, exacerbated by international isolation, to which the low quality of statistics, especially for the 1990s, should be added.²⁰

GENERAL DEVELOPMENT CHARACTERISTICS

Economic development means qualitative improvements in the use of production factors and structural change. Thus, it differs from economic growth which is simply a quantitative change. Economic transition implies a shift from a state-guided or self-managed model of socialist economy to a market system dominated by private ownership instead of a state or social one.

²⁰ Cf. Michael Palairat, "The Economic Consequences of Slobodan Milošević", op. cit., pp. 904-905.

The outcome of this process is expected to ensure fast long-term economic development.²¹ Transition paths can vary considerably. Thus, in the case of former Soviet Union and Yugoslavia one can speak of a “triple transition” involving political changes, economic reforms, and state- and nation-building, while in the case of Hungary only political and economic changes are relevant.²²

In economic life, quantitative growth is closely related to qualitative development. In a certain sense, all countries and social systems are always in the process of development, because even small quantitative changes of population or wealth can lead to major systemic qualitative changes. But in its classical sense, economic development can be reduced to the problem of capital accumulation,²³ which is also reflected by a key role attributed to capital intensity here.

Table 3. Total factor productivity in Hungary, Russia and Serbia, 1961–2008

Country	Average annual change				Contribution to output growth		
	in percent						
	Output*	Fixed assets	Employment	TFP	Fixed assets	Employment	TFP
National economy							
Hungary	3.1	3.5	-0.4	2.2	38.7	-9.7	71.0
Russia	2.5	4.8	0.5	0.6	64.0	12.0	24.0
Serbia	1.8	2.8	1.1	0.2	50.0	38.9	11.1
Manufacturing							
Hungary	3.6	3.9	-0.5	2.6	36.1	-8.3	72.2
Russia	2.8	5.5	-0.3	1.2	64.3	-7.2	42.9
Serbia	2.2	3.7	-0.1	1.1	54.5	-4.5	50.0

* GDP in the national economy and gross value added in manufacturing.

Source: calculated from the Appendix.

As seen from Table 3, of the three investigated countries, long-term economic growth and rise in TFP were most dynamic in Hungary, followed by

21 Leszek Balcerowicz, *Socialism, Capitalism, Transformation*, Central European University Press, Budapest, 1995, pp. 145, 166, 184.

22 Cf. Gwendolyn Sasse, “Lost in Transition: When Is Transition Over?”, *Development and Transition*, Vol. 1, No. 6, 2005, p. 10.

23 See e.g. Ben Slay, “Development versus Transition”, *Development and Transition*, Vol. 1, No. 6, 2005, p. 7.

Russia and Serbia. This was true for both the national economy and manufacturing industry. Manufacturing value added (MVA) grew everywhere on average faster than GDP. Fixed capital increased more rapidly than the number of persons employed. Thus, capital intensity, K/L , became higher implying that this general regularity was valid not only macro economically, but also for manufacturing. TFP contributed most to output growth in Hungary, regarding both the total economy and manufacturing. At the same time, the lowest contribution was observed in Serbia in the former and in Russia in the latter sphere.

Table 4. GDP per inhabitant
(in U.S. dollars of 2000, at PPP*)

Year	Hungary	Russia	Serbia	European Union	United States
1960	3 774	5 601	2 300	8 525	14 039
1989	11 362	13 691	6 381	20 398	28 684
2000	12 075	9 178	3 088	25 326	35 264
2008	15 994	15 801	4 815	28 185	38 849

* Purchasing power parity. USD 1 = HUF 107.92, Rbl. 5.40, RSD 17.13 and EUR 0.92.

Calculated from: Magyar statisztikai évkönyv, Magyarország nemzeti számlái, KSH, Budapest; Российский статистический ежегодник, Россия в цифрах, Национальные счета России, Госкомстат/Росстат, Москва; Statistički godišnjak Srbije, Sistem nacionalnih računa Republike Srbije, RZS, Beograd; National Accounts, OECD, Paris; OECD Factbook: Economic, Environmental and Social Statistics, Paris, various volumes; Dva veka razvoja Srbije – Statistički pregled, RZS, Beograd, 2008, str. 64-67; Masaaki Kuboniwa, “Economic Growth in Postwar Russia: Estimating GDP”, Hitotsubashi Journal of Economics, Vol. 38. No. 1, 1997, pp. 21-32; Alan Heston, Robert Summers, Daniel A. Nuxoll and Bettina Aten, Penn World Table 5.6, NBER, Cambridge, Mass., January 1995; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania (CICUP), Philadelphia, September 2006; EBRD, Selected Economic Indicators database; Eurostat, New Cronos database; U.S. Department of Commerce, Bureau of Economic Analysis.

In 1961-2008, GDP per inhabitant, reflecting living standard, increased on annual average in Hungary by 3.1, in Russia by 2.2 and in Serbia by 1.6 percent, compared to 2.5 percent in the European Union and 2.1 percent in the United States (It should be noted that the term European Union in the present paper covers only the 15 larger European economies to ensure comparability in a long run.) Between 1960 and 2008, Hungary’s GDP per inhabitant rose from 44.3 to 56.7 percent of the EU level, whereas the corresponding

indicators of Russia and Serbia fell from 65.7 to 56.1 percent and from 27 to 17.1 percent, respectively. At the same time, in relation to the United States, Hungary was able to get nearer from 26.9 to 41.2 percent and Russia from 39.9 to 40.7 percent, while in the case of Serbia there was a decline from 16.4 to 12.4 percent (see Table 4).

Table 5. Average annual rate of economic catch-up in terms of GDP per inhabitant (percent)

Note. HU = Hungary, RU = Russia, RS = Serbia, EU = European Union, US = United States.

Period	HU/EU	RU/EU	RS/EU	HU/US	RU/US	RS/US
1961-2008	0.52	-0.33	-0.95	0.89	0.04	-0.58
1961-1989	0.79	0.07	0.51	1.34	0.62	1.05
1990-2008	0.09	-0.94	-3.13	0.21	-0.83	-3.02
1990-2000	-1.40	-5.46	-8.21	-1.32	-5.37	-8.07
2001-2008	2.18	5.63	4.31	2.35	5.76	4.38

Source: calculated from data sources of Table 4.

Data in Table 5 show that it was only Hungary that managed to achieve a positive catch-up rate relative to both the EU and U.S. over the entire investigated period. Russia succeeded in it to a minimal extent only with respect to the United States. As for shorter periods, catch-up development in both relations took place in all the three transition countries at issue from 1961 to 1989 and from 2001 to 2008. Considering the average speed of catching-up in the latter period, one can calculate that it will take Russia 11, Hungary 27 and Serbia 42 years to reach the EU's 2008 living standard. Thus, by the time of Serbia's presumable accession in 2014, its GDP per inhabitant will have attained about one-fifth of the respective EU indicator, which roughly corresponds to Bulgaria's and Romania's levels when they joined the Union in 2007.²⁴

²⁴ In the case of Hungary, Mellár believes that it is impossible to determine unequivocally a single figure showing the time needed for catching up with the EU's average level of development, which may be put in the interval between 15 and 45 years. See Mellár Tamás, "Mikor éri el a magyar gazdaság fejlettsége az Európai Unió átlagát?", *Közgazdasági Szemle*, 48. évf., 12. sz., 2001, 995-1008. old.

Table 6. Intensities in the Hungarian, Russian and Serbian economies

Indicator	Hungary			Russia			Serbia		
	1960	1989	2008	1960	1989	2008	1960	1989	2008
National economy									
K/L USD 10 ³ per person	19.868	70.492	125.058	10.967	58.190	83.037	8.460	24.221	18.721
H/L years per person	6.64	8.93	9.60	8.91	11.56	11.66	4.20	7.02	7.09
R_{t-2}/L per mille	1.58	4.66	4.52	3.07	11.71	6.81	2.88	3.12	4.28
Z/L hectares per person	1.22	1.11	1.23	2.45	1.77	1.81	2.33	0.97	1.28
Manufacturing									
K/L USD 10 ³ per person	12.837	46.148	103.674	4.335	27.592	66.072	5.508	17.837	33.099
R_{t-2}/L per mille	4.87	6.53	3.90	3.56	19.95	15.01	4.30	4.89	8.08

Source: calculated from the Appendix.

Since Hungary, Russia and Serbia, similarly to other transition countries, can be considered as belonging to the semi-periphery of contemporary world economy, their catch-up development would probably demand enormous sacrifices, which could divert for decades a significant part of resources necessary for Western Europe's participation in world competition, resulting in a distant perspective in a moderately heterogeneous and perhaps less manageable community. Therefore, the adaptation of entire Eastern Europe is not even on the agenda; its consequences would be catastrophic for the future of the European centre. Thus, one cannot expect that in the foreseeable future the European Union will significantly contribute to the economic development of semi-peripheral countries.²⁵

What does the intensity indicators of these three investigated countries show? From Table 6, it can be ascertained that between 1960 and 2008, Hungary

25 Kozma Ferenc, *A félperiféria*, Aula Kiadó, Budapest, 1998. 297-298. old. The current global financial crisis has even worsened the situation in this respect, as shown by the recent events in Greece, which certain Western circles want to expel from the euro zone for economic imbalances violating the Maastricht rules.

achieved the highest level among them in terms of capital intensity regarding both the total economy and manufacturing. The regime change beginning in 1989 did not alter the general picture much. Russia's macroeconomic results were most outstanding with respect to education, research and arable land intensities. However, its research intensity in manufacturing was initially lower than that of Hungary and Serbia.

*Table 7. Share of cumulative FDI in fixed assets
(at 2000 prices, in percent)*

Year	Hungary		Russia		Serbia	
	National economy	Manufacturing	National economy	Manufacturing	National economy	Manufacturing
1992	1.3	4.5	0.03	0.1	0.1	0.02
2000	8.3	20.8	0.4	1.2	2.8	1.2
2008	13.8	33.1	3.4	6.7	26.9	14.8

Note. FDI data at current prices were deflated with the U.S. investment price index taken from the U.S. Department of Commerce, Bureau of Economic Analysis.

Calculated from: UNCTAD, FDI/TNC database and national statistics.

Available data show that the share of cumulative FDI in the total capital stock of national economy was initially largest in Hungary, but at the turn of millennium, it was Serbia that took the leading position in this respect. However, in manufacturing, Hungary managed to retain the first place to the end over the whole period 1992-2008 (see Table 7). In 2006-2008, the highest marginal rate of corporate income tax was 16 percent in Hungary, 24 percent in Russia and 10 percent in Serbia.²⁶ In this connection, one should bear in mind that the inflow of direct investments in a longer run can be efficiently stimulated not exclusively by providing various tax allowances, because their profits are much more favourably affected by a qualified workforce and a developed infrastructure. Also, an important role is played by macroeconomic, price, currency and political stability, a strict compliance with contractual obligations.²⁷

GROWTH MECHANISM IN HUNGARY

What main features characterise Hungary's long-term economic development?

²⁶ World Development Indicators, World Bank, Washington, D.C., 2009, pp. 291-292.

²⁷ Cf. Erdős Tibor, *Növekedési potenciál és gazdaságpolitika*, op. cit., 72, 284. old.

1. Beginning in 1968, Hungarian leaders claimed to be following a market socialist model, in which ownership of the means of production remained overwhelmingly in state hands, prices were partially decontrolled and most short-term central planning was inoperative. This New Economic Mechanism granted considerable decision-making autonomy to individual enterprises, while the central government used many methods to coordinate enterprise behaviour bureaucratically. After a period of backsliding to centralised control in the 1970s, the movement towards a market economy accelerated in the 1980s, laying the groundwork for the later gradualist transformation to capitalism. Also, before the regime change, Hungary lived in a less politically repressive atmosphere than other Soviet bloc states and avoided consumer good shortages with their attendant lines. Agricultural production based on cooperatives with flexible leasing and marketing arrangements for both inputs and outputs made the country the breadbasket of the Comecon. At the same time, the country had a fairly equal income distribution, but accumulated large foreign debts caused by the soft budget constraint,²⁸ as state-owned enterprises were propped up by a variety of devices.

2. With prior market experience and a financial system already in place, Hungary's economy after 1989 was able to handle the transition in a gradualist manner not based on shock therapy. However, a confused and misguided approach to land redistribution seriously damaged the previously successful agricultural sector. Taking a disciplined approach to paying its existing foreign debts and adopting a rigorous bankruptcy law in September 1991, Hungary has attracted more FDI than any other former Comecon country except Russia. Some of this funding has gone into high-technology sectors, where Hungary has considerable potential based on its highly educated population.

3. With generally well-established market institutions, reasonable macroeconomic stability and a Western European level of privatisation, Hungary is perhaps the first of the former socialist nations to have approached the completion of the transition process, especially after joining the EU in May 2004.²⁹ Similarly to Poland and Estonia, it became a country where the policies of discipline of hard budget constraints with institutions of corporate governance to monitor managerial behaviour and encouragement through

28 Hard budget constraints are said to exist when managers of state enterprises know that the budgets set for them by central government are fixed and that losses will not be financed out of the general revenues or by the central bank. World Development Report 1996, op. cit., p. iii.

29 J. Barkley Rosser Jr. and Marina V. Rosser, *Comparative Economics in a Transforming World Economy*, MIT Press, Cambridge, Mass., 2004, pp. 371, 384-385.

liberalisation were most consistently pursued, resulting in a climate hospitable to domestic and foreign investments.³⁰

Bartha³¹ contends that the positive effects of EU accession reveal themselves through two mechanisms. On the one hand, owing to expanding trade, capital investments and credit relations, as well as more favourable interest rates, they raise directly by 0.6-0.9 percentage points the economic growth of new member states. On the other hand, at least equally important is the indirect, though not easily measurable effect deriving from the reduction of risks. However, it is the institutional environment based on applicable rules and the stability of fiscal policy that are decisive from the viewpoint of assertion of potential positive effects.

In this connection, Losonczi³² points to three economic policy challenges of Hungary's EU membership.

1. In the wake of transition to a market economy, Hungarian economic policy had to gradually give up its non-market instruments. Under such conditions, its main tasks became the strengthening of the market- and enterprise-friendly economic environment in the interest of improving international competitiveness.

2. With the EU accession, the scope for action of Hungarian economic policy and its autonomy in many fields have been modified, as the EU membership has quantitatively changed the relevant conditions.

3. The management of catching-up with the developed countries under market economy circumstances implies that economic policy must be augmented by related fields. This is helped by an adequate coordination and a convergence programme aimed at creating the necessary conditions for the country's accession to the euro zone.

Nowadays, it is mostly investment- and export-led growth that is considered as efficient and, correspondingly, an economic policy encouraging that investment and exports increase faster than GDP.³³ As seen from Table 8,

30 Transition – The First Ten Years: Analysis and Lessons for Eastern Europe and the Former Soviet Union, World Bank, Washington, D.C., 2002, pp. xvii-xviii, 34.

31 Bartha Attila, "Az új EU-tagországok felzárkózása, belépésük a Gazdasági és Monetáris Unióba", in: Hegedűs István (szerk.), A magyarok bemenetele. Tagállamként a bővülő Európai Unióban, Demokrácia Kutatások Magyar Központja Közhasznú Alapítvány – Budapesti Corvinus Egyetem Politikatudományi Intézet, Budapest, 2006, 324-325. old.

32 Losonczi Miklós, A magyar EU-tagság gazdaságpolitikai kihívásai, Tri-Mester Bt., Tatabánya, 2007, 249-251. old.

33 Erdős Tibor, Növekedési potenciál és gazdaságpolitika, op. cit., 26. old.

Hungary's economic growth in 1961-2008 had both characteristics, as not only investment (gross fixed capital formation – GFCF), but also exports expanded on average more rapidly than production. However, if the transition period (1990-2008) is compared to the preceding socialist era (1961-1989), it is visible that there was a slowdown in the growth rates of GDP and investment, whereas export expansion showed an accelerating trend. Of the external factors, the Brent oil price had declined prior to the regime change, but after 1989, it began rising at a fast pace, which was unfavourable for the energy-dependent Hungarian economy. This was accompanied by a slight long-term appreciation of the forint with respect to its equilibrium rate (Table 8). In this connection, Erdős notes that a relatively stable, only slightly volatile, exchange rate, approximating to purchasing power parity within the range of tradable goods and services, favourably affects economic potential. Economic policy and therein directly the monetary policy can affect price-based competitiveness, in part through exchange rate policy. It can devalue the national currency, making cheaper the price of domestic goods and services for foreign buyers. Revaluation has an opposite effect. It reduces export prices in domestic currency. Prices calculated with the insertion of exchange rate become cheaper abroad, whereas domestic prices are getting more expensive for foreigners. Therefore, price-based competitiveness is deteriorating.³⁴

Table 8. The dynamics of GDP, investment, oil price and exchange rate in Hungary (average annual change in percent)

Denomination	1961-2008	1961-1989	1990-2008
GDP	3.1	4.0	1.6
Gross fixed capital formation	3.7	4.1	3.0
Exports of goods and services	8.8	7.6	10.8
Brent oil price	4.3 ^a	-8.1 ^b	9.5
Exchange rate: HUF/USD	2.56 ^c	2.98 ^d	2.12

a 1983-2008. – b 1983-1989. – c 1970-2008. – d 1970-1989.

Note. Here the exchange rate is an average ratio of nominal and PPP exchange rates.

Calculated from: Magyar statisztikai évkönyv, Magyarország nemzeti számlái, KSH, Budapest, various volumes; IMF, World Economic Outlook database; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, op. cit.; Energy Prices and Taxes, Quarterly Statistics, Third Quarter 2009, OECD/IEA, Paris, 2009, p. 4.

34 Ibid., op. cit., 131, 361. old.

The development of Hungarian economy has for centuries been motivated by the claim to catch up with the more developed regions of Europe. This claim determined the activities of economic actors and decisions of economic policy. After the regime change, it was decisively influenced by the mass appearance of foreign-owned firms. Regarding the outstanding role of foreign ownership, it can justly be stated that it is a group of largest transnational corporations that plays a leading part in the present development model of the Hungarian economy.³⁵

Table 9. Contribution of FDI inflows to GDP/MVA increase in Hungary

Period	National economy		Manufacturing	
	FDI inflow, USD million	$\Delta\text{FDI}_N/\Delta Y_N$, percent	FDI inflow, USD million	$\Delta\text{FDI}_M/\Delta Y_M$, percent
	At current prices	At 2000 prices	At current prices	At 2000 prices
1981-2008	70 689	9.6	31 373	22.5
1981-1989	211	1.3	103	7.8
1990-2008	70 478	12.9	31 270	24.1

Note. See Table 7.

Calculated from: A külföldi működő tőke Magyarországon, Magyar statisztikai évkönyv, Magyarország nemzeti számlái, KSH, Budapest, various volumes; UNCTAD, FDI/TNC database.

Data in Table 9 show that the overall production impact of the foreign capital which flowed in Hungary from 1981 to 2008 was on average more than twice greater in manufacturing than in the total economy. The overwhelming part of foreign investments entered the country after the regime change. Thus, in comparison with the period 1981-1989, their contribution to output growth during the transition in 1990-2008 became much higher, especially at a macroeconomic level. Direct capital imports have a decisive role in Hungary's economic growth as the most important carrier of technology transfer and a domestic disseminator of modern corporate governance. To this must be added the widespread external market connections of affiliated companies importing capital.³⁶

Originally, foreign capital could enter the country only as an exception in certain specially agreed and permitted cases. However, in the early 1990s a

35 Szanyi Miklós, "Külföldi befektetésekre alapozott fejlődési modell a XXI. század elején Magyarországon", Műhelytanulmányok, 76. sz., MTA VKI, Budapest, 2007, 3. old.

36 Erdős Tibor, *Növekedési potenciál és gazdaságpolitika*, op. cit., 367. old.

large-scale inflow of FDI had immediately begun, which soon became the determinant factor of Hungary's rapid economic growth, particularly in manufacturing, beginning in the mid-1990s. Hungary had a great advantage as an early reformer possessing a more mature institutional system than other transition countries. The main sphere of inward FDI within manufacturing was engineering industry. Among other sectors, trade and the financial system were of primary importance.³⁷ One can speak of a transfer of relatively developed technology concerning entire branches exclusively in the case of green-field investments. In other cases, technological development was limited, and especially in the beginning, there was rare significant innovation. Green-field investments operated mostly in isolation, with high import content. An exception was Suzuki, but this firm had no significant innovative impact either, as it was bringing the technologically sensitive components from abroad. Nonetheless, by 1998 it was Hungary's transnational sector that, regarding its size, had become the largest in the region.³⁸

What was the role of fundamental factors in Hungary's economic growth before and after the regime change? This question can be answered with the help of the endogenous model described above. For that purpose, we put the data on Hungary's economy from the Appendix in relation (2a) and obtained the results of investigation shown in Table 10.

What conclusions can be drawn from these calculations?

1. Concerning the entire investigated period of 1961-2008, it was the mobile factor ($\Delta F_K G_M$) in the national economy and the immobile one ($\Delta F_K G_I$) in manufacturing that made the most significant contribution to the achieved growth. The creative factor ($\Delta F_K G_{KR}$), describing the role of human capital, was more important macro economically than at a manufacturing level.

2. In the transition period (1990-2008), the macroeconomic importance of mobile technical progress somewhat declined as compared to the socialist era (1961-1989). At the same time, the return to immobile technical progress rose above one-third, whereas creative technical progress became slightly less significant. In manufacturing, there was an increase in the significance of all

37 Schweitzer Iván, "A hazai beruházások alakulása, aránya a GDP-ben és szerkezete", op. cit., 6, 33, 61. old.

38 Simai Mihály, Farkas Péter, Éltető Andrea és Gál Péter, A működőtőke kivitele és a technikai fejlődés a 21. század küszöbén, Oktatási Minisztérium, Budapest, 2000, 112, 208. old.

Table 10. Returns to factors of economic growth in Hungary

Denotation	1961-2008		1961-1989		1990-2008	
	Annual average	Percent	Annual average	Percent	Annual average	Percent
National economy*						
$\Delta \ln Y$	0.03019	100.0	0.03968	100.0	0.01570	100.0
$\Delta \ln M$	-0.00392	-13.0	0.00074	1.9	-0.01102	-70.2
$\Delta FkGi$	0.01017	33.7	0.01258	31.7	0.00600	38.2
$\Delta FkGM$	0.01754	58.1	0.02361	59.5	0.00864	55.0
$\Delta FkGKR$	0.01102	36.5	0.01464	36.9	0.00557	35.5
$\Delta \varepsilon$	-0.00462	-15.3	-0.01189	-30.0	0.00651	41.5
Manufacturing						
$\Delta \ln Y$	0.03561	100.0	0.03590	100.0	0.03517	100.0
$\Delta \ln M$	-0.00513	-14.4	0.00313	8.7	-0.01773	-50.4
$\Delta FkGi$	0.01702	47.8	0.01616	45.0	0.01882	53.5
$\Delta FkGM$	0.01677	47.1	0.01598	44.5	0.01836	52.2
$\Delta FkGKR$	0.01022	28.7	0.00994	27.7	0.01073	30.5
$\Delta \varepsilon$	-0.00327	-9.2	-0.00931	-25.9	0.00499	14.2

* Calculated from aggregated data.

Source: see Table A1.

three types of technical progress, but especially in that of the immobile one, reflecting learning by doing.

3. The amount of labour (M) generally contributed negatively to economic growth, with the exception of the socialist period. However, even then it played only a marginal role, particularly at a national economy level.

4. Overall, the level of Hungary's development was somewhat nearer to international standards in manufacturing than macro economically. In this respect, the transition period showed an obvious improvement over the pre-transition years, reflected in significant positive deviations from the world level, especially in the total economy, which may be considered as a kind of system effect attributable to accelerated market reforms leading to emergence of more or less mature capitalist relations built in a globalised context.

GROWTH MECHANISM IN RUSSIA

What are the main characteristics of the long-term development of Russian economy?

1. Stalin's death in March 1953 signalled that the development of Soviet model, designed to produce a speedy shift from a relatively backward nation to a modern industrial society, became increasingly dysfunctional. The first round of the ensuing reform cycle had already demonstrated that the ruling elite actually wished to change the systemic mechanism without altering its principles. Consumer good shortages appeared, masked by state provision of public goods and subsidised staples. There was an increasing gap between the poor quality of public goods used by the population and the goods available to the elite. Following the failed attempt by Khrushchev to decentralise the management of national economy in the late 1950s and early 1960s, Brezhnev and Kosygin tried in 1965 to increase the autonomy of enterprises making them more profit-oriented. After the abandonment of Khrushchev's regional decentralisation, the Soviet leaders reorganised the economic bureaucracy in line with the branch principle of management and created associations of industrial enterprises and research institutes for scientific planning. The Czechoslovak events of 1968 only enhanced these tendencies to facilitate central control during the 1970s.

2. The slowdown in growth rates from the mid-1970s to economic stagnation in the 1980s, along with environmental problems, attested to central planners' inability to deal with a complex over-industrialised economy's need for constant adjustments. Monopolistic producers and risk-averse managers lacked the impetus to innovate, which led to technological backwardness. Full employment guarantees disguised hidden unemployment and favoured labour-intensive production. The soft budget constraint policy resulted in wasteful resource use when the costs of non-profitable production were borne solely by the state. Domestic production had limited exposure to international trade and became uncompetitive, except for raw materials and some military goods. Gorbachev's perestroika (1985-1991) involved a new succession of reforms, which, however, failed to improve central planning, were unsuccessful in questioning state ownership and died out completely in the late 1980s after re-enactment of the 1965 self-accounting enterprise reform in the form of the 1987 Law on Enterprise, the last of the command reforms. On the other hand, the late 1980s produced legal recognition of a variety of property arrangements ranging from cautious introduction of cooperatives to individual proprietorship. The recognition of private property in Russia clearly broke with a long history of denying private economic activity.

3. The economic transition in Russia, which received a decisive impetus in December 1991 as a result of the collapse of the USSR, is a process of making

a break with the institutional legacies of the Soviet economy, which demonstrated remarkable resilience and the ability to adapt to new realities. The Russian transition turned to be a nomenclature revolution when the power elites successfully consolidated their political dominance with economic wealth. The nomenclature, a class produced by the Soviet economy, succeeded in carrying its influence into the post- the Soviet economy and reasserted its dominance.³⁹ Under Yeltsin's presidency (1991-1999), a shock therapy was carried out, intended to put the economy on a rebound growth track. Owing to its mostly political nature, it was labelled market bolshevism.⁴⁰ Though Russia liberalised its economy, for a long time it failed to maintain discipline through hard budget constraints. It was also unable to contain tunnelling, the expropriation of assets and income belonging to minority shareholders, and theft through either rule of law or administrative control. Though it did encourage new entry early in the transition, the capture of the state by a narrow set of vested enterprises – old enterprises and well-connected early entrants – discouraged further entry and created a poor investment climate, resulting in a pattern of protection and selective encouragement.⁴¹ Russian privatisation was successful in introducing new owners of plants and equipment, but failed to create effective corporate governance. The combination of mostly unstructured enterprises and revenue-starved government budgets compounded by capital flight severely undercut investment. This situation prolonged Russia's transformational recession and ultimately resulted in the proliferation of virtual economy. When Putin came to power, increasing oil prices in 2000-2001 had a stimulating effect on the economy, which started showing signs of better growth rates and a decline in the virtual economy.⁴²

39 J. Barkley Rosser Jr. and Marina V. Rosser, *Comparative Economics in a Transforming World Economy*, op.cit., pp. 272, 281-283, 286-287, 295.

40 See Peter Reddaway and Dmitry Glinsky, *The Tragedy of Russia's Market Reforms: Market Bolshevism against Democracy*, United States Institute of Peace Press, Washington, D.C., 2001.

41 *Transition – The First Ten Years*, op. cit., p. xviii.

42 J. Barkley Rosser Jr. and Marina V. Rosser, *Comparative Economics in a Transforming World Economy*, op.cit., pp. 294-295.

Table 11. The dynamics of GDP, investment, oil price and exchange rate in Russia
(average annual change in percent)

Denomination	1961-2008	1961-1990	1991-2008	1991-1998	1999-2008
GDP	2.5	3.7	0.6	-6.7	6.8
Gross fixed capital formation	1.6	5.5	-4.7	-20.8	10.6
Exports of goods and services	n.a.	n.a.	6.9	5.6	7.9
Urals oil price	5.6 ^a	-3.5 ^b	8.3	-7.6	23.0
Exchange rate: Rbl./USD	n.a.	n.a.	4.63	5.87	3.65

^a 1986-2008. – ^b 1986-1990.

Note. See Table 8.

Calculated from: Российский статистический ежегодник, Россия в цифрах, Национальные счета России, Госкомстат/Росстат, Москва, various volumes; IMF, World Economic Outlook database; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, op.cit.; Energy Prices and Taxes, op.cit., 2009, p. 4.

Data in Table 11 show that the question of the character of economic growth in Russia can only be considered in part, as there are no available export data for the period prior to 1990. Moreover, the situation is complicated by a downturn in 1991-1998, when the GDP substantially contracted. Fixed investments in that period declined about thrice faster than the volume of GDP. As a consequence, in the period under study, production was directed by negative investment, which is economically quite understandable if we recall Keynes' multiplier. With a view to an excessive earlier development of defence industry, the whole process can be conceived to a certain extent as an inevitable correction.⁴³ At the same time, the decline in production was curbed by a relatively rapid increase in exports.

According to Table 11, investment directed the growth of Russia's economy in 1961-1990 and even more markedly in the reconstruction period following the default of 1998 when a significant export expansion was under way, which also exerted a guiding influence on economic growth. However, this growth was seriously affected by the world market price of crude oil and the related natural gas. Thus, the Urals oil price, which has a determinant importance for the country, fluctuated mostly unfavourably in the period from 1985 to 1998, but after 1998 the situation radically changed (see Table 11). Previously, it had restrained, but after the default, began to feed economic growth.

43 Csaba László, *A fölemelkedő Európa*, Akadémiai Kiadó, Budapest, 2006, 310. old.

In this context, Hanson⁴⁴ points to two developments that jolted the Russian economy into growth after the crisis: a five-fold devaluation of the rouble in the course of a few months and, a little later, an upturn in oil prices in 1999 and 2000. After 1990, large tracts of Russian manufacturing had been almost destroyed by import competition of 5-6 roubles to the U.S. dollar; at 25 roubles to the dollar, they revived. The rapid growth was well managed. The Ministry of Finance was relentlessly prudent, resisting public spending increases and channelling a large slice of the windfall revenues from high oil prices into a Stabilisation Fund, which, in turn, was used in part to pay off public and publicly guaranteed external debt, which decreased from USD 111 billion in 2000 to USD 70.4 billion in 2007.⁴⁵

Russian firms took enthusiastically to borrowing abroad, even as the state paid off much of its debts (a good deal of the borrowing was by state-controlled firms). It was foreign trade that kicked off the recovery: a cut in imports because of the rouble devaluation and then a surge in export earnings as oil prices rose and oil companies responded by boosting production and exports. Later on, however, domestic demand, for both consumption and investment, became the immediate driver of growth. This demand was able to grow because of the surge in profits, government revenue and personal incomes generated by rising oil, gas and metal earnings from abroad.⁴⁶

Table 12. Contribution of FDI inflows to GDP/MVA increase in Russia

Period	National economy		Manufacturing	
	FDI inflow, USD million	$\Delta\text{FDI}_N/\Delta Y_N$, percent	FDI inflow, USD million	$\Delta\text{FDI}_M/\Delta Y_M$, percent
	At current prices	At 2000 prices	At current prices	At 2000 prices
1991-2008	219 047	26.6	57 515	–
1999-2008	203 614	5.3	52 094	6.6

Note. See Table 7.

Calculated from: Банк России, Платёжный баланс Российской Федерации; Российский статистический ежегодник, Россия в цифрах, Национальные счета России, Госкомстат/Росстат, Москва, various volumes; UNCTAD, FDI/TNC database.

44 Philip Hanson, “The Russian Economic Puzzle: Going Forwards, Backwards or Sideways”, *International Affairs*, Vol. 83, No. 5, 2007, p. 870.

45 *Global Development Finance: Charting a Global Recovery. Summary and Country Tables*, World Bank, Washington, D.C., 2009, p. 208.

46 Philip Hanson, “The Russian Economic Puzzle: Going Forwards, Backwards or Sideways”, *op.cit.*, pp. 870-872.

Many analysts emphasise that a faster growth connected with rising oil and gas incomes occurred in Russia without overcoming structural and competitive weaknesses.⁴⁷ It is noticeable that under Putin's presidency, the share of fuels in Russian exports expanded from 51.7 percent in 2000 to 66.5 percent in 2008, while the relative weight of other mining products contracted from 16.8 to 7.8 percent, respectively.⁴⁸ The post-default recovery was ensured chiefly by cyclical factors and took place on an obsolete technological base, whose degradation began under the perestroika. At the same time, the revaluation of the rouble encouraged Russian enterprises to cut their costs and, applying high technology, raise their competitiveness.⁴⁹

Data in Table 12 show that in 1991-2008, foreign investments contributed on average with more than a quarter to macroeconomic growth. In the post-default period (1999-2008), their contribution was somewhat higher in manufacturing than in the total economy. The main spheres which attracted most FDI in Russia were manufacturing, transport and communications, mining and therein oil and gas extraction, as well as trade and catering, financial and real estate activities, and utilities.⁵⁰ Business environment became more problematic following the turn to an aggressive form of state intervention in 2003, hallmarked by the case of Yukos. Despite some privatisations, including sales of electricity-generating companies, state ownership loomed large in banking, oil, gas and defence-related production. In the oil and gas sector, the Russian authorities had preserved from Soviet times a state monopoly in export pipelines, even during the period of strong private oil companies up to 2004.⁵¹

To determine the role of fundamental growth factors, the data on Russia's economy from the Appendix were put in relation (3a). Thus, the results of investigation shown in Table 13 were obtained.

47 Ibid. 311-312. old.

48 Calculated from: WTO Statistics Database.

49 See György Simon Jr., "The Role of Foreign Direct Investment in Russia's Economy: A View from Outside", Available at Social Science Research Network, Working Paper Series, Rochester, New York, 2008, <http://ssrn.com/abstract=1516370> (Downloadable document is in Russian), p. 8.

50 Ibid., pp. 14-16.

51 Philip Hanson, "The Russian Economic Puzzle: Going Forwards, Backwards or Sideways", op.cit., pp. 872, 877.

Table 13. Returns to factors of economic growth in Russia

Denotation	National economy*		Manufacturing				National economy*	
	1961-2008		1961-1990				1991-2008	
	Annual average	Percent	Annual average	Percent	Annual average	Percent	Annual average	Percent
$\Delta \ln Y$	0.02510	100.0	0.02741	100.0	0.03664	100.0	0.00586	100.0
$\Delta \ln M$	0.00486	19.4	-0.00342	-12.5	0.01108	30.2	-0.00549	-93.7
$\Delta FkGi$	0.00492	19.6	0.01195	43.6	0.00696	19.0	0.00130	22.2
$\Delta FkGm$	0.01001	39.9	0.01187	43.3	0.01488	40.6	0.00213	36.3
$\Delta FkGKR$	0.00595	23.7	0.00693	25.3	0.00868	23.7	0.00139	23.8
$\Delta FkGo$	0.00673	26.8	—	—	0.00956	26.1	0.00182	31.0
$\Delta \varepsilon$	-0.00737	-29.4	0.00008	0.3	-0.01452	-39.6	0.00115	19.6

* Calculated from aggregated data.

Source: see Table A2.

What conclusions can be drawn from these calculations?

1. In the entire period under study (1961-2008), the mobile factor contributed with nearly two-fifths and the immobile one with one-fifth to the Russian economy's growth. The creative factor ensured less and the effect of oil and gas resources ($\Delta FkGo$) more than a quarter of macroeconomic growth. In manufacturing, the return to the immobile technical progress was a little higher than that to the mobile one, while the one-fourth contribution of the creative technical progress was similar to its role at a macroeconomic level.

2. In the reform period after 1990, Russian manufacturing was not the engine of economic growth. By 2008, its value added in real terms reached only 67 percent of its 1990 level (see Table A2 in the Appendix). Macro economically, the immobile growth component became somewhat more important during the transition (1991-2008) than in the Soviet era (1961-1990). The contribution of the mobile component slightly decreased, while that of the creative one remained practically unchanged. The return to the oil factor rose from more than a quarter to nearly a third due to an increased natural resource intensity, accompanied by a decelerated growth.

3. Overall, the amount of labour contributed with less than one-fifth to macroeconomic growth, but it was more than one and a half times more significant under socialism. At the same time, manufacturing growth was exclusively based on rising productivity.

4. In the Soviet era, the Russian economy's development, despite its largely successful industrialisation, was characterised by a marked negative deviation from international standards at a macroeconomic level. Although

this deviation became positive under the conditions of transition, it reflected a smaller reform effect than in Hungary.

GROWTH MECHANISM IN SERBIA

The Serbian economy between 1946 and 1992 developed within the former Yugoslavia where beginning in 1950, central planning was gradually transformed into a system of workers' self-management, which coexisted with strong individual holdings in agriculture. The reforms of the 1960s created a specific type of market socialism with purely indicative planning and a degree of economic freedom even higher than in Hungary. In 1963, socialist self-management was introduced, comprising all spheres of economics and politics. The 1974 constitution and the 1976 Law on Associated Labour made the system atomised in the form of various labour organisations that existed until the late 1980s. A chronic confrontation emerged between a required high-degree organisation of modern production and an atomised economy, exacerbated by Tito's death in May 1980 and the subsequent rise of Serbian populism under Slobodan Milošević. However, the economic decline of the 1980s was caused primarily not by that conflict but by the incompletely removed state-bureaucratic controls over the economy.⁵²

Though from 1989 onwards Serbia was set on the road to capitalism, it had to go through several economic policy cycles.

1. During the 1990s, Serbian economy was dominated by inefficient social and public ownership. A lack of financial and fiscal discipline led to widespread corruption. The state became an all-powerful arbitrator in a militarised economy with selective benefits for subsidised branches and privileged taxpayers. Serbia suffered severely from sanctions imposed on the Federal Republic of Yugoslavia (FRY, Serbia and Montenegro) by the UN, EU and the U.S. during the civil war in 1991-1995 and the Kosovo conflict in 1998-2001. Air strikes by NATO in March-June 1999 significantly damaged transport infrastructure and industrial facilities, while the subsequent de facto loss of the mineral-rich province of Kosovo aggravated the republic's situation.⁵³

52 See e.g. Sabrina P. Ramet, *The Three Yugoslavias: State-Building and Legitimation, 1918-2005*, Indiana University Press, Indianapolis – Woodrow Wilson Center Press, Washington, D.C., 2006, pp. 175-90, 199-225, 263-84, 325-40; J. Barkley Rosser Jr. and Marina V. Rosser, *Comparative Economics in a Transforming World Economy*, op.cit., pp. 397-401, 412.

53 See Branislav Đorđević and Duško Lopandić, "Introduction of Sanctions against the FR of Yugoslavia and Their Lifting, 1991-2001", *Yugoslav Survey*, Vol. 42, No. 3, 2001, pp.

2. The medium-term objectives of the reform program announced in October 2000 envisaged a growth of production and employment, rise in living standard and economic efficiency, as well as a gradual integration with the EU.⁵⁴

2.1. Within the Stabilisation and Association Process launched by the EU, Serbia became a potential candidate country in November 2000. Macroeconomic stabilisation begun by Zoran Đinđić's government in January 2001 and accomplished by the middle of the decade was based on a tight fiscal policy supported by conditional external financing, first of all by the International Monetary Fund (IMF) and a debt rescheduling by international banks. Đinđić and his successors pursued a mix of liberal and social-democratic reform policies under the impact of the EU as the external mover of transition. Under the impact of successive IMF agreements, the republic's budgets became more transparent and comprehensive. All quasi-fiscal deficits were eradicated, and the rate of corporate income tax was cut to 10 percent.⁵⁵

2.2. A halt came in the reform process after Đinđić's assassination on 12 March 2003, when Zoran Živković shifted the centre of gravity in economic policy towards the questions of harmonisation with Montenegro and partially abandoned the initial trade liberalisation.

2.3. Vojislav Koštunica's government, which came to power in March 2004, introduced from January 2005 an EU-conform value-added tax as a result of further reform measures announced under pressure from the IMF and World Bank. This was enhanced by the beginning of negotiations for concluding a Stabilisation and Association Agreement (SAA) with the EU in October 2005.

2.4. Fiscal policy has been subsequently loosened, as frequent elections have encouraged governments to grant generous public-sector wage increases. The separation of Montenegro from Serbia meant the dissolution of the State Union, which was followed by proclamation of Serbia's independence on 5

25-40; Vjeran Pavlaković, "Serbia Transformed? Political Dynamics in the Milošević Era and After", in: Sabrina P. Ramet and Vjeran Pavlaković (eds.), *Serbia since 1989: Politics and Society under Milošević and After*, University of Washington Press, Seattle and London, 2005, pp. 13-54.

54 Gordana Lazarević and Mića Basara, "Reforms in Serbia", *Survey – Serbia & Montenegro*, Vol. 44, No. 1, 2003, p. 65.

55 Milica Bisić, "Public Finance Policies," Boris Begović and Boško Mijatović (eds.), *Four Years of Transition in Serbia*, Center for Liberal Democratic Studies, Belgrade, 2005, pp. 143-144.

June 2006. After the SAA had been signed in Luxembourg on 29 April 2008, Mirko Cvetković's government took office in July to deal with the consequences of the present global economic and financial crisis by means of a package aimed at stimulating production, exports and investment. To ensure macroeconomic stability, a stand-by arrangement was reached with the IMF in October-November 2008, amended in January 2009.⁵⁶

As shown in Table 14, economic growth in Serbia was not investment-oriented even during the socialist era (1961-1989) when it was relatively rapid. The protracted socio-economic crisis led to a drastic decline in investment from 1990 to 2000. More than a decade its total volume was lower than the consumption of fixed assets. The economy got into a vicious circle. Low incomes, negative real interest rates and the general lack of trust in the banking system resulted in low savings. Low savings, together with international financial sanctions forestalled investments. Modest investment activity, weak corporate governance and hidden unemployment restrained productivity, the low level of which caused low incomes and corporate insolvency.⁵⁷ The acceleration of transition at the turn of millennium resulted later in a faster macroeconomic development than prior to the 1990s. In this respect, Serbia managed to outpace Hungary, but lagged behind Russia (see the Appendix).

56 See Boško Mijatović, "General Overview of Transition in Serbia", in: Boris Begović and Boško Mijatović (eds.), *Four Years of Transition in Serbia*, op.cit., pp. 9-32; Danica Drakulić, "Strukturne promene privrede Srbije i rezultati tranzicije", *Ekonomске teme*, Vol. 45, No. 3, 2007, pp. 67-77; Mihailo Crnobrnja, Nebojša Savić and Jelena Miljković, "Economic Developments", in: Szörfi Béla (ed.), *Integration Perspectives and Synergic Effects of European Countries Targeted by EU Enlargement and Neighborhood Policies: Serbia*, Center for EU Enlargement Studies, Central European University, Budapest, 2008, pp. 136-266; *Izveštaj o razvoju Srbije*, RZR, Beograd, 2009, str. 12-13.

57 See e.g. György Simon Jr., "Ekonomska tranzicija u Jugoslaviji – jedno viđenje spolja", *Međunarodni problemi*, God. 55, Br. 1, 2003, str. 110-111.

Table 14. The dynamics of GDP, investment, oil price and exchange rate in Serbia
(average annual change in percent)

Denomination	1961-2008	1961-1989	1990-2000	2001-2008
GDP	1.8	4.2	-6.8	5.4
Gross fixed capital formation	-0.6	2.5	-13.7	7.9
Exports of goods and services	n.a.	n.a.	n.a.	13.7
Brent oil price	4.3 ^a	-8.1 ^b	4.1	16.6
Exchange rate: RSD/USD	1.52	1.61	1.40	1.30

^a 1983-2008. – ^b 1983-1989.

Note. See Table 8.

Calculated from: Statistički godišnjak Srbije, Sistem nacionalnih računa Republike Srbije, RZS, Beograd, various volumes; WIIW database incorporating national statistics; IMF, World Economic Outlook database; Alan Heston et al., Penn World Table 5.6, op.cit.; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, op.cit.; Energy Prices and Taxes, op.cit., 2009, p. 4.

After the October changes of 2000, the average annual growth of GFCF became faster than that of GDP but even so in 2008 it attained merely 36% of the 1989 level of investment (see Table 14 and its data sources). A National Investment Plan accepted by the government in September 2006, aimed fundamentally at infrastructural investments (dwellings, roads, etc.), was regarded as an important instrument of promoting the country's European integration. Although in 2001-2008 exports increased on average more rapidly than production, this did not affect much the traditionally weak export orientation of Serbian companies dating back to the times of former Yugoslavia, where inter-republic trade on the basis of political dealings was much more intensive than international transactions.⁵⁸

From Table 14 it is also evident that the dinar's equilibrium exchange rate showed a slight appreciation in the period from 1961 through 2008. The Brent oil price, relevant for Serbia, was on average favourable prior to the transition, when it was sharply falling between 1983 and 1989, but its subsequent rise had a negative impact on the country's energy-dependent economy.

58 Danica Popović, "Economic Developments and Macroeconomic Policies in Transition", in: Boris Begović and Boško Mijatović (eds.), *Four Years of Transition in Serbia*, op.cit., p. 71; Novák Tamás, "Szerbia Montenegró nélkül – ördögi körben?", in: Novák Tamás és Szemlér Tamás (szerk.), *Európa peremén: új tagok és szomszédok*, MTA VKI, Budapest, 2007, 115-117. old.

Table 15. Contribution of FDI inflows to GDP/MVA increase in Serbia

Period	National economy		Manufacturing	
	FDI inflow, USD million	$\Delta\text{FDI}_N/\Delta Y_N$, percent	FDI inflow, USD million	$\Delta\text{FDI}_M/\Delta Y_M$, percent
	At current prices	At 2000 prices	At current prices	At 2000 prices
1993-2008	16 605	41.5	2 647	–
2001-2008	15 386	20.5	2 521	67.8

Note. See Table 7.

Calculated from: Strane direktne investicije u Republici Srbiji, Privredna komora Srbije – Centar za razvoj, restrukturiranje i privatizaciju, Beograd, 2008, str. 17-20; Statistički godišnjak Srbije, Sistem nacionalnih računa Republike Srbije, RZS, Beograd; Izveštaj o razvoju Srbije, RZR, Beograd, various volumes; EBRD, Selected Economic Indicators database; UNCTAD, FDI/TNC database.

In Serbia, because of low domestic saving, foreign capital is an important source of financing consumption, as well as fixed investments. In 1993-2008, FDI inflows generated on average about two-fifths of GDP increase. However, if the shorter period of accelerated transition (2001-2008) is considered, their contribution decreases by half, despite the fact that in the latter period foreign capital played a determinant role in increasing MVA (see Table 15). Foreign capital invested in Serbia has not yet managed to bring a comprehensive renewal of productive capacities. The largest sectors in terms of the share in received investments are financial intermediation; manufacturing; transport, storage and communication; trade and repairs; and real estate, renting and business activities.⁵⁹ In this respect, the country is at the initial stage, for it is fundamentally dominated by sectors using cheap raw materials and labour force. The motivating factors include additional elements typical for less developed countries such as an accelerating privatisation process and the satisfaction of domestic demand, especially in the field of consumer goods and services. Many observers believe that because of its phase delay in transition and isolation of earlier years, Serbia, despite the present crisis, may stand before an appreciation similar to that which happened in the more developed countries of Central Europe in the mid-1990s.⁶⁰

59 Ile Kovačević, "Foreign Direct Investment in Serbia, 2000-2005", Survey – Serbia & Montenegro, Vol. 47, No. 1, 2006, p. 70; Strane direktne investicije u Republici Srbiji, Privredna komora Srbije – Centar za razvoj, restrukturiranje i privatizaciju, Beograd, 2008, str. 17-20.

60 See e.g. Novák Tamás, "Szerbia Montenegró nélkül – ördögi körben?", in: Novák Tamás és Szemlér Tamás (szerk.), Európa peremén: új tagok és szomszédok, MTA VKI, Budapest, 2007, 118, 125. old.

Concerning the role of fundamental growth factors, the data on Serbia's economy from the Appendix were put in relation (2a) in order to obtain the results of investigation shown in Table 16.

Table 16. Returns to factors of economic growth in Serbia

Denotation	1961-2008		1961-1989		1961-2000		2001-2008	
	Annual average	Percent	Annual average	Percent	Annual average	Percent	Annual average	Percent
National economy*								
$\Delta \ln Y$	0.01751	100.0	0.04116	100.0	0.01047	100.0	0.05273	100.0
$\Delta \ln M$	0.01103	63.0	0.02852	69.3	0.01554	148.4	-0.01150	-21.8
$\Delta FkGi$	0.00250	14.3	0.00584	14.2	0.00136	13.0	0.00680	12.9
$\Delta FkGM$	0.00933	53.3	0.02375	57.7	0.00466	44.5	0.04062	77.0
$\Delta FkGKR$	0.00741	42.3	0.01552	37.7	0.00374	35.7	0.03048	57.8
$\Delta \epsilon$	-0.01276	-72.9	-0.03247	-78.9	-0.01483	-141.6	0.01367	25.9
Manufacturing								
$\Delta \ln Y$	0.02145	100.0	0.06233	100.0	0.02108	100.0	0.02330	100.0
$\Delta \ln M$	-0.00117	-5.5	0.02681	43.0	0.00897	42.6	-0.05188	-222.7
$\Delta FkGi$	0.00916	42.7	0.02792	44.8	0.00847	40.2	0.01086	46.6
$\Delta FkGM$	0.00912	42.5	0.02786	44.7	0.00846	40.1	0.01079	46.3
$\Delta FkGKR$	0.00598	27.9	0.01895	30.4	0.00620	29.4	0.00598	25.7
$\Delta \epsilon$	-0.00164	-7.6	-0.03921	-62.9	-0.01102	-52.3	0.00095	4.1

* Calculated from aggregated data.

Source: see Table A3.

What conclusions can be drawn from these calculations?

1. Considering the entire period 1961-2008, the most important macroeconomic factor was the amount of labour, which gave a predominantly extensive character to overall growth. Among the other factors, it was the mobile technical progress that had the highest return. By contrast, the intensive manufacturing growth was nearly to the same extent determined by the immobile and mobile types of technical progress.

2. The immobile technical progress was more pronounced in manufacturing than in the total economy. It was much less significant macroeconomically.

3. The creative technical progress had about a one and a half times higher share in the total economy than in manufacturing.

4. If shorter periods are examined, the mostly extensive character of macroeconomic development becomes more marked in 1961-1989 and particularly in 1961-2000. It is well known that, similarly to Russia and

Hungary, a significant part of Serbia's workforce was transferred to manufacturing from other sectors of the economy, first of all from agriculture, in the course of socialist construction. At the same time, the increasing amount of labour in manufacturing ensured only around two-fifths of that sector's output growth. By contrast, the reform period of 2001-2008 was characterised by negative returns to labour both in the national economy and even more in manufacturing.

5. In the investigated period, the development of Serbian economy generally lagged behind international standards, but it stood much better at a manufacturing than a national economy level. Here, too, a positive reform effect can be revealed, in this case for the period 2001-2008, which was macro economically somewhere between that of Hungary and Russia. However, it was much less formidable in manufacturing than in the total economy.

CONCLUSIONS

In this paper, the main characteristics of growth mechanism were analysed in Hungary, Russia and Serbia from the early 1960s to the present global crisis. To break down economic growth by its fundamental factors, an endogenous development model was applied, whose parameters can be assumed to be valid for any country of the world. Relying on the obtained results, the following conclusions can be made.

1. Considering the entire investigated period of 1961-2008, the mobile technical progress was the most important macroeconomic growth factor in Hungary and Russia. By contrast, in Serbia, the most significant role was played by labour, which gave a predominantly extensive character to overall growth, which becomes more marked if shorter periods are examined, with the exception of 2001-2008 when there were negative returns to labour both in the national economy and manufacturing.

2. In the manufacturing sector, it was the immobile technical progress that made the relatively largest contribution to the achieved growth of intensive character in all the three countries.

3. In Hungary and Serbia, the creative technical progress, reflecting the role of human capital, was more important macro economically than at a manufacturing level, while in the case of Russia, the opposite was true.

4. It is remarkable that in Russia's macroeconomic growth, the importance of the oil factor, increasing in time, seems to have been greater than the role of human capital.

5. In Hungary and Russia, the immobile growth factor became macro economically more important during the transition than in the socialist era. In the Serbian economy, on the contrary, the acceleration of transition after 2000 enhanced further the leading role of the mobile factor.

6. In manufacturing, the comparison of two sub-periods gives a different picture, which shows that in Hungary the importance of all three types of technical progress was increasing, whereas in Serbia there was a certain decline in the significance of the creative growth component.

7. Overall, regarding the whole investigated period, the development level of the three countries at issue was substantially nearer to international standards in manufacturing than in the national economy. The transition period showed an improvement over the pre-transition years, reflected in significant positive deviations from the world level, especially in the total economy, corroborating our hypothesis on the system effect of market reforms. In our case, this effect seems to be macro economically strongest in Hungary, followed by Serbia and Russia. In this connection, it should be pointed out that consequently implemented market reforms combined with a growth-oriented economic policy could substantially contribute to the attainment of better performance.

APPENDIX

Legend to the tables

Y_N = gross domestic product at purchasing power parity (PPP), in billions of 2000 U.S. dollars;

Y_M = manufacturing value added at PPP, in billions of 2000 U.S. dollars;

K_N = average annual gross fixed capital in the national economy (with dwellings) at PPP, in billions of 2000 U.S. dollars;

K_M = average annual gross fixed capital in manufacturing at PPP, in billions of 2000 U.S. dollars;

L_N = average annual number of persons employed in the national economy (in millions);

L_M = average annual number of persons employed in manufacturing (in millions);

H/L = number of schooling years per capita (for population aged 15 and over);

R_{Nt-2} = full-time equivalent (FTE) number of all scientists and engineers engaged in R&D (considering a two-year lag, in thousands);

R_{Mt-2} = FTE number of manufacturing scientists and engineers engaged in R&D (considering a two-year lag, in thousands);

Z = arable land (in million hectares);

O_{t-1} = crude oil and natural gas resources (at the end of the year preceding the reference year, in million tonnes of oil equivalent).

Notes

For Hungary, data on fixed assets should have been estimated, as after 1991 they are not regularly published. For that country, we accepted as initial the 1960 data (the average of 1959 and 1960 year-end values) derived from the Hungarian Central Statistical Office (HCSO). In the course of estimating data for further years, we added to them the fixed investments of the preceding year at constant prices and subtracted real depreciation (3.3 percent for the national economy and 4.9 percent for manufacturing).

For Serbia, where all data refer to the present territory of the republic excluding Kosovo, the relevant mid-year data analogously calculated from the Federal Statistical Office of Yugoslavia (SZS) and (for the years after 2001) annual financial statements of enterprises were used.

In both cases, current values were converted to real ones with the help of the corresponding investment price index.⁶¹

For Russia, the average annual values of fixed assets were derived from the Federal State Statistics Service (Rosstat).

61 Cf. Simon György, "Gazdasági felzárkózás és növekedési tényezők", *Külgazdaság*. 47. évf., 9. sz., 2003, 57-58. old.

Table A1. Hungary: Main Macro Economic and Manufacturing Indicators

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	Y_M	K_M	L_M	R_{Mt-2}
	National economy						Manufacturing			
1960	37.68	93.0	4.681	7.388	6.64	5.70	4.59	14.3	1.114	5.425
1961	39.47	96.7	4.585	7.905	6.73	5.62	4.90	15.5	1.142	5.555
1962	41.88	100.3	4.587	8.458	6.82	5.62	5.18	16.6	1.171	5.688
1963	44.26	104.4	4.602	9.050	6.92	5.63	5.36	18.0	1.214	5.824
1964	46.35	109.0	4.642	9.884	7.01	5.64	5.66	19.4	1.249	5.964
1965	46.79	114.0	4.658	10.362	7.10	5.65	5.85	20.9	1.257	6.107
1966	50.27	119.0	4.688	11.087	7.31	5.64	6.22	22.4	1.284	6.254
1967	54.06	124.0	4.738	11.863	7.52	5.63	6.58	24.2	1.342	6.404
1968	56.73	129.9	4.837	12.211	7.73	5.61	6.82	26.5	1.408	6.558
1969	60.63	136.3	4.934	12.779	7.94	5.60	7.04	28.0	1.454	6.715
1970	63.46	143.5	4.995	13.807	8.19	5.59	7.41	30.1	1.466	6.876
1971	67.41	151.7	5.025	15.304	8.11	5.58	7.77	31.4	1.463	7.041
1972	71.55	160.6	5.050	16.282	8.09	5.57	8.18	33.1	1.453	7.474
1973	76.45	169.9	5.068	17.892	8.06	5.56	8.77	34.6	1.469	7.925
1974	80.94	179.4	5.080	19.013	8.03	5.50	9.57	35.9	1.482	8.175
1975	85.96	185.0	5.090	20.325	8.00	5.50	9.96	37.4	1.473	8.502
1976	89.03	190.9	5.087	21.758	8.21	5.47	10.43	39.2	1.466	9.100
1977	95.83	201.0	5.075	22.588	8.42	5.42	11.13	41.2	1.460	9.364
1978	100.1	211.9	5.075	23.533	8.63	5.39	11.41	44.1	1.462	9.917
1979	102.8	223.7	5.077	24.316	8.85	5.35	11.96	46.9	1.451	10.288
1980	103.0	235.6	5.045	25.308	9.06	5.33	11.71	49.2	1.413	10.643
1981	106.0	246.5	5.008	25.314	9.04	5.32	12.07	50.7	1.384	10.444
1982	109.0	255.2	4.986	25.589	9.02	5.30	12.43	51.8	1.361	10.935
1983	109.8	268.1	4.955	22.267	9.00	5.29	12.54	52.8	1.331	9.397
1984	112.7	279.3	4.927	21.970	8.97	5.29	12.89	53.5	1.322	9.254
1985	112.4	289.6	4.903	22.132	8.93	5.29	12.89	54.1	1.315	8.528
1986	114.1	299.8	4.889	22.518	8.93	5.29	13.13	54.7	1.302	8.731
1987	118.7	309.7	4.865	22.479	8.93	5.29	13.71	55.1	1.267	8.426
1988	118.7	320.5	4.834	22.974	8.93	5.29	13.71	55.7	1.236	8.542
1989	119.1	336.9	4.782	22.284	8.93	5.29	13.00	56.3	1.220	7.963
1990	114.9	346.0	4.603	21.427	8.93	5.29	11.85	57.3	1.159	5.689
1991	101.2	285.9	4.274	20.431	8.91	5.29	9.42	46.9	1.107	5.122
1992	98.06	292.4	4.083	17.550	8.89	4.97	9.82	47.8	1.054	3.932
1993	97.47	298.5	3.827	14.471	8.87	4.97	10.40	49.1	0.938	2.595
1994	100.3	304.7	3.752	12.311	8.85	4.97	11.10	49.7	0.889	1.927
1995	101.8	312.7	3.679	11.818	8.83	5.03	12.02	50.6	0.850	1.672
1996	102.8	319.6	3.642	11.752	8.88	5.04	12.52	51.7	0.851	1.816
1997	107.2	327.1	3.646	10.499	8.94	5.05	14.15	53.4	0.864	1.719
1998	112.8	335.9	3.698	10.408	9.00	5.05	15.41	55.3	0.912	1.424
1999	117.5	346.9	3.812	11.154	9.06	5.04	16.69	58.3	0.929	1.773
2000	123.3	358.7	3.849	11.731	9.12	4.80	17.69	61.9	0.931	1.983
2001	128.4	371.6	3.860	12.579	9.18	4.80	18.13	65.6	0.956	2.103
2002	134.0	385.4	3.871	14.406	9.24	4.79	18.84	69.0	0.960	2.252
2003	139.8	400.2	3.922	14.666	9.30	4.80	20.27	71.0	0.926	2.366
2004	146.7	416.9	3.900	14.965	9.36	4.80	21.30	75.0	0.894	2.545
2005	151.8	434.6	3.902	15.180	9.42	4.81	22.19	79.2	0.869	2.638

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	Y_M	K_M	L_M	R_{Mt-2}
	National economy						Manufacturing			
2006	157.9	453.1	3.930	14.904	9.48	4.79	23.72	83.0	0.865	2.610
2007	159.5	470.5	3.926	15.878	9.54	4.79	25.36	86.4	0.872	2.873
2008	160.5	485.1	3.879	17.547	9.60	4.78	25.36	90.3	0.871	3.401

PPP conversion rates. USD 1 = HUF 107.92 for GDP, 152.96 for MVA, and 115.31 for fixed assets.

Sources: Magyar statisztikai évkönyv, Magyarország nemzeti számlái, Kutatás és fejlesztés, KSH, Budapest; National Accounts Statistics, UN, New York; Yearbook of Labour Statistics, ILO, Geneva; FAO Production Yearbook, Rome, various volumes; Nép gazdasági mérlegek 1960-1970, KSH, Budapest, 1971; Nép gazdasági mérlegek 1949-1987, KSH, Budapest, 1989; Beruházási adattár 1950-1977. KSH, Budapest, 1979; Magyarország népessége és gazdasága: múlt és jelen, KSH, Budapest, 1996; Robert J. Barro and Jong-Wha Lee, "International Data on Educational Attainment: Updates and Implications", CID Working Paper No. 42, Center for International Development at Harvard University, Cambridge, Mass., April 2000 (Appendix Data Tables); Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania (CICUP), Philadelphia, September 2006; Marcel Timmer, Gerard Ypma and Bart van Ark, "PPPs for Industry Output: A New Dataset for International Comparisons", EU KLEMS Working Paper No. 16, Groningen Growth and Development Centre, University of Groningen, 2007, p. 28; KSH, STADAT adatbázis; Eurostat, New Cronos database.

Table A2. Russia: Main Macro Economic and Manufacturing Indicators

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	O_{t-1}	Y_M	K_M	L_M	R_{Mt-2}
	National economy						Manufacturing				
1960	671.6	592.5	54.026	165.970	8.91	132.2	11419	63.71	59.58	13.745	48.891
1961	701.6	644.9	55.083	181.220	9.02	133.4	11818	69.60	66.38	14.374	60.782
1962	736.0	699.6	56.162	206.951	9.13	134.8	12230	76.20	74.57	14.929	75.408
1963	742.2	759.6	57.261	236.856	9.24	134.9	12657	83.09	84.34	15.357	87.792
1964	796.4	825.6	58.382	308.850	9.35	134.4	13099	89.54	94.10	15.766	116.019
1965	832.7	896.3	59.524	331.684	9.46	134.3	13656	96.43	103.9	16.522	138.809
1966	891.3	964.0	60.342	357.414	9.60	134.1	14029	105.2	113.3	17.030	148.999
1967	947.8	1029.5	61.170	389.790	9.74	134.0	14519	115.8	122.0	17.518	159.755
1968	1008.4	1101.6	62.010	416.372	9.89	133.8	15027	125.4	131.2	17.971	166.607
1969	1028.3	1182.3	62.862	450.197	10.04	133.8	15999	134.0	142.6	18.367	183.768
1970	1111.0	1273.9	63.725	480.443	10.19	133.8	17000	145.7	156.8	18.566	197.410
1971	1161.6	1375.7	64.586	513.926	10.22	133.7	15598	157.3	170.2	18.759	211.894
1972	1185.6	1485.8	65.459	537.697	10.25	133.7	16933	166.9	184.2	18.985	227.652
1973	1290.5	1604.7	66.343	586.517	10.28	133.5	18379	179.4	200.6	19.184	248.261
1974	1334.8	1731.6	67.239	616.848	10.31	134.2	19564	193.9	217.9	19.467	270.782
1975	1381.3	1867.5	68.148	648.116	10.34	134.0	20856	209.4	236.0	19.769	287.816
1976	1425.6	2007.3	69.140	685.349	10.33	134.1	22458	219.8	255.6	20.136	306.606
1977	1486.1	2148.5	70.146	714.402	10.32	134.1	24002	230.3	276.0	20.153	313.337
1978	1534.6	2300.1	71.168	735.617	10.31	134.2	25035	242.9	297.1	20.294	321.028
1979	1548.6	2459.7	72.204	748.312	10.30	134.3	26879	249.3	318.1	20.636	328.209
1980	1578.8	2624.6	73.250	768.078	10.29	134.3	28077	257.6	339.9	20.911	335.756
1981	1602.9	2799.1	73.686	782.221	10.40	134.3	29417	265.3	362.9	20.911	343.082
1982	1661.6	2984.0	73.867	798.920	10.51	134.3	31758	273.1	385.9	21.094	352.159
1983	1726.1	3180.8	74.058	820.817	10.63	134.2	32347	283.4	408.5	21.103	359.792
1984	1760.2	3380.8	74.248	831.296	10.75	134.3	33010	296.3	431.5	21.110	366.713

Simon G., Faktori i problemi privrednog rasta u Mađarskoj, Rusiji i Srbiji, MP 2, 2010
(str. 195-238)

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	O_{t-1}	Y_M	K_M	L_M	R_{Mt-2}
	National economy							Manufacturing			
1985	1802.6	3575.1	74.491	838.794	10.89	134.2	33719	306.7	456.4	21.147	374.115
1986	1877.2	3769.7	74.792	854.386	11.05	134.2	35002	322.0	480.5	21.145	382.217
1987	1915.6	3963.7	74.942	868.273	11.22	134.2	36378	334.2	503.1	21.030	390.653
1988	1982.1	4164.1	75.093	873.385	11.39	133.8	37829	346.4	524.4	20.473	395.195
1989	2024.5	4374.0	75.168	880.372	11.56	132.8	39325	353.3	547.7	19.850	395.980
1990	2015.8	4570.5	75.325	879.349	11.71	132.3	40893	354.7	571.2	19.146	394.033
1991	1915.0	4740.4	73.848	879.008	11.52	133.7	42535	308.0	597.5	18.794	390.341
1992	1637.3	4867.8	72.071	878.500	11.36	133.7	44256	261.2	623.5	17.688	386.594
1993	1491.6	4938.2	70.852	714.900	11.20	131.3	46060	223.1	638.1	17.317	311.748
1994	1302.2	4955.2	68.484	662.500	11.05	130.4	48039	160.7	640.1	15.335	286.266
1995	1248.8	4952.9	66.409	644.900	10.90	129.4	48039	154.0	636.7	13.946	276.112
1996	1203.8	4952.9	65.950	621.790	10.96	128.0	48039	131.6	632.6	13.013	263.860
1997	1220.7	4940.4	64.693	610.357	11.02	129.4	48039	121.3	626.8	11.577	266.280
1998	1156.0	4920.4	63.812	562.070	11.08	128.0	47628	112.4	620.8	10.937	236.968
1999	1230.0	4913.2	63.963	532.469	11.14	126.8	47628	129.3	616.5	11.528	214.431
2000	1353.0	4927.4	64.517	492.494	11.18	126.2	47687	143.5	615.2	12.178	190.168
2001	1422.0	4962.4	64.980	497.031	11.24	125.7	45105	146.4	619.3	12.656	194.754
2002	1488.8	5009.3	65.574	506.420	11.30	125.3	46670	147.9	626.5	13.067	204.067
2003	1597.5	5067.1	65.979	505.778	11.36	124.4	46670	163.2	632.6	12.820	200.587
2004	1712.5	5140.5	66.407	491.944	11.42	124.0	46670	180.4	647.2	12.674	193.008
2005	1822.1	5230.1	66.792	487.477	11.48	123.6	46655	194.2	671.6	12.534	183.477
2006	1962.4	5342.8	67.174	477.647	11.54	123.4	51104	210.2	698.1	12.472	181.880
2007	2121.4	5490.0	67.701	464.577	11.60	123.4	51104	230.2	730.8	12.324	175.146
2008	2240.2	5665.8	68.232	464.357	11.66	123.4	51104	237.5	770.6	11.663	175.063

PPP conversion rates. USD 1 = Rbl. 5.40 for GDP, 7.23 for MVA, and 4.10 for fixed assets.

Sources: Народное хозяйство РСФСР/РФ, Москва: ЦСУ/Госкомстат; Российский статистический ежегодник, Россия в цифрах, Национальные счета России, Госкомстат/Росстат, Москва; National Accounts Statistics. UN, New York; Main Economic Indicators, OECD, Paris; Yearbook of Labour Statistics, ILO, Geneva; International Yearbook of Industrial Statistics, UNIDO, Vienna; FAO Production Yearbook, Rome, Energy Statistics Yearbook, Annual Bulletin of General Energy Statistics for Europe, UN, New York; UNESCO Statistical Yearbook, Paris; various volumes; Robert J. Barro and Jong-Wha Lee, "International Data on Educational Attainment: Updates and Implications", op.cit.; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, op.cit.; Masaaki Kuboniva, "Economic Growth in Postwar Russia: Estimating GDP", Hitotsubashi Journal of Economics, Vol. 38. No. 1, 1997, pp. 21-32; New Cronos Eurostat database.

Table A3. Serbia: Main Macro Economic and Manufacturing Indicators

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	Y_M	K_M	L_M	R_{Mt-2}
	National economy						Manufacturing			
1960	15.27	14.06	1.662	4.794	4.20	3.88	1.05	2.82	0.512	2.201
1961	16.09	15.30	1.831	4.943	4.40	3.88	1.11	3.14	0.522	2.269
1962	16.32	17.34	1.868	5.096	4.61	3.86	1.17	3.59	0.529	2.339
1963	18.12	19.49	1.887	5.254	4.83	3.86	1.37	4.04	0.551	2.412
1964	20.23	21.22	2.013	5.417	5.07	3.84	1.64	4.48	0.611	2.487
1965	20.17	23.10	2.049	5.585	5.30	3.84	1.77	4.89	0.630	2.564
1966	21.64	25.13	2.018	5.758	5.40	3.82	1.82	5.29	0.621	2.643
1967	22.49	27.15	2.020	5.937	5.50	3.83	1.81	5.75	0.615	2.725
1968	23.46	29.09	2.040	6.234	5.61	3.82	1.87	6.19	0.601	2.861
1969	27.78	31.68	2.130	6.456	5.71	3.83	2.08	6.69	0.627	2.963
1970	28.24	34.66	2.207	6.686	5.82	3.82	2.28	7.29	0.647	3.069
1971	32.03	37.83	2.309	6.900	5.84	3.82	2.56	7.99	0.677	3.167
1972	31.22	41.11	2.394	6.934	5.87	3.81	2.77	8.63	0.706	3.183
1973	32.80	44.25	2.440	7.013	5.89	3.81	2.98	9.21	0.727	3.129
1974	39.64	47.51	2.549	7.351	5.91	3.80	3.34	9.87	0.756	3.374
1975	39.22	50.74	2.667	7.341	5.95	3.80	3.53	10.57	0.792	3.370
1976	39.75	54.38	2.758	7.721	6.06	3.79	3.67	11.36	0.812	3.544
1977	45.37	58.23	2.872	7.711	6.18	3.78	4.05	12.14	0.837	3.539
1978	48.87	62.44	3.012	7.433	6.30	3.77	4.45	13.06	0.867	3.412
1979	53.41	67.34	3.148	8.083	6.42	3.76	4.85	14.26	0.904	3.710
1980	52.89	71.65	3.231	9.199	6.54	3.75	5.13	15.41	0.934	4.222
1981	53.21	74.95	3.319	8.514	6.60	3.76	5.41	16.21	0.953	3.908
1982	53.07	77.94	3.383	8.907	6.66	3.75	5.43	16.86	0.985	4.088
1983	52.10	80.72	3.436	9.443	6.72	3.73	5.51	17.44	1.012	4.334
1984	52.25	82.68	3.503	9.489	6.78	3.72	5.87	17.82	1.029	4.355
1985	50.72	84.21	3.588	10.244	6.84	3.72	5.98	18.15	1.064	4.702
1986	53.10	85.96	3.687	10.501	6.88	3.72	6.18	18.55	1.097	4.820
1987	50.78	87.56	3.773	11.227	6.92	3.71	6.24	18.90	1.107	5.153
1988	49.43	89.66	3.803	10.917	6.96	3.71	6.30	19.38	1.105	5.011
1989	50.37	92.04	3.800	11.872	7.02	3.70	6.40	19.87	1.114	5.446
1990	46.39	94.10	3.720	12.716	7.06	3.69	5.63	20.18	1.056	5.197
1991	41.01	96.35	3.674	12.683	7.02	3.69	4.53	20.59	0.994	4.960
1992	29.57	98.00	3.567	11.870	6.98	3.69	3.28	20.94	0.936	4.733
1993	20.46	96.52	3.461	10.721	6.93	3.69	2.23	20.85	0.909	4.245
1994	20.97	92.82	3.399	10.944	6.89	3.70	2.26	20.51	0.912	4.067
1995	22.25	88.11	3.299	11.031	6.85	3.70	2.37	21.59	0.895	4.113
1996	23.99	78.69	3.273	11.481	6.81	3.68	2.59	20.95	0.878	3.751
1997	26.41	59.93	3.137	12.113	6.77	3.67	2.99	16.28	0.840	3.960
1998	26.91	50.80	3.139	11.994	6.73	3.66	3.06	12.35	0.812	4.190
1999	22.07	43.38	3.103	12.093	6.69	3.66	2.13	10.28	0.826	4.108
2000	23.21	48.78	3.094	11.577	6.65	3.67	2.44	11.16	0.733	3.758
2001	24.51	51.74	3.106	12.163	6.70	3.67	2.55	14.20	0.704	3.949
2002	25.47	51.63	3.000	11.969	6.76	3.67	2.53	13.69	0.645	3.848

Simon G., Faktori i problemi privrednog rasta u Mađarskoj, Rusiji i Srbiji, MP 2, 2010
(str. 195-238)

Year	Y_N	K_N	L_N	R_{Nt-2}	H/L	Z	Y_M	K_M	L_M	R_{Mt-2}
	National economy						Manufacturing			
2003	26.08	51.51	2.919	10.071	6.81	3.64	2.41	12.48	0.597	3.826
2004	28.25	51.42	2.931	10.855	6.87	3.64	2.64	12.39	0.551	3.804
2005	29.83	51.59	2.733	11.353	6.92	3.63	2.62	12.95	0.497	3.782
2006	31.38	51.83	2.631	11.637	6.98	3.62	2.77	13.62	0.519	3.761
2007	33.54	52.24	2.656	11.551	7.04	3.60	2.91	14.53	0.522	3.739
2008	35.39	52.83	2.822	12.079	7.09	3.60	2.94	16.02	0.484	3.910

PPP conversion rates. USD 1 = RSD 17.13 for GDP, 35.08 for MVA, and 49.85 for fixed assets.

Sources: Statistički godišnjak Srbije, Sistem nacionalnih računa Republike Srbije, RZS, Beograd; Statistički godišnjak Jugoslavije/Srbije i Crne Gore, (Savezni) zavod za statistiku, Beograd, various volumes; Jugoslavija 1918-1988. Statistički godišnjak, SZS, Beograd, 1989; Dva veka razvoja Srbije – Statistički pregled, RZS, Beograd, 2008; National Bank of Serbia – Annual financial statements of enterprises; National Accounts Statistics, UN, New York; Yearbook of Labour Statistics, ILO, Geneva; FAO Production Yearbook, Rome, various volumes; Robert J. Barro and Jong-Wha Lee, “International Data on Educational Attainment: Updates and Implications”, op.cit.; Alan Heston, Robert Summers, Daniel A. Nuxoll and Bettina Aten, Penn World Table 5.6, NBER, Cambridge, Mass., January 1995; Alan Heston, Robert Summers and Bettina Aten, Penn World Table 6.2, op.cit.; EBRD, Selected Economic Indicators database; Eurostat, New Cronos database; WIIW database incorporating national statistics.

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**FAKTORI I PROBLEMI PRIVREDNOG RASTA
U MAĐARSKOJ, RUSIJI I SRBIJI**

APSTRAKT

U ovoj studiji se analiziraju glavne karakteristike mehanizma rasta u tri ekonomije u tranziciji – Mađarskoj, Rusiji i Srbiji. Autor istražuje osnovne unutrašnje i međunarodne činioce koji su uticali na dugoročni rast privreda u ovim zemljama od početka 1960-ih godina do sadašnje globalne krize. Gde god je to bilo moguće, autor je činio upoređenja između pretranzicionog i tranzicionog perioda. Primenjujući modele matematičke ekonomije, on je izveo ekonometričko istraživanje za potvrđivanje svoje hipoteze o sistemskom efektu tržišnih reformi. Autor naglašava da je dosledno sprovedene tržišne reforme u sprezi sa ekonomskom politikom orijentisanom na rast može suštinski doprineti postizanju bolje performanse.

Ključne reči: Ekonomije u tranziciji, privredni rast, glavni određujući faktori, komparativna analiza, Mađarska, Rusija, Srbija.