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Myth and Reality: Impact of Fiscal Transfers on Regional Convergence

Key words: growth, sigma and beta convergence, state intervention, subsidisation

The decision makers of the European Union have committed themselves a great number of times in the past decades to decreasing the economic and social differences between the regions in the member states. This was designed to be achieved by the regional (cohesion) policy of the community; this was what the population in the poorest regions of new members have trusted in. The results are, however, far from unambiguous. The paper seeks to find the answer to the reasons based on the experience of the region of Northern Hungary.

Introduction

The hope of catching up with economically more developed countries is not new in Hungarian thinking. The very best of the intellectuals from the Reform Age to the present day (e.g. István Széchenyi[1/], Miklós Wesselényi, Endre Ady[2/], Oszkár Jászi, and István Bibó in accordance with the spirit of the age and their social standings) asserted their conviction in the need for convergence and discussed its obstacles.
The political propaganda prior to Hungary's accession to the European Union (2004) set out the promise (both directly and indirectly) of catching up fast.
The outcome is well-known. Our wish returning cyclically has been borne out by the facts so far only ambiguously, therefore an increasing part of the population feels deceived. The initial great enthusiasm has soon been replaced by fast disappointment and disillusion and the recognition that we have again entertained disproportionate hopes. It seems that this time we had unfounded expectations concerning EU membership (particularly the resources from the various funds), much higher ones than what the order of the subsidies would entitle us to.
The paper attempts to answer three questions:

- Has our economic performance (GDP growth) achieved a substantial breakthrough as a result of our economic policy following the accession, and as a result of the resource allocation mechanism forming part of it, or has it been enough only to more or less maintain our position?
- Is it possible to sustain real convergence without regional convergence?
- What impact have EU subsidies had on Hungarian regional convergence?

[1/] „How could we lift Hungary out of the mud?" asks István Széchenyi in his letter to Miklós Wesselényi in 1830 (Széchenyi, 2004).

[2/] „Ferry-boat county, ferry-boat county, ferry-boat county. Even in its best dreams it only shuttled between two banks: from the East to the West, wishing to go back. Why did they lie that the ferry, oh Potemkin, you holy man with anointed hands, you only cheated on Czarina Catherine?... Idealists and malefactors united to build castles of the air-stones of falsity and shouted to the whole world with joy that Europe had been built up under the Carpathian Mountains.
The Great Humbug did not hurt Europe, the lie was believed at home. We were told that Europe was here, we were preparing for a life of culture and jerked ourselves forward with taut nerves." Ady Endre, Budapesti Napló, 15 October 1905. (Complete Prose Works of Endre Ady, Vol. 7. Arcadum Adatbázis Kft.).

Historical background: from semi-periphery to semi-periphery?

Our economic historians are more or less in agreement about drawing up the periods of the Hungarian economic growth and development.
The nearly fifty years ('balmy days of peace') between 1867 and 1914 (Austro-Hungarian Monarchy) is in general positively evaluated (e.g. Berend/Ránki, 1987), although opinions are divided on the economic growth rate of the period. It remains a fact, however, that Hungary developed from a backward agrarian country (with a semi-peripheral position) into an agrarian-industrial country with a developed food industry in that period. As a result, the growth rate of the economy accelerated (Kövér, 2007); between 1870 and 1913 (at a growth rate of 2-3.5 %/year) the per capita GDP was nearly trebled (Figure 1).

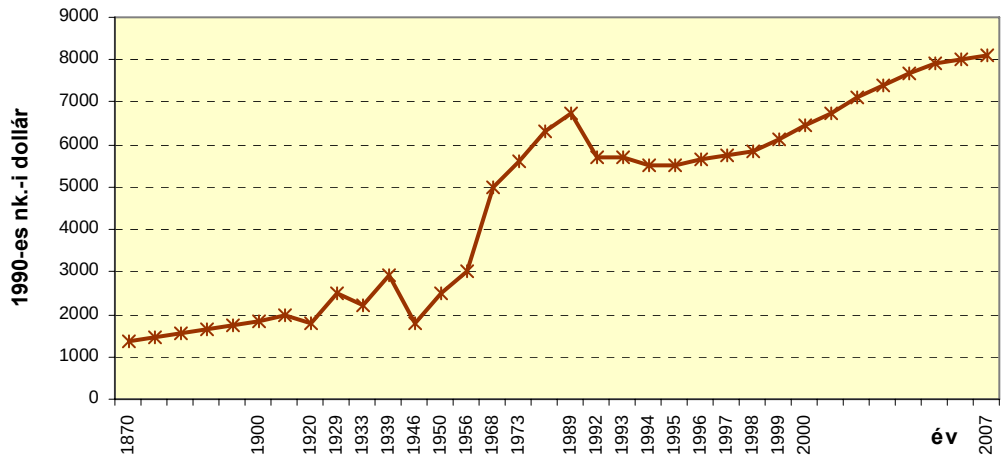

Figure 1. Per capita GDP in Hungary, 1870-2007
Source: A. Maddison: Monitoring the World Economy 1820-1992. Paris: OECD, 1994 and author's calculation based on CSO data

This growth rate was broken by World War I. Although the governments succeeding each other took serious steps to protect to economy (repayment of foreign debts was halted, the industry was given considerable military orders, etc.), the resources had been depleted by 1918 and the economic performance of the country suffered a significant setback.
Opinions are greatly divided on the economic performance of the period between the two World Wars (the Horthy period) as well as on that of the subsequent period (1945-1989) (Romsics, 2008). Unbiased empirical analyses have been published only recently. The change in political orientation taking place after 1989 has exerted a significant influence on the Hungarian economy, as is well-known. Privatisation, the decline of state interventions, opening up the markets, the indebtedness of the country, etc. have put a range of companies in difficult situations, and industries have declined. The dramatic decline in added value and output had the direct consequence that the specific performance of Hungary underwent a decline (Figure 2).

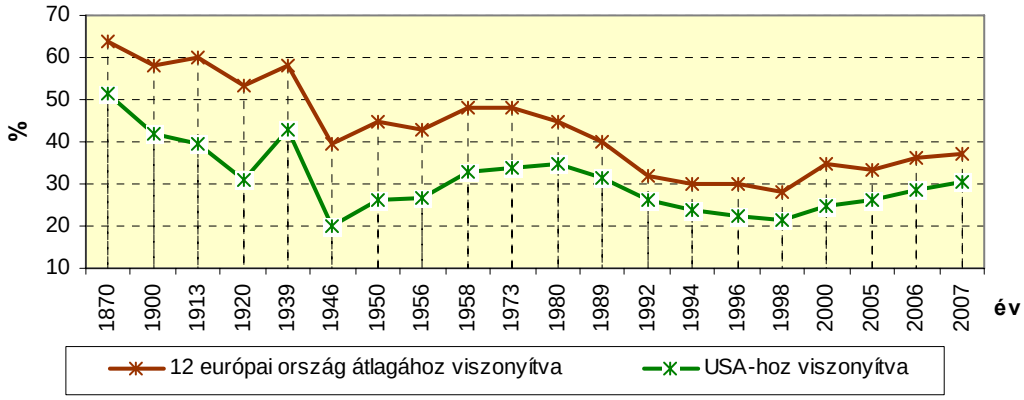

Figure 2. Relative development of per capita GDP in Hungary (1870-2007)
Source: Based on data in A. Maddison (1995) and author's calculations

At the beginning of the new millenary (between 2000 and 2003), the hopes were born again and economic growth re-appeared. The global economic crisis breaking out in the spring of 2008 shook the Hungarian economy dramatically. Although there are differences concerning the causes according to political commitments, there is hardly any dispute about the fact that the Hungarian economy suffered the negative external effect in a state of ill health, and thus the consequences are far more serious than in terms of the Union average.

As also shown by data of the Statistics Office of the European Union, the per capita GDP at purchasing power parity in Hungary in the year of accession was 63.2 % of the EU average, in 2007 it was only 62.6 %, in 2008 60.3 %, and in July 2009 it reached only 59.8 %.

Thus the real convergence indicators of Hungary showed a relative decline in the past four years. (As opposed to the period 2000-2004, when a convergence was registered with the value of the indicator rising from 56.1 % to 63.2 %. It is worth noting that in Slovakia, which joined the Union at the same time as Hungary, 50.1 % in 2000 rose to 55.5 % at the time of accession and to 67 % in 2007; between the turn of the millenary and 2008 the same indicator rose from 68.5 % to 80.2 % in the Czech Republic, from 48.3 % to 53.3 % in Poland, and from 44.6 % to 67.9 % in Estonia.)

According to Eurostat cumulative data, Hungary ranks ninth of the ten countries which joined the Union in 2004 in terms of real convergence in the period 2000 to 2007, and last when considering the period since the accession (http://epp.eurostat.ec.europea.eu). This means that our economic performance is weak not only in an absolute sense, but also when compared to the new members.

According to Eurostat data, in the field of industry and services, the annual gross income of full-time employees in companies employing at least ten persons in Hungary was 12.8% of the average of the 15 old members in 1998. This ratio increased to 21.7 % by 2008, with the major part of the increase taking place between 2000 (13.51 %) and 2004 (20.56 %).

In 2006, the value of the indicator was 22.93 % in the Czech Republic, 10.28 % in Rumania, 19.49 % in Slovakia and 17.67 % in Poland (the last figure is for 2005). In Hungary the annual gross income grew by 10 % in 2006 as compared to 2004, and in 2007 the increase in incomes was 26 % as compared to the year of the accession.

At the same time, the data available show that in 2006 the annual gross income in Hungary amounted to 21.7 % of the average income of the 15 old members and 25 % of the EU- 27.

Nevertheless, foreign direct investments of non-resident companies in Hungary have visibly increased since the accession, although economic analysts are doubtful about the causal relationship. According to data of the Hungarian National Bank, FDI remained between 1995 and 2000 in a narrow band between 2.63 billion Euro and 3.70 billion Euro, while in the three years preceding the accession it showed a definite decreasing tendency: from 4.39 billion Euro in 2001 to 3.19 billion Euro in 2002 and then to 1.89 billion Euro in 2003.
In the year of accession this tendency changed: FDI increased to 3.63 billion Euro in 2004, then to 6.17 billion Euro in 2005 and also exceeded 6 billion Euro in 2006. In the last two years it decreased to a level around 4.5 billion Euro, with its average amounting to 4.93 billion Euro between 2004 and 2008. Meanwhile the public debt increased, with the highest rate of debt service in the region.
To sum up: the economic statistical data of the past 150 years have proved that Hungary continues to belong to the semi-peripheral countries of the world economy.[3/] Our positions obviously undergo changes, for the system itself is dynamic. At the moment it seems that Hungary is sliding downwards rather than climbing towards the centre.

Conditions for sustainable convergence

The general concept of convergence (Hungarian Encyclopaedia, Budapest, 2000) allows for a wide range of interpretation. Economic and regional economic scientists have formulated two interpretations for convergence.
The first definition regards a decrease in the differences between the chosen social-economic indicators as convergence, which indicates in effect a decrease in the range of standard deviation (σ convergence). In the second interpretation, convergence means catching up on a longer term growth path (ß convergence). Thus the latter (sustainable, therefore long-term convergence) is of greater importance than the former.
The rate of sustainable (long-term) convergence and the change with time of its rate are basically determined by three groups of factors with a strong logical interrelation in a given country: the public morals, nominal equilibrium and growth surplus (Figure 3).

[3/] The centre-periphery world theory comes from Immanuel Wallerstein (1983). According to it, in a global world a centre at a high level of economic and social development concentrates capital, state-of-the-art technology, information, and science, and this is where innovation originates from. The economically backward periphery has the role of providing raw materials for the centre, and is described by low technical level and social underdevelopment. These – in addition to other features – determine the difference as well. The exchange of goods between the centre and the periphery is performed with terms of trade beneficial for the centre. A relation of economic dependence develops between the two regions with the capital of the centre playing a major role. The model was refined in the late 1980s with the introduction of the concept of semi-periphery.

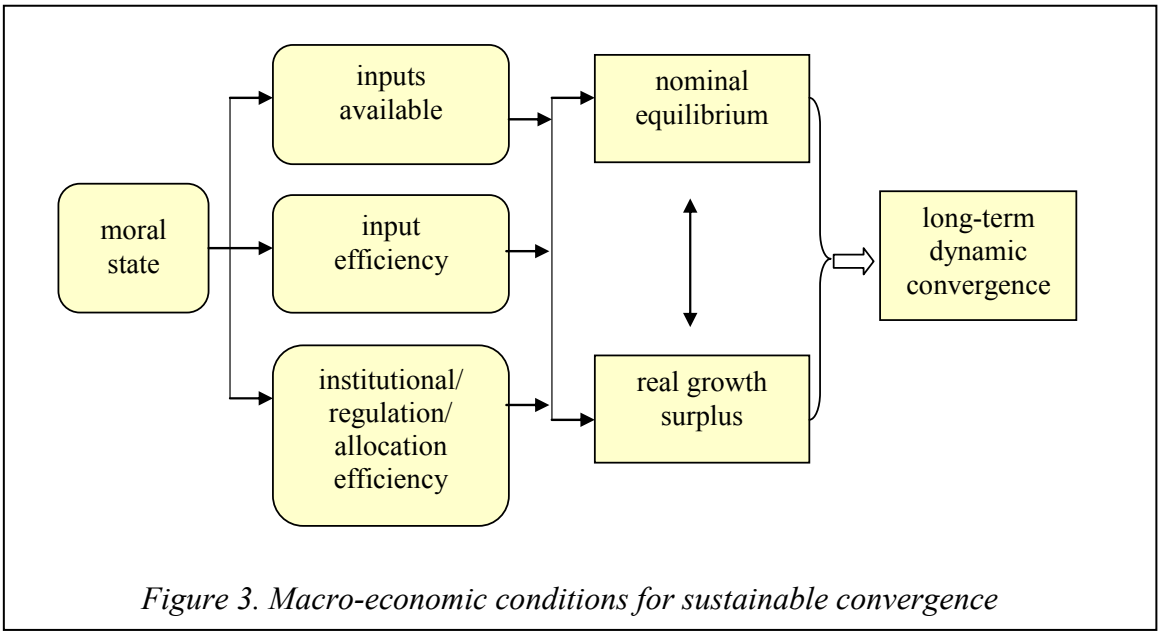

Figure 3. Macro-economic conditions for sustainable convergence

Nominal equilibrium is described by the stability of state finances (monetary and budget situation). (As it is known, the European Union wishes to keep the differences between the member states within limits and to secure convergence by the prescription of the Maastricht criteria, though with varying results).[4/] Nominal equilibrium is determined by an increase in the inputs, particularly the strengthening of savings, the efficiency of their use and the system of institutions and norms handling it. The equilibrium of the financial and fiscal affairs (or the still manageable imbalance) is a necessary, but not sufficient condition of convergence.

In case of real convergence, the performance of a country with the lower performance (development and income levels) approaches those of countries with a higher performance.
In practice this can be achieved if the income generating capacity of the poorer country grows more rapidly than that of the richer country. This process can be generated by an increase in productivity and employment and by eliminating factors hindering the growth of performance (e.g. a system of institutions with low efficiency, political instability, etc.).
There is hardly any chance for real or nominal convergence when there is a lack of stable moral conditions or the will to improve the moral situation.
The general moral situation exerts its effect both on fiscal and real processes. The larger the proportion of the black (hidden) economy, the higher the budgetary revenue lost. The proportion lost in this way can be replaced by increasing the budgetary revenues (taxes and

[4/] The Maastricht criteria (as is well-known) defined four convergence criteria for the introduction of the common currency (Euro):

- Price stability: the rate of inflation in the period examined may exceed the average of the three countries with the lowest inflation by max 1.5 %.
- Budgetary deficit is not to exceed 3 % of the GDP, and national debt is not to exceed 60 % of the GDP.
- Long-term nominal interest may exceed the average of the interest of the three countries with the lowest inflation by maximum 2 %.
- Stable exchange rate: in the European Monetary System (EMS) exchange rate mechanism the national currency is not to be devalued against another currency (Euro) for at least two years.

The (above) criteria ensure the manageability of the imbalance of a given country in addition to the introduction of the common currency (Euro) under low and controlled inflation.

contributions by the white economy), selling assets of the national wealth ('denationalisation'), and reducing the state expenditure or by credits.
In the case when the political elite violates the written and unwritten legal regulations or although abiding by them, takes the liberties to take steps infringing public morals, then a 'simple' citizen will also regard tax evasion as a forgivable sin (e.g. work without invoice, etc.).
The connections between black economy, corruption and real processes are at least that serious. Part or all of the state intervention intended for increasing capacity, improving productivity, improving efficiency, i.e. the convergence of real processes, may disappear in the current system without having achieved its purpose.
Without improving our public moral conditions and states it is a vain hope to increase the performance of the economy or to create the nominal equilibrium.
Obviously the same logic can be followed in evolving the relations in respect of regional convergence, noting that the steps taken by the government in power for creating (sustaining) the nominal equilibrium may strengthen or also weaken the chances of convergence of a particular region.

Regional possibilities for investigating beta (ß) convergence

Investigations designed to determine ß-convergence attempt to provide answers in respect of the time and speed of 'catching up'.
The model of simple ß-convergence (Baumol (1986), DeLong (1988), Mankiw (1992)) was elaborated by Barro & Sala-i Martin (1995) relying on the work by Solow (1956) and Swan (1956).[5/]
The model is suitable for examining the differences in regional incomes (performance) if there is an explanation for the causes (Barro & Sala-i Martin, 1995. pp.382.).
On the basis of the original Solow-Swan model (explaining growth for the overall period of catching up against the initial GDP level), ß-convergence can be written as follows:

$$(1) \qquad \ell n\left[\frac{y_{T,i}}{y_{0,i}}\right] = \alpha + \beta \ell n y_{0,i} + \varepsilon_i \qquad (t=0, \ldots, r; m=u=1, \ldots, n),$$

where $y_{t,i}$ per capita income at time t in region i; and ß is the convergence factor.
The model presupposes that if the regions examined are of the same structure (e.g. the growth rates of the population, savings, and investment as well as access to technology are identical and in a state of equilibrium); then only their initial states may differ.

Parameter ß exerts an impact on the progress towards the state of equilibrium (speed of convergence, b), which can be expressed as follows: $B=-(1-e^{-bT})$, consequently $b=-\ell n(1+ß)/t$ (Arbia, 2006).

The second significant parameter is halving time (the time needed for the logarithm of per capita regional income to become the mean value of the initial value and the value that can

[5/] Despite the criticism (Quah, 1993, Temple 1999, Durlauf et al. 2005), several authors involved in regional convergence use this relationship as their starting point.

be assigned to the state of equilibrium. Formulated in a different way: it denotes the time needed for the initial difference in per capita output to be halved).[6/]
Mankiw (1995. pp. 304-305.) points out that this standard form ignores the interrelations and dependence relations between the regions (Anselin, 2003).[7/]

Regional interrelations can be best demonstrated by means of a regional auto-regression model (Anselin/Bera, 1998), into which a regional 'impact factor' is introduced for the dependent variable.
Accordingly, equation (1) can be written in the following form:

$$(2) \qquad \ell n\left[\frac{y_{T,i}}{y_{0,i}}\right] = \alpha + \beta \ell n y_{0,i} + p\sum_{j=1}^{n} w_{ij}\,\ell n\left[\frac{y_{T,i}}{y_{0,i}}\right] + \varepsilon_i;\ \varepsilon_i \sim \mathrm{Nid}(0,\sigma^2),$$

where w_{ij} is an element of the matrix of regional weight W; p is a variable dependent on regional influence expressing regional interaction (i.e. to what extent the per capita GDP increase of the neighbouring regions influences the specific GDP increase of the region under examination).[8/]
Regional dependence can also be expressed by re-interpreting the error factor of equation (1) (Anselin/Bera, 1998):

$$(3) \qquad \ell n\left[\frac{y_{T,i}}{y_{0,i}}\right] = \alpha + \beta \ell n \gamma_{0,i} + \varepsilon_i,$$

where $\varepsilon_i = \delta\sum_{j=1}^{n} \omega_{ij}\varepsilon_j + \mu_i$, $\mu \sim Nid(0,\sigma^2)$.

The regional structure of the data can be modelled by the auto-regressive error factor (which is a random coefficient) and can be determined by the model iteration (Kelejian/Prucha 1999) formalised in (3).[9/]

The disturbances in models (2) and (3) can be written in matrix form:
(4) $\varepsilon \sim N(0,\sigma^2 V)$ or $\mu \sim N(0,\sigma^2 V)$, $V = \mathrm{diag}(v_1, v_2, \ldots, v_n)$.
Modelling the disturbances is identical to Student error distribution (Geweke, 1993). In order to supplement the model, normal preliminary values were supposed for parameters α and ß, a diffuse preliminary value for sigma noise variance, and uniform antecedents for

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[6/] The formalisation offered in equation (1) does not influence the meaning assigned to the parameters (e.g.: the negative value of parameter ß is in harmony with the absolute ß-convergence condition, the higher the (absolute) value of parameter ß, the faster the economy of the region approaches an equilibrium).
[7/] The literature is greatly engaged in eliminating this limitation (Abreu, 2005; Fingleton/Lopez-Bazo, 2006). From a theoretical aspect the use of regional auto-correlation was advocated by Lopez-Bazo (2004) Vaya (2004) and Ertur and Koch (2007), who examined neo-classical models with the involvement of regional externalia, which resulted in convergence models, including regional auto-correlation as well.
The new economic geographical models (Fujita, 1999) answer the question why the distribution of economic activities is non-uniform spatially. The primary conditions (e.g. vicinity to natural resources) can be used to explain why an industry settles in a certain location, and the secondary conditions show that a company has chosen a geographical area for its activities because other companies have already been established there. The new economic geographical models stress the spatial spin-off effect between the economies, which has to be included also in the convergence models.
[8/] The model can be appraised by the maximum probability method (Anselin, 1988).
[9/] The original ß-convergence model was made more accurate by using the Bayes framework (LeSage, 1997, 2002). It is claimed that the greatest merit of the Bayes approach used in regional convergence is that it answers the problem of heterogeneity in regional samples and of leaping values, which resulted from the 'enclave impact', in which case a particular event elicits different behaviours from the nearby events. These problems can be solved by the Bayes hetero-skedasticity model.

$\left[-1/\lambda_{min};+1\right]$ and ρ (model 2) or δ (model 3), where λ_{min} denotes the minimum eigenvalue of the standardised weight matrix.
The model can be determined by the sampling proposed by Gibbs. (For the calculation methods of regional models see in more detail LeSage (1997); for the analytical or coding errors in the general Bayes model of subsequent simulations see Geweke (2006).)
The solution presented above is methodically suitable for handling problems of regional dependence resulting from empirical calculation.[10/] In order to understand the problem in all its details, let us regard equation (1) as a simple linear regression model and equation (2) as a multiple linear regression model. It is known from regression theory that the value of the coefficient in the simple regression model is different from that of the identical variable coefficient in the multiple regression model. Although it is true that the negative value of ß advances convergence, it is possible to find differences between the two cases. More exactly, in the case of the individual regions convergence refers to the same level of per capita income (i.e. to the same state of equilibrium) in the case of equation (1) and to different ones (depending on the regional context) in the case of equations (2) and (4).

According to Abreu (2005), the interpretation errors of the regional deferral model (equation 2) can be correctly written as follows:

(5) $y = X\beta + \rho Wy + \varepsilon$,

where vector y (nx1) contains the growth rates and X contains the constant elements as well as the initial values of per capita income, and W is the regional matrix. The model can then be written in the following form:

(6) $y = (I - \rho W)^{-1}(X\beta + \varepsilon)$, where:

(7) $(I - \rho W)^{-1} = I + \rho W + \rho^2 W^2 + \rho^3 W^3 + ...$

It can be seen from equations (6) and (7) that the multiplication effect means that the growth rate of region i exerts an impact not only on the marginal change of the explanatory variable of region i, but on the marginal changes in the explanatory variables of other regions as well. More exactly, the first member describes the direct changes (the impact of the growth rate of the marginal change on the initial per capita GDP); and the second describes the indirect effects, which are the spin-off effects of the direct effects of first-rank neighbours. Finally, the other members describe induced effects, which consist of the summation of the impacts exerted by the highest ranking neighbours. Consequently, in the regional deferral model, the coefficients calculated examine only the direct marginal effect of the changes in the explanatory variables, excluding all the indirect induced impacts.

Examination possibilities using panel data

Panel data have several advantages over pure time series and cross-section models (Baltagi, 2001; Hsiao, 2003). Their introduction is justified by the fact that they eliminate

[10/] But does parameter ß have the same meaning in equations (1), (2), (3) or (4)? More accurately, can we still interpret the change of ß-parameter, similarly to the original model, as the speed of convergence towards the state of equilibrium? In equation (2) and in its Bayes version, e.g. have we used other components in addition to the initial specific income in explaining regional growth?
In this respect, they represent a kind of 'regional condition', which is discussed in detail by Le Gallo/Ertur (2003), and Arbia and Pealinck (2003), i.e. these are convergences which tend towards various states of equilibrium and which are determined by the regional context (with the exception of the specification of spatial error).

the limitations of the conventional neo-classical approach (the initial technology and growth rates of the regions are identical and constant).

Panel data are characterised by the combined presence of cross-section and time-series models. Thus equation (1) can be written concerning the panel model as follows:

$$(8) \qquad \ell n\left[\frac{y_{t,i}}{y_{t-5,i}}\right] = \alpha_i + \beta' \ell n y_{t-5,i} + \varepsilon_{it}\,.$$

Equation (8) can be regarded as a modified version of the original ß-convergence, where the growth rate is determined not for the complete period, but for 5 years (Elhorsd, 2003).

The main point of the calculation method is that regional and time observations are performed resulting in an individual parameter (ß'). In equation (2), the dependent variable is the growth rate of the specific GDP of region i at time t $y_{t-5,i}$ (the natural logarithm of the per capita GDP of the same region at time t-5), and ß' is the relevant parameter of the convergence analysis. Equation (8) is the classical expression of the (α_i) fixed impacts in the panel data model. It is well-known from the literature that the speed of convergence greatly depends on the differences that can be measured in the states of equilibrium. Fixed impacts are probably the easiest way to explore region-specific differences in the states of equilibrium.

The second possibility is to use conditional convergence by applying several explanatory variables in the model. (Since the objective of the analysis is to examine the results obtained by the different calculation methods, more complex versions of equation (8) were not used so as to diminish the risk that the outputs obtained from the various models would not be comparable.)
Economic growth and convergence are basically long-term phenomena. Thus there is a discussion going on in the literature about how long the periods examined (in case of panel data) should be (Islam, 1995). The argument for examining five-year growth periods is that, when annual growth rates are used, the impacts of short-term economy cycles and long-term effects become mixed up with each other.

$$(9) \qquad \widehat{\beta}_{FE} = \left\{\widehat{\beta} + \frac{\sum_{i=1}^{n} \ell n y_{0,i} \ell n\left[y \frac{y_{5,i}}{y_{T,i}}\right] + \sum_{t=+}^{T}\sum_{i=1}^{n} \ell n y_{t-5,i} \ell n\left[\frac{y_{t,i}}{y_{t-5,i}}\right]}{\sum_{i=1}^{n}\left(\ell n y_{0,i}\right)^2}\right\} \frac{\sum_{i=1}^{n}\left(\ell n y_{0,i}\right)^2}{\sum_{t=1}^{T}\sum_{i=1}^{n}\left(\ell n y_{t-5,i}\right)^2},$$

where $\widehat{\beta}_{FE}$ $ß_{FE}$ is the least-square (fixed impact) parameter of parameter ß' in equation (8), and ß is the parameter of the least square method referring to the cross-section model. It can be seen from equation (9) that the sign of $ß_{FE}$ depends on the sign of member C (and its relation with ß):

$$(10) \qquad C = \frac{\sum_{i=1}^{n} \ell n \gamma_{0,1} \ell n\left[\frac{y_{5,i}}{y_{T,i}}\right] + \sum_{t=6}^{T}\sum_{i=1}^{n} \ell n y_{t-5,i1} \ell n \frac{y_{t,i}}{y_{t-5,i}}}{\sum_{i=1}^{n}(\ell n y_{0,i})^2}.$$

(Thus if ß<0 and C<0, $ß_{FE}$ is negative and convergence can be interpreted both for the cross-section model and the panel data. But if ß<0 and C is positive and /C/>/ ß/, then at

the level of panel data we speak of divergence, even if the cross-section model shows convergence. As opposed to that, if ß>0, but C is negative and /C/>/ ß/, convergence prevails at the level of panel data, even if divergence is demonstrated in the cross-section model.
The results discussed so far refer to a case without regional correlation. Regional dependence (as consideration of a supplementary regional deferral or error coefficient) complicates the relation between the two models further.
Model (8) is easy to handle from a regional econometric aspect, just like model (1); the involvement of regional dependence in the panel data is identical in both cases, particularly with the fixed effect regional auto-regressive model, which can be written in the form:

$$(11) \qquad \ell n\left[\frac{y_{t,i}}{y_{t-5,i}}\right] = \alpha_i + \beta \ell n y_{t-5,i} + \rho \sum_{i=1}^{n} W_{ij} \ell n\left[\frac{y_{t,i}}{t-5,i}\right] + \varepsilon_{it} \quad \varepsilon_{it} \sim \text{Nid}(0,\sigma^2),$$

using the notations in equation (2) and its conclusions. It is, however, also possible to re-interpret the regional error model as follows:

$$(12) \qquad \ell n\left[\frac{y_{t,i}}{y_{t-5,i}}\right] = \alpha_i + \beta \ell n y_{t-5,i} + \varepsilon_{it}, \text{ or:}$$

$$\varepsilon_{it} = \delta \sum_{i=1}^{n} \omega_{ij} \varepsilon_{it} + \eta_{it}, \qquad \eta_{it} \sim \text{Nid}(0,\sigma^2),$$

which is called fixed effect regional error model in the literature.

Several examples prove (particularly for poorer countries) that an increasing macro-economic performance will lead to a growth of disparities within the country (trade-off effect)[11/].
The experience of the most developed countries and the old members of the European Union, on the other hand, shows that an increase in macro-economic performance is necessarily matched by an increase in regional divergence. If there is a well-functioning regional policy in place, the regional income differences (sigma convergence) can be reduced (Table 1).

Table 1. Development of macro- and mezo level convergence indicators in selected countries

Country	Number of regions	Beta convergence		Regional income inequality (sigma convergence)				
		Period examined	(%/year)	1940	1950	1970	1990	2005*
Germany**	11	1950-1990	1.4	-.	0.31	0.20	0.19	0.14
Sweden	24	1951-1933	2.4	0.26	0.15	0.10	0.07	0.06
Great Britain	11	1950-1990	3.0	-	0.17	0.10	0.12	0.10
France	21	1950-1990	1.6	-	0.21	0.17	0.14	0.11
Italy	20	1950-1990	1.0	-	0.43	0.33	0.27	0.25
Spain	15	1955-1987	2.3	-	0.34	0.27	0.22	0.20
USA	48	1880-1990	1.7	0.35	0.24	0.17	0.17	0.16
Japan	47	1955-1990	1.9	0.63	0.29	0.23	0.15	0.12
Hungary***	7	1995-2007	0.81					
EU ***		1995-2007	1.71					

*Source: Sala-i-Martin Author's calculation **without the former GDR ***Author's calculation*

[11/] The trade-off effect is used in the literature in several contexts (e.g. exchange rate, etc.). For our topic, perhaps the expression 'contrary effect' seems appropriate.

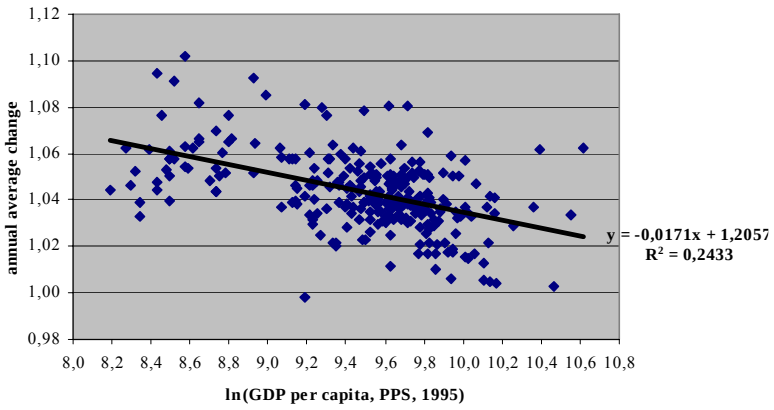

Figure 4. Beta convergence (EU 27, region)
Source: author's calculation based on Eurostat data

To sum it up: as a result of the semi-peripheral character, the speed of convergence between the regions of Hungary falls behind the EU average (2007).
The regional policy of Hungary in the period examined was not able to achieve convergence as such either by improving economic activity, or by setting the economy on a new growth path, therefore it is in effect virtual.

Divergence instead of convergence

The European Union and the national regional policy (strengthening cohesion) are in principle designed to serve the growth of the macro-economy and that of regional performance simultaneously.
The dual objective was achieved with varying success in the EU in recent years (Figure 5).

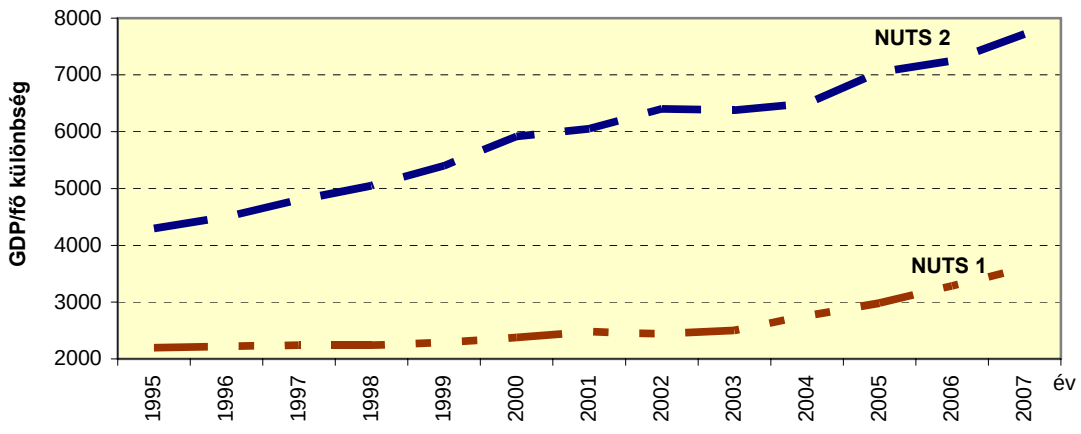

Figure5. Development of sigma convergence in the EU NUTS 1 and NUTS 2 levels

Beside positive cases, several negative examples can be mentioned. Unfortunately, Hungary belongs to the latter: in the past nearly 15 years the macro-economic performance was increased with an increase in regional differences at the same time (Figure 6).

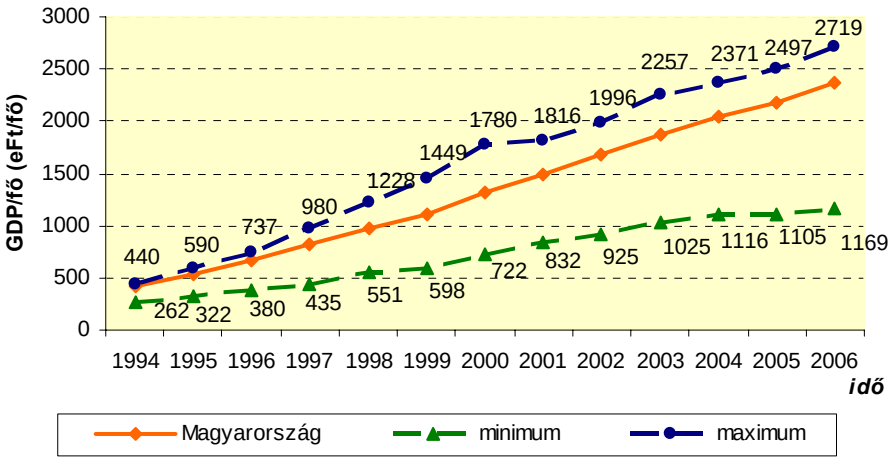

Figure 6. Standard deviation of county per capita GDP in Hungary

Meanwhile the growth rate of counties with outstanding performance as compared to the basis period (6.17) is well in excess of the national average (5.56). Thus it is natural that the range of standard deviation increased, the scissors opened wider (Figure 7).

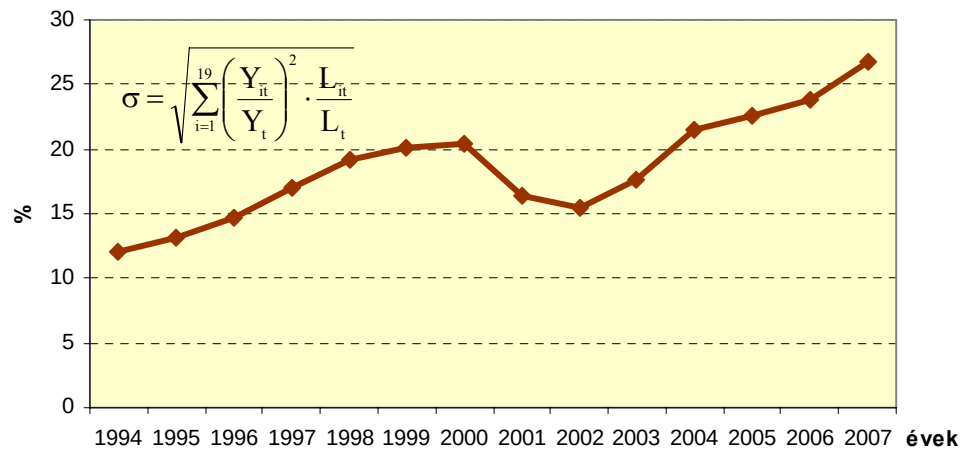

Figure 7. Development of per capita GDP σ-convergence in Hungary

According to the standard deviation of economic performance, Hungary became split into three parts. The lagging behind of Szabolcs-Szatmár-Bereg county seems to be permanent. The situation of Borsod-Abaúj-Zemplén county is somewhat better, but no real improvement can be perceived (Figure 8).

Table 2. Changes in per capita GDP (thousand HUF/person) in Hungary

County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Pest	324	394	487	643	760	894	1 035	1 309	1 493	1 678	1 816	1 949	2 018
Fejér	410	542	696	980	1228	1283	1 577	1 561	1 596	1 782	2 009	2 091	2 292
Komárom-Esztergom	341	471	599	716	827	918	1 104	1 397	1 561	1 997	2 282	2 497	2 426
Veszprém	339	460	543	669	795	901	1 115	1 262	1 343	1 483	1 606	1 633	1 713
Győr-Moson-Sopron	440	590	737	905	1182	1449	1 780	1 816	1 996	2 257	2 371	2 430	2 719
Vas	439	581	734	951	1150	1317	1 517	1 529	1 679	1 985	2 067	2 068	2 332
Zala	401	496	620	751	881	989	1 122	1 310	1 472	1 754	1 875	1 871	1 878
Baranya	356	433	518	662	769	868	1 005	1 122	1 258	1 401	1 516	1 584	1 702
Somogy	325	413	498	579	672	760	911	1 058	1 158	1 301	1 421	1 439	1 469
Tolna	401	497	600	690	838	978	1 092	1 206	1 342	1 345	1 457	1 512	1 593
Borsod-Abaúj-Zemplén	299	410	468	570	670	736	851	950	1 054	1 182	1 371	1 499	1 563
Heves	310	405	493	599	716	805	946	1 113	1 250	1 398	1 523	1 528	1 626
Nógrád	263	322	380	435	553	605	722	832	925	1 025	1 116	1 105	1 169
Hajdú-Bihar	353	421	521	632	741	794	963	1 126	1 249	1 435	1 564	1 620	1 698
Jász-Nagykun-Szolnok	335	419	503	620	704	745	894	1 062	1 152	1 239	1 327	1 358	1 542
Szabolcs-Szatmár-Bereg	262	327	391	474	551	598	731	847	934	1 069	1 167	1 196	1 257
Bács-Kiskun	329	425	502	602	696	769	916	1 038	1 178	1 280	1 434	1 466	1 567
Békés	338	422	507	590	673	750	893	985	1 069	1 158	1 263	1 302	1 359
Csongrád	402	503	614	737	864	947	1 110	1 195	1 327	1 465	1 607	1 670	1 744
Average in Hungary	**425**	**544**	**669**	**830**	**983**	**1113**	**1 325**	**1 499**	**1 691**	**1 870**	**2 050**	**2 185**	**2 363**
minimum	**262**	**322**	**380**	**435**	**551**	**598**	**722**	**832**	**925**	**1025**	**1116**	**1105**	**1169**
maximum	**440**	**590**	**737**	**980**	**1228**	**1449**	**1780**	**1816**	**1996**	**2257**	**2371**	**2497**	**2719**
standard deviation	50,98183	71,09075	98,15695	140,7276	187,751	223,4005	271,0971	244,7015	261,7051	329,5011	349,121	375	402,5
relative variance	0,119957	0,130682	0,146722	0,169551	0,190998	0,200719	0,204602	0,163243	0,154764	0,176204	0,170303	0,172	0,17

Source: KSH.

Table 3.Range of per capita GDP standard deviation and changes in relative variance

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Hungary	425	544	669	830	983	1113	1325	1499	1691	1870	2050	2185	2363
minimum	262	322	380	435	551	598	722	832	925	1025	1116	1105	1169
maximum	440	590	737	980	1228	1449	1780	1816	1996	2257	2371	2497	2719
relative variance	11,99572	13,06815	14,67219	16,95513	19,09979	20,07193	20,46015	16,32432	15,47635	17,62038	17,03029	17,16	17,03

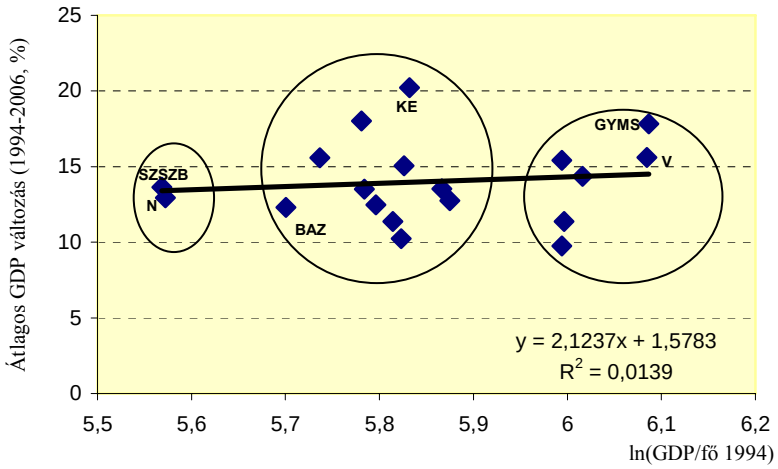

Figure 8. Convergence clubs of counties in Hungary

Impact of European Union subsidies on regional convergence

Already the first works on economic growth raised the question of what role governments played in generating growth and of what capacities governments had that the private sphere did not.

The 1950s and 1960s (the golden age of state intervention) was pervaded by a naive approach to the operation of governments. Explicitly or not, the supposition was entertained that the public sector served the advancement of social welfare with each of its acts. Therefore hunting for annuities played an insignificant role in the motivation of political decision makers and executives. It was thought that the public sector formed a monolithic unity, economic decisions were reasonable to understand and there could be no inconsistencies between the policies.

The consistency of the individual steps in economic policy was regarded as given not only in space, but in time as well. Therefore the political time horizons of governments were believed to be sufficiently long for the decisions of the present not to enter into conflict with those to be employed by the future governments.

However, these conflicts may well arise either as a result of errors, or they may originate from political considerations as well (e.g. winning the elections to come) that urge governments in the short term to choose alternatives that are obviously incompatible with long-term objectives.

It was also taken at face value that economic policy decisions were reversible. Civil servants could be dismissed when they were no longer needed, or after the objectives strived for were achieved, entitlements could be automatically eliminated, etc. Conversely, we know today that it is much easier to increase entitlements than to decrease them, or that it is much easier to hire than to fire civil servants.

Finally mention must be made of the misconception that the instruments of economic policy are completely under the control of decision makers, and they in turn can rely on a honest and efficient civil servant body, which executes all the decisions made at a higher level in an objective and efficient way. It is sufficient to refer here to corruption, the problem of employer and agent, or the hunt for annuities – the relevant literature is also the product of the past years.

Experience has shown that this romantic or idealised image is far from reality. Actually the public sector is not monolithic, but consists of a number of political centres with conflicting

interests and thinking, which are not necessarily governed by the same conception of public interest; the economic policies followed by them are not necessarily consistent in space and time; while it may easily happen that they are hunters for annuities and are under the influence of various groups of interests; it is also possible that those making some of the economic political decisions ignore how the economy works in reality; there may be employer-agent problems present; measures may be irreversible; bureaucracies may have low efficiency and/or be possibly corrupt (or both).

The fundamental objective of the cohesion policy of the European Union is to achieve the convergence of regions with low performance. It follows that subsidisation is only efficient if it generates surplus output (as compared to the condition without subsidies).
The literature makes the impact of surplus performance contingent on the efficiency of the operation of the system of institutions and on that of utilisation.
Empirical studies and analyses verify in this respect as well that there are considerable differences between the member states. Side by side with obviously positive examples, low absorption capacity is not infrequent. Unfortunately, this is what was typical of the first two years following Hungary's accession (2004-2006) (Table 4).

Table 4. Impact of subsidies on increase in GDP

Country	**GDP/EU* subsidy**	**Contribution to increase in GDP (%)**		
		1989-1993	**1994-1999**	**2000-2006**
Portugal	~ 3 %	3,9	4,6	6,1
Spain	~ 1,5 %	2,9	3,1	4,2
Greece	~ 2,6 %	4,3	5,6	6,1
Ireland	~ 2,8 %	n.a.	8,9	8,6
Hungary	~ 2,1 %	-	-	1,2**

Notes: * AGENDA 2000 (max. 4 %)
** in 2004-2006
Source: The Role of Fiscal Transfers for Regional Economic Convergence in Europe (No.1029.2009.)

Although the experience of two years is hardly suitable for drawing far-reaching consequences, it can be seen clearly that the impact of subsidies arriving in Hungary on GDP growth lags behind the EU average. This has or may have a number of causes:

- the political 'brainstorming' present in resource allocation.
- the majority of EU funds arriving in the Hungarian convergence regions (60-65 %) has the one-time effect of increasing demand or of improving community infrastructure, and not of strengthening the economic potential, including a high proportion of 'soft projects'.
- Resource allocation happens on the basis of political (partial) interests, and the majority of resources is not spent on investments supporting long-term convergence, thus their impact is also weaker.
- Resources are not additive, but substitute in character. In the majority of cases they do not appear as additional funds, but replace previous own investments.

Table 5. Working capital imports of selected countries against the working capital imports of the world and of EU-27 in 1998-2007 (%)

		1998	1990	2000	2001	2002	2003	2004	2005	2006	2007	Vál-tozás
the Czech Republic	Against the world	0,53	0,58	0,36	0,68	1,36	0,37	0,69	1,22	0,43	0,50	-0,03
	Against EU-27	1,31	1,25	0,71	1,47	2,74	0,81	2,32	2,34	1,07	1,13	-0,18
Estonia	Against the world	0,08	0,03	0,03	0,07	0,05	0,16	0,14	0,30	0,12	0,14	0,05
	Against EU-27	0,20	0,06	0,06	0,14	0,09	0,35	0,45	0,58	0,30	0,31	0,10
Poland	Against the world	0,90	0,67	0,67	0,69	0,66	0,82	1,82	1,08	1,36	0,96	0,06
	Against EU-27	2,24	1,44	1,34	1,49	1,34	1,77	6,11	2,08	3,41	2,19	-0,06
Hungary	Against the world	0,47	0,30	0,20	0,48	0,48	0,38	0,63	0,80	0,48	0,30	-0,17
	Against EU-27	1,18	0,66	0,40	1,03	0,97	0,82	2,10	1,55	1,21	0,69	-0,48

Source: UNCTAD working capital database

On the shortcomings hindering regional convergence

In spite of the subsidies of the past years, the economic performance of the Hungarian regions lags behind (at various rates from time to time) what we have hoped for; divergence rather than convergence has emerged. The causes are complex. Beyond the conditions for nominal and real convergence, the moral foundations are lacking, which has a fundamental influence on the room for manoeuvring of the former.

A regional level convergence program seems to be virtual. Part of the subsidies (resulting from the types of the programs) is used for 'political scenic plans'. It is only an extraordinarily small proportion (hardly verifiable) that attempts to change the economic structure. As long as there is no intention in the political elite to change this, hardly any advance of merit can be expected.

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