Economic Growth Paths in the CEE Countries and in Selected Emerging Economies, 1993–2007

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Abstract

This paper presents an empirical analysis of the economic growth paths in two groups of countries. The first group consists of ten Central and Eastern European (CEE) countries. The second group constitutes a benchmark and encompasses 29 emerging economies in other regions of the world. Our analysis covers the period 1993-2007. We aim to compare the growth paths of the CEE countries and the reference emerging economies. We use two econometric methods: income-level convergence analysis and growth accounting exercise. The main findings are as follows. (1) The individual CEE countries and the CEE-10 group, as a whole, displayed a relatively rapid economic growth, compared with the remaining 29 emerging economies. (2) Our analysis does not confirm that fast economic growth of the CEE-10 countries (in comparison with the other emerging economies) resulted from the mechanism of absolute convergence. There were signs, however, that the former group was subject to a conditional beta convergence. (3) Rapid economic growth of the CEE-10 countries has been driven to a large extent by the increase of total factor productivity (TFP).

1. Introduction

In this article, we embark on an empirical study of the economic growth paths in two groups of countries. The first group consists of ten Central and Eastern European new members of the enlarged European Union (CEE-10): Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The second group constitutes a reference or benchmark and encompasses 29 emerging economies in other regions of the world that, in 1993, exhibited per capita income comparable to that of the CEE area. In particular, we include in our sample the following countries, classified into five geographical subgroups:

- 5 former socialist or transition economies (PS-5): Belarus, Croatia, Macedonia, Russia, and Ukraine;
- 4 countries from the Middle East (ME-4): Iran, Lebanon, Oman, and Turkey;
- 4 East-Asian countries (ASIA-4): Korea, Malaysia, Taiwan, and Thailand;
- 11 Latin American countries (AM-11): Argentina, Brazil, Chile, Colombia, Ecuador, Jamaica, Mexico, Panama, Peru, Uruguay, and Venezuela;
- 5 African countries (AFR-5): Algeria, Botswana, Gabon, Libya, and South Africa.

Our analysis covers the period 1993-2007.

We aim to check whether the growth paths of the CEE countries were similar or different to the growth trajectories of the reference emerging economies. The comparison of these two groups will enable an assessment, i.a. of the effects of systemic transformation process in former communist economies and will shed some light on the impact of the "integration anchor" related to their EU accession. The differences between the two groups involved may also be attributed to diverging features of their institutional frameworks.

The comparison of the CEE countries with the benchmark emerging economies may be seen as the value added of our research. Despite many empirical studies of economic growth paths in the CEE countries and in the enlarged EU, including our own (see e.g. Madden and Savage, 1998; Liberda et al., 2002; Mencinger, 2003; Welfe et al., 2005; Rogut and Roszkowska, 2006; Tokarski, 2006; Rapacki, 2007, 2009), we have encountered very few comparative analyses of the CEE countries and other emerging economies (rare exceptions include e.g. Schadler et al., 2006).

Our study consists of two parts. In the first part (sections 2 and 3), we provide an empirical picture of the economic growth paths in the two groups involved, with a view to highlight the pertinent similarities and differences. This part of the study also comprises the econometric analysis of real convergence. Two kinds of income-level convergence are tested: β-convergence (both absolute and conditional) and σ-convergence.

In the second part of the research (section 4) we decompose the annual economic growth rates of the countries concerned using the standard procedure of economic growth accounting. We aim to find out what part of economic growth results from labour and capital accumulation and what proportion may be attributed to the increase in total factor productivity (TFP). We are especially interested in answering the question whether the growth rates of TFP in the CEE countries were similar or different from those prevailing in the reference emerging economies.

The article consists of five sections. Section 1 is this introduction. Sections 2 to 4 present the results of our empirical research. Section 5 concludes.

2. The Empirical Picture of Economic Growth Paths

The empirical picture of economic growth paths encompasses two variables. The first one is the growth rate of real GDP per capita at PPP (in constant 2000 US dollars) during 1993-2007.[1] It is calculated as the difference between the 2007 and 1993 log GDP per capita at PPP levels (in constant prices), and divided by the number of years in order to express the yearly growth rate. The second variable is the average annual growth rate of total real GDP (in constant prices), calculated as the geometric average of the annual GDP growth rates for the period 1994-2007. GDP statistics come from the International Monetary Fund (IMF, 2008).

Both variables involved can be used as measures of the pace of economic growth. The differences between them concern the following aspects: the total population, price levels, and exchange rates. For several countries included in our sample, these differences become significant. For example, the analysed group of 39 countries is very heterogeneous in terms of demographic growth. In most transition economies (CEE-10 and PS-5) the total population decreased between 1993 and 2007. The largest decline occurred in Latvia (by 15%), Ukraine (12%), Estonia (11%), Lithuania (11%), and Bulgaria (10%). On the other hand, population increased considerably in Gabon (by 41%), Malaysia (37%), and Panama, Libya, and Venezuela (32%). Such huge discrepancies in demographic trends imply that changes in the level of total income may considerably diverge from its behaviour expressed in per capita terms.

The analysed group is also heterogeneous as regards the changes (trends) in both exchange rates and price levels. To show this, below we provide some data on the behaviour of the real effective exchange rate, which is a measure entailing both nominal exchange rates and price levels. The data comes from the IMF (2009). For example, during 2002-2008, the real effective exchange rate appreciated by only 0.5% annually in Macedonia, 2-2.5% in Croatia, Ukraine, and Poland, 4-5% in Hungary, Romania, Czech Republic, and Bulgaria, 7% in Russia, and 8.5% in Slovakia. Due to these huge differences in the scale of real appreciation, the GDP growth rates based on official exchange rates may diverge from those based on PPP.

We use two measures of economic growth because both of them are simultaneously applied in economics. In the convergence analysis, carried out in the next section, the growth rate of the real GDP per capita at PPP is used; whereas, in the growth accounting exercise, presented in section 4, the growth rate of total real GDP is applied.

Before discussing the results, let us focus on the period covered by our study in order to avoid possible misinterpretations of our findings. Our research covers the period 1993-2007, which is to say that we compare income levels between 1993 and 2007. Thus, the growth rate of GDP per capita at PPP is calculated as the difference between the 1993 and 2007 per capita income levels. However, when considering annual growth rates of total real GDP, we calculate the averages for the years 1994-2007. This is because the growth rate for 1994 shows the change in real GDP between 1993 and 1994. If we included the real GDP growth rate for 1993, we would analyse GDP changes between 1992 and 2007, i.e. different time horizon. In the rest of the paper, we always mention the years 1993-2007 as the reference period, assuming the reader is well aware of the above details.

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[1] We used GDP deflator for the United States to convert current US dollars (at PPP) into constant 2000 US dollars (at PPP).

Figure 1. Economic Growth in 39 Emerging Countries, 1993–2007 (in percent)

Real GDP per capita at PPP growth rate   Real GDP growth rate

Source: Authors' calculations

Figure 1 shows the average annual economic growth rates between 1993 and 2007 for all 39 analysed countries, as well as for the six subgroups (CEE-10, PS-5, ME-4, ASIA-4, AM-11, and AFR-5). The subgroup averages are non-weighted. Economic growth rates are measured by two indices: the growth rate of real GDP per capita at PPP and the growth rate of total real GDP.

The CEE-10 countries performed very well in regards to the growth rate of real GDP per capita at PPP. The highest growth rates during 1993-2007 were recorded in the Baltic states: Latvia (7.3% annually), Estonia (7.0%), and Lithuania (5.6%). Four other countries, Slovakia, Poland, Slovenia, and Hungary, also displayed relatively high growth rates.

The CEE-10 group, as a whole, grew in the period 1993-2007, at an annual rate of 4.7% on average (non-weighted). None of the other groups of countries in our sample achieved such a fast growth of real GDP per capita at PPP. In the latter category, the group of East Asian countries (ASIA-4) was the best performer, with the average growth rate of 3.7% annually. Five other transition economies (PS-5) grew at the rate of 3.0% on average. The economic growth rate of Middle East countries (ME-4) amounted to 2.6%; whereas, that of the Latin American group (AM-11) – to 1.9%. The slowest economic growth was experienced in African countries (AFR-5) – 1.6% on average.

As regards the growth rate of total real GDP, the individual CEE-10 countries also performed well relative to other emerging economies, but the differences tended to be smaller than in the case of economic growth in per capita terms. Among the CEE-10 countries, the Baltic states (except Lithuania) exhibited again the highest growth rates during 1993-2007. The total real GDP in Estonia and Latvia rose by 6.4% annually. On the other hand, it was Romania (3.3%) and Bulgaria (2.1%) who displayed the slowest GDP dynamics.

The CEE-10 group, as a whole, recorded an average total real GDP growth rate of 4.5% annually during the same period. This is not a particularly impressive outcome if compared with the other benchmark groups in our sample. The fastest growing group in the latter category was ASIA-4, whose GDP was augmented by 4.9% per annum on average. The ME-4 countries grew at the rate of 4.1%, that is only slightly less than the CEE-10 economies. The AM-11 and AFR-5 groups displayed a moderate economic growth of about 3.5%. The poorest growth performer in terms of total real GDP was the PS-5 group.

The foregoing results indicate that various measures of economic growth yield different conclusions concerning the changes in income levels. On the one hand, in most transition countries (CEE-10 and PS-5 groups) the growth rates of real GDP per capita at PPP show more optimistic outcomes than total real GDP growth indices. On the other hand, in all the remaining economies, the growth performance measured by GDP per capita at PPP tended to be much worse than that expressed in terms of total real GDP. For example, in the Baltic states, Ukraine, and Bulgaria the average growth rate of GDP per capita at PPP exceeds by more than a 0.5 percentage point the average growth rate of total real GDP; while in Gabon, Malaysia, Libya, Panama, and Venezuela the former index is by at least 2 percentage points lower than the latter. The extreme cases are Gabon and Libya as they experienced a fall of GDP per capita at PPP. The above discrepancies stem i.a. from a declining total population in transition countries during 1993-2007. As a result, the increase of per capita income was greater than that of total income. This phenomenon was enhanced by the strong currency appreciation in transition economies. As a derivative, the rise in income expressed in US dollars was greater than that expressed in national currency. Both these effects (a decrease in the number of population and the currency appreciation) implied that growth rates of

GDP per capita at PPP in former socialist economies tended, as a rule, to exceed the growth rates of total real GDP.

Summing up, the CEE-10 countries recorded a faster economic growth compared to the remaining emerging economies during 1993-2007. What are the underlying reasons for this performance? We expect that high growth rates of the CEE-10 countries were, to a large extent, caused by institutional factors, associated with systemic transformation, the progress of market (structural) reforms, and the increasing scope of economic freedom. The most significant reforms that stimulated economic growth of the CEE countries comprised i.a. privatisation of state-owned enterprises, enterprise restructuring, promoting competition, investments in infrastructure, price liberalisation, public finance reforms, financial sector and capital market development, and the liberalisation of international trade and the forex market. All of these changes were closely linked with the prospects of the EU enlargement and the subsequent accession of the CEE countries to the EU, which may be treated as the effect of an "integration anchor". Moreover, the EU policy aimed at diminishing the existing disparities in development levels, e.g. the EU aid and structural funds flowing into the CEE countries, also contributed to an accelerated economic growth of the CEE area.

In the next section, we will address the following issue: to what extent the growth rate of the countries concerned was influenced by income level differentials in the starting year (this is to say that we will verify the convergence hypothesis)? In section 4, we will try to explain whether the high growth rate of the CEE countries (and the other emerging economies) resulted mainly from accumulation of measurable inputs (labour and capital) or from the increase in total factor productivity (TFP).

3. Income–Level Convergence

3.1. Theoretical Framework

The theoretical background for income-level convergence can be found in economic growth models. Neoclassical models of economic growth (e.g. Solow, 1956; Mankiw et al., 1992) confirm the conditional β-convergence. The latter implies that less-developed economies tend to grow faster than more-developed ones when all the economies strive to reach the same steady state. We will explain the concept of β-convergence using the basic Solow model.

In the Solow model, the equation which describes the drive of the economy towards a steady-state (in discrete time) is:

$$\frac{\Delta k_t}{k_t} = s k_t^{\alpha-1} - (n + a + \delta) \quad , \tag{1}$$

where: k_t – capital per unit of effective labour in year t, Δk_t – change of k_t between years t and $t - 1$, n – growth rate of population, a – rate of exogenous technical progress, δ – rate of capital depreciation, s – saving rate. We have assumed the Cobb-Douglas production function: $f(k_t) = k_t^{\alpha}$ ($0 < \alpha < 1$). Since output is proportional to capital, a similar equation characterises the dynamics of GDP per unit of effective labour.

The graphical analysis of equation (1) is the best way to illustrate the convergence hypothesis. This is shown in Figure 2a. The growth rate equals the vertical distance between the curve $s k_t^{\alpha-1}$ and the line $n + a + \delta$. As we can see, the economy starting from the capital level k_0 and reaching the steady-state capital value k^* will reveal a decreasing rate of economic growth.

Figure 2. Economic Growth in the Solow Model
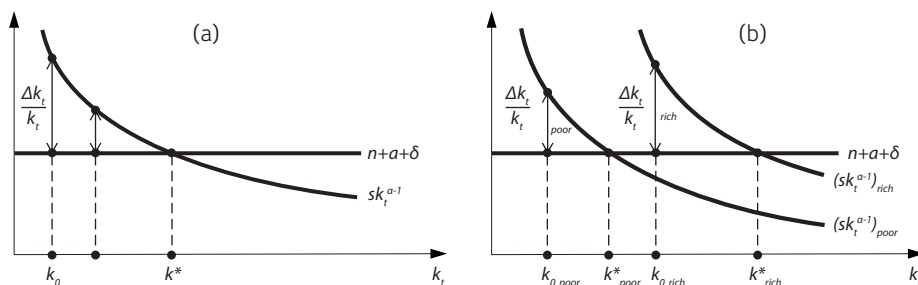
Source: Authors' calculations

The convergence is conditional because it is limited to a situation when both economies tend to reach the same steady-state. Let us consider two countries: a poor one and a rich one, with different saving rates. Since the saving rate in the rich country is higher, the steady-state value of capital in the rich country is also higher than in the poor country. This is shown in Figure 2b. Although the rich country starts from a higher capital level, it displays a more rapid growth, because it approaches a different steady-state than the poor country. In this case, both economies will not converge.

An important target of empirical research boils down to estimating the value of parameter *β,* which measures the speed of convergence towards the steady-state, according to the following equation, presented in discrete time:

$$\frac{\Delta y_t}{y_t} = \beta \left(\ln y^* - \ln y_t \right), \tag{2}$$

where: y_t – output per unit of effective labour in year t, Δy_t – change of y_t between years t and $t - 1$, y^* – output per unit of effective labour in the steady-state.[2] The parameter β explains what part of the distance towards the steady-state the economy is covering during one period (year). For example, if $\beta = 0.02$, the economy covers 2% of the distance annually.

Another measure of convergence is σ-convergence. σ-convergence occurs when income differentiation between economies concerned decreases over time. Income differentiation can be measured by standard deviation, variance, or a coefficient of variation of GDP per capita levels.

β-convergence is a necessary but insufficient condition for σ-convergence. Thus, it is possible that income differentiation between economies increases over time and a less-developed economy exhibits a higher rate of economic growth.

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[2] Equation (2) includes y^*, i.e. the steady-state level of output, which is unknown by definition. This does not mean, however, that we are not able to estimate the β-coefficient in the empirical research. The theoretical model of convergence assumes that the rate of economic growth diminishes with output and, eventually, it becomes zero. Thus, if we plot the rate of economic growth against the income level and then extrapolate the trend, we will be able to estimate the level of output that corresponds to a zero-growth rate and is compatible with the theoretical concept of steady-state. Hence, β-coefficient can be measured using the empirical data.

Before presenting the results, let us discuss briefly the theoretical pros and cons of the possible convergence tendencies in the countries involved. We are aware of the fact that the analysed group is largely heterogeneous and that will be proved later in subsection 3.3. Nevertheless, the catching-up process among these economies may take place. The main argument behind the convergence hypothesis is the diminishing marginal product of the inputs employed. The countries where the capital is scarce reveal higher returns to capital. It stimulates the inflow of FDI and – as a result – faster economic growth. If the analysed group revealed the convergence tendencies, we could conclude that initial differences in the level of physical capital (and income) were significant enough to affect the pace of economic growth.

3.2. Data and Calculations

We analyse two types of β-convergence: absolute (unconditional) and conditional. With a view to verify the absolute β-convergence hypothesis, we estimate the following regression equation:

$$\frac{1}{T}\ln\frac{y_T}{y_0} = \alpha_0 + \alpha_1 \ln y_0 \ . \tag{3}$$

The explained variable is the average annual growth rate of real GDP per capita at PPP between period T and 0 while the explanatory variable is the log of the GDP per capita level in the initial period. If parameter α_1 is negative and statistically significant, β-convergence exists. In such a case, we can calculate the value of coefficient β, which measures the speed of convergence, from:

$$\beta = -\frac{1}{T}\ln(1 + \alpha_1 T). \tag{4}$$

To verify the conditional β-convergence hypothesis, we extend the regression equation (3) for control variables that represent the differences in steady-states between countries:

$$\frac{1}{T}\ln\frac{y_T}{y_0} = \alpha_0 + \alpha_1 \ln y_0 + \sum_{k=1}^{n}\phi_k X_k \ , \tag{5}$$

where X_k is a vector of control variables. A negative and statistically significant value of parameter α_1 indicates the existence of β-convergence.

In order to verify the σ-convergence hypothesis, we estimate the trend line of dispersion in income levels between countries:

$$\mathrm{sd}(\ln y_t) = \alpha_0 + \alpha_1 t \ . \tag{6}$$

The explained variable is the standard deviation of log GDP per capita levels between the economies involved, while the explanatory variable is the time variable ($t = 1,\ldots,15$ for the period 1993-2007). If parameter α_1 is negative and statistically significant, σ-convergence takes place.

3.3. Results

Table 1 shows the regression results for absolute β-convergence among all the 39 emerging economies; between the six groups of countries singled out (all the averages are non-

weighted); and among the countries within each group. The calculations were conducted for the whole period – 1993-2007. The table includes the estimated coefficients with t-statistics and p-values as well as F-statistics and R-square. The bottom part of the table indicates whether β-convergence hypothesis has been confirmed by our model (answer "yes" appears if α_1 parameter is negative and statistically significant). If β-convergence is confirmed, the last row shows the value of β-coefficient calculated according to equation (4).

Figure 3 provides the graphical picture of our results for β-convergence among the 39 countries. The growth rate of real GDP per capita at PPP over the period 1993-2007 is plotted on the vertical axis and the log 1993 GDP per capita level is plotted on the horizontal axis. The individual CEE-10 countries are marked by squares, and the remaining countries – by appropriate symbols depending on the group.

Based on our findings, it can be claimed that the group of 39 emerging economies has not been developing in line with the absolute β-convergence hypothesis between 1993 and 2007. As a matter of fact, the slope of the trend line is negative but completely insignificant (p-value equals 0.485). The R-square coefficient of only 1% indicates that the trend line does not fit the empirical points at all. Among the relatively poor economies in 1993, we can find those that grew rapidly (e.g. Latvia and Estonia), those that displayed a moderate economic growth (e.g. Belarus, Peru, and Thailand), and those whose economies rose very slowly (Algeria, Ecuador, and Ukraine). A similar pattern can be traced among the countries that were relatively rich in 1993. These results indicate that it was not the mechanism of absolute convergence that could explain the economic growth differentials in the countries concerned.

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Table 1. Regression Results for Absolute β-Convergence: Different Samples of Countries, 1993–2007

	All 39 countries	Six groups	10 CEE countries	5 PS countries	4 ME countries	4 ASIA countries	11 AM countries	5 AFR countries
	0.0834	−0.0940	0.2451	−0.0017	0.0422	−0.0729	0.1524	0.2932
Constant	1.10	−0.27	1.83	0.00	0.49	−2.07	1.41	1.47
	0.279	0.799	0.104	0.997	0.674	0.174	0.191	0.237
	−0.0060	0.0137	−0.0221	0.0036	−0.0018	0.0121	−0.0152	−0.0310
Log of 1993 GDP per capita at PPP	−0.71	0.36	−1.48	0.08	−0.19	3.12	−1.24	−1.39
	0.485	0.739	0.177	0.939	0.868	0.089	0.248	0.258
F statistics	0.50	0.13	2.19	0.01	0.04	9.72	1.53	1.94
p-value for F	0.485	0.739	0.177	0.939	0.868	0.089	0.248	0.258
Number of observations	39	6	10	5	4	4	11	5
R-square − standard	0.0133	0.0309	0.2150	0.0023	0.0174	0.8294	0.1450	0.3932
− adjusted	−0.0134	−0.2114	0.1169	−0.3302	−0.4739	0.7440	0.0500	0.1910
β-convergence	no	no	yes	no	no	no	no	no
β-coefficient	x	x	2.64%	x	x	x	x	x

Note: Dependent variable: The growth rate of real GDP per capita at PPP, 1993–2007.
Cells in the upper part of the table show the estimated coefficients, t-statistics, and p-values.
Method: OLS for cross-sectional data.
Source: Authors' calculations

Figure 3. Real GDP per capita Growth Rate Over the Period 1993–2007 and the Initial GDP per capita Level (39 Countries)
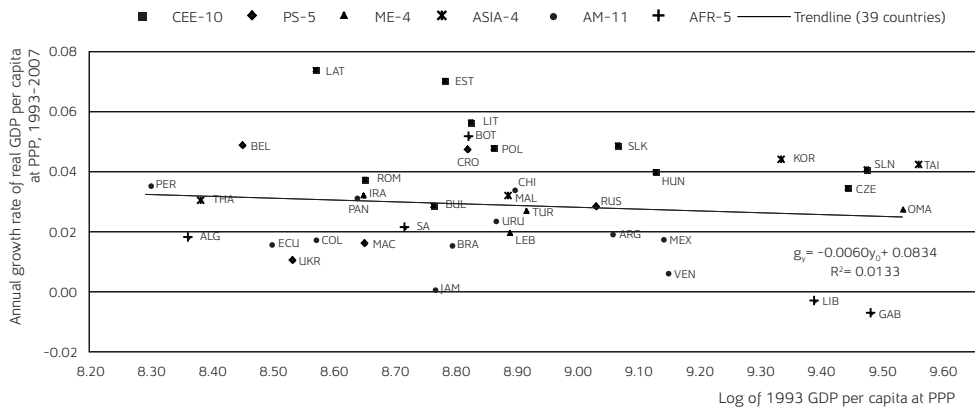
Source: Authors' calculations

The data in Table 1 also demonstrates that the absolute convergence has not occurred between the six groups of countries involved and within these groups, the only exception being the CEE-10 economies that converged at the rate of 2.64% annually. Given this value of coefficient *β,* these countries will need over 25 years to decrease by half their distance towards the common hypothetical steady state (assuming that they will remain on their average GDP growth trajectories observed during 1993-2007). Yet, this is not a fast catching-up process and we should not expect a rapid equalisation of income levels between the CEE-10 countries in the coming years.

To have a full picture of *β*-convergence, we also conducted an analysis of conditional convergence, adding control variables to the regression equation. As a result, we are able to estimate what part of economic growth derives from the pure convergence mechanism, and what part results from the fact that different economies tend to reach different steady-states. In this study, we take into account five control variables: four variables from the World Bank database (investment rate, FDI inflow, tertiary school enrolment ratio, and exports rate), and one qualitative variable compiled by the Heritage Foundation (2009). All variables were calculated as the averages for 1993-2007 (in case of incomplete data, the average covers a shorter period). Due to the lack of data, Taiwan was excluded from the calculations.

We are aware of the fact that the chosen set of explanatory variables is not the only possible solution. The selection of control variables was based on economic theory. We tried to choose the variables that best explain the differences in steady states between the economies concerned. Both the investment rate and the FDI inflow, as well as the school enrolment ratio, explain the differentials in the accumulation of physical and human capital, i.e. two basic factors of production. In turn, the exports' rate measures the openness of an economy and – along with FDI – indicates its capacity to absorb foreign technology; and the index of economic freedom may be interpreted as a proxy for the country's institutional development.

Table 2. Regression Results for Conditional β-Convergence: 38 Countries (Excluding Taiwan), 1993-2007

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	0.0784	0.0821	0.0639	0.0834	0.0716	0.1073
	1.09	1.18	0.92	1.17	0.91	1.34
	0.284	0.246	0.362	0.249	0.367	0.190
Log of 1993 GDP per capita at PPP	−0.0127	−0.0133	−0.0116	−0.0107	−0.0081	−0.0088
	−1.60	−1.75	−1.53	−1.36	−0.94	−0.97
	0.121	0.089	0.135	0.181	0.352	0.338
Gross fixed capital formation (% of GDP)	0.0005	0.0004	0.0009	0.0011	0.0014	
	0.69	0.67	1.47	1.95	2.13	
	0.497	0.509	0.151	0.060	0.040	
Foreign direct investment, net inflows (% of GDP)	0.0003					
	0.25					
	0.802					
School enrolment ratio, tertiary (% gross)	0.0004	0.0004	0.0004	0.0004		
	2.96	3.19	3.17	2.94		
	0.006	0.003	0.003	0.006		
Exports of goods and services (% of GDP)	0.0002	0.0002				
	1.23	1.39				
	0.229	0.174				
Index of economic freedom	0.0005	0.0005	0.0006			
	1.54	1.82	1.93			
	0.134	0.079	0.062			
F statistics	3.72	4.58	5.10	5.14	2.79	0.94
p-value for F	0.007	0.003	0.003	0.005	0.075	0.338
Number of observations	38	38	38	38	38	38
R-square − standard	0.4185	0.4173	0.3820	0.3122	0.1374	0.0255
− adjusted	0.3060	0.3263	0.3071	0.2515	0.0881	−0.0016
β-convergence	yes	yes	yes	yes	no	no
β-coefficient	1.40%	1.47%	1.27%	1.16%	x	x

Note: Dependent variable: The growth rate of real GDP per capita at PPP, 1993-2007.
Explanatory variables were calculated as the averages for 1993-2007 (except for GDP per capita).
Cells in the upper part of the table show the estimated coefficients, t-statistics, and p-values.
Method: OLS for cross-sectional data.
Source: Authors' calculations

Table 2 reports the results of our exercise aimed at verifying the conditional β-convergence hypothesis among all the 38 emerging economies (excluding Taiwan) during 1993-2007. We tested several variants of the model, with different specifications of explanatory variables. Model 1 includes all the control variables. Next, to arrive at variants 2 through 5, we were eliminating the variable that exhibited the poorest significance in statistical or economic

terms. Finally, model 6 includes only one explanatory variable (initial GDP per capita) and it actually boils down to the equation of absolute convergence.

The results in Table 2 give a very interesting picture of the convergence phenomenon in the analysed countries. They confirm the conditional β-convergence among all the 38 emerging economies. In models 1-4, the coefficient on initial income level is negative and statistically significant, which may be interpreted as a proof of convergence. The β parameter of the conditional convergence equals 1.0-1.5%. This indicates a relatively slow catching-up process of emerging economies towards their individual steady-states, compared with a standard 2% speed of conditional convergence reported in the literature.[3] All the control variables included in the equations have a correct sign; moreover, except for variants 5 and 6, the equations display good statistical properties: significant explanatory variables and R-square coefficients of 30-40%. This suggests that the results of the regression analysis are reliable.

Table 3. Regression Results for Absolute Convergence: 39 Countries or 6 Groups, Different Periods

	39 countries			6 groups		
	1993-2007	1993-2000	2000-2007	1993-2007	1993-2000	2000-2007
Constant	0.0834	−0.0421	0.1303	−0.0940	−0.5090	0.0893
	1.10	−0.39	1.66	−0.27	−1.30	0.34
	0.279	0.698	0.106	0.799	0.263	0.753
Log of 1993 GDP per capita at PPP	−0.0060	0.0068	−0.0099	0.0137	0.0590	−0.0055
	−0.71	0.57	−1.14	0.36	1.35	−0.19
	0.485	0.575	0.262	0.739	0.249	0.859
F statistics	0.50	0.32	1.30	0.13	1.82	0.04
p-value for F	0.485	0.575	0.262	0.739	0.249	0.859
Number of observations	39	39	39	6	6	6
R-square − standard	0.0133	0.0086	0.0338	0.0309	0.3126	0.0088
− adjusted	−0.0134	−0.0182	0.0077	−0.2114	0.1408	−0.2390
β-convergence	no	no	no	no	no	no
β-coefficient	x	x	x	x	x	x

Note: Dependent variable: The growth rate of real GDP per capita at PPP.
   Cells in the upper part of the table show the estimated coefficients, t-statistics, and p-values.
   Method: OLS for cross-sectional data.
Source: Authors' calculations

It is also worth explaining how the process of convergence has evolved over time. Table 3 presents the results of our analysis aimed at verifying the hypothesis of absolute β-convergence among the 39 countries and 6 groups over the whole period 1993-2007, as well as two shorter sub-periods: 1993-2000 and 2000-2007.

As we can see, the β-convergence among the 39 emerging economies and between six groups of countries has not been confirmed for both sub-periods either. Moreover, the

[3] For example, Barro and Sala-i-Martin (2004, p. 521) show that the β-coefficient of the conditional convergence for more than 80 countries during 1965-95 equalled 2.5% (per year).

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results for 1993-2000 indicate divergence tendencies rather than convergence trends (for this period the slope of the regression line is positive).

In order to get a full picture of the catching-up process, we also verify the σ-convergence hypothesis. The results are presented in Table 4 and Figure 4. Table 4 shows the estimation of the trend line of standard deviation of log GDP per capita levels between the 39 countries in our sample and between their six groups. The calculations have been carried out for the whole period 1993-2007, as well as for two shorter sub-periods. The last row informs about the occurrence of σ-convergence (the answer would be "yes" if the slope of the trend line were negative and statistically significant). Figure 4 illustrates the tendencies of income differentiation between the 39 countries (the upper curve) and between the six groups (the lower curve) along with the estimated trend lines.

Our results indicate that the emerging economies do not confirm the σ-convergence hypothesis in any of the periods being studied. Income differentiation among the 39 countries and between the six groups involved tended to rise over time. The highest increase of income differences took place in the first part of the analysed period. It is well visible in Figure 4 and confirmed by the regression equations for 1993-2000.

Table 4. Regression Results for σ-Convergence: 39 Countries or 6 Groups, Different Periods

	39 countries			6 groups		
	1993–2007	1993–2000	2000–2007	1993–2007	1993–2000	2000–2007
	0.3637	0.3423	0.3935	0.1844	0.1630	0.2251
Constant	54.25	53.45	121.40	19.90	11.16	56.97
	0.000	0.000	0.000	0.000	0.000	0.000
	0.0026	0.0079	−0.0003	0.0042	0.0094	0.0013
Time	3.46	6.21	−0.54	4.08	3.24	1.60
	0.004	0.001	0.607	0.001	0.018	0.160
F statistics	11.98	38.53	0.30	16.64	10.50	2.57
p–value for F	0.004	0.001	0.607	0.001	0.018	0.160
Number of observations	15	8	8	15	8	8
R-square − standard	0.4796	0.8653	0.0469	0.5614	0.6364	0.2999
− adjusted	0.4396	0.8428	−0.1120	0.5277	0.5758	0.1832
σ-convergence	no	no	no	no	no	no

Note: Dependent variable: Standard deviation of log of real GDP per capita at PPP.
    Explanatory variable: Time (t = 1,2,3,...).
    Cells in the upper part of the table show the estimated coefficients, t-statistics, and p-values.
    Method: OLS.
Source: Authors' calculations

Figure 4. Standard Deviation of GDP Per Capita, 1993–2007
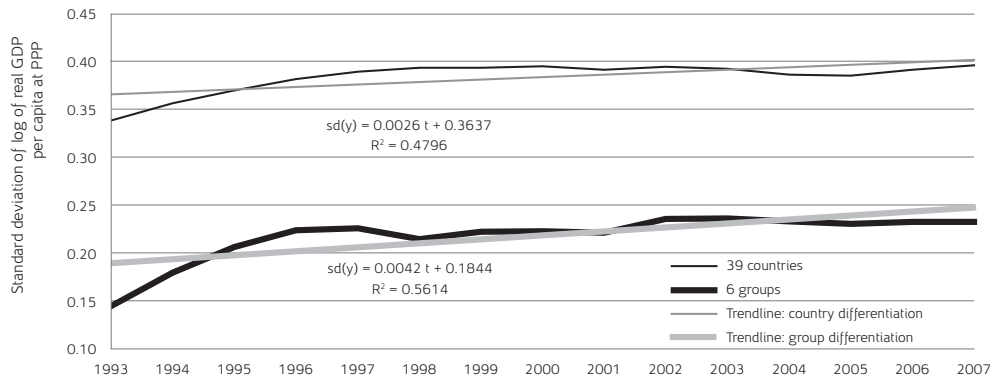
Source: Authors' calculations

Wrapping up, the phenomenon of absolute convergence was not the main factor underlying the rapid economic growth of the CEE-10 countries as compared with the remaining emerging economies in the sample. The present study encompassing 39 countries has not confirmed that less developed economies grew, on average, faster than more developed ones. Moreover, the income differences between the countries involved tended to increase over time. We should emphasise, however, that there is strong evidence of conditional convergence, after controlling for the differences in the countries' individual steady-states.

The main reason why the analysed economies did not converge in absolute terms is the heterogeneity of the entire group. The 39 emerging economies included in our sample exhibit only one common feature: the level of initial per capita income. Other characteristics, including e.g. the structure of an economy, institutional framework, political factors, government policy, the scope of economic freedom, and geographical location, may widely differ from one country to another. Due to a considerable heterogeneity of our sample, the analysed countries have not converged, as the neoclassical theory would predict.

In the next section, we will check to what extent the fast economic growth of the CEE-10 countries can be attributed to the changes in total factor productivity or TFP.

4. Total Factor Productivity

4.1. Theoretical Framework

Total factor productivity (TFP) can be analysed using the growth accounting framework. Growth accounting is based on the decomposition of economic growth initiated by Solow (1957). The starting point for this analysis is the macroeconomic production function of the following general form: $Y = F(A, Z_1, \ldots, Z_n)$, where Y – output (GDP), A – level of technology, $Z_1, \ldots, Z_n$ – measurable factor inputs. Two or three measurable factors are used, as a rule, in the empirical research: labour, physical capital, and sometimes human capital. Our analysis includes two such factors: labour (L) and physical capital (K). Thus, the production function takes the form: $Y = F(A, L, K)$.

In order to break down the rate of economic growth, we differentiate the production function:

$$\frac{\dot{Y}}{Y} = \frac{\frac{\delta F(A,L,K)}{\delta A}A}{Y}\frac{\dot{A}}{A} + \frac{\frac{\delta F(A,L,K)}{\delta L}L}{Y}\frac{\dot{L}}{L} + \frac{\frac{\delta F(A,L,K)}{\delta K}K}{Y}\frac{\dot{K}}{K} \quad . \qquad (7)$$

The above equation shows that the GDP growth rate is the weighted average of the growth rates of three factors: technology, labour, and physical capital. The weights are the factor shares in income, calculated as the marginal factor product (at the social level) multiplied by the quantity of the respective input and divided by the level of output.

We assume the Hicks-neutral technological progress: $F(A,L,K) = A f(L,K)$. For such a production function, the technology share in income, i.e. the expression $(\partial F/\partial A)A/Y$ in equation (7), is simply 1.

With a view to calculate the TFP growth rate empirically, we have to make further assumptions concerning marginal factor products. It is impossible to estimate the marginal product at the social level. Hence, we assume that all markets are perfectly competitive and that there are no externalities. Given these assumptions, the marginal social product of capital $\partial F/\partial K$ equals the price of capital r, and the marginal social product of labour $\partial F/\partial L$ equals the wage rate w. Let s_K be the capital share in income (rK/Y), and s_L – the labour share in income (wL/Y).

Let us assume further that total income is obtained from labour and capital, i.e. $Y = wL + rK$. This yields: $s_K + s_L = 1$.

Given all the above assumptions, the equation (7) can be expressed as:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + s_K \frac{\dot{K}}{K} + (1-s_K)\frac{\dot{L}}{L} \quad . \qquad (8)$$

The above formula is the basic equation in standard growth accounting. From this equation, we can calculate the TFP growth rate as the difference between the GDP growth rate and the weighted average growth rate of labour and physical capital:

$$\text{TFP growth rate} \equiv \frac{\dot{A}}{A} = \frac{\dot{Y}}{Y} - \left[s_K \frac{\dot{K}}{K} + (1-s_K)\frac{\dot{L}}{L} \right]. \qquad (9)$$

4.2. Data and Calculations

The following time series were collected for the purposes of our study: (a) the growth rate of GDP, (b) the growth rate of labour, (c) the growth rate of physical capital. The relevant data were derived from four sources: World Bank (World Bank, 2009), International Monetary Fund (IMF, 2008), International Labour Organization (ILO, 2009), and Penn World Table (Heston et al., 2006).

The growth rate of GDP is the real annual GDP growth rate, based on the IMF data (for the period 1994-2007)[4]. The growth rate of labour input was approximated by the growth rate of employment and calculated based on the ILO data. The amount of physical capital was derived using the perpetual inventory method (started in 1990). We assumed a 5%

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[4] As noted earlier, our analysis covers the period 1993-2007 in the sense that we compare the GDP levels between 1993 and 2007. Thus, while discussing the annual GDP and TFP growth, we include the growth rates for the years 1994-2007. Nevertheless, in the interpretation of the results, we will refer to the period 1993-2007 (as in the convergence analysis) because all parts of our research cover the same time horizon and are fully comparable.

depreciation rate and an initial capital/output ratio of 1.5.[5] The investment variable is represented by gross fixed capital formation from the World Bank data. Since the World Bank data is not available for Taiwan, for the sake of completeness we decided to use the Penn World Table statistics for this country despite the fact that they cover a shorter period. We also assumed that the capital share in income equals 0.3, while the pertinent labour share amounts to 0.7.[6]

The parameters described above were incorporated into the basic variant of the model. However, we also made alternative assumptions while performing the growth accounting exercise, aimed at checking the stability of our results. Subsection 4.4. presents the key findings of the robustness test.

4.3. Results

Table A1, in the Appendix, contains a detailed breakdown of the rate of economic growth. The values in the respective cells show: (a) the growth rate of labour (*L*), physical capital (*K*), TFP, and GDP, (b) the contribution of labour, capital, and TFP to economic growth in percentage points, (c) the contribution of labour, capital, and TFP to economic growth in percent. Figures 5 and 6 sum up the data presented in Table A1. Figure 5 shows the average labour and capital contribution to economic growth (in percentage points), as well as TFP and GDP growth rates in the whole analysed period, 1993-2007, for the individual CEE countries and for the six distinguished groups (all the averages are arithmetic). Figure 6 shows the average labour, capital, and TFP contribution to economic growth (in percent) for the whole period – 1993-2007. The factors' contributions to economic growth presented in Figure 6 are all calculated based on the aggregate statistics shown in Figure 5.

The individual CEE-10 countries displayed a relatively fast growth of TFP. The highest TFP growth rates were recorded in the Baltic states: Latvia – 5.2% on average during 1993-2007, Estonia – 5.1%, and Lithuania – 4.3%. TFP also grew relatively rapidly in Slovakia and Romania (3.2% in both countries), and Poland (3.0%). In the remaining CEE economies the average annual TFP changes did not exceed 3%.

The CEE-10 group, as a whole, exhibited higher TFP growth rates compared with the other groups of emerging economies in our sample. In the CEE-10 group, TFP rose by 3.1% on average between 1993 and 2007. High TFP dynamics were also recorded in other former socialist economies (PS-5) and ASIA-4 groups: 2.0% and 1.7% per annum respectively. The remaining groups of countries experienced much slower TFP changes. In ME-4 and AM-11, total factor productivity exhibited a growth rate of less than 1%, while in the African countries (AFR-5), the TFP declined.

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[5] According to estimates by King and Levine (1994), the capital/output ratio for 24 OECD countries was around 2.5. Since the emerging economies are capital scarce compared with the advanced economies, we decreased the initial capital/output ratio for them to 1.5.

[6] The physical capital share of ca. $^1/_3$ is assumed in most studies (see, e.g., Young, 1994; De Broeck and Koen, 2000). Arbitrary values of factor shares are widely assumed in empirical studies (e.g. King and Levine, 1994; Wang and Yao, 2003; Caselli and Tenreyro, 2005). Wang and Yao (2003) show that different assumptions on factor shares do not yield different outcomes. Caselli and Tenreyro (2005) come to similar conclusions from the models based on both arbitrary and actual factor shares.

Figure 5. Labour, Capital, and TFP Contribution to Economic Growth (in percentage points), 1993–2007
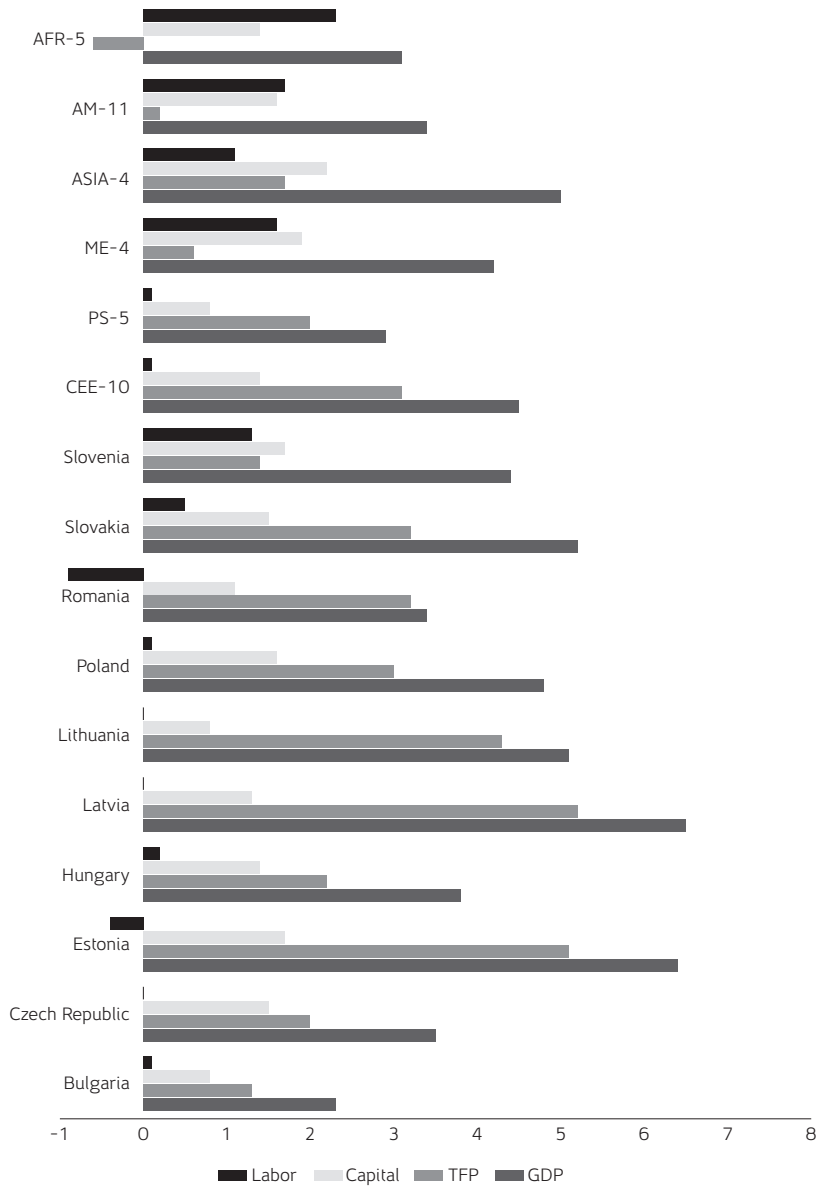
Source: Authors' calculations

Figure 6. Labour, Capital, and TFP Contribution to Economic Growth (in percent), 1993–2007
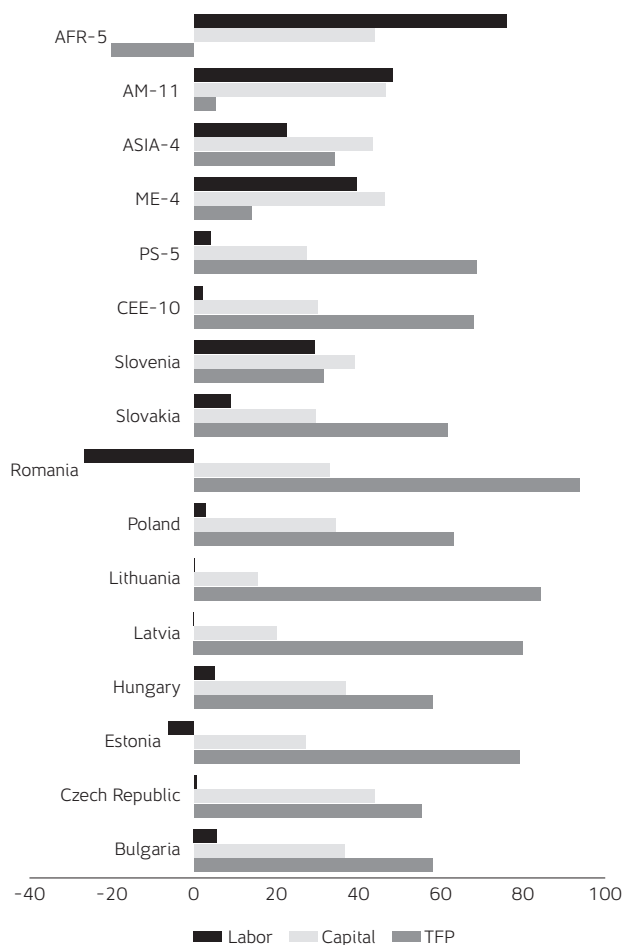
Source: Authors' calculations

High TFP growth rates in individual CEE countries, and in the whole CEE-10 group, imply a high TFP contribution to economic growth. The greatest TFP contribution to economic growth was recorded in the Baltic states (about 80%) and Romania (about 90%). Such high outcomes in Romania can be attributed to the negative growth rate of labour. The remaining CEE-10 economies (except Slovenia) also recorded high TFP contribution to economic growth (ranging between 55% and 65%). Only Slovenia witnessed the lowest TFP contribution of 30%.

The CEE-10 countries performed very well in terms of TFP contribution to economic growth relative to other groups of countries in our sample. Between 1993 and 2007, the CEE-

10 group recorded an average annual GDP growth rate of 4.5% (arithmetic average) and an average annual TFP growth rate of 3.1%, implying a TFP contribution to economic growth at the level of 68%. In this regard, the CEE-10 was only slightly outperformed by the PS-5 countries: there the TFP contribution to economic growth amounted to 69% (however, in the PS-5 group both GDP and TFP growth rates were lower than in the CEE-10 countries). In the remaining four groups of emerging economies (ME-4, ASIA-4, AM-11, and AFR-5), the TFP contribution to economic growth was much lower and did not exceed 35%.

Summing up, the CEE-10 countries perform very well in comparison with five other analysed groups in regards to the changes in total factor productivity. Moreover, as additions to the stock of measurable inputs: labour (and – to a lesser extent – physical capital) only marginally contributed to economic growth in these countries, changes in TFP can be claimed to be one of the most important drivers of an accelerated economic growth of the CEE-10 group compared with the remaining emerging economies.

In our view, the diverging growth patterns in the CEE-10 countries – on the one hand – and other groups of emerging economies – on the other – are not spurious. They are strongly linked with two factors. First, the systemic transformation from a centrally planned to a market economy forced the CEE countries to implement institutional, economic, and political reforms, aimed at a more efficient usage of factors of production; as well as at the liquidation of idle physical capital. As a derivative, fast economic growth could have been sustained without a considerable increase in the stock of measurable inputs. Second, the integration process with the European Union (the so called "integration anchor"), that resulted in liberalisation of labour and capital movements, FDI inflow, structural aid, and significant tariff cuts, stimulated the technology transfer from Western Europe, thus fostering the productivity growth in the CEE countries. Indeed, our own earlier study (Rapacki and Próchniak, 2009) confirmed that the EU enlargement contributed greatly to the economic growth of the CEE countries. The main channels of this effect comprised: FDI, structural reforms, and EU aid.

However, while assessing the role of TFP in the economic growth of transition countries, one should not forget that systemic transformation initially triggered a deep economic slump and the emergence of a major output gap. Under such circumstances, the growth of total factor productivity is more than just a pure effect of technological progress. It also results in part – after overcoming the initial transformation recession – from the increasing use of factors of production (in particular fixed assets) and closing the gap between actual and potential output. It can be argued therefore – what seems to be incompatible with the assumptions of the neoclassical production function – that economic growth in the early stages of transition from a centrally planned to market economy was essentially a blend of three processes: (1) an increase of actual output (faster than the rise of potential output), (2) an increase of potential output (resulting from additions to capital stock) and (3) an increase in total factor productivity as a result of both quantitative and qualitative changes. It was not until the output gap was closed (for example, in Poland it occurred around 1996) that the changes in TFP could be interpreted as a symptom of technological progress and increased efficiency in the transition countries.

We also have to add that the part of TFP growth stemming from higher labour productivity should be treated as the human capital contribution to economic growth rather than that of TFP. However, due to difficulties in estimating the level of human capital, TFP in our study also includes the human capital contribution to economic growth.

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4.4. Robustness

The basic variant of the growth accounting model is based on the following assumptions: the initial capital-output ratio = 1.5, depreciation rate = 5%, and the capital share in income = 0.3. However, in order to verify the stability of our results, we also performed the robustness analysis trying to check to what extent our results depend on the assumed parameters.

We test three other variants of the model, with the following characteristics: the 1st variant assumes the initial capital-output ratio of 3, which is comparable to that prevailing in the OECD (rich) countries; the 2nd variant includes a depreciation rate of 10%; and the 3rd alternative model assumes both the capital and labour shares to be 0.5 (this value is more appropriate for some of the CEE-10 countries, e.g. Poland).

Table 5. Robustness Analysis: Testing the Hypothesis on the Equality of the Average TFP Growth Rates

| Country | Basic model (initial K/Y = 1.5, depreciation rate = 5%, capital share in income = 0.3) versus: | | | | | | | | |
| | Model with initial K/Y = 3 | | | Model with depreciation rate = 10% | | | Model with capital share in income = 0.5 | | |
	Mean: basic variant	Mean: alternative variant	p-value for equality of means	Mean: basic variant	Mean: alternative variant	p-value for equality of means	Mean: basic variant	Mean: alternative variant	p-value for equality of means
Bulgaria	1.3	2.0	0.699	1.3	1.9	0.762	1.3	0.8	0.777
Czech Rep.	2.0	2.7	0.360	2.0	2.6	0.500	2.0	0.9	0.294
Estonia	5.1	5.9	0.454	5.1	5.5	0.702	5.1	3.8	0.288
Hungary	2.2	3.0	0.077*	2.2	2.8	0.234	2.2	1.3	0.045
Latvia	5.2	6.1	0.608	5.2	5.6	0.809	5.2	4.3	0.571
Lithuania	4.3	5.0	0.712	4.3	4.9	0.734	4.3	3.8	0.778
Poland	3.0	3.9	0.166	3.0	3.6	0.378	3.0	2.0	0.076*
Slovakia	3.2	3.9	0.322	3.2	3.8	0.460	3.2	2.3	0.288
Slovenia	1.4	2.3	0.323	1.4	1.9	0.562	1.4	0.6	0.322
Croatia	2.7	3.6	0.434	2.7	3.1	0.692	2.7	1.8	0.443
Russia	2.2	2.8	0.781	2.2	2.9	0.723	2.2	2.0	0.919
Ukraine	0.8	1.4	0.888	0.8	1.6	0.843	0.8	0.6	0.948
Turkey	1.5	2.4	0.705	1.5	2.0	0.829	1.5	0.7	0.722
Korea	2.0	2.7	0.449	2.0	2.5	0.602	2.0	0.6	0.253
Argentina	0.1	1.0	0.708	0.1	0.6	0.814	0.1	−0.6	0.772
Brazil	0.1	0.8	0.241	0.1	0.7	0.335	0.1	−0.2	0.702
Chile	1.7	2.6	0.367	1.7	2.2	0.568	1.7	0.5	0.232
Mexico	0.1	0.9	0.426	0.1	0.7	0.591	0.1	−0.5	0.595
Libya	−3.2	−2.4	0.792	−3.2	−2.4	0.778	−3.2	−2.9	0.905
S. Africa	0.8	1.6	0.497	0.8	1.4	0.601	0.8	0.6	0.810

Note: Null hypothesis (H₀): Avg. 1994–2007 TFP growth rate (basic variant) minus avg. 1994–2007 TFP growth rate (alternative variant) = 0.
* H₀ is rejected at the 10% significance level, meaning that the means are statistically different.
Source: Authors' calculations

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Table 5 summarises the results of the robustness test. For each variant of the model, we calculated the average TFP growth rate and then we compared it with the average TFP growth rate in the basic model. In order to say whether the means are similar or different, we performed the statistical test for the equality of means. The respective p-values are shown in Table 5. For the sake of conciseness, only selected countries are included in the table.

The results indicate that – seen from the statistical angle – the alternative models do not yield different TFP growth rates compared to the basic variant. Low p-values, suggesting different means and the rejection of null hypothesis, appear only twice.

While looking at the data in Table 5 in more detail, we can see that, on the one hand, the values of both the initial capital-output ratio and the depreciation rate assumed in the basic model yield lower TFP growth rates than the alternative models (in general by about 0.5-1.0 percentage point). On the other hand, however, the basic model overestimates the growth of TFP compared to the model based on a higher capital share in income. Yet, all these discrepancies are not large and do not challenge our results discussed in subsection 4.3.

5. Conclusions

The individual CEE countries and the CEE-10 group, as a whole, displayed a relatively rapid economic growth, compared to 29 emerging economies in other regions of the world. During 1993-2007, the CEE-10 group grew at the average annual rate of 4.7% in terms of real GDP per capita at PPP and 4.5% in terms of total real GDP.

Our study does not confirm that fast economic growth of the CEE-10 countries (in comparison with the other emerging economies) resulted from the mechanism of absolute convergence. The 39 countries included in our sample, as well as 6 distinguished groups, have not been developing in line with the hypothesis of absolute β- and σ-convergence, both in the whole period, 1993-2007, and in two shorter sub-periods, i.e. 1993-2000 and 2000-2007. The main reason explaining why the analysed economies did not converge to the same steady-state over time is the heterogeneity of the entire group. However, after controlling for the differences in steady-states, the empirical evidence suggests the existence of conditional š-convergence.

Rapid economic growth of the CEE-10 countries has mostly been driven by the rise in total factor productivity (TFP); as labour and physical capital contributions to economic growth tended to be much smaller. The CEE-10 countries, as a group, exhibited the average annual TFP growth rate of 3.1%. As a result, the TFP contribution to economic growth totalled 68%; whereas that of labour and physical capital were 2% and 30% respectively. The remaining groups of emerging economies recorded lower TFP growth rates (not exceeding 2%) and, except the other former socialist countries, lower TFP contributions to economic growth (below 35%).

In our view, these differences in TFP dynamics have mainly been caused by two factors: (i) the systemic transformation of the CEE countries from a centrally planned to a market economy; (ii) the 'EU factor' or "the integration anchor", due to the accession of the CEE countries to the European Union.

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APPENDIX

Table A1. Labour, Physical Capital, and TFP Contribution to Economic Growth

		1994			1995			1996			1997			1998			1999			2000		
		growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %
Bulgaria	L	−0.8	−0.6	16.2	2.6	1.8	−114.8	−0.1	0.0	0.6	−2.9	−2.0	34.9	−1.2	−0.9	−20.6	−5.1	−3.6	−157.6	−6.7	−4.7	−86.4
	K	1.1	0.3	−9.1	1.5	0.5	−28.8	2.3	0.7	−8.7	0.8	0.2	−3.9	−0.6	−0.2	−4.5	0.4	0.1	5.7	1.4	0.4	8.0
	TFP	−3.4	−3.4	92.9	−3.9	−3.9	243.6	−8.7	−8.7	108.2	−4.0	−4.0	69.0	5.2	5.2	125.1	5.7	5.7	251.9	9.6	9.6	178.4
	GDP	−3.7	−3.7	100.0	−1.6	−1.6	100.0	−8.0	−8.0	100.0	−5.8	−5.8	100.0	4.1	4.1	100.0	2.3	2.3	100.0	5.4	5.4	100.0
Czech Rep.	L	1.0	0.7	21.5	0.6	0.4	6.3	0.1	0.1	1.7	−0.8	−0.6	79.3	−1.5	−1.1	140.8	−2.1	−1.5	−110.2	−0.7	−0.5	−13.4
	K	7.6	2.3	70.8	7.2	2.2	34.2	8.3	2.5	59.6	8.0	2.4	−328.0	6.1	1.8	−242.6	4.8	1.4	107.4	4.1	1.2	33.6
	TFP	0.2	0.2	7.7	3.8	3.8	59.5	1.6	1.6	38.7	−2.5	−2.5	348.7	−1.5	−1.5	201.7	1.4	1.4	102.7	2.9	2.9	79.7
	GDP	3.2	3.2	100.0	6.4	6.4	100.0	4.2	4.2	100.0	−0.7	−0.7	100.0	−0.8	−0.8	100.0	1.3	1.3	100.0	3.6	3.6	100.0
Estonia	L	−3.4	−2.4	146.8	−4.0	−2.8	−56.4	−3.1	−2.2	−43.5	−1.4	−1.0	−9.3	−0.2	−0.1	−2.1	−3.9	−2.7	2005.3	−1.2	−0.8	−8.7
	K	3.9	1.2	−70.8	4.3	1.3	26.1	4.6	1.4	27.5	4.4	1.3	12.3	5.7	1.7	31.7	6.5	1.9	−1433.8	3.7	1.1	11.7
	TFP	−0.4	−0.4	24.0	6.5	6.5	130.3	5.8	5.8	116.1	10.5	10.5	97.0	3.8	3.8	70.4	0.6	0.6	−471.6	9.3	9.3	96.9
	GDP	−1.6	−1.6	100.0	5.0	5.0	100.0	5.0	5.0	100.0	10.8	10.8	100.0	5.4	5.4	100.0	−0.1	−0.1	100.0	9.6	9.6	100.0
Hungary	L	−1.5	−1.0	−35.6	−1.3	−0.9	−27.2	−0.6	−0.4	−29.2	−0.3	−0.2	−4.5	1.3	0.9	18.5	3.3	2.3	55.1	1.4	1.0	19.0
	K	3.9	1.2	39.5	4.4	1.3	38.1	4.1	1.2	91.5	4.4	1.3	29.2	4.8	1.4	29.8	5.4	1.6	39.2	5.4	1.6	31.4
	TFP	2.8	2.8	96.1	3.1	3.1	89.0	0.5	0.5	37.7	3.4	3.4	75.3	2.5	2.5	51.7	0.2	0.2	5.7	2.6	2.6	49.5
	GDP	2.9	2.9	100.0	3.4	3.4	100.0	1.3	1.3	100.0	4.6	4.6	100.0	4.9	4.9	100.0	4.2	4.2	100.0	5.2	5.2	100.0
Latvia	L	−3.7	−2.6	−116.5	2.5	1.8	−85.1	−18.2	−12.7	−329.2	6.3	4.4	52.4	−0.5	−0.4	−7.5	−0.8	−0.6	−17.4	−2.6	−1.8	−26.0
	K	−0.2	−0.1	−2.5	0.3	0.1	−4.8	−0.1	0.0	−1.0	1.1	0.3	4.0	1.8	0.5	11.3	5.2	1.5	47.2	4.3	1.3	18.5
	TFP	4.8	4.8	219.0	−4.0	−4.0	189.9	16.6	16.6	430.3	3.6	3.6	43.6	4.6	4.6	96.2	2.3	2.3	70.2	7.4	7.4	107.5
	GDP	2.2	2.2	100.0	−2.1	−2.1	100.0	3.9	3.9	100.0	8.4	8.4	100.0	4.7	4.7	100.0	3.3	3.3	100.0	6.9	6.9	100.0
Lithuania	L	−1.3	−0.9	9.4	−1.1	−0.8	−64.5	0.1	0.1	1.9	−0.1	0.0	−0.6	1.4	1.0	13.2	−1.3	−0.9	63.3	−5.9	−4.1	−100.3
	K	2.5	0.8	−7.8	1.6	0.5	39.8	1.2	0.4	7.3	1.4	0.4	5.1	2.3	0.7	9.3	3.1	0.9	−62.6	2.1	0.6	15.1
	TFP	−9.6	−9.6	98.4	1.5	1.5	124.6	4.6	4.6	90.9	8.1	8.1	95.4	5.8	5.8	77.5	−1.5	−1.5	99.3	7.6	7.6	185.2
	GDP	−9.8	−9.8	100.0	1.2	1.2	100.0	5.1	5.1	100.0	8.5	8.5	100.0	7.5	7.5	100.0	−1.5	−1.5	100.0	4.1	4.1	100.0
Poland	L	−1.4	−1.0	−19.4	0.1	0.1	1.0	0.9	0.6	9.9	1.1	0.8	11.3	0.6	0.4	8.2	−3.1	−2.2	−48.5	−2.8	−2.0	−46.7
	K	3.7	1.1	21.2	5.0	1.5	22.4	5.0	1.5	24.2	6.3	1.9	26.9	7.9	2.4	47.7	8.5	2.6	56.4	8.2	2.5	57.7
	TFP	5.1	5.1	98.2	5.2	5.2	76.6	4.1	4.1	65.9	4.4	4.4	61.8	2.2	2.2	44.1	4.2	4.2	92.1	3.8	3.8	89.0
	GDP	5.2	5.2	100.0	6.7	6.7	100.0	6.2	6.2	100.0	7.1	7.1	100.0	5.0	5.0	100.0	4.5	4.5	100.0	4.3	4.3	100.0
Romania	L	−0.9	−0.6	−15.3	3.1	2.2	30.6	−2.2	−1.5	−39.1	0.9	0.6	−10.7	−2.1	−1.5	30.9	−0.8	−0.5	45.8	−0.5	−0.4	−17.7
	K	3.3	1.0	25.2	4.5	1.3	18.8	5.2	1.6	39.9	5.9	1.8	−29.1	3.9	1.2	−24.2	2.0	0.6	−52.0	1.6	0.5	22.4
	TFP	3.5	3.5	90.1	3.6	3.6	50.5	3.9	3.9	99.2	−8.5	−8.5	139.8	−4.5	−4.5	93.4	−1.2	−1.2	106.3	2.0	2.0	95.3
	GDP	3.9	3.9	100.0	7.1	7.1	100.0	3.9	3.9	100.0	−6.1	−6.1	100.0	−4.8	−4.8	100.0	−1.2	−1.2	100.0	2.1	2.1	100.0
Slovakia	L	−4.1	−2.9	−46.2	1.6	1.1	19.2	3.6	2.5	40.6	−0.6	−0.4	−8.8	−0.1	−0.1	−2.1	−3.1	−2.2	−8694.9	−1.7	−1.2	−83.8
	K	6.0	1.8	29.0	4.8	1.4	24.5	4.4	1.3	21.2	7.4	2.2	48.2	8.0	2.4	54.2	8.3	2.5	9932.9	5.1	1.5	110.1
	TFP	7.3	7.3	117.3	3.3	3.3	56.3	2.3	2.3	38.2	2.8	2.8	60.6	2.1	2.1	47.9	−0.3	−0.3	−1138.1	1.0	1.0	73.7
	GDP	6.2	6.2	100.0	5.8	5.8	100.0	6.1	6.1	100.0	4.6	4.6	100.0	4.4	4.4	100.0	0.0	0.0	100.0	1.4	1.4	100.0
Slovenia	L	11.9	8.4	157.6	4.3	3.0	72.8	−0.7	−0.5	−12.8	1.9	1.4	28.1	2.1	1.5	38.5	−1.3	−0.9	−17.0	0.2	0.2	3.8
	K	4.3	1.3	24.4	4.9	1.5	35.5	5.8	1.7	46.4	5.8	1.8	36.2	6.4	1.9	49.7	6.6	2.0	36.7	7.2	2.2	53.0
	TFP	−4.3	−4.3	−82.0	−0.3	−0.3	−8.4	2.5	2.5	66.4	1.7	1.7	35.6	0.5	0.5	11.8	4.4	4.4	80.4	1.8	1.8	43.2
	GDP	5.3	5.3	100.0	4.1	4.1	100.0	3.7	3.7	100.0	4.8	4.8	100.0	3.9	3.9	100.0	5.4	5.4	100.0	4.1	4.1	100.0
Belarus	L	−1.1	−0.8	6.8	−1.2	−0.8	7.2	−0.7	−0.5	−17.4	0.2	0.1	1.0	−1.6	−1.1	−13.3	−2.0	−1.4	−41.0	0.8	0.5	9.2
	K	9.6	2.9	−24.6	6.5	2.0	−17.3	2.2	0.7	23.8	1.2	0.4	3.1	3.1	0.9	11.2	3.8	1.1	34.0	3.9	1.2	20.0
	TFP	−13.8	−13.8	117.8	−12.5	−12.5	110.1	2.6	2.6	93.6	11.0	11.0	95.9	8.6	8.6	102.0	3.6	3.6	106.9	4.1	4.1	70.8
	GDP	−11.7	−11.7	100.0	−11.3	−11.3	100.0	2.8	2.8	100.0	11.4	11.4	100.0	8.4	8.4	100.0	3.4	3.4	100.0	5.8	5.8	100.0
Croatia	L	12.5	8.8	148.5	0.0	0.0	0.0	−0.4	−0.3	−4.4	−0.9	−0.6	−9.3	−2.5	−1.7	−68.4	−3.9	−2.7	313.0	−3.7	−2.6	−91.1
	K	1.3	0.4	6.4	0.9	0.3	4.2	2.0	0.6	10.3	4.5	1.4	20.0	6.5	2.0	77.3	5.7	1.7	−197.6	5.0	1.5	52.8
	TFP	−3.2	−3.2	−54.9	6.4	6.4	95.8	5.6	5.6	94.1	6.1	6.1	89.3	2.3	2.3	91.2	0.1	0.1	−15.4	4.0	4.0	138.4
	GDP	5.9	5.9	100.0	6.6	6.6	100.0	5.9	5.9	100.0	6.8	6.8	100.0	2.5	2.5	100.0	−0.9	−0.9	100.0	2.9	2.9	100.0
Macedonia	L	1.9	1.3	−74.6	1.5	1.1	−95.9	−2.4	−1.7	−140.7	−0.6	−0.4	−29.6	2.7	1.9	55.4	3.4	2.3	54.1	1.3	0.9	19.4
	K	2.6	0.8	−42.7	1.7	0.5	−45.1	2.0	0.6	49.4	2.3	0.7	50.5	2.2	0.7	19.5	2.3	0.7	16.1	2.1	0.6	13.9
	TFP	−3.9	−3.9	217.3	−2.7	−2.7	241.0	2.3	2.3	191.3	1.1	1.1	79.1	0.8	0.8	25.1	1.3	1.3	29.8	3.0	3.0	66.7
	GDP	−1.8	−1.8	100.0	−1.1	−1.1	100.0	1.2	1.2	100.0	1.4	1.4	100.0	3.4	3.4	100.0	4.3	4.3	100.0	4.5	4.5	100.0

2001			2002			2003			2004			2005			2006			2007		
growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %
4.4	3.1	75.9	1.4	1.0	22.0	2.4	1.7	33.8	3.1	2.1	32.2	2.2	1.5	24.2	5.0	3.5	55.6	−1.8	−1.2	−20.0
1.9	0.6	14.4	3.2	1.0	21.6	3.3	1.0	19.9	4.0	1.2	18.0	4.8	1.4	22.9	6.7	2.0	31.6	7.5	2.2	36.4
0.4	0.4	9.7	2.5	2.5	56.4	2.3	2.3	46.2	3.3	3.3	49.8	3.3	3.3	52.9	0.8	0.8	12.8	5.1	5.1	83.6
4.1	4.1	100.0	4.5	4.5	100.0	5.0	5.0	100.0	6.6	6.6	100.0	6.2	6.2	100.0	6.3	6.3	100.0	6.2	6.2	100.0
0.5	0.3	13.3	1.0	0.7	37.5	−0.7	−0.5	−14.3	−0.7	−0.5	−10.9	1.0	0.7	10.8	0.9	0.6	9.6	2.1	1.4	22.0
4.4	1.3	53.4	4.2	1.3	66.7	3.8	1.2	32.0	3.6	1.1	23.8	3.4	1.0	16.0	3.3	1.0	14.5	3.5	1.0	15.9
0.8	0.8	33.3	−0.1	−0.1	−4.2	3.0	3.0	82.3	3.9	3.9	87.1	4.6	4.6	73.2	5.2	5.2	76.0	4.1	4.1	62.1
2.5	2.5	100.0	1.9	1.9	100.0	3.6	3.6	100.0	4.5	4.5	100.0	6.3	6.3	100.0	6.8	6.8	100.0	6.6	6.6	100.0
0.2	0.1	1.6	1.9	1.3	16.8	1.5	1.1	14.8	−1.2	−0.8	−10.7	3.8	2.7	29.4	1.1	0.8	7.6	2.1	1.4	22.8
4.7	1.4	18.4	5.2	1.6	20.1	6.7	2.0	28.3	7.5	2.3	29.9	7.2	2.2	23.7	7.3	2.2	21.2	9.0	2.7	42.6
6.1	6.1	80.0	4.9	4.9	63.1	4.0	4.0	56.9	6.1	6.1	80.9	4.3	4.3	46.9	7.4	7.4	71.2	2.2	2.2	34.5
7.7	7.7	100.0	7.8	7.8	100.0	7.1	7.1	100.0	7.5	7.5	100.0	9.2	9.2	100.0	10.4	10.4	100.0	6.3	6.3	100.0
0.2	0.1	2.6	0.1	0.0	0.8	1.5	1.1	25.4	−0.3	−0.2	−4.7	−0.2	−0.1	−3.0	0.5	0.3	8.9	−0.1	−0.1	−7.9
5.0	1.5	36.9	4.9	1.5	33.8	4.9	1.5	35.2	4.4	1.3	27.4	4.6	1.4	33.9	5.0	1.5	38.1	4.1	1.2	93.4
2.5	2.5	60.5	2.9	2.9	65.4	1.6	1.6	39.5	3.7	3.7	77.3	2.8	2.8	69.1	2.1	2.1	53.0	0.2	0.2	14.5
4.1	4.1	100.0	4.4	4.4	100.0	4.2	4.2	100.0	4.8	4.8	100.0	4.1	4.1	100.0	3.9	3.9	100.0	1.3	1.3	100.0
1.4	1.0	11.9	4.9	3.4	53.0	1.7	1.2	16.4	1.3	0.9	10.2	1.7	1.2	11.5	5.5	3.8	31.5	0.4	0.3	2.4
5.0	1.5	18.7	5.6	1.7	25.8	5.2	1.6	21.7	5.7	1.7	19.6	7.3	2.2	20.8	9.2	2.8	22.5	10.5	3.2	30.7
5.6	5.6	69.3	1.4	1.4	21.2	4.5	4.5	61.9	6.1	6.1	70.2	7.2	7.2	67.7	5.6	5.6	46.0	6.9	6.9	66.9
8.0	8.0	100.0	6.5	6.5	100.0	7.2	7.2	100.0	8.7	8.7	100.0	10.6	10.6	100.0	12.2	12.2	100.0	10.3	10.3	100.0
−2.5	−1.8	−26.4	3.3	2.3	33.4	2.3	1.6	15.4	−0.1	−0.1	−1.3	2.6	1.8	22.7	1.9	1.3	16.9	0.9	0.7	7.3
1.1	0.3	4.8	1.9	0.6	8.1	2.3	0.7	6.6	3.2	1.0	13.0	4.0	1.2	15.0	4.5	1.4	17.2	5.6	1.7	18.9
8.1	8.1	121.6	4.0	4.0	58.5	8.0	8.0	78.0	6.5	6.5	88.3	4.9	4.9	62.4	5.2	5.2	65.9	6.6	6.6	73.8
6.6	6.6	100.0	6.9	6.9	100.0	10.3	10.3	100.0	7.3	7.3	100.0	7.9	7.9	100.0	7.9	7.9	100.0	8.9	8.9	100.0
−2.2	−1.5	−125.4	−3.0	−2.1	−147.7	0.4	0.3	7.1	1.2	0.8	15.3	2.3	1.6	43.8	4.0	2.8	44.9	4.7	3.3	49.9
7.4	2.2	183.3	5.2	1.5	107.4	3.9	1.2	30.1	3.6	1.1	20.4	3.7	1.1	30.8	3.7	1.1	18.0	4.8	1.4	21.6
0.5	0.5	42.1	2.0	2.0	140.3	2.4	2.4	62.8	3.4	3.4	64.3	0.9	0.9	25.5	2.3	2.3	37.1	1.9	1.9	28.5
1.2	1.2	100.0	1.4	1.4	100.0	3.9	3.9	100.0	5.3	5.3	100.0	3.6	3.6	100.0	6.2	6.2	100.0	6.6	6.6	100.0
−1.1	−0.7	−12.8	−12.2	−8.5	−166.3	3.5	2.4	46.2	−3.9	−2.7	−32.3	−0.3	−0.2	−4.9	1.6	1.1	14.2	−3.4	−2.4	−39.6
2.1	0.6	10.9	3.0	0.9	17.7	3.4	1.0	19.7	3.6	1.1	12.8	4.1	1.2	29.5	4.7	1.4	18.0	5.2	1.6	25.9
5.9	5.9	101.9	12.7	12.7	248.6	1.8	1.8	34.0	10.1	10.1	119.5	3.2	3.2	75.4	5.3	5.3	67.8	6.9	6.9	113.6
5.7	5.7	100.0	5.1	5.1	100.0	5.2	5.2	100.0	8.5	8.5	100.0	4.2	4.2	100.0	7.9	7.9	100.0	6.0	6.0	100.0
1.0	0.7	20.5	0.9	0.6	13.1	2.5	1.8	36.8	−0.5	−0.3	−6.7	1.9	1.3	19.9	3.2	2.2	26.0	4.6	3.2	31.2
3.5	1.1	31.3	4.4	1.3	27.9	4.1	1.2	25.6	3.3	1.0	18.7	3.1	0.9	14.4	4.3	1.3	15.2	4.7	1.4	13.5
1.6	1.6	48.3	2.8	2.8	59.0	1.8	1.8	37.6	4.6	4.6	87.9	4.3	4.3	65.8	5.0	5.0	58.9	5.7	5.7	55.3
3.4	3.4	100.0	4.8	4.8	100.0	4.8	4.8	100.0	5.2	5.2	100.0	6.6	6.6	100.0	8.5	8.5	100.0	10.4	10.4	100.0
1.6	1.1	35.1	1.1	0.8	20.9	−3.0	−2.1	−75.4	5.5	3.8	86.1	0.5	0.4	8.9	2.0	1.4	24.5	−0.4	−0.3	−4.8
6.7	2.0	64.7	5.7	1.7	46.6	4.8	1.4	51.2	5.0	1.5	33.7	5.3	1.6	38.6	5.4	1.6	28.2	5.9	1.8	29.0
0.0	0.0	0.2	1.2	1.2	32.4	3.5	3.5	124.2	−0.9	−0.9	−19.8	2.2	2.2	52.5	2.7	2.7	47.3	4.6	4.6	75.8
3.1	3.1	100.0	3.7	3.7	100.0	2.8	2.8	100.0	4.4	4.4	100.0	4.1	4.1	100.0	5.7	5.7	100.0	6.1	6.1	100.0
0.2	0.1	3.1	0.5	0.3	6.4	0.7	0.5	6.6	0.8	0.6	5.2	0.2	0.1	1.1	−0.1	−0.1	−0.6	−0.6	−0.4	−5.0
3.7	1.1	23.4	2.9	0.9	17.1	2.8	0.8	12.0	3.8	1.1	9.9	5.1	1.5	13.2	6.0	1.8	17.9	7.7	2.3	28.4
3.5	3.5	73.5	3.9	3.9	76.5	5.7	5.7	81.4	9.7	9.7	84.9	9.8	9.8	85.7	8.3	8.3	82.7	6.2	6.2	76.6
4.7	4.7	100.0	5.0	5.0	100.0	7.0	7.0	100.0	11.4	11.4	100.0	11.5	11.5	100.0	10.0	10.0	100.0	8.2	8.2	100.0
−6.1	−4.2	−95.5	7.3	5.1	91.3	1.6	1.1	20.9	1.2	0.9	20.0	1.2	0.8	19.6	1.6	1.1	23.3	1.6	1.1	20.4
4.2	1.3	28.2	4.4	1.3	23.8	5.4	1.6	30.2	7.2	2.2	50.5	6.7	2.0	46.6	6.4	1.9	40.3	6.9	2.1	37.4
7.4	7.4	167.2	−0.8	−0.8	−15.0	2.6	2.6	48.9	1.3	1.3	29.5	1.4	1.4	33.8	1.7	1.7	36.4	2.3	2.3	42.2
4.4	4.4	100.0	5.6	5.6	100.0	5.3	5.3	100.0	4.3	4.3	100.0	4.3	4.3	100.0	4.8	4.8	100.0	5.6	5.6	100.0
4.8	3.4	−74.3	−1.9	−1.3	−152.9	−5.7	−4.0	−141.9	−3.9	−2.7	−66.1	3.4	2.4	58.6	4.8	3.4	84.9	1.8	1.2	24.7
2.1	0.6	−14.0	1.1	0.3	38.1	1.8	0.5	19.0	1.9	0.6	14.1	2.5	0.8	18.4	2.3	0.7	17.5	2.9	0.9	17.5
−8.5	−8.5	188.3	1.8	1.8	214.8	6.3	6.3	222.9	6.2	6.2	152.0	0.9	0.9	23.0	−0.1	−0.1	−2.4	2.9	2.9	57.7
−4.5	−4.5	100.0	0.9	0.9	100.0	2.8	2.8	100.0	4.1	4.1	100.0	4.1	4.1	100.0	4.0	4.0	100.0	5.0	5.0	100.0

		1994 growth %	1994 contr. % points	1994 contr. %	1995 growth %	1995 contr. % points	1995 contr. %	1996 growth %	1996 contr. % points	1996 contr. %	1997 growth %	1997 contr. % points	1997 contr. %	1998 growth %	1998 contr. % points	1998 contr. %	1999 growth %	1999 contr. % points	1999 contr. %	2000 growth %	2000 contr. % points	2000 contr. %
Russia	L	−3.2	−2.2	17.4	−2.6	−1.8	44.5	−1.1	−0.8	21.1	−2.2	−1.5	−108.9	−1.9	−1.3	24.5	−0.2	−0.2	−2.6	5.6	3.9	39.0
	K	2.8	0.8	−6.5	2.1	0.6	−15.1	1.4	0.4	−11.7	0.8	0.2	16.7	0.3	0.1	−1.8	−0.6	−0.2	−2.7	−0.8	−0.2	−2.3
	TFP	−11.3	−11.3	89.1	−2.9	−2.9	70.5	−3.3	−3.3	90.6	2.7	2.7	192.2	−4.1	−4.1	77.3	6.7	6.7	105.3	6.3	6.3	63.3
	GDP	−12.7	−12.7	100.0	−4.1	−4.1	100.0	−3.6	−3.6	100.0	1.4	1.4	100.0	−5.3	−5.3	100.0	6.4	6.4	100.0	10.0	10.0	100.0
Ukraine	L	0.6	0.4	−1.9	0.0	0.0	0.0	−0.7	−0.5	5.1	−0.2	−0.1	3.7	−1.4	−1.0	52.0	−13.7	−9.6	4273.5	0.6	0.4	7.6
	K	4.1	1.2	−5.4	1.5	0.5	−3.8	0.6	0.2	−1.7	−0.6	−0.2	5.5	−0.8	−0.3	13.0	−0.9	−0.3	126.1	−1.0	−0.3	−5.0
	TFP	−24.6	−24.6	107.3	−12.6	−12.6	103.8	−9.7	−9.7	96.6	−2.7	−2.7	90.8	−0.7	−0.7	35.0	9.6	9.6	−4299.7	5.7	5.7	97.4
	GDP	−22.9	−22.9	100.0	−12.2	−12.2	100.0	−10.0	−10.0	100.0	−3.0	−3.0	100.0	−1.9	−1.9	100.0	−0.2	−0.2	100.0	5.8	5.8	100.0
Iran	L	2.4	1.7	−475.2	2.8	2.0	74.4	2.9	2.0	28.8	3.8	2.6	78.3	4.0	2.8	101.4	4.0	2.8	144.9	3.9	2.8	53.6
	K	8.2	2.5	−704.5	5.8	1.7	65.9	5.0	1.5	21.0	7.8	2.3	69.4	8.3	2.5	91.1	7.9	2.4	122.3	6.9	2.1	40.1
	TFP	−4.5	−4.5	1279.6	−1.1	−1.1	−40.3	3.6	3.6	50.2	−1.6	−1.6	−47.7	−2.5	−2.5	−92.5	−3.2	−3.2	−167.2	0.3	0.3	6.3
	GDP	−0.4	−0.4	100.0	2.7	2.7	100.0	7.1	7.1	100.0	3.4	3.4	100.0	2.7	2.7	100.0	1.9	1.9	100.0	5.1	5.1	100.0
Lebanon	L	4.8	3.4	42.0	4.4	3.1	47.2	2.6	1.9	46.3	1.6	1.1	28.0	1.7	1.2	44.2	2.0	1.4	−180.3	1.9	1.4	79.2
	K	16.8	5.0	63.1	20.4	6.1	94.2	17.4	5.2	130.2	14.1	4.2	105.9	9.9	3.0	113.1	8.6	2.6	−335.7	4.9	1.5	85.5
	TFP	−0.4	−0.4	−5.0	−2.7	−2.7	−41.4	−3.1	−3.1	−76.6	−1.4	−1.4	−33.9	−1.5	−1.5	−57.4	−4.7	−4.7	616.1	−1.1	−1.1	−64.7
	GDP	8.0	8.0	100.0	6.5	6.5	100.0	4.0	4.0	100.0	4.0	4.0	100.0	2.6	2.6	100.0	−0.8	−0.8	100.0	1.7	1.7	100.0
Oman	L	6.0	4.2	109.6	4.8	3.4	69.6	3.9	2.7	94.2	2.8	2.0	31.8	2.2	1.5	57.0	1.9	1.3	−561.3	1.4	1.0	17.5
	K	7.3	2.2	57.0	5.7	1.7	35.4	5.1	1.5	53.1	4.1	1.2	19.7	6.9	2.1	76.3	10.5	3.2	−1327.0	3.7	1.1	20.2
	TFP	−2.6	−2.6	−66.6	−0.2	−0.2	−5.0	−1.4	−1.4	−47.3	3.0	3.0	48.5	−0.9	−0.9	−33.3	−4.7	−4.7	1988.2	3.4	3.4	62.3
	GDP	3.8	3.8	100.0	4.8	4.8	100.0	2.9	2.9	100.0	6.2	6.2	100.0	2.7	2.7	100.0	−0.2	−0.2	100.0	5.5	5.5	100.0
Turkey	L	7.9	5.5	−100.8	2.5	1.8	24.8	2.9	2.0	29.0	−0.1	0.0	−0.5	2.7	1.9	60.5	1.3	0.9	−26.9	−2.0	−1.4	−21.0
	K	6.5	2.0	−36.0	5.0	1.5	20.8	4.8	1.4	20.6	6.1	1.8	24.4	6.6	2.0	63.9	8.5	2.6	−76.2	5.0	1.5	22.1
	TFP	−12.9	−12.9	236.7	3.9	3.9	54.4	3.5	3.5	50.4	5.7	5.7	76.0	−0.8	−0.8	−24.3	−6.8	−6.8	203.0	6.7	6.7	98.9
	GDP	−5.5	−5.5	100.0	7.2	7.2	100.0	7.0	7.0	100.0	7.5	7.5	100.0	3.1	3.1	100.0	−3.4	−3.4	100.0	6.8	6.8	100.0
Korea	L	3.3	2.3	26.8	2.7	1.9	20.3	2.1	1.5	21.0	1.7	1.2	25.8	−6.0	−4.2	61.0	1.9	1.3	13.7	4.0	2.8	32.9
	K	13.2	4.0	46.4	12.5	3.8	40.9	12.4	3.7	53.2	11.6	3.5	75.1	9.8	2.9	−43.0	5.7	1.7	18.1	5.9	1.8	20.7
	TFP	2.3	2.3	26.8	3.6	3.6	38.8	1.8	1.8	25.8	0.0	0.0	−0.9	−5.6	−5.6	82.0	6.5	6.5	68.2	3.9	3.9	46.4
	GDP	8.5	8.5	100.0	9.2	9.2	100.0	7.0	7.0	100.0	4.7	4.7	100.0	−6.9	−6.9	100.0	9.5	9.5	100.0	8.5	8.5	100.0
Malaysia	L	3.0	2.1	22.7	3.1	2.1	21.8	3.9	2.7	27.4	3.4	2.4	32.2	2.6	1.8	−24.4	2.9	2.0	33.0	5.3	3.7	42.8
	K	16.2	4.9	52.9	15.7	4.7	47.8	16.2	4.9	48.7	14.6	4.4	59.8	13.6	4.1	−55.5	4.4	1.3	21.7	2.8	0.9	9.8
	TFP	2.2	2.2	24.4	3.0	3.0	30.4	2.4	2.4	23.9	0.6	0.6	8.0	−13.2	−13.2	179.9	2.8	2.8	45.3	4.1	4.1	47.4
	GDP	9.2	9.2	100.0	9.8	9.8	100.0	10.0	10.0	100.0	7.3	7.3	100.0	−7.4	−7.4	100.0	6.1	6.1	100.0	8.7	8.7	100.0
Taiwan	L	1.3	0.9	12.4	0.9	0.6	9.6	0.5	0.3	5.1	1.1	0.8	12.0	1.3	0.9	19.7	1.0	0.7	11.9	0.4	0.3	4.6
	K	9.1	2.7	36.8	8.7	2.6	40.4	8.3	2.5	39.7	7.7	2.3	35.0	8.4	2.5	55.6	8.3	2.5	43.4	7.1	2.1	37.0
	TFP	3.8	3.8	50.8	3.2	3.2	50.0	3.5	3.5	55.2	3.5	3.5	52.9	1.1	1.1	24.7	2.6	2.6	44.7	3.4	3.4	58.4
	GDP	7.4	7.4	100.0	6.5	6.5	100.0	6.3	6.3	100.0	6.6	6.6	100.0	4.5	4.5	100.0	5.7	5.7	100.0	5.8	5.8	100.0
Thailand	L	−0.4	−0.3	−3.3	2.6	1.8	19.6	2.3	1.6	27.0	1.9	1.3	−97.9	−2.0	−1.4	13.2	0.5	0.3	7.7	2.6	1.8	37.9
	K	14.8	4.4	49.4	14.0	4.2	45.4	13.7	4.1	69.6	12.4	3.7	−271.3	7.6	2.3	−21.6	1.9	0.6	13.0	1.6	0.5	10.1
	TFP	4.8	4.8	53.9	3.2	3.2	35.1	0.2	0.2	3.5	−6.4	−6.4	469.2	−11.4	−11.4	108.4	3.5	3.5	79.3	2.5	2.5	51.9
	GDP	9.0	9.0	100.0	9.2	9.2	100.0	5.9	5.9	100.0	−1.4	−1.4	100.0	−10.5	−10.5	100.0	4.4	4.4	100.0	4.8	4.8	100.0
Argentina	L	2.1	1.5	25.5	1.0	0.7	−25.3	3.3	2.3	42.1	2.5	1.7	21.5	1.7	1.2	30.1	1.2	0.8	−25.0	2.5	1.8	−222.8
	K	9.3	2.8	47.8	9.5	2.8	−100.1	6.6	2.0	35.6	6.5	2.0	24.2	7.6	2.3	58.8	7.5	2.2	−66.2	5.1	1.5	−195.1
	TFP	1.6	1.6	26.7	−6.4	−6.4	225.3	1.2	1.2	22.3	4.4	4.4	54.3	0.4	0.4	11.1	−6.5	−6.5	191.3	−4.1	−4.1	518.0
	GDP	5.8	5.8	100.0	−2.8	−2.8	100.0	5.5	5.5	100.0	8.1	8.1	100.0	3.8	3.8	100.0	−3.4	−3.4	100.0	−0.8	−0.8	100.0
Brazil	L	3.3	2.3	39.4	3.3	2.3	54.9	1.3	0.9	42.0	2.9	2.1	61.1	2.1	1.5	3841.4	2.7	1.9	751.3	2.9	2.0	47.5
	K	6.1	1.8	31.4	6.9	2.1	48.9	5.2	1.6	73.2	4.2	1.2	37.0	4.4	1.3	3441.5	3.8	1.1	449.9	2.8	0.8	19.6
	TFP	1.7	1.7	29.2	−0.2	−0.2	−3.8	−0.3	−0.3	−15.2	0.1	0.1	2.0	−2.7	−2.7	−7183.0	−2.8	−2.8	−1101.3	1.4	1.4	32.9
	GDP	5.9	5.9	100.0	4.2	4.2	100.0	2.2	2.2	100.0	3.4	3.4	100.0	0.0	0.0	100.0	0.3	0.3	100.0	4.3	4.3	100.0
Chile	L	0.4	0.3	4.4	1.3	0.9	8.5	0.8	0.6	7.8	2.4	1.7	25.5	0.6	0.4	12.0	−0.1	0.0	10.2	0.1	0.1	2.0
	K	11.9	3.6	62.5	10.0	3.0	28.2	10.6	3.2	42.8	10.9	3.3	48.6	10.7	3.2	97.9	9.1	2.7	−734.9	5.2	1.6	35.1
	TFP	1.9	1.9	33.1	6.7	6.7	63.3	3.7	3.7	49.5	1.7	1.7	26.0	−0.3	−0.3	−9.9	−3.1	−3.1	824.7	2.8	2.8	62.9
	GDP	5.7	5.7	100.0	10.6	10.6	100.0	7.4	7.4	100.0	6.7	6.7	100.0	3.3	3.3	100.0	−0.4	−0.4	100.0	4.5	4.5	100.0

2001			2002			2003			2004			2005			2006			2007		
growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %
1.9	1.3	26.4	1.7	1.2	25.9	0.0	0.0	0.1	0.6	0.4	5.4	1.4	1.0	15.9	−0.4	−0.3	−4.1	3.1	2.2	27.0
0.5	0.1	2.9	1.4	0.4	9.1	1.3	0.4	5.3	1.8	0.6	7.7	2.2	0.7	10.3	2.2	0.7	9.1	2.9	0.9	10.8
3.6	3.6	70.7	3.1	3.1	65.0	6.9	6.9	94.6	6.3	6.3	86.9	4.7	4.7	73.8	7.0	7.0	95.0	5.0	5.0	62.2
5.1	5.1	100.0	4.7	4.7	100.0	7.3	7.3	100.0	7.2	7.2	100.0	6.4	6.4	100.0	7.4	7.4	100.0	8.1	8.1	100.0
1.6	1.1	11.9	1.4	1.0	19.5	0.2	0.1	1.2	0.6	0.4	3.4	2.5	1.7	64.4	−0.1	0.0	−0.6	0.8	0.5	7.0
−0.6	−0.2	−2.0	−0.2	−0.1	−1.0	0.0	0.0	−0.1	0.8	0.2	2.1	2.1	0.6	23.3	1.9	0.6	8.0	3.2	1.0	12.6
8.2	8.2	90.1	4.2	4.2	81.5	9.5	9.5	98.9	11.4	11.4	94.5	0.3	0.3	12.3	6.8	6.8	92.6	6.1	6.1	80.4
9.2	9.2	100.0	5.2	5.2	100.0	9.6	9.6	100.0	12.1	12.1	100.0	2.7	2.7	100.0	7.3	7.3	100.0	7.6	7.6	100.0
2.2	1.5	42.0	3.8	2.6	35.2	5.0	3.5	48.9	4.9	3.4	67.4	2.0	1.4	29.8	3.6	2.5	43.3	4.1	2.9	45.2
5.9	1.8	47.8	6.3	1.9	25.2	6.5	2.0	27.3	6.8	2.0	39.8	6.5	2.0	41.8	5.7	1.7	29.1	5.4	1.6	25.6
0.4	0.4	10.2	3.0	3.0	39.6	1.7	1.7	23.8	−0.4	−0.4	−7.2	1.3	1.3	28.3	1.6	1.6	27.6	1.9	1.9	29.2
3.7	3.7	100.0	7.5	7.5	100.0	7.2	7.2	100.0	5.1	5.1	100.0	4.7	4.7	100.0	5.8	5.8	100.0	6.4	6.4	100.0
1.5	1.0	23.3	1.7	1.2	36.7	1.4	1.0	23.1	2.1	1.4	19.3	1.8	1.2	115.7	2.1	1.5		1.6	1.1	27.4
3.6	1.1	23.9	3.6	1.1	32.7	3.1	0.9	22.3	3.2	1.0	13.0	4.0	1.2	111.3	4.3	1.3		0.4	0.1	3.3
2.4	2.4	52.8	1.0	1.0	30.6	2.3	2.3	54.6	5.0	5.0	67.6	−1.4	−1.4	−126.9	−2.8	−2.8		2.8	2.8	69.2
4.5	4.5	100.0	3.3	3.3	100.0	4.1	4.1	100.0	7.5	7.5	100.0	1.1	1.1	100.0	0.0	0.0	100.0	4.0	4.0	100.0
0.6	0.4	5.7	0.4	0.3	10.0	0.5	0.3	17.0	1.0	0.7	12.7	1.4	1.0	16.8	2.0	1.4	20.8	3.3	2.3	35.7
2.1	0.6	8.4	2.9	0.9	34.1	2.8	0.8	41.9	4.7	1.4	26.2	7.8	2.3	39.0	6.0	1.8	26.4	6.5	1.9	30.5
6.4	6.4	85.9	1.4	1.4	55.9	0.8	0.8	41.1	3.3	3.3	61.0	2.7	2.7	44.3	3.6	3.6	52.8	2.2	2.2	33.8
7.5	7.5	100.0	2.6	2.6	100.0	2.0	2.0	100.0	5.3	5.3	100.0	6.0	6.0	100.0	6.8	6.8	100.0	6.4	6.4	100.0
−0.3	−0.2	3.7	−0.7	−0.5	−8.5	−0.9	−0.6	−11.5	3.0	2.1	22.7	1.3	0.9	10.6	1.4	1.0	14.4	0.2	0.1	2.7
5.9	1.8	−31.3	2.6	0.8	12.7	3.3	1.0	18.6	3.6	1.1	11.4	5.8	1.7	20.8	6.5	1.9	28.1	7.2	2.2	46.7
−7.3	−7.3	127.5	5.9	5.9	95.7	4.9	4.9	92.9	6.2	6.2	65.9	5.8	5.8	68.6	4.0	4.0	57.5	2.3	2.3	50.6
−5.7	−5.7	100.0	6.2	6.2	100.0	5.3	5.3	100.0	9.4	9.4	100.0	8.4	8.4	100.0	6.9	6.9	100.0	4.6	4.6	100.0
1.7	1.2	30.4	2.6	1.8	26.0	−0.3	−0.2	−7.3	1.8	1.3	27.3	0.8	0.6	13.6	1.1	0.8	15.6	0.6	0.4	8.2
6.6	2.0	52.0	5.8	1.7	24.9	5.7	1.7	55.5	5.8	1.7	36.5	5.5	1.7	39.4	5.3	1.6	30.9	5.2	1.6	31.4
0.7	0.7	17.7	3.4	3.4	49.2	1.6	1.6	51.8	1.7	1.7	36.2	2.0	2.0	46.9	2.7	2.7	53.4	3.0	3.0	60.5
3.8	3.8	100.0	7.0	7.0	100.0	3.1	3.1	100.0	4.7	4.7	100.0	4.2	4.2	100.0	5.1	5.1	100.0	5.0	5.0	100.0
2.3	1.6	316.9	2.6	1.8	33.8	2.3	1.6	28.4	2.4	1.7	24.4	2.6	1.8	33.6	2.5	1.8	30.4	2.2	1.6	24.5
4.6	1.4	264.8	4.1	1.2	23.1	3.7	1.1	18.9	3.4	1.0	15.2	3.1	0.9	17.6	3.1	0.9	16.3	3.5	1.0	16.4
−2.5	−2.5	−481.8	2.3	2.3	43.1	3.0	3.0	52.7	4.1	4.1	60.4	2.6	2.6	48.8	3.1	3.1	53.4	3.7	3.7	59.0
0.5	0.5	100.0	5.4	5.4	100.0	5.8	5.8	100.0	6.8	6.8	100.0	5.3	5.3	100.0	5.8	5.8	100.0	6.3	6.3	100.0
−0.3	−0.2	8.8	0.4	0.3	6.5	1.9	1.3	37.5	2.3	1.6	26.4	2.1	1.5	35.3						
6.7	2.0	−92.0	3.4	1.0	21.7	2.9	0.9	25.2	2.7	0.8	13.0	4.3	1.3	30.7						
−4.0	−4.0	183.2	3.3	3.3	71.8	1.3	1.3	37.3	3.7	3.7	60.6	1.4	1.4	34.0						
−2.2	−2.2	100.0	4.6	4.6	100.0	3.5	3.5	100.0	6.2	6.2	100.0	4.2	4.2	100.0						
1.4	1.0	45.5	1.9	1.3	24.8	1.2	0.9	12.2	1.2	0.9	13.6	1.4	0.9	20.9	0.4	0.3	6.2	0.7	0.5	10.8
2.2	0.7	30.2	2.5	0.8	14.2	2.7	0.8	11.2	3.4	1.0	16.2	4.3	1.3	28.7	5.4	1.6	31.8	5.1	1.5	32.5
0.5	0.5	24.3	3.2	3.2	61.0	5.5	5.5	76.6	4.4	4.4	70.1	2.3	2.3	50.3	3.2	3.2	62.0	2.7	2.7	56.7
2.2	2.2	100.0	5.3	5.3	100.0	7.1	7.1	100.0	6.3	6.3	100.0	4.5	4.5	100.0	5.1	5.1	100.0	4.8	4.8	100.0
1.6	1.2	−26.2	1.2	0.8	−7.5	4.8	3.3	37.9	2.1	1.5	16.4	2.1	1.5	15.9	2.0	1.4	16.4	1.4	1.0	11.3
3.6	1.1	−24.5	1.9	0.6	−5.4	0.1	0.0	0.4	2.0	0.6	6.8	4.5	1.4	14.8	6.1	1.8	21.8	7.5	2.2	25.9
−6.6	−6.6	150.6	−12.3	−12.3	112.8	5.5	5.5	61.7	6.9	6.9	76.8	6.4	6.4	69.2	5.2	5.2	61.8	5.4	5.4	62.8
−4.4	−4.4	100.0	−10.9	−10.9	100.0	8.8	8.8	100.0	9.0	9.0	100.0	9.2	9.2	100.0	8.5	8.5	100.0	8.7	8.7	100.0
2.6	1.8	139.8	3.5	2.5	92.5	1.3	0.9	81.9	3.9	2.7	47.6	1.6	1.1	36.0	2.9	2.0	54.6	2.5	1.7	32.0
3.5	1.1	80.3	3.4	1.0	38.8	3.1	0.9	80.0	2.4	0.7	12.5	3.0	0.9	28.7	3.0	0.9	23.6	3.3	1.0	18.3
−1.6	−1.6	−120.1	−0.8	−0.8	−31.3	−0.7	−0.7	−61.9	2.3	2.3	40.0	1.1	1.1	35.3	0.8	0.8	21.8	2.7	2.7	49.7
1.3	1.3	100.0	2.7	2.7	100.0	1.1	1.1	100.0	5.7	5.7	100.0	3.2	3.2	100.0	3.8	3.8	100.0	5.4	5.4	100.0
2.3	1.6	45.6	1.3	0.9	40.9	2.9	2.0	50.3	4.1	2.9	47.6	1.8	1.3	22.8	4.1	2.9	66.6	−1.3	−0.9	−17.4
5.1	1.5	43.4	5.4	1.6	75.1	4.9	1.5	37.0	4.3	1.3	21.2	4.0	1.2	21.7	5.0	1.5	34.9	4.2	1.3	24.7
0.4	0.4	11.1	−0.3	−0.3	−16.1	0.5	0.5	12.7	1.9	1.9	31.2	3.1	3.1	55.4	−0.1	−0.1	−1.5	4.7	4.7	92.7
3.5	3.5	100.0	2.2	2.2	100.0	4.0	4.0	100.0	6.0	6.0	100.0	5.6	5.6	100.0	4.3	4.3	100.0	5.1	5.1	100.0

		1994			1995			1996			1997			1998			1999			2000		
		growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %
Colombia	L	1.0	0.7	13.0	2.9	2.0	39.3	0.9	0.6	30.2	2.9	2.0	58.6	3.2	2.2	388.3	6.4	4.5	-107.0	2.8	2.0	66.8
	K	6.9	2.1	40.3	9.5	2.9	55.0	8.4	2.5	123.0	7.2	2.2	62.9	6.0	1.8	316.1	4.8	1.4	-34.1	1.3	0.4	12.9
	TFP	2.4	2.4	46.6	0.3	0.3	5.6	-1.1	-1.1	-53.2	-0.7	-0.7	-21.5	-3.4	-3.4	-604.4	-10.1	-10.1	241.2	0.6	0.6	20.3
	GDP	5.1	5.1	100.0	5.2	5.2	100.0	2.1	2.1	100.0	3.4	3.4	100.0	0.6	0.6	100.0	-4.2	-4.2	100.0	2.9	2.9	100.0
Ecuador	L	3.8	2.7	56.6	3.8	2.7	153.1	3.5	2.4	101.4	3.3	2.3	56.4	3.1	2.2	103.0	3.1	2.1	-34.1	2.6	1.8	65.4
	K	6.0	1.8	38.4	5.9	1.8	100.7	5.4	1.6	67.0	4.7	1.4	34.8	4.5	1.4	64.3	5.3	1.6	-25.4	2.8	0.9	30.4
	TFP	0.2	0.2	5.0	-2.7	-2.7	-153.9	-1.6	-1.6	-68.4	0.4	0.4	8.8	-1.4	-1.4	-67.3	-10.0	-10.0	159.5	0.1	0.1	4.3
	GDP	4.7	4.7	100.0	1.7	1.7	100.0	2.4	2.4	100.0	4.1	4.1	100.0	2.1	2.1	100.0	-6.3	-6.3	100.0	2.8	2.8	100.0
Jamaica	L	2.7	1.9	207.6	-0.7	-0.5	-48.5	0.5	0.4	-32.0	-0.8	-0.6	57.1	1.5	1.1	-87.7	-0.2	-0.1	-14.5	0.0	0.0	0.0
	K	10.7	3.2	355.5	8.8	2.6	261.4	8.8	2.6	-240.6	7.9	2.4	-242.2	6.9	2.1	-170.1	4.7	1.4	147.6	3.9	1.2	163.4
	TFP	-4.2	-4.2	-463.1	-1.1	-1.1	-112.9	-4.1	-4.1	372.6	-2.8	-2.8	285.1	-4.3	-4.3	357.8	-0.3	-0.3	-33.1	-0.4	-0.4	-63.4
	GDP	0.9	0.9	100.0	1.0	1.0	100.0	-1.1	-1.1	100.0	-1.0	-1.0	100.0	-1.2	-1.2	100.0	1.0	1.0	100.0	0.7	0.7	100.0
Mexico	L	1.3	0.9	20.0	-0.3	-0.2	3.4	4.6	3.2	62.2	6.4	4.5	66.6	2.8	2.0	40.1	2.3	1.6	41.1	1.8	1.2	18.9
	K	6.1	1.8	41.4	6.4	1.9	-30.9	3.4	1.0	19.6	4.4	1.3	19.5	5.5	1.7	33.7	6.2	1.9	48.1	6.1	1.8	27.7
	TFP	1.7	1.7	38.7	-7.9	-7.9	127.5	0.9	0.9	18.2	0.9	0.9	13.9	1.3	1.3	26.2	0.4	0.4	10.8	3.5	3.5	53.4
	GDP	4.4	4.4	100.0	-6.2	-6.2	100.0	5.2	5.2	100.0	6.8	6.8	100.0	4.9	4.9	100.0	3.9	3.9	100.0	6.6	6.6	100.0
Panama	L	2.2	1.6	54.5	2.8	2.0	112.8	2.1	1.5	20.1	4.4	3.1	48.2	2.5	1.7	23.6	5.7	4.0	101.9	0.4	0.3	9.4
	K	11.7	3.5	122.8	10.7	3.2	182.4	10.8	3.3	44.1	6.4	1.9	29.6	6.3	1.9	25.8	7.7	2.3	59.3	7.3	2.2	80.4
	TFP	-2.2	-2.2	-77.3	-3.4	-3.4	-195.2	2.6	2.6	35.8	1.4	1.4	22.2	3.7	3.7	50.6	-2.4	-2.4	-61.2	0.3	0.3	10.2
	GDP	2.8	2.8	100.0	1.8	1.8	100.0	7.4	7.4	100.0	6.5	6.5	100.0	7.3	7.3	100.0	3.9	3.9	100.0	2.7	2.7	100.0
Peru	L	4.5	3.1	24.5	2.9	2.0	23.3	2.5	1.7	68.8	3.8	2.7	38.8	2.1	1.5	-223.7	3.4	2.3	256.7	3.4	2.4	80.6
	K	6.1	1.8	14.3	8.7	2.6	30.2	10.5	3.1	124.9	8.4	2.5	36.7	9.0	2.7	-410.6	7.6	2.3	250.7	5.9	1.8	60.2
	TFP	7.9	7.9	61.3	4.0	4.0	46.5	-2.4	-2.4	-93.7	1.7	1.7	24.5	-4.8	-4.8	734.3	-3.7	-3.7	-407.4	-1.2	-1.2	-40.8
	GDP	12.8	12.8	100.0	8.6	8.6	100.0	2.5	2.5	100.0	6.9	6.9	100.0	-0.7	-0.7	100.0	0.9	0.9	100.0	3.0	3.0	100.0
Uruguay	L	3.4	2.4	33.1	2.1	1.5	-102.5	0.5	0.4	6.5	0.9	0.6	12.3	0.8	0.6	12.4	1.1	0.8	-26.7	0.9	0.6	-41.8
	K	5.0	1.5	20.8	5.1	1.5	-105.8	3.8	1.1	20.5	4.3	1.3	25.3	4.6	1.4	30.7	5.1	1.5	-53.9	3.9	1.2	-81.9
	TFP	3.4	3.4	46.1	-4.5	-4.5	308.2	4.1	4.1	73.0	3.2	3.2	62.5	2.6	2.6	56.9	-5.1	-5.1	180.6	-3.2	-3.2	223.7
	GDP	7.3	7.3	100.0	-1.4	-1.4	100.0	5.6	5.6	100.0	5.0	5.0	100.0	4.5	4.5	100.0	-2.8	-2.8	100.0	-1.4	-1.4	100.0
Venezuela	L	1.9	1.3	-56.8	2.2	1.5	38.7	1.5	1.0	-515.1	5.5	3.8	60.4	3.7	2.6	877.2	0.1	0.0	-0.7	5.1	3.6	97.4
	K	7.6	2.3	-97.0	5.1	1.5	38.5	4.3	1.3	-654.7	3.5	1.1	16.7	9.2	2.7	934.9	9.6	2.9	-48.2	5.4	1.6	43.8
	TFP	-6.0	-6.0	253.8	0.9	0.9	22.8	-2.5	-2.5	1269.8	1.5	1.5	23.0	-5.0	-5.0	-1712.1	-8.9	-8.9	148.9	-1.5	-1.5	-41.2
	GDP	-2.3	-2.3	100.0	4.0	4.0	100.0	-0.2	-0.2	100.0	6.4	6.4	100.0	0.3	0.3	100.0	-6.0	-6.0	100.0	3.7	3.7	100.0
Algeria	L	3.5	2.4	-268.4	0.0	0.0	-0.8	5.7	4.0	104.8	5.6	3.9	357.4	2.8	2.0	38.6	2.8	2.0	62.1	1.3	0.9	41.6
	K	8.0	2.4	-266.9	7.6	2.3	58.9	7.4	2.2	58.6	5.3	1.6	144.1	4.1	1.2	24.2	5.3	1.6	49.8	4.6	1.4	63.8
	TFP	-5.7	-5.7	635.3	1.6	1.6	42.0	-2.4	-2.4	-63.5	-4.4	-4.4	-401.5	1.9	1.9	37.3	-0.4	-0.4	-12.0	-0.1	-0.1	-5.4
	GDP	-0.9	-0.9	100.0	3.8	3.8	100.0	3.8	3.8	100.0	1.1	1.1	100.0	5.1	5.1	100.0	3.2	3.2	100.0	2.2	2.2	100.0
Botswana	L	0.5	0.4	10.0	0.5	0.4	7.8	1.0	0.7	12.3	10.1	7.1	71.6	9.0	6.3	58.4	4.5	3.2	43.7	3.9	2.8	32.8
	K	8.7	2.6	73.5	7.3	2.2	49.2	7.0	2.1	37.2	6.5	1.9	19.7	7.0	2.1	19.5	7.9	2.4	32.7	7.3	2.2	26.2
	TFP	0.6	0.6	16.5	1.9	1.9	42.9	2.9	2.9	50.4	0.9	0.9	8.7	2.4	2.4	22.2	1.7	1.7	23.6	3.4	3.4	41.0
	GDP	3.5	3.5	100.0	4.5	4.5	100.0	5.7	5.7	100.0	9.9	9.9	100.0	10.8	10.8	100.0	7.3	7.3	100.0	8.4	8.4	100.0
Gabon	L	2.8	2.0	52.8	3.0	2.1	42.2	2.6	1.9	51.1	2.8	2.0	34.6	2.8	1.9	55.5	1.7	1.2	-13.4	3.1	2.2	-115.9
	K	7.4	2.2	60.0	6.0	1.8	36.4	6.8	2.0	56.0	6.8	2.0	35.6	10.0	3.0	86.5	13.0	3.9	-43.7	4.9	1.5	-77.8
	TFP	-0.5	-0.5	-12.8	1.1	1.1	21.4	-0.3	-0.3	-7.0	1.7	1.7	29.8	-1.5	-1.5	-42.0	-14.0	-14.0	157.0	-5.5	-5.5	293.7
	GDP	3.7	3.7	100.0	5.0	5.0	100.0	3.6	3.6	100.0	5.7	5.7	100.0	3.5	3.5	100.0	-8.9	-8.9	100.0	-1.9	-1.9	100.0
Libya	L	4.5	3.1	163.3	3.6	2.5	-20.0	4.7	3.3	128.9	4.2	3.0	-393.6	4.0	2.8	-677.2	4.0	2.8	693.8	3.9	2.8	74.5
	K	5.5	1.7	85.9	5.3	1.6	-12.4	1.1	0.3	12.8	2.1	0.6	-85.3	1.1	0.3	-82.8	0.6	0.2	41.7	0.5	0.2	4.1
	TFP	-2.9	-2.9	-149.2	-16.8	-16.8	132.4	-1.1	-1.1	-41.8	-4.4	-4.4	578.9	-3.6	-3.6	860.0	-2.6	-2.6	-635.5	0.8	0.8	21.4
	GDP	1.9	1.9	100.0	-12.7	-12.7	100.0	2.6	2.6	100.0	-0.8	-0.8	100.0	-0.4	-0.4	100.0	0.4	0.4	100.0	3.7	3.7	100.0
South Africa	L	12.1	8.5	261.6	7.1	5.0	159.6	-2.2	-1.5	-35.0	0.2	0.2	5.7	-0.4	-0.3	-48.9	1.9	1.3	56.4	0.3	0.2	4.6
	K	3.1	0.9	29.0	3.4	1.0	32.7	3.8	1.1	26.3	4.0	1.2	45.8	4.0	1.2	234.8	4.0	1.2	51.5	3.0	0.9	22.0
	TFP	-6.2	-6.2	-190.7	-2.9	-2.9	-92.3	4.7	4.7	108.7	1.3	1.3	48.5	-0.4	-0.4	-85.9	-0.2	-0.2	-7.9	3.1	3.1	73.4
	GDP	3.2	3.2	100.0	3.1	3.1	100.0	4.3	4.3	100.0	2.6	2.6	100.0	0.5	0.5	100.0	2.4	2.4	100.0	4.2	4.2	100.0

Source: Authors´ calculations

2001			2002			2003			2004			2005			2006			2007		
growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %	growth %	contr. % points	contr. %
4.2	3.0	135.3	1.6	1.1	46.1	4.5	3.2	69.0	3.3	2.3	50.2	4.9	3.4	60.0	1.6	1.1	16.1	4.9	3.4	44.4
2.5	0.8	34.7	3.0	0.9	36.4	3.2	1.0	20.6	4.1	1.2	26.4	4.7	1.4	24.8	5.6	1.7	24.8	7.1	2.1	27.4
−1.5	−1.5	−69.9	0.4	0.4	17.5	0.5	0.5	10.3	1.1	1.1	23.3	0.9	0.9	15.2	4.0	4.0	59.2	2.2	2.2	28.3
2.2	2.2	100.0	2.5	2.5	100.0	4.6	4.6	100.0	4.7	4.7	100.0	5.7	5.7	100.0	6.8	6.8	100.0	7.7	7.7	100.0
2.3	1.6	30.0	2.6	1.8	43.2	2.6	1.8	51.6	3.1	2.2	27.3	2.4	1.7	28.1	2.4	1.7	42.7	1.6	1.1	45.4
4.5	1.3	25.1	5.0	1.5	35.1	5.8	1.7	48.5	4.7	1.4	17.5	5.1	1.5	25.5	5.4	1.6	41.4	5.0	1.5	60.9
2.4	2.4	44.8	0.9	0.9	21.7	0.0	0.0	−0.1	4.4	4.4	55.2	2.8	2.8	46.4	0.6	0.6	16.0	−0.2	−0.2	−6.3
5.3	5.3	100.0	4.2	4.2	100.0	3.6	3.6	100.0	8.0	8.0	100.0	6.0	6.0	100.0	3.9	3.9	100.0	2.5	2.5	100.0
0.6	0.4	27.5	−0.8	−0.6	−50.2	3.7	2.6	114.6	0.9	0.6	62.6	1.8	1.3	88.8	2.7	1.9	77.3	−0.4	−0.3	−22.2
4.4	1.3	86.8	5.0	1.5	134.4	5.4	1.6	72.4	4.6	1.4	141.9	4.6	1.4	96.6	4.8	1.4	57.8	4.9	1.5	127.0
−0.2	−0.2	−14.3	0.2	0.2	15.8	−2.0	−2.0	−87.0	−1.0	−1.0	−104.5	−1.2	−1.2	−85.4	−0.9	−0.9	−35.1	−0.1	−0.1	−4.9
1.5	1.5	100.0	1.1	1.1	100.0	2.3	2.3	100.0	1.0	1.0	100.0	1.4	1.4	100.0	2.5	2.5	100.0	1.2	1.2	100.0
0.8	0.6	−353.5	1.5	1.1	128.9	0.5	0.3	18.9	3.0	2.1	52.4	1.6	1.1	36.5	3.7	2.6	52.2	−0.5	−0.4	−11.1
6.3	1.9	−1195.6	4.9	1.5	177.8	4.2	1.2	74.1	3.8	1.1	28.3	4.1	1.2	39.8	4.2	1.3	25.8	4.6	1.4	43.0
−2.6	−2.6	1649.2	−1.7	−1.7	−206.7	0.1	0.1	7.0	0.8	0.8	19.3	0.7	0.7	23.8	1.1	1.1	22.0	2.2	2.2	68.1
−0.2	−0.2	100.0	0.8	0.8	100.0	1.7	1.7	100.0	4.0	4.0	100.0	3.1	3.1	100.0	4.9	4.9	100.0	3.2	3.2	100.0
1.5	1.1	189.1	3.3	2.3	104.2	3.3	2.3	54.9	4.4	3.1	40.7	5.0	3.5	48.6	2.1	1.5	17.6	5.4	3.8	32.8
6.2	1.8	322.5	2.6	0.8	34.8	1.7	0.5	12.5	3.7	1.1	14.7	3.8	1.1	15.7	4.2	1.3	14.7	5.4	1.6	14.0
−2.4	−2.4	−411.7	−0.9	−0.9	−39.0	1.4	1.4	32.6	3.4	3.4	44.6	2.6	2.6	35.7	5.8	5.8	67.7	6.1	6.1	53.2
0.6	0.6	100.0	2.2	2.2	100.0	4.2	4.2	100.0	7.5	7.5	100.0	7.2	7.2	100.0	8.5	8.5	100.0	11.5	11.5	100.0
2.7	1.9	884.9	3.8	2.7	52.8	2.9	2.0	49.6	3.1	2.2	42.1	3.0	2.1	31.1	2.9	2.0	26.0	2.8	1.9	21.9
4.9	1.5	680.9	3.7	1.1	22.0	3.3	1.0	24.6	3.5	1.0	20.4	3.6	1.1	16.2	4.1	1.2	16.1	5.0	1.5	16.8
−3.2	−3.2	−1465.9	1.3	1.3	25.2	1.0	1.0	25.8	1.9	1.9	37.5	3.6	3.6	52.7	4.4	4.4	57.9	5.4	5.4	61.3
0.2	0.2	100.0	5.0	5.0	100.0	4.0	4.0	100.0	5.1	5.1	100.0	6.7	6.7	100.0	7.7	7.7	100.0	8.9	8.9	100.0
0.6	0.4	−13.2	0.5	0.3	−3.1	0.4	0.2	11.3	0.4	0.3	2.5	0.5	0.3	5.2	0.2	0.1	2.1	2.0	1.4	19.0
2.7	0.8	−24.0	1.9	0.6	−5.1	−0.1	0.0	−2.1	−0.4	−0.1	−0.9	1.2	0.4	5.6	2.8	0.8	11.2	4.7	1.4	19.0
−4.6	−4.6	137.2	−11.9	−11.9	108.3	2.0	2.0	90.7	11.6	11.6	98.4	5.9	5.9	89.2	6.1	6.1	86.7	4.6	4.6	62.0
−3.4	−3.4	100.0	−11.0	−11.0	100.0	2.2	2.2	100.0	11.8	11.8	100.0	6.6	6.6	100.0	7.0	7.0	100.0	7.4	7.4	100.0
4.4	3.1	90.2	−0.1	0.0	0.5	3.1	2.2	−27.8	5.3	3.7	20.3	5.4	3.8	36.5	7.7	5.4	52.1	2.6	1.8	21.8
4.1	1.2	35.9	5.3	1.6	−18.0	3.1	0.9	−12.1	0.1	0.0	0.2	2.2	0.7	6.4	3.6	1.1	10.4	4.7	1.4	16.9
−0.9	−0.9	−26.1	−10.4	−10.4	117.4	−10.9	−10.9	139.9	14.5	14.5	79.5	5.9	5.9	57.1	3.9	3.9	37.5	5.1	5.1	61.3
3.4	3.4	100.0	−8.9	−8.9	100.0	−7.8	−7.8	100.0	18.3	18.3	100.0	10.3	10.3	100.0	10.3	10.3	100.0	8.4	8.4	100.0
7.8	5.5	202.8	5.5	3.9	82.1	6.2	4.4	63.2	11.3	7.9	152.8	6.1	4.3	83.5	6.8	4.7	237.2	3.5	2.4	52.9
2.9	0.9	32.6	3.7	1.1	23.4	4.4	1.3	19.3	4.5	1.4	26.0	4.6	1.4	27.0	3.9	1.2	59.0	4.0	1.2	26.3
−3.7	−3.7	−135.4	−0.3	−0.3	−5.5	1.2	1.2	17.5	−4.1	−4.1	−78.7	−0.5	−0.5	−10.5	−3.9	−3.9	−196.2	1.0	1.0	20.8
2.7	2.7	100.0	4.7	4.7	100.0	6.9	6.9	100.0	5.2	5.2	100.0	5.1	5.1	100.0	2.0	2.0	100.0	4.6	4.6	100.0
−5.5	−3.8	−82.2	−1.6	−1.1	−21.1	−1.8	−1.3	−20.2	−3.3	−2.3	−35.2	−4.1	−2.9	−61.3	22.8	16.0	464.6	3.1	2.2	37.8
5.8	1.7	36.9	5.3	1.6	29.6	5.9	1.8	27.7	5.7	1.7	25.7	5.1	1.5	32.9	4.5	1.3	38.9	3.8	1.2	20.1
6.8	6.8	145.3	4.9	4.9	91.4	5.9	5.9	92.4	7.2	7.2	109.4	6.0	6.0	128.5	−13.9	−13.9	−403.5	2.4	2.4	42.1
4.7	4.7	100.0	5.3	5.3	100.0	6.4	6.4	100.0	6.6	6.6	100.0	4.7	4.7	100.0	3.4	3.4	100.0	5.7	5.7	100.0
2.8	2.0	91.6	2.5	1.7	−652.5	2.6	1.9	75.8	2.4	1.7	151.4	2.3	1.6	53.6	2.3	1.6	134.4	2.6	1.8	32.9
2.7	0.8	38.5	4.0	1.2	−452.9	3.3	1.0	39.9	3.0	0.9	82.4	3.0	0.9	30.0	2.0	0.6	51.2	3.0	0.9	16.2
−0.6	−0.6	−30.2	−3.2	−3.2	1205.3	−0.4	−0.4	−15.8	−1.5	−1.5	−133.8	0.5	0.5	16.4	−1.0	−1.0	−85.7	2.8	2.8	50.9
2.1	2.1	100.0	−0.3	−0.3	100.0	2.4	2.4	100.0	1.1	1.1	100.0	3.0	3.0	100.0	1.2	1.2	100.0	5.6	5.6	100.0
3.3	2.3	−53.6	3.7	2.6	−205.7	3.7	2.6	20.0												
1.6	0.5	−11.0	1.2	0.4	−29.8	2.7	0.8	6.3												
−7.1	−7.1	164.6	−4.2	−4.2	335.5	9.6	9.6	73.7												
−4.3	−4.3	100.0	−1.3	−1.3	100.0	13.0	13.0	100.0												
−1.9	−1.3	−48.3	0.2	0.2	4.4	0.5	0.3	10.4	8.5	5.9	121.7	0.1	0.1	1.2	2.4	1.7	30.7	5.0	3.5	68.3
3.0	0.9	32.6	2.9	0.9	23.7	2.9	0.9	28.3	3.4	1.0	21.1	3.7	1.1	22.1	4.2	1.3	23.2	5.3	1.6	30.8
3.2	3.2	115.7	2.6	2.6	71.8	1.9	1.9	61.2	−2.1	−2.1	−42.8	3.8	3.8	76.7	2.5	2.5	46.1	0.0	0.0	0.9
2.7	2.7	100.0	3.7	3.7	100.0	3.1	3.1	100.0	4.9	4.9	100.0	5.0	5.0	100.0	5.4	5.4	100.0	5.1	5.1	100.0