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# CAUSES OF GROWTH IN TRANSITION COUNTRIES 1990-2012: COMPARATIVE ANALYSIS

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## ABSTRACT

*This paper provides comparative analysis of the proximate causes of growth of South East European, Central European and Former Soviet Union countries. The first section covers comparative sources of growth analysis for GDP. Apart from this conventional sources-of-growth analysis, both the demand and the industry side decomposition of the GDP growth rate, is given in second section of the paper. In the demand side of the sources-of-growth analysis, special attention is devoted to the issue of the level of capital account liberalisation and its influence on the growth anatomy. Connected with this is the issue of industry / sectors side sources-of-growth analysis. The third section covers comparative source-of-growth analysis for GDP per capita as an approximation of growth of standard of living. The results of the above mentioned different sources-of-growth approaches present a good basis for further research of fundamental causes of growth of these countries.*

**Keywords:** *Growth rate, Proximate causes of growth, Fundamental causes of growth, Sources of growth, Growth accounting, Comparative analysis, Knowledge, Human capital, Physical capital, Total factor productivity.*

## INTRODUCTION

The purpose of this paper is to provide a comparative analysis of the causes of growth of East European countries. This group of countries are here divided into those that belong to immediate European periphery, which are further grouped into Central European countries (CE) and South East European (SEE) countries, and those that used to be a part of former Soviet Union (FSU) or were in orbit of their economy (like Mongolia, for example). Indeed, Mongolia and some former Soviet Union member countries, such as Kyrgyzstan, Kazakhstan, Turkmenistan, Uzbekistan, Azerbaijan, and Tajikistan, are not part of Europe at all, but due to common history and geographic proximity, their addition to the analysis is natural and insightful. FSU countries are further divided into two groups: those that are exporters of energy and those that are energy importers.

The common practice within modern theories of growth is to make a distinction between “proximate” and “fundamental” causes of growth (Acemogly, 2008, Acemoglu et al 2005). Proximate causes, usually comprised within the sources-of-growth analysis, are based on and developed according to the Solow Growth Model. The end result of this analysis is a decomposition of the GDP (gross domestic product) growth rate into the absolute and relative contribution of the increase in employment, the increase in capital, and the increase in the total factor productivity (TFP). The growth rate of the TFP is further decomposed into the contribution of human capital (skills), advance in applied knowledge (sometimes

referred to as embodied technological progress), and contribution of organizational innovation, structural changes and similar factors.<sup>1</sup> In one or the other form, when short run variations in level of economic activity are eliminated, it captures in the long run different kinds of knowledge and this is why the TFP is sometimes referred to as the advance in “broader knowledge”.

On the other hand, the so-called “fundamental” causes of growth refer mainly to institutional factors but also to cultural, geographical, and other factors, including pure luck. These factors determine the rate of growth by determining the rate of formation as well as an efficient usage of proximate factors enumerated above. While differences in income levels can be attributed to differences in the proximate causes, the answer to the question of why growth rates differ among countries and within the same country at different times can be obtained only after additional insights from the analysis of fundamental factors. So we can say that, as noticed by Abramovitz (1993), relationships among proximate causes of growth are not additive, but very complex indeed. First, there are obvious direct inter-relationships among proximate causes of growth, like the one that we have between the accumulation of physical and human capital. And second, there are numerous complex indirect relationships that operate via fundamental causes of growth.

Finally, the state and development of fundamental factors are ultimately and primarily determined by what is known as a political economy of respected countries. By political economy here is referred not only to power structures and power struggles within the respected country, but also to international or, better, global power structure as well. In fact, it is not possible to understand “domestic” political economy without connecting it to political economy of international relations. This is especially important for small countries. And, as it is known, both groups of countries that will be analysed here belong to this group of countries. Exception is Russian federation.

This paper is primarily focused on the analysis of proximate causes of growth in the East European countries. In the absence of certain long-term data series, mainly related to “capital” as a measure of “number of machine”, and to some changes in national accounting systems that took place at different periods, these countries don’t have a very comprehensive or comparable sources of growth analysis.<sup>2</sup> Now, however, after more than two decades, some decent time span data are available and it seems appropriate to make such an analysis. Some data is still missing and, for that reason, it was not possible to make a detailed sources-of-growth analysis. For the beginning, this paper estimates only decomposition of the GDP growth rate into the contribution of capital, labour and TFP. This kind of sources-of-growth analysis will, nevertheless, provide some important insight into the anatomy of the economic growth of the East European countries. The comparative analysis of these countries will, no doubt, bring some additional and exciting results. Especially important are the results related to the speed of convergence and topics related to this issue. Apart from that, on the basis of this kind of research and on the basis of some other research on transition in these countries, it will be possible to identify and briefly analyse some of the most important fundamental factors of economic growth.

The results of the proximate causes of growth analysis will be presented in the first section of this paper. Apart from this conventional sources-of-growth analysis, both the demand and the industry side of decomposition of the GDP growth rate will be given in the second section of the paper. In the demand side of the sources-of-growth analysis special attention will be devoted to the issue of the real exchange rate level and its influence on the growth anatomy. Connected with this is the issue of industry / sectors side sources-of-growth analysis. The third section will cover comparative source-of-growth analysis for GDP per capita as an approximation of growth of standard of living. The results of the above mentioned different sources-of-growth approaches present a good basis for identifying the main institutional and policy related factors that have determined an anatomy of the economic growth. Each section of this paper will provide only a brief notation of fundamental factors of the growth, which will be based on previous research on this issue as well as on the basis of results obtained within this comparative analysis of proximate factors. Concluding remarks recapitulate main findings of the paper.

## SOURCES OF GDP GROWTH ANALYSIS

Sources-of-growth analyses are usually based on the assumption of constant factors (capital and labour) shares in the distribution of GDP. Until recently, the constancy of factors shares has been regarded as one of the most important and unquestionable stylised facts of economic growth.<sup>3</sup> The Cobb-Douglas (CD) aggregate production function and the Solow Growth Model (1956, 1957) satisfy this assumption and it is for this reason that this model of growth has been so frequently used in empirical as well as in theoretical researches. By differentiating and dividing the CD production function  $Q = AC^aL^{(1-a)}$  with  $Q$  (GDP) the following well known decomposition of the GDP rate of growth is obtained:

$$r_Q = ar_C + (1 - a)r_L + r_A. \quad (1)$$

Note that  $r$  represents the rate of growth of the variable given in subscript ( $C$  for capital,  $L$  for labor, and  $A$  for TFP), while  $a$  and  $(1 - a)$  stands for the partial elasticity of production with respect to capital and labor respectively, which should be equal to respective factors shares if assumption of competitive market is satisfied. The growth rate of GDP is therefore decomposed into parts that measure the contribution of capital ( $ar_C$ ), the contribution of employment ( $(1 - a)r_L$ ), and the contribution of total factor productivity ( $r_A$ ). Based on previous measurements and on now widely used practices, in this analysis is assumed  $a$  and  $(1 - a)$  to be equal to 0.40 and 0.60 respectively.

Note, however, that Cobb-Douglas aggregate production function is not the only one which satisfies assumption of the constancy of factors shares. The same result follows from zero-elasticity-of-substitution production function, once when it is assumed that technological progress shifts kinked isoquant of new vintages of capital in a way where the capital-labour ratio increases at the same rate at which expected wages-profit ratio increase. In this kind of model, the possibility of factors substitution exists only before investments in R&D are undertaken and not before investment in new vintage of physical capital or after investment in new vintage have been done. This, obviously, could be regarded as a kind of *putty-clay-clay* production function which, by allowing factors substitution only before new technology is designed, describes what we have in reality in a much better way than the CD function does. It is unacceptable to assume that economic agents conduct their R&D activities in order to “discover” all possible factors combination that are associated with certain level of production: it would be prohibitively costly to do something like that and it is something that the CD function, by allowing factors substitution *ex ante* and *ex post* investment in new vintages of capital, implicitly assumes. Being *rational ignorant*, the economic agent makes his decisions on factors combination during R&D process following expectations regarding future wages and other factors prices. Note that in this case, demand for labour (and other factors of production) is, as usual, downward sloping and that willingness to pay for additional units of labour (or any other factor of production) depends on vintage of capital. More importantly, it allows growth accounting to be done in the exactly same way as CD production function is assumed.<sup>4</sup>

The same kind of the growth accounting analysis is performed here for the period 1990-2012 as well as for the sub-periods 1990-1995, 1995-2000, pre-crisis sub-period 2000-2008, which, due to distortion caused by the economic crisis, better reflects long-run characteristics of the path of economic growth than the data pertaining to the entire period, and for the post-crisis sub-period 2008-2012. The data about investment and employment were not available for the year 2013 and this is why analysis is limited by this year. More importantly, the data about gross value of capital as a common measure of “number of machines”, as well as the data about net value of capital, do not exist for respective countries and we approximated it by using perpetual inventory method, based on the available data about investment.<sup>5</sup>

In the Annex (A) (tables A1 to A4) results for each country in different country groups are presented, for each sub-period as well as for entire respected period, 1990-2012. As can be seen, the first column (GR) in these tables presents rates of growth of the respected factors of production: capital, labour, and total

factor productivity. The second column presents absolute contribution (AC) of those factors to the GDP rate of growth, while the last column presents relative contribution (%) of respected factors to the GDP rate of growth. The results for each country and each period are very interesting and insightful. In order to get a broader picture on the anatomy of growth of particular regions, simple averages of RG and AC for respected regions are calculated and presented in the tables 1 and 2. Note that presented figures for the rate of growth (RG) of respected variables do not present rate of growth of that variable in respected regions as whole, but rather a simple average of those rates in all countries that belong to the respected region. This approach should have certain advantage when discussing and analysing a regions' anatomy of growth.

Table 1 (about here)

Table 2 (about here)

If one looks at the above results in the *entire 1990-2012 period* it can noticed that the GDP growth rate in East Europe was smaller than that of developed countries, which are on the frontiers of production possibilities, where GDP growth rate have been between 2,00% and 2,50%. As can be seen average GDP growth rate in CE was 1,71%, while in SEE countries it was 1,67% per year. It means that it take 42 years to double GDP in CE and 43 years in SEE countries. Interestingly enough, growth rate was almost the same in SEE and CE countries, which is really surprising keeping in mind that SEE countries had passed through war and destruction of SFRJ in the nineties. As far as CE countries are regarded, results are especially weak in Latvia (with 0,12% rate of growth of GDP), Lithuania (0,85%), and Hungary (0,99%). Results for Poland, with rate of growth of 3,78%, and Slovakia, with 2,73%, can be regarded as especially good. Czech Republic (1,87%) and Estonia (1,89%) are just bit above the average. Regarding SEE countries, suppressing outlier is Bosnia and Herzegovina with GDP growth rate of 7,11% for whole period and with 2,18% growth rate during war years 1990-1995. No doubt, these figures, based on data from UN data set, are far from being true. If Bosnia and Herzegovina is excluded, average growth rate for SEE become just 1,07%. In this case, which is indeed realistic description of SEE dynamics, we can conclude that there are significant differences in growth rate between CE and SEE countries: their growth rate differ for 0,64 percentage points or, to put it in more illustrative way, rate of growth in CE countries is higher for 60% than that in SEE countries. Regarding other SEE countries, noticeable are bad results for Serbia, with negative GDP growth rate of -1,45%, Croatia, with 0,30%, and Montenegro, with 0,34%. Bit better are results for Macedonia (1,22%), Bulgaria (1,17%), Romania (1,41%) and Greece (1,34%). Only Albania, with growth rate of 3,34% and Slovenia, with 1,98%, are well above average.

Similar situation is in FSU countries: growth rate in these countries as whole was even smaller, 1,43%, meaning that GDP doubles after 50 years. Energy exporting FSU countries have grown, as expected, at much higher rate of 2,83%, which implies 25 years for doubling GDP, while, again as expected, energy importing FSU countries have grown at much smaller growth rate of just 0,55%, which implies 131 years to double GDP. No doubt, all these results are very weak compared to other countries in the world and compared to previous growth rates for same countries. Regarding energy importing FSU countries, relatively good results are noticeable for Belarus, with GDP growth rate of 3,04%, Armenia, with 2,34% rate, and Mongolia, with 4,18% rate of growth. All other countries from this group have experienced extremely bad growth performances: Ukraine with negative -1,64% growth rate, Moldova with -2,24% rate, Georgia with -1,09%, Tajikistan with -0,43% rate, and Kyrgyzstan, 0,20%. As far as energy exporting FSU countries are regarded, Azerbaijan (3,94%), Turkmenistan (3,28%), and Uzbekistan (3,76%) have performance above average in whole 1990-2012 period. Bellow average are Russia, with growth rate of just 0,68% and Kazakhstan, with growth rate slightly below average (2,51%).

Small GDP growth rate in former socialist countries has been followed by a dangerous combination of negative or, at best, negligible growth rate and contribution of employment, on the one hand, and small growth rate but relatively dominant role of TFP in explaining GDP growth, on the other hand. In whole

period, absolute and relative contribution of labour to growth rate was negative: -0,49% (about -28% of the GDP growth) in CE countries and -0,46% (about -27% of the GDP growth) in SEE countries. Just a bit better situation was in FSU countries where absolute contribution of labour was 0,04%, while relative contribution was just 2,70%. In energy exporting FSU countries contribution of labour was much higher, 0,69% absolute and 24% relative contribution, while in energy importing countries it was close to CE and SEE countries: -0,37% absolute contribution and about -68% relative contribution.

Relative contribution of capital, on the other side, was significant in all countries, although its absolute contribution was not impressive compared to other countries: 0,94% absolute and about 54% relative contribution in CE countries, 1,33% and 79% in SEE countries, 0,71% and 25% in energy exporting FSU countries, 0,32% and 59% in energy importing FSU countries.

Most interestingly, and surprisingly for countries at this level of development, relative contribution of TFP was very high: 74% of growth in CE countries, 48% in SEE countries, 51% in energy exporting FSU countries, and 108% in energy importing FSU countries. Note, however, that absolute contribution of TFP was low (1,30% in CE, 0,80% in SEE, 1,43% in energy exporting FSU and 0,59% in energy importing FSU countries) compared to fast growing countries that at the beginning of the nineties happened to be at the similar level of development, like Ireland for example, where TFP growth rate was 2,40%. Low level of absolute contribution is not miraculous having in mind low level of GDP growth rate. High level of TFP's relative contribution is, however, puzzling and contradicts to what students are taught, about comparative advantages of countries with oversupply of labour. It seems that solution of this puzzle is the key to understand reasons for low level of the GDP growth rate as well.

Important additional insights can be obtained from analysis of the GDP growth of different countries in particular *sub-periods*. This analysis will, among other things, bring first explanation for slow growth rate in all respected countries. Note first that the growth rate was pretty volatile in all respected countries and that their growth rates have varied significantly in all respected sub-periods. Particularly important in this respect are the sub-periods 1990-1995, 1995-2000 and post crisis period 2008-2012. The first two sub-periods, that cover the nineties, are in the former socialist countries known as “transformational recession” (Kornai, 1993, 1994). As can be seen, in Central Europe the GDP growth rate was negative (-4,70%), in the first five years and positive (4,26%), in the second five years of the nineties. Similarly, in South Eastern Europe these rates were -3,99% and 5,0% in respected periods. The same applies for former Soviet Union countries: in the first five years the GDP growth rate was -11,85%, and in the second five years it was just 3,14%. The situation was especially bad in energy importing countries (-13,29% and 2,66%). Keeping in mind that the year 1990, which is taken here as the starting year, is not actually the starting year of the transformation recession, meaning that it was not the year with the highest GDP before the beginning of recession, it can be pretty safely concluded that in the case of these countries it had taken more than one decade until level of GDP which prevailed before the beginning of transformational recession has been reached. When we compare this findings with that for Europe after World War II (see, for example, Baldwin & Wyplosz, 2009), it can be concluded that, from an economic point of view, during the transformational recession, former socialist countries had experienced disaster that is relatively, at least, as large as that during the WWII. The usual explanations for all that happened in East Europe point to the complexity of the transformation process from one unsustainable economic system to a new one and to the internal political economy related to it. It is obvious, however, that the brake-up of the matrix of international economic relations that existed before the transition among former socialist states and international political economy related to it played an equally important, if not a greater, role. Example of China's growth in last 37 years, with growth rate around 10% per year and with only 7 years to double GDP, shows more than anything else that transition can be done without such astonishing sacrifices and, in fact, without any transitional recession.

Another explanation for the bad performance of former socialist countries in the last quarter of century can be the recent financial crisis, which hit these countries much harder than the other European countries. While in CE countries the GDP average growth dropped from 5,55% in pre-crisis period 2000-2008 to -0,24% in post-crisis period, which is a decline of 5,79 percentage points, in SEE countries it declined by 5,76 percentage points, a drop from 4,74% to -1,02%. Although both groups of FSU countries experienced a positive rate of growth in the post-crisis period (5,41% for energy exporters and 2,81% for energy importers), they also experienced a significant decline of growth rate in the post-crisis period: 4 percentage points for energy exporting countries and 5 percentage points for energy importers. Finally, as noticed in some other papers (Iradian, 2007; Popović and Čizmović, 2013), it can be also seen from data in this research, that former socialist countries' GDP growth rates can be comparable to that of other decently growing economies only in sub-periods of 1995-2000 and 2000-2008. Note, however, that East Europe's high rates of growth in the 1995-2000 sub-period can be largely attributed to an increase in utilization of the capital that declined dramatically in the previous period. On the other hand, relatively high rates of growth in the pre-crisis period, 2000-2008, can be attributed to an overheating of economy experienced by all European countries. Simply speaking, it is very difficult to judge what the magnitude might be of long run rates of the growth of all former socialist countries. The whole East Europe region is still in the process of the large institutional and geo-economic adjustment and it is for this reason that it is experiencing volatile rates of growth.

Especially interesting is a fact that in whole period respected countries experienced something that in some earlier papers was termed as a "jobless growth" (Popović and Čizmović, 2013; Popović, 2010, 2013). Indeed, negative or, at best, negligible growth rate of employment in transition countries explains not only slow GDP growth but a good deal of the growth anatomy of these countries as well. The jobless growth accompanied by high increase in TFP in respected countries is puzzling indeed. The contribution of TFP is usually treated as a measure of the contribution of "broader knowledge" which includes the contribution of different forms of knowledge. Having this in mind, a natural question is: Does high relative contribution TFP in almost all transition countries really reflect high increase in "broader knowledge"? Not exactly - high relative contribution of TFP to the growth mostly results from peculiar privatizations and other economic reforms undertaken at the last decade of previous and first decade of new millennium. Equally, the high contribution of labour and the low contribution of TFP in the socialist period resulted from peculiarities of socialist economic system.

With exception of SFRY, in all socialist countries, as is known, economic activity was mainly organized by state via medium range (5 years) and the long run central plans. For well known reason this system was extremely inefficient and unsustainable. In SFRY, which now make 7 SEE states, during the socialism, economic activity was mainly organized within the system of worker self-management characterized by strong "internal" solidarity among workers, implying a decent wage flexibility, and low "external" solidarity due to low propensity to saving. In order to preserve power and social peace, the state or political nomenclature, as the company's "explicit stockholder", in central planning economies, or "implicit stockholder", in Yugoslavian self-management system, created hidden unemployment within the company and provided financial assistance for companies in troubles. The implicit social contract between the nomenclature and the working class was that the nomenclature would provide job security to workers in return for political stability (Županov, J. 1983 and 1983a). This is how is obtained the high contribution of labour and the low contribution of TFP to the economic growth of that period. However, at the end, the implicit social contract between working class and political nomenclature turned out to be unsustainable. By somewhat modifying the prospect of upward mobility (POUM) hypothesis, it can be concluded that the mentioned implicit social contract broke down at the moment when the nomenclature became unable to provide the prospect of upward mobility to people.<sup>6</sup> This is mainly caused by the fact that de-ruralisation and urbanization, as the main sources of providing upward mobility and social promotion, were almost exhausted by the middle of the eighties.

After the end of the cold war and brake up of Soviet Union and SFRY, economies of new states were in a very bad shape. One decade was lost. The existing capacities were old and technologically obsolete, mainly built to serve the already non-existing communist state block (SEV) and SFRY markets. In such circumstances, instead of adopting an active economic policy directed toward “rediscovering economy” (Hausmann at all, 2005), the new government(s) opted for all kinds of “neoliberal shocks”. These “shocks” almost destroyed the domestic economies. Adopted models of privatization were especially bad and destructive. Foreign direct investments, especially at the beginning, were mostly comprised within the so-called “brown-field” investment based on privatized companies. To make a long story short and relevant for the issue being discussed, it is important to emphasize that the new domestic or foreign owners of privatized companies reduced employment in their companies to technologically acceptable level. In other words, hidden unemployment disappeared and became explicit unemployment. New investments in new or old companies, on the other hand, were insufficient to compensate for this effect and increase employment significantly. Apart from that, these new investments were mainly directed toward industrial centres, very rarely to less developed and distant regions, so that number of “closed” companies especially increased in less developed areas that once had labor intensive capacities. From the sources of growth point of view the consequence of all this is negative contribution of employment and the increased contribution of TFP to the economic growth. Obviously, the recent high growth rates of TFP in respected countries results from an advance in “broader knowledge” only to a small extent. The greatest portion of the TFP growth rate results from reduction in hidden unemployment accumulated in the previous phase of economic development. In other words, the TFP increase was the more “revealed” productivity of the already existing technology than the advance in “broader knowledge” brought with new investment. Later, within demand and industry side sources of growth, we will see that some other factors also might have played important role in generating this kind of growth anatomy.

By saying that instead of adopting policy toward “rediscovering economy” respected countries opted for all kind of “neoliberal shocks”, it was not meant that these countries really applied recopies from “Washington consensus”. Far from that: in fact, rarely anybody did. Either measured with share of public spending or with its’ regulatory impact, the role of state has been still very strong. The point is that this role has not been devoted to, so badly needed, selective industrial policy aimed at promoting economic growth by mitigating numerous market failures, but to promoting interest of newly established business elites. Market rhetoric, on the other hand, has mainly been used to justify acquired position of new elites. Being implicit “owner” of the state and by promoting their interest via state, new elites in fact contribute market failures to be amplified even further. So, what we got is, in fact, combination of the worst from both worlds: economies with extreme number of market failures and even greater number of state failures. This especially applies to SEE and FSU countries where existing order can be defined as a state captured. All kind of corruptions are extremely widespread in these countries. In fact, we can say that *grand corruption* can be regarded as *genesis* of new order in these countries, while *petit corruption* can be regarded as a new *life style*. Consequences of state capture, corruption and unsolved problems of market failures for economic growth are enormous and well known. Situation is now much better in CE countries than what it used to be at the beginning of transition and, especially, better than in SEE and FSU countries. Consequently, differences between growth rates in two groups of countries (SEE and FSU versus CE) can, at least partially, be explained by this difference. Still, corruption is great problem in CE countries as well.

## DEMAND AND INDUSTRY SIDE SOURCES OF GROWTH

Further insights in this analysis can be provided by the demand and industry side sources of growth analysis. In order to conserve space, only the basic findings will be discussed here. Results for demand side sources of growth are presented in tables 3 and 4, while results for industry side sources of growth are given in tables 5 and 6. For each group of countries, table presents demand or industry structure in particular years (black letters) and its changes in respected periods (red letters). These values are



calculated based on current and constant 2005 reference prices, but, in order to conserve space, only calculations based on current prices are presented. In fact, structural changes calculated in current prices can be decomposed on effect of quantity changes and effect of relative price changes. Or, more formally

$$\frac{Q_{it}p_{it}}{\sum_{i=1}^n Q_{it}p_{it}} - \frac{Q_{i0}p_{i0}}{\sum_{i=1}^n Q_{i0}p_{i0}} = \left( \frac{Q_{it}p_{it}}{\sum_{i=1}^n Q_{it}p_{it}} - \frac{Q_{it}p_{i0}}{\sum_{i=1}^n Q_{it}p_{i0}} \right) + \left( \frac{Q_{it}p_{i0}}{\sum_{i=1}^n Q_{it}p_{i0}} - \frac{Q_{i0}p_{i0}}{\sum_{i=1}^n Q_{i0}p_{i0}} \right) \quad (2)$$

$Q_{it}$  and  $Q_{i0}$  present quantity of goods  $i$  consumed or produced at years  $t$  and  $0$ , while  $p_{it}$  and  $p_{i0}$  present their prices in respected years. Obviously, two expressions at left hand side of this equation present shares of particular type of consumption (or production) in two years, which are given in black letters at the tables, while whole left side of equation stands for change in share in respected periods measured in percentage points, which are given in red letters at the tables. When from left hand side  $i$ -th shares in year  $t$  measured in  $0$ -th year prices are added and subtracted, then, after some manipulations, decomposition is obtained which shows how much of structural change is attributable to relative price changes, what can be seen in the first part of right hand side of equation, and how much is attributable to quantity of goods consumed (or produced) changes, second part of right hand side of equation. Since value of  $Q_{it}p_{i0}$  is not available, it was not possible to calculate relative price effect directly by using above equation. Instead, this effect is calculated by subtracting quantity effect from left hand side of above equation. Quantity effect is, on the other hand, calculated by using appropriate values in 2005 prices, since these data are available in UN data set. This is legitimate because these data are calculated using prices from 2005 as a reference price (calculated by chain indexes), not as exact prices from that year, so that any year reference prices would give same results. In order to conserve space, only calculation for difference between last and first year of the observation is presented in tables, and it is given in the last two columns of the tables (blue letters).

Regarding the aggregate demand side, the first important thing to note is the fact that in CE countries, final consumptions (household and government spending) have played much a smaller role than in the case of SEE countries. In CE countries the share of the final consumption varies from 72% in the beginning of the nineties to around 77% in 2008, and 76% in 2012, while in SEE countries it was much higher and varies between 91% and 96%. Note, however, that while in the whole respected period in CE countries real volume (quantity) of the final consumption declined by 5,75 percentage points, its share measured in current prices increased by 3,54 percentage points. It happened due to increase of the relative price of respected goods by 9,3 percentage points. SEE countries in same period have experienced opposite situation: quantity effect was positive (1,39 percentage points) and weaker than negative price effect (-2,98 percentage points), so that share of the final consumption measured in current prices declined by -1,59 percentage points. On the other hand, in energy-importing Former Soviet Union countries this share measured in current prices (between 79% and 97%) was higher than in energy-exporting countries (between 52% and 78%). In energy importing FSU countries final consumption share increased dramatically, for about 18 percentage points, due to both, price (7,55 pp) and quantity (10,41 pp), effect (10,41 pp), while in energy exporting countries it decreased also significantly, -19,83 percentage points, again due to both price (-15 pp) and quantity (-4,82 pp) effect.

Table 3 (about here)

Table 4 (about here)

Secondly, and this partly explains the above findings, net-exports (and accompanying capital inflow) have been negative in all respected countries with exception of energy exporting FSU countries. Net export have been negative and large in SEE countries (between -14% and -24% of their GDP), while in CE countries it has been stable and relatively low (between -4,7% and +2,22%). So, since trade deficit is covered mainly by capital inflow, SEE countries are extremely vulnerable to capital inflow. These countries are sensitive mainly on capital inflow and remittance from EU core countries. And of course, all

SEE countries are, like all CE countries, sensitive, via export, to the level of economic activity in the core EU countries. As far as FSU countries are regarded, it can be noticed that energy-exporting countries have a positive value of net export, which have varied from 10% to 19% of GDP, while energy-importing countries have a negative value of net export, which have varied from -7% to -28%. As a whole, FSU countries have a negative value of net export, meaning that FSU energy-importing countries have a positive capital inflow not only from regional energy-exporting partner countries, but from the rest of the world as well.

If changes in shares of net export in GDP are decomposed on the effect of price changes and the effect of quantity changes, some important additional insights can be provided. Note first that in CE and SEE countries, due to trade account liberalization, the relative prices of the both exported and imported goods decreased, so that shares of export and import increased much stronger when measured in constant prices. In CE countries price effect on increase of export share have been -14,54 pp, while in SEE countries it was -3,79 pp. In the case of import, respected figures were -10,78 pp for CE and -9,07 pp for SEE countries. So, due to all this, when measured in constant prices, increase of export share in CE countries is about 56 pp (versus 41,21 pp when measured in current price), while that of import is about 48 pp (versus 37,12 pp in current prices). In the case of SEE countries respected figures are about 14 pp (versus 10 pp in current price) for export and 17 pp (versus 8,38 pp when measured in current prices) for import. This is much smaller change in share than in the case of CE countries despite the fact that share of net export in GDP was much larger in SEE than in CE countries. On a top of that, note that all this happened despite enormous increase of oil price and that all CE and SEE countries are net-importer of oil, meaning that, if oil is excluded, decline of relative price of import goods would be even much stronger. Just for illustration, from 1990 to 2011, relative level of crude oil prices, measured in reference price of 2011 of USA \$, increased, according to BP workbook of historical data, by 5,02% per year.

Most interesting fact is that price effect was relatively so strong on import share in the case of SEE countries: as already told its effect was -9,07 percentage points compared to just -3,79 percentage points in the case of export. On the basis of these figures it can be concluded, with great certainty, that average terms of trade of these countries has changed significantly. Indeed, these calculations based on UN data set, show that relative prices of exported goods (ratio of export price level to import price level) increased on average by 0,42% a year, or, to put it in other way, that relative import price (ratio of import price level to export price level) decreased in whole respected period by -0,41% a year.<sup>7</sup> If, due to extreme data unreliability, Bosnia and Herzegovina is excluded, we get -0,59 for yearly decrease of relative import price. This is strong terms of trade change especially keeping in mind that it happened despite significant increase of energy prices that have happened since beginning of nineties. If oil prices are excluded, decrease of relative level of import prices would be much stronger. This implies that real exchange rate have appreciated in way that, due to worsened external competitiveness, presented one of the most serious limitation for stronger GDP growth. All this is natural to expect in countries, like those of SEE, where trade deficit and capital inflow have been so strong and presented -15% to -24% of GDP. Apart from, earlier mentioned, the effect of destruction of matrix of market relations that existed before nineties among these countries (especially destruction of SFRY) and the effect of inappropriate model of privatization and corruption, this is probably the most important fundamental factors that can explain low level of the GDP growth in SEE countries. On the other hand, dynamics of real exchange rate left a space only for development of those activities that have higher TFP. So, this also explains relatively high contribution of TFP to GDP growth rate, which was discussed in previous section. As already explained, other source of explanation for high relative contribution of TFP is in the fact that process of privatization, which took place in respected period, has been followed with reduction of employment in all privatized companies, which during period of socialism used to have very high level of hidden unemployment.

For CE countries situation is different and it can be noticed even from figures given in our tables: negative contribution of relative price effect is stronger in the case of export (-14,54 pp) than in the case of import (-10,78 pp), quite opposite from what happened in the SEE countries. Calculations in this research, based on UN data set, show that relative price of imported goods (ratio of import price level to export price level) increased in whole respected period by 0,30% a year. It is hard to say to what extent is this increase result of the energy price increase and to what of other goods. Anyway, this implies that real exchange rate has depreciated in CE countries and that, due to consequent improvement of competitiveness, it should have contributed to stronger GDP growth than that in SEE countries. All this would be natural to expect in countries in which trade and capital account have been closer to balance than in SEE countries: net-export used to be here between -4,73% and +2,22 of GDP. Indeed, and in accordance to expectation, growth rates in CE countries have been much higher than in SEE countries (for 60%), once unreliable data for Bosnia and Herzegovina are excluded. Note, however, that as far as exchange rate impact on growth rate in CE countries is regarded, it should be considered not only level of real exchange rate, but its volatility as well. Apart from that, and probably more importantly, increase of import price relative level in CE countries is probably not so important once impact of oil price is excluded. So, further research is necessary to get clearer picture about possible influence of real exchange rate on growth rate solely in CE countries. In fact, in somewhat different way and with different country classification, such research has already been done by Becker at all (2010). This research shows that even 5 best performing CE countries (CE5: Czech Republic, Slovakia, Poland, Hungary and Slovenia) have experienced certain real exchange appreciation, but authors concluded that in this case appreciation was pretty mild and could not have been obstacle for the growth. In our research CE include Baltic States as well, and from Becker at all (2010) research it can be safely concluded that in the case of these countries real exchange rate appreciation was very strong. Unfortunately, their BB6 group of countries include, apart from Baltic States, Romania and Bulgaria, so that additional research is still needed, to make any definite conclusions about this issue. Despite this ambiguity, it seems likely that CE countries, as defined in our research, have experienced real exchange appreciation rate that have had certain negative effect on the economic growth. On the other hand, their research is quite in accordance with here presented findings regarding impact of real exchange rate on growth of SEE countries.

Somewhat different situation is with FSU countries. Interestingly enough, price effect on export and import share was here positive for both group of countries: +6,33 pp for export and +17,49 pp for import in energy importing FSU countries and +4,55 pp for export and +5,13 pp for import in energy exporting countries. While positive price effect can, at least partially, be explained with energy price increase for import in the case of energy importing countries and for export in energy exporting FSU countries, a lot of other issue should be taken into consideration in order to get full understanding of these movements. What is obvious, however, is dramatic increase of import share (28,13 pp) and modest increase of export share (6,33 pp) in energy importing countries, on the one side, and dramatic decrease of import share (17,61 pp) and modest increase of export share (6,18 pp) in energy exporting FSU countries. To get clearer picture of this issue rate of growth of relative import price in both group of FSU countries was calculated. This estimation shows that in whole 1990-2012 period it increased by 0,85% per year in energy importing FSU countries, while in energy exporting countries it decreased by amazing -3,66% per year. All this is in accordance with dynamics of trade balance of respected countries, with movement of energy prices, as well as with differences between growth rates of two groups of countries. Huge decrease of relative import prices in energy exporting FSU countries, -3,66% per year, is a result of the dramatic increase of oil prices as main export good of these countries (5,02% per year from 1990 to 2011). This also explain higher rate of growth in these countries compared to energy importing countries. Note, however that growth rate in energy exporting FSU countries is not impressive at all (2,83%). In fact, although high inflow of “oil money” allows these countries to have higher rate of growth, due to possible higher investment rate, strong appreciation of real exchange rate limits its growth by reducing share of manufacture and other propulsive sectors. This is very known phenomenon, sometime termed as Dutch disease, noticed long ago in the case of MENA countries (Middle East and North Africa)<sup>8</sup>. Looking at

energy importing FSU countries, it is obvious that increase of relative import prices, by 0,85% per year, in these countries is mainly a result of increase of energy prices, not result of significant exchange rate depreciation which would significantly improve their external competitiveness and, in that way, increase their growth rate.

Third important conclusion that may be derived from analysis of demand side dynamics is that magnitudes of gross fixed capital formations in SEE countries and FSU energy importing countries are crucially determined with magnitudes of net-export and accompanying capital inflow. All variations in capital inflow and consequent variations in net export are followed by even stronger variations in gross fixed capital formation, which, as is known, crucially determine economic growth. About 65% to 96% of gross fixed capital formation in SEE countries has been financed by capital inflows, mainly from core EU countries. Similarly, in the case of energy-importing FSU countries, 62% to 98% of their gross fixed capital formation arrived from capital inflow. In the case of CE these figures vary between 8% and 18%, which is important but negligent compared to SEE countries. An interesting trend of relative price decline can be noticed for goods that refer to gross fixed capital investment in CE and SEE countries. The consequence is a higher share of investment in GDP when they are measured in constant prices than when they are measured in current prices. So, when measured in constant price, share of gross fixed capital formation in CE countries is about the same as at the beginning of the nineties (24%), while in the case of SEE this share is even higher than at the beginning of the nineties (23% versus 21%). In the case of FSU countries relative price of this kind of goods increased, so that, when measured in constant prices, share of gross fixed capital formation in GDP, in fact, decreased from 24,43% in 1990 to 21,37% in energy importing countries and from 29,38% to 22,07% in energy exporting countries. In both cases, relative prices increase contributed to decrease of share of gross fixed capital formation for bit more than 7 pp, when measured in fixed prices. In the case of energy exporting countries this is just one of manifestation of Dutch disease.

Looking now at industry structure, it can be regarded as a mirror image of demand structure. The first thing to notice is a decrease of share of manufacture in GDP in all respected groups of countries. The decrease of manufactures share in GDP has been extremely strong in CE and SEE countries: it dropped by 10 percentage points in CE countries (from 27% 1990. to 17% in 2012) and by 9 percentage points in SEE countries (from around 21% in 1990 to 12% in 2012). Due to trade and capital account liberalisation that occurred in this period, the impact of the relative price decline was much stronger in CE and SEE than in other EU countries. In the case of CE countries, 16 percentage points of decline in share is attributable to price declines, meaning that when measured in constant price, share of manufacture in GDP would increase by 6 percentage points. In the case of SEE countries, the 3,3 percentage point of share decrease is attributable to a relative price decline, meaning that if measured in constant prices share of manufacture would decline by just 5,7 percentage points. In energy-importing FSU countries this decline was much larger – 16 percentage points (a drop from 29% in 1990 to 13% in 2012), while in energy exporting FSU countries it was just 3 percentage points (a drop from 20% to 17% in the same period). In energy importing FSU countries, almost half of the decline in share is attributable to relative price decline, while in energy-exporting group of countries more than half of the decline is attributable to price effect. The above data are obvious signs of “deindustrialization” that we witnessed in all of these countries in the last three decades. As can be seen, this is especially pronounced in CE, SEE and energy-importing FSU countries.

The second important change is a significant decrease of share of agriculture in GDP. Again, like in the case of manufacture, a good deal of this decrease is attributable to the relative price decrease that can be witnessed in agriculture. Share of agriculture, forestry, hunting and fishing in GDP dropped from 13,7% to 3,4% in CE countries (drop of 10,3 percentage points), from 14,4% to 7,7% in SEE countries (drop of 6,73 pp), from 25% to 13% in energy-importing FSU countries (12 pp drop), and from around 29% to 9% in energy-exporting FSU countries (20 pp drop). In the case of CE countries around 70% of that drop is

attributable to price decrease (-7,03 pp). In SEE countries price effect is 3,87 pp while quantity effect was just 2,86 pp. In energy importing FSU countries price effect is responsible for 9 pp (out of 12 pp), while in energy exporting FSU countries price effect account for 16,52 pp (out of about 20 pp). Keeping in mind that agriculture used to be labour intensive in respected countries and that a lot of employees used to be allocated to this activity, it is clear what the social consequences of this trend are.

Table 5 (about here)

Table 6 (about here)

Finally, the third important trend is related to broadly defined trade (wholesale, retail, hotels and restaurants). We can notice a strong increase of this sector share in GDP in all former socialist countries: an increase from 10% of GDP to 16% of GDP in CE countries, from 11% to 14% in SEE countries, from 7% to 15% in energy-importing FSU countries, and from 6% to 11% in energy-exporting FSU countries. This “bubble” in the trade sector is, in fact, the other side of the above mentioned trend in the decline of manufacture and agriculture. More or less in all of these countries, due to capital and trade account liberalization and, in some countries, due to the real exchange rate appreciation, external competitiveness of domestic sectors declined causing a strong decline of export and increase of import. These two trends together caused domestic manufacture and agriculture shares in GDP to decrease, while increase of “cheep” imported goods itself caused the “trade” sector to flourish. Price effects presented in tables do not show that price effect have negative impact on its share which is natural having in mind industrial structure in this sector and how value added in “trade” is being calculated.

## GDP PER CAPITA SOURCES OF GROWTH

The analysis of the GDP per capita sources of growth that is given in the tables 7 and 8 and in Annex (B) (tables B1 to B4), will be useful in focusing on and analysing another important source of growth and reserve for future growth – the increase in the labour participation rate. Basically, taking  $P$  to present population and  $Q$  to present GDP, the growth of GDP per capita can be decomposed in the following way:

$$\frac{Q}{P} = \frac{L}{P} \frac{Q}{L} = \left(\frac{L}{P}\right) \frac{AC^a L^{(1-a)}}{L} = \left(\frac{L}{P}\right) A \left(\frac{C}{L}\right)^a \Rightarrow r_{Q/P} = r_{L/P} + r_{Q/L} = r_{L/P} + ar_{C/L} + r_A$$

where, as previously stated,  $r$  represents the rate of growth of the variable given in subscript. The growth of GDP per capita is decomposed into a part that measures the contribution of the increase in the employment share in the population (employment population ratio,  $r_{L/P}$ ), a part that measure the contribution of the increase in the capital labour ratio ( $ar_{C/L}$ ), and a part that measures the contribution of the TFP ( $r_A$ ).

The results presented in the Table 7 and 8, and in that from Annex (B) have been obtained by applying the above analytical framework on the existing data pertaining to given sample of countries. Note that the growth of GDP per capita is decomposed, first, into the contribution of the increase in the participation rate (labour-population ratio) and the contribution of the increase in labour productivity. After that, the contribution of labour productivity is decomposed into the contribution of the increase in capital labour ratio and the contribution of TFP. Many interesting conclusions can be derived from these results. Only those conclusions that are most important for the kind of analysis we intend to do, will be discussed.

Note first that, although far from perfect, the GDP per capita is usually regarded as a good proxy for the level of welfare and standard of living. The less developed the country, the better measure of welfare it is. Numerous researches, especially those related to the economics of happiness, revealed that this does not apply to developed countries.<sup>9</sup> Secondly, usually the less developed the country, the more important

source of its' rate of growth is the increase in the employment participation ratio. Finally, the increase in the employment population ratio, apart from increasing the standard of living, reduces economic inequality and eradicates poverty. In fact, it is the most powerful channel to reduce poverty. At the same time, it is the only sustainable way to do it.

Table 7 (about here)

Table 8 (about here)

Let see how former communist countries position themselves against these issues. Looking at the entire period 1990-2012, the first thing that attracts attention is the differences in the growth of population. Central and South East European countries have mainly experienced a significant decline in population. In Central Europe, population declined at an annual rate of -0,42%, while in South East Europe it declined at an annual rate of -0,21%. On the other hand, in FSU countries as a whole, the population grew at 0,49%: 0,89% in energy importing countries and 0,24% at energy exporting countries. These trends in population movements within CE, SEE and FSU countries are the result of movements in natural rate of growth of population, on the one hand, which was weak in CE and SEE countries, and movement in migration on the other hand, where CE and SEE become emigration countries. Both trends are, of course, the result of different long run economic movements in two groups of countries and of different cultural shapes that determine fertility rate and other population indicators. According to the available data (see, for example, PRB report, 2013), the natural rate of population growth (birth rate minus mortality rate) has been negative in majority of former communist states: -0,1% in Estonia, -0,5% in Latvia, -0,4% in Lithuania, -0,6% in Bulgaria, -0,5% in Serbia, -0,4% in Hungary and Romania, -0,3% in Romania and Ukraine, -0,2% in Croatia, -0,1% in Belarus and Bosnia and Herzegovina, 0,0% in Czech republic, Poland, Moldavia and Russia, +0,1% in Slovakia and Slovenia, +0,2 in Macedonia, +0,3% in Montenegro, +0,5% in Albania, and +1% in Kosovo. On a top of that, due to worsened economic conditions and to a liberalized approach to labour market in core European countries, CE and SEE countries experienced significant emigration rate: -1,5% in Albania, -0,7% in Lithuania, -0,5% in Estonia, -0,2% in Kosovo and Latvia, -0,1% in Croatia and Bulgaria, 0,0% in Serbia, Slovenia, Montenegro, Moldova, Poland, Romania and Bosnia and Herzegovina, 0,1% in Belarus, Czech Republic, Hungary, Slovakia, Ukraine, and Russia. Data for countries with zero and positive migration rates are extremely dubious, and these countries probably have negative migration rates. According to World Bank (2007) estimates all of these countries have been important destinations for remittances from core EU countries: in Bosnia and Herzegovina and Moldova, for example, remittances present 20-27% of GDP, in Montenegro and Serbia they present 5-10% of GDP, and for other countries with zero or positive migration rate they present 0-5% of GDP. The point is that a great number of workers that leave their countries do not register their movement from native countries.

As a result of negative trends in the movement of population, the GDP per capita growth rates increased and even become favourable for CE and SEE countries. Average GDP per capita growth rate was 2,16% in Central European and 1,89% in South East European countries. These results imply that in CE countries it takes 33 years to double GDP per capita while in SEE countries it takes 38 years. In former Soviet Union countries, the respected rate was just 0,93%: 0,30% in energy importing countries and 1,95% in energy exporting countries. So, it takes 240 years in energy importing and 37 years in energy exporting countries to double GDP per capita. If GDP per capita growth rate of most developed countries in the same period is taken as a benchmark, 1,31% for 12 most developed European countries and 1,38% for USA, it can be concluded that on average CE countries, SEE countries and FSU energy exporters countries have experienced a convergence towards most developed countries. Expectedly FSU energy importing countries do not show convergence. When it comes to making judgements about the healthiness of growth experienced by different countries, however, one should be very careful with the interpretation of these results and figures. It is very dubious to conclude that the growth of CE and SEE countries has been even close to healthy. Apart from the fact that the speed of convergence was not very

impressive, it is obvious that the seemingly decent results for GDP per capita growth follow from a decline in population, caused mainly by labour force emigration, which is itself a result of overall bad economic performance of those countries.

Looking at the different sub-periods it can be noticed that per capita GDP growth rate in CE and SEE countries were pretty volatile. In the first five years of the nineties it was negative, -3,90% (-4,25% in CE and -3,65% in SEE countries), and in the next five years it was positive, 5,03% (4,66% in CE and 5,30% in SEE), indicating that, on average, by the beginning of the millennium GDP per capita returned to pre-transitional level. When we exclude the nineties and look only at the data for this millennium, a pretty good GDP per capita growth rate of 3,39% (3,98% for CE and 2,98% for SEE countries) is noticeable. Even more impressive are the data for pre-crisis period 2000-2008, 5,32% (5,93% for CE and 4,90% for SEE countries). In this particular case, it takes 12 years in CE countries and 15 years in SEE countries to double per capita GDP, which is very good indeed. Of course, all this was followed, as it was stressed earlier, with a decline in population. Apart from that, growth rate in pre-crisis period was under the influence of the real estate “bubble” that preceded the crash in 2008. This is why one should be careful in making any overoptimistic conclusions about the possible speed of convergence in respected countries. Same kind of volatility is noticeable in the case of FSU countries. Looking only at data for this millennium, picture of growth is much better. For energy importing countries, per capita GDP growth rate has been 5,70%, which implies about 13 years for doubling it, while for energy exporters it was 7,07%, which implies 10 years for doubling GDP per capita. These countries have had highest growth rate of per capita GDP in pre-crisis period 2000-2008: 7,54% in energy importing (9,5 years for doubling) and 8,66% in energy exporting (about 8 years for doubling) FSU countries. Those figures are, no doubt, impressive. However, keeping in mind previous considerations as well as a fact that ongoing crisis is structural and long run one, it is unlikely that respected countries will be able to even approach to them.

Further important insights can be obtained from the anatomy of the GDP per capita growth analysis. In the whole 1990-2012 period in former communist countries as a whole, participation rate has had a negative effect on GDP per capita growth, which is surprising if the high rate of unemployment and negative rate of population growth present in these countries is taken into account. In CE countries, the employment participation rate's relative contribution to growth was -18,45%, while in SEE countries it was -28,8%. In other words, GDP per capita growth rate is in these countries entirely explained with productivity growth: in CE countries its relative contribution was 118,45% and in SEE countries it was 128,80%. Obviously, despite a significant decline in population, these countries experienced a negative impact of labour participation rate due to an even stronger decline in employment. In fact, the decline in the natural rate of population and emigration of labour force as well as a consequent decline of population in these countries is predominately the result of their inability to generate new work places and jobs. In FSU countries, the relative contribution of labour participation rate was also negative, -45,70%, while contribution of labour productivity growth was 145,70%. Note, however, that this result can be entirely attributed to performance of energy importers countries, where relative contribution of labour participation rate was astonishing -282,87%. In energy exporting countries it was even positive and explains 13,58% of GDP per capita growth.

Regarding sources of growth of labour productivity, it can be noticed that in the 1990-2012 period, the contribution of TFP to labour productivity growth was 60% (out of 118%) in CE and 42% (out of 128%) in SEE countries. Remaining 40% in CE and 58% in SEE countries is explained with increase of capital labour ratio. As far as FSU countries are regarded, the contribution of TFP is especially noticeable in energy-exporting countries, where it explains around 74% (out of 86%) of labour productivity increase. On average, in FSU countries 98% (out of 146%) of labour productivity growth can be explained with TFP.

Looking at GDP per capita sources of growth at different sub-periods, it could be obtained a lot of additional and interesting insights for all countries and for all groups of countries. It would take a lot of space to make such comprehensive analysis and, for that reasons, only some results important for this comparative analysis will be pointed out. Again, it is noticeable that sources of growth structures are extremely volatile in all former communist countries. As usual, this volatility is especially significant in post-crisis period 2008-2012 and it especially refers to growth of TFP. Apart from that, in former socialist countries this volatility is even more significant during “transformational recession”, in sub-periods 1990-1995. In the following two sub-periods, 1995-2000 and 2000-2008, the growth anatomy of these countries is more stable and more in accordance with the long run shapes.

## CONCLUDING REMARKS

Focus of this research was on proximate causes of growth in SEE, CE, and FSU countries. Comparative approach as well as detailed demand and industry side sources of growth analysis brought insights into some important fundamental causes of growth which have been stressed here together with some other discovered in numerous previous researches. In this concluding section focus will be on those fundamental causes and its impact on rate and anatomy of growth in transition economies.

First, low growth rate in all respected countries in 1990-2012 period was mainly determined with what is known as “transformational recession”. This explanation usually points only to the complexity of the transformation process from one unsustainable economic system to a new one. It is obvious, however, that the brake-up of the matrix of international economic relations that existed before the transition among former socialist states and international political economy related to it played an equally important, if not a greater, role. Example of Chinas’ growth in last 37 years shows, better than anything else, that transition can be done without astonishing sacrifices and, in fact, without any transitional recession. Eastern European countries have been victims of old and well known European “curse” – European fragmentation.

Second, negative or, at best, negligible growth rate of employment in transition countries explains not only slow GDP growth but a good deal of the growth anatomy of these countries as well. Privatization in all of analysed countries have been done in a way that was followed with great number of losers, quite contrary to what have happened in Chinese “transition without losers”. The new domestic or foreign owners of privatized companies reduced employment in their companies to technologically acceptable level. In that way, hidden unemployment disappeared and became explicit unemployment. New investments in new or old companies, on the other hand, were insufficient to compensate for this effect and increase employment significantly. From the sources of growth point of view the consequence of all this is negative contribution of employment and unusually strong relative contribution of TFP to the economic growth. In other words, the TFP increase was the more “revealed” productivity of the already existing technology than the advance in “broader knowledge” brought with new investment.

Third, either measured with share of public spending or with its’ regulatory impact, the role of state has been still very strong. The point is that this role has not been devoted to, so badly needed, selective industrial policy aimed at promoting economic growth by mitigating numerous market failures, but to promoting interest of newly established business elites. Being implicit “owner” of the state and by promoting their interest via state power, new elites in fact contribute market failures to be amplified even further. So, what we got is, in fact, combination of the worst from both worlds: economies with extreme number of market failures and even greater number of state failures. This especially applies to SEE and FSU countries where existing order can be defined as a state captured. All kind of corruptions are extremely widespread in these countries. In fact, it can be said that *grand corruption* can be regarded as *genesis* of new order in these countries, while *petit corruption* can be regarded as a new *life style*. Consequences of state capture, corruption and unsolved problems of market failures for economic growth



are enormous and well known. In CE countries situation is now much better than what it used to be at the beginning of transition and, especially, better than in SEE and FSU countries.

Finally, appreciation of real exchange rate has played important role not only in explaining slow growth rate but in explaining relatively strong contribution of TFP as well. Possible exceptions are 5 most developed CE countries. Appreciation of real exchange rate, due to worsened external competitiveness, leads inevitably to reduction of growth rate. On the other hand, in such circumstances only those activities that have relatively high level of TFP can survive and go ahead. So, it is appreciated real exchange rate and implied relative price level that caused TFP to increase in respected countries, not vice versa like in school textbooks. In a peculiar way, it was appreciated real exchange rate that contributed both to low *absolute* contribution of TFP growth and to unusually high *relative* contribution of TFP growth. Of course, exchange rate policy is only one of many economic policies. It seems, however, that in globalized world it is becoming one of the most important for small countries. In other words, it seems appropriate to define appropriate optimal exchange rate regime and optimal exchange rate as one of the most important policy instrument.<sup>10</sup> Unfortunately, this seems to be most difficult task.

Table 1: Sources of GDP growth for Central European and South-East European countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
All countries	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	2.92%	1.17%	68,50%	1,36%	0,54%	-12,70%	2,07%	0,83%	17,52%	3,94%	1,58%	50,36%	4,00%	1,60%	31,53%	3,84%	1,53%	-218,65%
Labor	-0,78%	-0,47%	-27,51%	-3,17%	-1,90%	44,41%	-0,67%	-0,40%	-8,52%	0,20%	0,12%	3,84%	1,23%	0,74%	14,59%	-1,84%	-1,10%	157,05%
TFP	1,01%	1,01%	59,01%	-2,93%	-2,93%	68,29%	4,31%	4,31%	91,00%	1,43%	1,43%	45,80%	2,73%	2,73%	53,88%	-1,13%	-1,13%	161,60%
GDP - Q	1,71%	1,71%	100,00%	-4,29%	-4,29%	100,00%	4,73%	4,73%	100,00%	3,13%	3,13%	100,00%	5,07%	5,07%	100,00%	-0,70%	-0,70%	100,00%
Central Europe	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	2,35%	0,94%	53,75%	1,03%	0,41%	-8,78%	1,57%	0,63%	14,85%	3,23%	1,29%	36,17%	3,41%	1,37%	24,59%	2,88%	1,15%	-479,66%
Labor	-0,81%	-0,49%	-27,95%	-3,42%	-2,05%	43,58%	-0,52%	-0,31%	-7,41%	0,18%	0,11%	2,95%	1,26%	0,76%	13,65%	-1,94%	-1,17%	485,64%
TFP	1,30%	1,30%	74,20%	-3,07%	-3,07%	65,20%	3,92%	3,92%	92,57%	2,18%	2,18%	60,89%	3,43%	3,43%	61,75%	-0,23%	-0,23%	94,02%
GDP - Q	1,75%	1,75%	100,00%	-4,70%	-4,70%	100,00%	4,24%	4,24%	100,00%	3,58%	3,58%	100,00%	5,55%	5,55%	100,00%	-0,24%	-0,24%	100,00%
SEE countries	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	3,32%	1,33%	79,28%	1,59%	0,64%	-15,94%	2,42%	0,97%	19,08%	4,44%	1,78%	62,95%	4,41%	1,76%	37,22%	4,51%	1,80%	-175,87%
Labor	-0,76%	-0,46%	-27,20%	-3,00%	-1,80%	45,09%	-0,78%	-0,47%	-9,17%	0,22%	0,13%	4,64%	1,21%	0,73%	15,35%	-1,76%	-1,06%	103,20%
TFP	0,80%	0,80%	47,92%	-2,83%	-2,83%	70,84%	4,58%	4,58%	90,09%	0,91%	0,91%	32,41%	2,25%	2,25%	47,43%	-1,77%	-1,77%	172,67%
GDP - Q	1,67%	1,67%	100,00%	-3,99%	-3,99%	100,00%	5,08%	5,08%	100,00%	2,82%	2,82%	100,00%	4,74%	4,74%	102,15%	-1,02%	-1,02%	100,00%

GR=Growth rate of respected variable; AC=Absolute contribution to growth rate of respected factor; %=Relative contribution.

GR and AC calculated as average of all respected countries; % calculated as contribution of average values

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population, employment participation in labour force and population.

Table 2: Sources of GDP growth for Former Soviet Union countries and Mongolia

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
All countries	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	1,18%	0,47%	33,06%	1,03%	0,41%	-3,49%	-0,53%	-0,21%	-6,76%	2,06%	0,82%	12,03%	1,39%	0,56%	6,61%	3,41%	1,36%	35,79%
Labor - L	0,06%	0,04%	2,70%	-0,49%	-0,29%	2,47%	-0,53%	-0,32%	-10,04%	0,51%	0,30%	4,45%	-0,21%	-0,12%	-1,47%	1,97%	1,18%	31,06%
T F P	0,92%	0,92%	64,24%	-11,93%	-11,93%	101,02%	3,67%	3,67%	116,80%	5,71%	5,71%	83,52%	7,99%	7,99%	94,86%	1,26%	1,26%	33,14%
G D P - Q	1,43%	1,43%	100,00%	-11,81%	-11,81%	100,00%	3,14%	3,14%	100,00%	6,84%	6,84%	100,00%	8,42%	8,42%	100,00%	3,81%	3,81%	100,00%
Energy Exp	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	1,77%	0,71%	25,01%	1,16%	0,47%	-4,93%	-0,02%	-0,01%	-0,19%	2,90%	1,16%	14,45%	2,09%	0,84%	8,89%	4,54%	1,82%	33,62%
Labor	1,15%	0,69%	24,40%	0,30%	0,18%	-1,92%	0,62%	0,37%	9,49%	1,67%	1,00%	12,49%	1,36%	0,81%	8,65%	2,31%	1,38%	25,59%
TFP	1,43%	1,43%	50,59%	-10,10%	-10,10%	106,85%	3,54%	3,54%	90,70%	5,86%	5,86%	73,05%	7,75%	7,75%	82,45%	2,21%	2,21%	40,79%
GDP - Q	2,83%	2,83%	100,00%	-9,45%	-9,45%	100,00%	3,91%	3,91%	100,00%	8,02%	8,02%	100,00%	9,40%	9,40%	100,00%	5,41%	5,41%	100,00%
Energy Imp	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	0,81%	0,32%	59,18%	0,94%	0,38%	-2,84%	-0,85%	-0,34%	-12,79%	1,53%	0,61%	10,04%	0,95%	0,38%	4,89%	2,70%	1,08%	38,40%
Labor	-0,62%	-0,37%	-67,73%	-0,98%	-0,59%	4,42%	-1,24%	-0,74%	-27,95%	-0,22%	-0,13%	-2,16%	-1,18%	-0,71%	-9,09%	1,77%	1,06%	37,64%
TFP	0,59%	0,59%	108,54%	-13,08%	-13,08%	98,43%	3,75%	3,75%	140,74%	5,62%	5,62%	92,12%	8,13%	8,13%	104,20%	0,67%	0,67%	23,96%
GDP - Q	0,55%	0,55%	100,00%	-13,29%	-13,29%	100,00%	2,66%	2,66%	100,00%	6,10%	6,10%	100,00%	7,81%	7,81%	100,00%	2,81%	2,81%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population, employment participation in labour force and population.

Table 3: Demand Side Sources of GDP growth for CE and SEE countries

CE – CENTRAL EUROPE / STRUCTURE	1990	1995	95-90	2000	00-90	2008	08-90	2012	12-90	Price Effect	Quantity Effect
Final consumption expenditure	72,37%	79,25%	6,88%	79,10%	6,73%	77,26%	4,89%	75,91%	3,54%	9,30%	-5,75%
Household final expenditure	54,06%	56,90%	2,84%	58,72%	4,66%	57,81%	3,75%	57,31%	3,25%	5,41%	-2,16%
General government final consumption expenditure	18,31%	22,34%	4,04%	20,38%	2,07%	19,44%	1,13%	18,60%	0,30%	3,93%	-3,63%
Gross capital formation	29,50%	23,54%	-5,96%	25,41%	-4,08%	27,47%	-2,02%	21,86%	-7,64%	-5,55%	-2,09%
Gross fixed capital formation	24,17%	22,20%	-1,96%	24,58%	0,41%	25,87%	1,70%	20,70%	-3,47%	-3,14%	-0,33%
Changes in inventories	5,33%	1,33%	-4,00%	0,83%	-4,49%	1,60%	-3,73%	1,16%	-4,17%	-1,79%	-2,38%
Export of goods and services	37,93%	47,37%	9,44%	57,79%	19,86%	63,43%	25,50%	79,14%	41,21%	-14,54%	55,75%
Import of goods and services	39,80%	50,15%	10,36%	62,30%	22,51%	68,16%	28,36%	76,91%	37,12%	-10,78%	47,90%
GROSS DOMESTIC PRODUCT (GDP)	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
Net-Export / GDP	-1,86%	-2,79%		-4,51%		-4,73%		2,22%			
Net-Export / Gross Fixed Capital Formation	-7,72%	-12,54%		-18,35%		-18,28%		10,76%			
SEE - SOUTH EAST EUROPE / STRUCTURE	1990	1995	95-90	2000	00-90	2008	08-90	2012	12-90	Price Effect	Quantity Effect
Final consumption expenditure	91,72%	96,76%	5,15%	95,60%	3,71%	92,42%	0,23%	90,72%	-1,59%	-2,98%	1,39%
Household final expenditure	73,66%	76,49%	3,22%	75,47%	1,59%	74,45%	0,53%	72,71%	-1,32%	-5,59%	4,27%
General government final consumption expenditure	18,06%	20,26%	1,93%	20,12%	2,12%	17,96%	-0,31%	18,01%	-0,27%	2,71%	-2,98%
Gross capital formation	23,51%	19,72%	-2,97%	22,53%	0,45%	31,21%	7,84%	23,21%	-0,11%	-2,30%	2,19%
Gross fixed capital formation	21,17%	17,20%	-3,29%	21,28%	0,97%	28,30%	7,59%	21,52%	0,72%	-1,17%	1,89%
Changes in inventories	2,35%	2,52%	0,31%	1,24%	-0,52%	2,91%	0,25%	1,69%	-0,83%	7,37%	-8,20%
Export of goods and services	33,10%	28,59%	-3,59%	33,24%	2,33%	37,56%	5,07%	42,88%	10,08%	-3,79%	13,87%
Import of goods and services	48,34%	45,07%	-1,41%	51,36%	6,49%	61,18%	13,13%	56,81%	8,38%	-9,07%	17,45%
GROSS DOMESTIC PRODUCT (GDP)	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
Net-Export / GDP	-15,23%	-16,54%		-18,08%		-23,83%		-14,03%			
Net-Export / Gross Fixed Capital Formation	-72,00%	-95,81%		-85,15%		-83,48%		-64,73%			

Sources: Authors' calculations based on data from UN Data Set.

Table 4: Demand Side Sources of GDP growth for FSU countries and Mongolia

FSUEI – ENERGY IMPORTERS / STRUCTURE	1990	1995	95-90	2000	00-90	2008	08-90	2012	12-90	Price Effect	Quantity Effect
Final consumption expenditure	78,91%	93,15%	14,24%	90,64%	11,74%	94,66%	15,75%	96,87%	17,96%	7,55%	10,41%
Household final expenditure	61,50%	75,80%	14,30%	75,87%	14,37%	77,68%	16,17%	79,96%	18,46%	-5,49%	23,95%
General government final consumption expenditure	17,41%	17,34%	-0,06%	14,77%	-2,63%	16,98%	-0,42%	16,91%	-0,50%	11,06%	-11,56%
Gross capital formation	28,19%	24,46%	-3,73%	21,16%	-7,03%	35,02%	6,84%	31,67%	3,48%	3,60%	-0,12%
Gross fixed capital formation	24,43%	20,74%	-3,69%	19,02%	-5,40%	31,47%	7,04%	29,00%	4,57%	7,63%	-3,06%
Changes in inventories	3,76%	3,73%	-0,04%	2,16%	-1,60%	3,55%	-0,21%	2,67%	-1,09%	0,44%	-1,53%
Export of goods and services	38,20%	54,80%	16,60%	50,85%	12,64%	42,93%	4,72%	44,89%	6,68%	6,33%	0,35%
Import of goods and services	45,30%	72,41%	27,11%	62,65%	17,35%	72,61%	27,31%	73,43%	28,13%	17,49%	10,64%
GROSS DOMESTIC PRODUCT (GDP)	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
Net-Export / GDP	-7,13%	-16,71%		-12,00%		-28,46%		-28,00%			
Net-Export / Gross Fixed Capital Formation	-29,05%	-84,91%		-62,05%		-94,32%		-98,41%			
FSUEE – ENERGY EXPORTERS / STRUCTURE	1990	1995	95-90	2000	00-90	2008	08-90	2012	12-90	Price Effect	Quantity Effect
Final consumption expenditure	71,84%	78,37%	6,53%	68,46%	-3,38%	55,27%	-16,58%	52,01%	-19,83%	-15,02%	-4,82%
Household final expenditure	55,02%	63,20%	8,18%	53,55%	-1,47%	43,09%	-11,93%	38,52%	-16,50%	-20,48%	3,98%
General government final consumption expenditure	16,82%	15,18%	-1,64%	14,91%	-1,91%	12,18%	-4,64%	13,49%	-3,33%	4,24%	-7,57%
Gross capital formation	34,62%	25,95%	-8,67%	22,22%	-12,40%	25,53%	-9,09%	30,66%	-3,96%	15,59%	-19,56%
Gross fixed capital formation	29,38%	23,14%	-6,24%	23,04%	-6,34%	24,73%	-4,66%	29,34%	-0,04%	7,27%	-7,31%
Changes in inventories	5,24%	2,80%	-2,43%	-0,82%	-6,06%	0,80%	-4,43%	1,31%	-3,92%	7,42%	-11,35%
Export of goods and services	41,70%	54,58%	12,88%	51,76%	10,06%	51,56%	9,86%	47,89%	6,18%	4,55%	1,63%
Import of goods and services	48,16%	58,90%	10,74%	42,44%	-5,72%	32,36%	-15,80%	30,55%	-17,61%	5,13%	-22,74%
GROSS DOMESTIC PRODUCT (GDP)	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
Net-Export / GDP	-6,54%	-4,35%		9,40%		19,19%		17,34%			
Net-Export / Gross Fixed Capital Formation	-21,98%	-18,67%		40,46%		77,68%		59,08%			

Sources: Authors' calculations based on data from UN Data Set.

Table 5: Industry Structure Side Sources of Growth for SEE and CE Countries

<b>CE – CENTRAL EUROPE / STRUCTURE</b>	<b>1990</b>	<b>1995</b>	<b>95-90</b>	<b>2000</b>	<b>00-90</b>	<b>2008</b>	<b>08-90</b>	<b>2012</b>	<b>12-90</b>	<b>Price Effect</b>	<b>Quantity Effect</b>
Agriculture, Hunting, Forestry, Fishing	13,74%	6,52%	-7,23%	4,37%	-9,38%	2,99%	-10,75%	3,44%	-10,31%	-7,03%	-3,27%
Mining, Manufacturing, Utilities	34,55%	24,24%	-10,32%	22,11%	-12,45%	21,12%	-13,43%	22,19%	-12,37%	-12,34%	-0,03%
Manufacturing	27,19%	18,82%	-8,36%	17,79%	-9,40%	16,51%	-10,68%	17,35%	-9,83%	-15,93%	6,09%
Construction	8,45%	5,68%	-2,77%	5,80%	-2,66%	7,71%	-0,74%	5,85%	-2,61%	1,30%	-3,90%
Wholesale, Retail trade, Restaurants and Hotels	10,19%	13,02%	2,83%	14,52%	4,33%	14,90%	4,72%	16,01%	5,83%	1,74%	4,09%
Transport, Storage, Communication	6,71%	9,00%	2,29%	10,71%	4,00%	9,84%	3,14%	9,51%	2,80%	0,86%	1,94%
Other activities	23,10%	29,89%	6,79%	31,34%	8,24%	32,33%	9,23%	31,61%	8,52%	11,32%	-2,80%
Total Value Added	96,74%	88,35%	-8,40%	88,84%	-7,90%	88,90%	-7,84%	88,61%	-8,13%	-3,60%	-4,54%
Taxes minus Subsidies plus stat error and Discrepancies	3,26%	11,65%	8,40%	11,16%	7,90%	11,10%	7,84%	11,39%	8,13%	3,60%	4,54%
Gross Domestic Product	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
<b>SEE – SOUTH EAST EUROPE / STRUCTURE</b>	<b>1990</b>	<b>1995</b>	<b>95-90</b>	<b>2000</b>	<b>00-90</b>	<b>2008</b>	<b>08-90</b>	<b>2012</b>	<b>12-90</b>	<b>Price Effect</b>	<b>Quantity Effect</b>
Agriculture, Hunting, Forestry, Fishing	14,37%	15,06%	0,63%	10,52%	-4,62%	7,78%	-6,70%	7,75%	-6,73%	-3,87%	-2,86%
Mining, Manufacturing, Utilities	28,20%	20,40%	-8,11%	18,47%	-10,32%	16,62%	-11,80%	17,31%	-11,20%	-4,20%	-7,00%
Manufacturing	20,94%	15,12%	-6,30%	13,92%	-7,79%	12,57%	-8,52%	12,13%	-9,02%	-3,44%	-5,58%
Construction	6,53%	5,98%	-0,28%	5,50%	-0,83%	7,47%	1,21%	5,58%	-0,77%	0,39%	-1,16%
Wholesale, Retail trade, Restaurants and Hotels	11,07%	12,23%	1,66%	13,50%	3,03%	14,68%	4,04%	14,10%	3,51%	0,00%	3,51%
Transport, Storage, Communication	6,39%	6,05%	-0,26%	7,98%	1,68%	8,51%	2,11%	8,07%	1,56%	-0,08%	1,64%
Other activities	23,51%	29,86%	5,24%	31,77%	8,28%	31,05%	7,29%	33,62%	10,05%	4,56%	5,49%
Total Value Added	90,07%	89,57%	-1,13%	87,74%	-2,78%	86,12%	-3,85%	86,43%	-3,57%	-3,38%	-0,19%
Taxes minus Subsidies plus stat error and Discrepancies	9,93%	10,43%	1,13%	12,26%	2,78%	13,88%	3,85%	13,57%	3,57%	3,38%	0,19%
Gross Domestic Product	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%

Sources: Authors' calculations based on data from UN Data Set.

Table 6: Industry Structure Side Sources of Growth for Former Soviet Union Countries

<b>FSUEI – ENERGY IMPORTERS / STRUCTURE</b>	<b>1990</b>	<b>1995</b>	<b>95-90</b>	<b>2000</b>	<b>00-90</b>	<b>2008</b>	<b>08-90</b>	<b>2012</b>	<b>12-90</b>	<b>Price Effect</b>	<b>Quantity Effect</b>
Agriculture, Hunting, Forestry, Fishing	25,45%	31,50%	6,05%	22,84%	-2,61%	13,92%	-11,53%	13,33%	-12,12%	-9,00%	-3,12%
Mining, Manufacturing, Utilities	32,65%	26,86%	-5,79%	24,50%	-8,15%	19,42%	-13,23%	19,85%	-12,80%	-5,30%	-7,50%
Manufacturing	29,47%	23,87%	-5,59%	17,98%	-11,49%	13,51%	-15,95%	13,33%	-16,13%	-7,74%	-8,39%
Construction	8,39%	4,33%	-4,07%	4,35%	-4,04%	8,12%	-0,28%	6,05%	-2,34%	1,06%	-3,40%
Wholesale, Retail trade, Restaurants and Hotels	7,31%	11,59%	4,27%	11,59%	4,28%	14,35%	7,04%	15,29%	7,98%	1,55%	6,43%
Transport, Storage, Communication	7,84%	7,13%	-0,70%	8,80%	0,97%	9,06%	1,22%	9,22%	1,38%	0,62%	0,76%
Other activities	16,11%	14,93%	-1,17%	18,46%	2,35%	23,63%	7,53%	24,79%	8,69%	6,01%	2,68%
Total Value Added	97,75%	96,34%	-1,41%	90,54%	-7,21%	88,50%	-9,25%	88,53%	-9,22%	-3,43%	-5,79%
Taxes minus Subsidies plus stat error and Discrepancies	2,25%	3,66%	1,41%	9,46%	7,21%	11,50%	9,25%	11,47%	9,22%	3,43%	5,79%
Gross Domestic Product	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%
<b>FSUEE – ENERGY EXPORTERS / STRUCTURE</b>	<b>1990</b>	<b>1995</b>	<b>95-90</b>	<b>2000</b>	<b>00-90</b>	<b>2008</b>	<b>08-90</b>	<b>2012</b>	<b>12-90</b>	<b>Price Effect</b>	<b>Quantity Effect</b>
Agriculture, Hunting, Forestry, Fishing	28,63%	17,80%	-10,83%	16,64%	-11,99%	9,29%	-19,34%	8,86%	-19,77%	-16,52%	-3,25%
Mining, Manufacturing, Utilities	26,56%	33,36%	6,80%	29,34%	2,78%	36,71%	10,14%	34,11%	7,55%	15,32%	-7,77%
Manufacturing	20,50%	24,20%	3,70%	17,27%	-3,23%	18,50%	-2,00%	17,39%	-3,11%	-1,22%	-1,89%
Construction	8,78%	6,28%	-2,50%	6,06%	-2,72%	6,99%	-1,79%	7,15%	-1,63%	-3,09%	1,46%
Wholesale, Retail trade, Restaurants and Hotels	6,42%	11,00%	4,58%	11,01%	4,59%	10,02%	3,61%	11,01%	4,59%	2,70%	1,89%
Transport, Storage, Communication	8,95%	10,30%	1,35%	9,17%	0,22%	8,83%	-0,12%	8,33%	-0,62%	1,39%	-2,00%
Other activities	18,08%	14,83%	-3,25%	20,63%	2,55%	21,41%	3,33%	23,12%	5,04%	4,14%	0,90%
Total Value Added	97,41%	93,57%	-3,84%	92,84%	-4,57%	93,25%	-4,16%	92,58%	-4,83%	3,16%	-7,99%
Taxes minus Subsidies plus stat error and Discrepancies	2,59%	6,43%	3,84%	7,16%	4,57%	6,75%	4,16%	7,42%	4,83%	-3,16%	7,99%
Gross Domestic Product	100,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	100,00%	0,00%	0,00%	0,00%

Sources: Authors' calculations based on data from UN Data Set.

Table 7: Sources of GDP per capita growth for Central European and South-East European countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
CE & SEE together	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Population - P	-0.30%			-0.38%			-0.30%			-0.26%			-0.25%			-0.27%		
Labor participation rate - L/P	-0.48%	-0.48%	-24.20%	-2.79%	-2.79%	71.45%	-0.37%	-0.37%	-7.43%	0.46%	0.46%	13.56%	1.48%	1.48%	27.85%	-1.57%	-1.57%	359.90%
Labor productivity - Q/L	2.49%	2.49%	124.20%	-1.11%	-1.11%	28.55%	5.41%	5.41%	107.43%	2.93%	2.93%	86.44%	3.84%	3.84%	72.15%	1.14%	1.14%	-259.90%
Capital labor ratio - K/L	3.70%	1.48%	73.95%	4.53%	1.81%	-46.48%	2.75%	1.10%	21.82%	3.74%	1.50%	44.14%	2.77%	1.11%	20.79%	5.67%	2.27%	-519.56%
T F P	1.01%	1.01%	50.25%	-2.93%	-2.93%	75.03%	4.31%	4.31%	85.60%	1.43%	1.43%	42.30%	2.73%	2.73%	51.36%	-1.13%	-1.13%	259.66%
GDP per capita - Q/P	2.00%	2.00%	100.00%	-3.90%	-3.90%	100.00%	5.03%	5.03%	100.00%	3.39%	3.39%	100.00%	5.32%	5.32%	100.00%	-0.44%	-0.44%	100.00%
C E	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Population - P	-0.42%			-0.45%			-0.42%			-0.40%			-0.38%			-0.44%		
Labor participation rate - L/P	-0.40%	-0.40%	-18.45%	-2.97%	-2.97%	69.72%	-0.11%	-0.11%	-2.33%	0.57%	0.57%	14.46%	1.64%	1.64%	27.69%	-1.50%	-1.50%	-748.66%
Labor productivity - Q/L	2.56%	2.56%	118.45%	-1.29%	-1.29%	30.28%	4.76%	4.76%	102.33%	3.40%	3.40%	85.54%	4.29%	4.29%	72.31%	1.70%	1.70%	848.66%
Capital labor ratio - K/L	3.16%	1.27%	58.49%	4.45%	1.78%	-41.84%	2.10%	0.84%	18.02%	3.06%	1.22%	30.77%	2.15%	0.86%	14.50%	4.82%	1.93%	961.14%
T F P	1.30%	1.30%	59.96%	-3.07%	-3.07%	72.12%	3.92%	3.92%	84.31%	2.18%	2.18%	54.77%	3.43%	3.43%	57.81%	-0.23%	-0.23%	-112.48%
GDP per capita - Q/P	2.16%	2.16%	100.00%	-4.25%	-4.25%	100.00%	4.66%	4.66%	100.00%	3.98%	3.98%	100.00%	5.93%	5.93%	100.00%	0.20%	0.20%	100.00%
SEE	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Population - P	-0.21%			-0.34%			-0.22%			-0.16%			-0.16%			-0.14%		
Labor participation rate - L/P	-0.54%	-0.54%	-28.80%	-2.66%	-2.66%	72.85%	-0.56%	-0.56%	-10.56%	0.38%	0.38%	12.71%	1.37%	1.37%	27.99%	-1.62%	-1.62%	183.58%
Labor productivity - Q/L	2.43%	2.43%	128.80%	-0.99%	-0.99%	27.15%	5.86%	5.86%	110.56%	2.60%	2.60%	87.29%	3.53%	3.53%	72.01%	0.74%	0.74%	-83.58%
Capital labor ratio - K/L	4.08%	1.63%	86.34%	4.59%	1.84%	-50.26%	3.20%	1.28%	24.16%	4.22%	1.69%	56.63%	3.20%	1.28%	26.11%	6.27%	2.51%	-284.05%
T F P	0.80%	0.80%	42.47%	-2.83%	-2.83%	77.41%	4.58%	4.58%	86.40%	0.91%	0.91%	30.66%	2.25%	2.25%	45.90%	-1.77%	-1.77%	200.47%
GDP per capita - Q/P	1.89%	1.89%	100.00%	-3.65%	-3.65%	100.00%	5.30%	5.30%	100.00%	2.98%	2.98%	100.00%	4.90%	4.90%	100.00%	-0.88%	-0.88%	100.00%

Sources: Authors' calculations based on data for tables 1 to 3 and data for population from WB data set.

Table 8: Sources of GDP per capita growth for Former Soviet Union countries and Mongolia

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
FSU all	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Population - P	0.49%			0.52%			0.18%			0.61%			0.45%			0.93%		
Labor participation rate - L/P	-0.43%	-0.43%	-45.70%	-1.00%	-1.00%	8.12%	-0.71%	-0.71%	-24.02%	-0.10%	-0.10%	-1.65%	-0.66%	-0.66%	-8.24%	1.04%	1.04%	36.17%
Labor productivity - Q/L	1.36%	1.36%	145.70%	-11.33%	-11.33%	91.88%	3.67%	3.67%	124.02%	6.33%	6.33%	101.65%	8.63%	8.63%	108.24%	1.84%	1.84%	63.83%
Capital labor ratio - K/L	1.11%	0.45%	47.70%	1.52%	0.61%	-4.92%	-0.01%	0.00%	-0.08%	1.55%	0.62%	9.95%	1.60%	0.64%	8.02%	1.44%	0.57%	19.96%
T F P	0.92%	0.92%	98.00%	-11.93%	-11.93%	96.80%	3.67%	3.67%	124.10%	5.71%	5.71%	91.70%	7.99%	7.99%	100.22%	1.26%	1.26%	43.86%
GDP per capita - Q/P	0.93%	0.93%	100.00%	-12.33%	-12.33%	100.00%	2.96%	2.96%	100.00%	6.23%	6.23%	100.00%	7.97%	7.97%	100.00%	2.88%	2.88%	100.00%
Energy Importers FSU	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%
Population - P	0.24%			0.14%			-0.02%			0.40%			0.27%			0.65%		
Labor participation rate - L/P	-0.86%	-0.86%	-283.87%	-1.12%	-1.12%	8.34%	-1.22%	-1.22%	-45.56%	-0.62%	-0.62%	-10.78%	-1.45%	-1.45%	-19.24%	1.11%	1.11%	51.51%
Labor productivity - Q/L	1.16%	1.16%	383.87%	-12.31%	-12.31%	91.66%	3.90%	3.90%	145.56%	6.32%	6.32%	110.78%	8.99%	8.99%	119.24%	1.05%	1.05%	48.49%
Capital labor ratio - K/L	1.42%	0.57%	188.14%	1.92%	0.77%	-5.73%	0.39%	0.16%	5.81%	1.75%	0.70%	12.28%	2.14%	0.85%	11.34%	0.94%	0.37%	17.32%
T F P	0.59%	0.59%	195.73%	-13.08%	-13.08%	97.38%	3.75%	3.75%	139.76%	5.62%	5.62%	98.51%	8.13%	8.13%	107.90%	0.67%	0.67%	31.18%
GDP per capita - Q/P	0.30%	0.30%	100.00%	-13.43%	-13.43%	100.00%	2.68%	2.68%	100.00%	5.70%	5.70%	100.00%	7.54%	7.54%	100.00%	2.16%	2.16%	100.00%
Energy Exporters FSU	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Population - P	0.89%			1.11%			0.51%			0.95%			0.74%			1.38%		
Labor participation rate - L/P	0.26%	0.26%	13.58%	-0.81%	-0.81%	7.67%	0.11%	0.11%	3.17%	0.72%	0.72%	10.13%	0.61%	0.61%	7.08%	0.93%	0.93%	23.00%
Labor productivity - Q/L	1.68%	1.68%	86.42%	-9.75%	-9.75%	92.33%	3.29%	3.29%	96.83%	6.35%	6.35%	89.87%	8.05%	8.05%	92.92%	3.10%	3.10%	77.00%
Capital labor ratio - K/L	0.62%	0.25%	12.74%	0.86%	0.34%	-3.27%	-0.64%	-0.25%	-7.50%	1.23%	0.49%	6.95%	0.73%	0.29%	3.39%	2.24%	0.90%	22.23%
T F P	1.43%	1.43%	73.67%	-10.10%	-10.10%	95.60%	3.54%	3.54%	104.33%	5.86%	5.86%	82.92%	7.75%	7.75%	89.53%	2.21%	2.21%	54.77%
GDP per capita - Q/P	1.95%	1.95%	100.00%	-10.56%	-10.56%	100.00%	3.40%	3.40%	100.00%	7.07%	7.07%	100.00%	8.66%	8.66%	100.00%	4.03%	4.03%	100.00%

Sources: Authors' calculations based on data for tables 1 to 3 and data for population from WB data set.

## ANNEX (A): Sources of GDP Growth Analysis

Table A1: Sources of GDP growth of Central European countries

COUNTRY	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
HUNGARIA	2.72%	1.09%	109,86%	1.79%	0.72%	-30,27%	2,38%	0.95%	32,35%	3,26%	1,30%	80,96%	3,68%	1,47%	46,00%	2,40%	0,96%	-63,72%
Capital - K																		
Labor - L	-1,12%	-0,67%	-68,03%	-6,15%	-3,69%	155,92%	1,12%	0,67%	22,87%	0,11%	0,06%	3,94%	0,16%	0,10%	3,06%	-0,01%	-0,01%	0,38%
T F P	0,58%	0,58%	58,18%	0,61%	0,61%	-25,65%	1,32%	1,32%	44,78%	0,24%	0,24%	15,10%	1,63%	1,63%	50,94%	-2,46%	-2,46%	163,33%
G D P - Q	0,99%	0,99%	100,00%	-2,37%	-2,37%	100,00%	2,95%	2,95%	100,00%	1,61%	1,61%	100,00%	3,20%	3,20%	100,00%	-1,51%	-1,51%	100,00%
CZECH REPUB																		
Capital - K	2,54%	1,02%	54,39%	1,58%	0,63%	-128,21%	2,71%	1,08%	58,93%	2,87%	1,15%	39,91%	2,88%	1,15%	25,38%	2,87%	1,15%	-328,95%
Labor - L	-0,28%	-0,17%	-9,10%	-1,37%	-0,82%	167,78%	-0,73%	-0,44%	-23,92%	0,36%	0,22%	7,59%	0,83%	0,50%	11,03%	-0,57%	-0,34%	97,52%
T F P	1,02%	1,02%	54,70%	-0,30%	-0,30%	60,44%	1,20%	1,20%	64,99%	1,51%	1,51%	52,50%	2,88%	2,88%	63,59%	-1,16%	-1,16%	331,43%
G D P - Q	1,87%	1,87%	100,00%	-0,49%	-0,49%	100,00%	1,84%	1,84%	100,00%	2,88%	2,88%	100,00%	4,53%	4,53%	100,00%	-0,35%	-0,35%	100,00%
SLOVAKIA																		
Capital - K	1,67%	0,67%	24,42%	1,00%	0,40%	-22,62%	1,40%	0,56%	16,44%	2,06%	0,82%	18,78%	1,98%	0,79%	12,96%	2,21%	0,88%	88,20%
Labor - L	-0,01%	-0,01%	-0,26%	-1,66%	-0,99%	56,06%	-0,43%	-0,26%	-7,66%	0,86%	0,52%	11,76%	1,85%	1,11%	18,14%	-1,09%	-0,66%	-65,38%
T F P	2,07%	2,07%	75,83%	-1,18%	-1,18%	66,57%	3,10%	3,10%	91,22%	3,05%	3,05%	69,46%	4,22%	4,22%	68,90%	0,77%	0,77%	77,18%
G D P - Q	2,73%	2,73%	100,00%	-1,77%	-1,77%	100,00%	3,40%	3,40%	100,00%	4,39%	4,39%	100,00%	6,12%	6,12%	100,00%	1,00%	1,00%	100,00%
POLAND																		
Capital - K	3,85%	1,54%	40,75%	1,86%	0,74%	34,16%	4,37%	1,75%	32,32%	4,48%	1,79%	47,36%	4,41%	1,77%	42,20%	4,61%	1,84%	61,75%
Labor - L	-0,16%	-0,10%	-2,57%	-1,89%	-1,13%	-52,05%	-0,22%	-0,13%	-2,47%	0,59%	0,35%	9,38%	1,06%	0,63%	15,15%	-0,33%	-0,20%	-6,69%
T F P	2,34%	2,34%	61,82%	2,56%	2,56%	117,89%	3,80%	3,80%	70,15%	1,64%	1,64%	43,26%	1,78%	1,78%	42,65%	1,34%	1,34%	44,94%
G D P - Q	3,78%	3,78%	100,00%	2,18%	2,18%	100,00%	5,41%	5,41%	100,00%	3,78%	3,78%	100,00%	4,18%	4,18%	100,00%	2,98%	2,98%	100,00%
LITHUANIA																		
Capital - K	1,93%	0,77%	90,32%	0,79%	0,32%	-3,02%	0,44%	0,18%	3,99%	3,03%	1,21%	27,26%	3,11%	1,24%	16,78%	2,87%	1,15%	-92,00%
Labor - L	-1,23%	-0,74%	-86,71%	-2,40%	-1,44%	13,76%	-1,11%	-0,66%	-14,95%	-0,80%	-0,48%	-10,73%	1,00%	0,60%	8,07%	-4,29%	-2,57%	206,14%
T F P	0,82%	0,82%	96,40%	-9,34%	-9,34%	89,26%	4,93%	4,93%	110,96%	3,71%	3,71%	83,48%	5,57%	5,57%	75,15%	0,18%	0,18%	-14,14%
G D P - Q	0,85%	0,85%	100,00%	-10,46%	-10,46%	100,00%	4,44%	4,44%	100,00%	4,45%	4,45%	100,00%	7,42%	7,42%	100,00%	-1,25%	-1,25%	100,00%
LATVIA																		
Capital - K	1,41%	0,57%	464,30%	-0,44%	-0,18%	1,36%	-0,82%	-0,33%	-5,94%	3,15%	1,26%	32,38%	3,60%	1,44%	19,67%	2,26%	0,90%	-34,11%
Labor - L	-1,90%	-1,14%	-934,21%	-5,84%	-3,51%	26,80%	-0,90%	-0,54%	-9,76%	-0,62%	-0,37%	-9,59%	2,22%	1,33%	18,14%	-6,06%	-3,64%	137,58%
T F P	0,69%	0,69%	569,91%	-9,40%	-9,40%	71,85%	6,41%	6,41%	115,71%	3,01%	3,01%	77,21%	4,56%	4,56%	62,18%	0,09%	0,09%	-3,46%
G D P - Q	0,12%	0,12%	100,00%	-13,09%	-13,09%	100,00%	5,54%	5,54%	100,00%	3,89%	3,89%	100,00%	7,33%	7,33%	100,00%	-2,64%	-2,64%	100,00%
ESTONIA																		
Capital - K	2,32%	0,93%	49,14%	0,65%	0,26%	-3,78%	0,53%	0,21%	3,48%	3,79%	1,52%	37,53%	4,22%	1,69%	27,79%	2,93%	1,17%	1431,94%
Labor - L	-0,99%	-0,59%	-31,43%	-4,61%	-2,76%	39,91%	-1,39%	-0,84%	-13,70%	0,73%	0,44%	10,79%	1,73%	1,04%	17,05%	-1,25%	-0,75%	-912,12%
T F P	1,56%	1,56%	82,30%	-4,42%	-4,42%	63,87%	6,72%	6,72%	110,21%	2,09%	2,09%	51,68%	3,35%	3,35%	55,16%	-0,34%	-0,34%	-419,82%
G D P - Q	1,89%	1,89%	100,00%	-6,92%	-6,92%	100,00%	6,10%	6,10%	100,00%	4,04%	4,04%	100,00%	6,07%	6,07%	100,00%	0,08%	0,08%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

Table A2: Sources of GDP growth of South East European countries

COUNTRY	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
BOSNIA & H	7,41%	2,96%	41,68%	2,74%	1,10%	50,32%	10,99%	4,40%	18,97%	7,93%	3,17%	103,84%	9,07%	3,63%	74,63%	5,71%	2,28%	-499,92%
Capital - K	7,41%	2,96%	41,68%	2,74%	1,10%	50,32%	10,99%	4,40%	18,97%	7,93%	3,17%	103,84%	9,07%	3,63%	74,63%	5,71%	2,28%	-499,92%
Labor - L	-1,11%	-0,67%	-9,37%	-5,78%	-3,47%	-159,21%	-3,83%	-2,30%	-9,91%	2,08%	1,25%	40,91%	4,20%	2,52%	51,87%	-2,02%	-1,21%	265,47%
T F P	4,81%	4,81%	67,68%	4,55%	4,55%	208,89%	21,09%	21,09%	90,95%	-1,37%	-1,37%	-44,76%	-1,29%	-1,29%	-26,50%	-1,53%	-1,53%	334,45%
G D P - Q	7,11%	7,11%	100,00%	2,18%	2,18%	100,00%	23,19%	23,19%	100,00%	3,06%	3,06%	100,00%	4,86%	4,86%	100,00%	-0,46%	-0,46%	100,00%
CROATIA																		
Capital - K	3,97%	1,59%	534,36%	1,79%	0,72%	-11,48%	3,63%	1,45%	42,96%	5,03%	2,01%	108,35%	5,33%	2,13%	49,64%	4,45%	1,78%	-62,54%
Labor - L	-0,77%	-0,46%	-155,08%	-5,32%	-3,19%	51,24%	1,02%	0,61%	18,12%	0,44%	0,27%	14,34%	2,37%	1,42%	33,09%	-3,30%	-1,98%	69,53%
T F P	-0,83%	-0,83%	-279,27%	-3,76%	-3,76%	60,24%	1,32%	1,32%	38,92%	-0,42%	-0,42%	-22,69%	0,74%	0,74%	17,27%	-2,64%	-2,64%	93,00%
G D P - Q	0,30%	0,30%	100,00%	-6,24%	-6,24%	100,00%	3,38%	3,38%	100,00%	1,86%	1,86%	100,00%	4,29%	4,29%	100,00%	-2,84%	-2,84%	100,00%
MACEDONIA																		
Capital - K	1,90%	0,76%	62,23%	2,18%	0,87%	-27,92%	1,35%	0,54%	18,23%	2,00%	0,80%	34,03%	1,70%	0,68%	22,76%	2,62%	1,05%	94,16%
Labor - L	-1,23%	-0,74%	-60,42%	-6,81%	-4,08%	130,48%	-1,71%	-1,03%	-34,53%	1,40%	0,84%	35,75%	1,28%	0,77%	25,75%	1,65%	0,99%	88,98%
T F P	1,20%	1,20%	98,18%	0,08%	0,08%	-2,56%	3,45%	3,45%	116,31%	0,71%	0,71%	30,23%	1,53%	1,53%	51,48%	-0,92%	-0,92%	-83,14%
G D P - Q	1,22%	1,22%	100,00%	-3,13%	-3,13%	100,00%	2,97%	2,97%	100,00%	2,35%	2,35%	100,00%	2,98%	2,98%	100,00%	1,11%	1,11%	100,00%
MONTENEGRO																		
Capital - K	3,41%	1,36%	405,20%	2,77%	1,11%	-8,60%	1,63%	0,65%	7,79%	4,42%	1,77%	57,94%	3,49%	1,40%	28,02%	6,32%	2,53%	-363,49%
Labor - L	0,29%	0,17%	51,45%	-2,57%	-1,54%	11,99%	0,51%	0,31%	3,66%	1,41%	0,85%	27,71%	2,10%	1,26%	25,29%	0,05%	0,03%	-4,02%
T F P	-1,20%	-1,20%	-356,65%	-12,43%	-12,43%	96,61%	7,40%	7,40%	88,55%	0,44%	0,44%	14,35%	2,33%	2,33%	46,69%	-3,25%	-3,25%	467,51%
G D P - Q	0,34%	0,34%	100,00%	-12,86%	-12,86%	100,00%	8,35%	8,35%	100,00%	3,05%	3,05%	100,00%	4,98%	4,98%	100,00%	-0,70%	-0,70%	100,00%
SERBIA																		
Capital - K	2,77%	1,11%	-76,38%	1,58%	0,63%	-4,61%	0,09%	0,03%	3,06%	4,42%	1,77%	58,36%	3,82%	1,53%	30,89%	5,64%	2,26%	-326,61%
Labor - L	-1,34%	-0,81%	55,55%	-2,52%	-1,51%	11,06%	-1,40%	-0,84%	-74,45%	-0,82%	-0,49%	-16,33%	0,59%	0,35%	7,16%	-3,60%	-2,16%	312,19%
T F P	-1,76%	-1,76%	120,83%	-12,81%	-12,81%	93,55%	1,94%	1,94%	171,39%	1,76%	1,76%	57,97%	3,06%	3,06%	61,95%	-0,79%	-0,79%	114,42%
G D P - Q	-1,45%	-1,45%	100,00%	-13,69%	-13,69%	100,00%	1,13%	1,13%	100,00%	3,03%	3,03%	100,00%	4,94%	4,94%	100,00%	-0,69%	-0,69%	100,00%
SLOVENIA																		
Capital - K	3,57%	1,43%	72,32%	1,92%	0,77%	-131,77%	3,55%	1,42%	32,58%	4,28%	1,71%	82,52%	4,86%	1,95%	45,47%	3,11%	1,24%	-56,59%
Labor - L	0,40%	0,24%	12,16%	0,62%	0,37%	-63,71%	0,64%	0,38%	8,77%	0,21%	0,13%	6,11%	1,27%	0,76%	17,76%	-1,87%	-1,12%	50,91%
T F P	0,31%	0,31%	15,51%	-1,72%	-1,72%	295,48%	2,56%	2,56%	58,65%	0,24%	0,24%	11,37%	1,57%	1,57%	36,77%	-2,32%	-2,32%	105,68%
G D P - Q	1,98%	1,98%	100,00%	-0,58%	-0,58%	100,00%	4,36%	4,36%	100,00%	2,07%	2,07%	100,00%	4,28%	4,28%	100,00%	-2,20%	-2,20%	100,00%
ALBANIA																		
Capital - K	2,00%	0,80%	23,91%	0,07%	0,03%	-1,39%	0,06%	0,02%	0,48%	3,63%	1,45%	29,32%	3,48%	1,39%	28,06%	3,95%	1,58%	55,16%
Labor - L	-1,37%	-0,82%	-24,55%	-1,89%	-1,13%	53,49%	-1,26%	-0,76%	-14,80%	-1,19%	-0,72%	-14,45%	-1,29%	-0,77%	-15,63%	-1,00%	-0,60%	-20,92%
T F P	3,36%	3,36%	100,64%	-1,01%	-1,01%	47,90%	5,85%	5,85%	114,32%	4,22%	4,22%	85,13%	5,41%	5,41%	109,03%	1,88%	1,88%	65,76%
G D P - Q	3,34%	3,34%	100,00%	-2,12%	-2,12%	100,00%	5,12%	5,12%	100,00%	4,96%	4,96%	100,00%	6,02%	6,02%	121,45%	2,86%	2,86%	100,00%
GREECE																		
Capital - K	2,93%	1,17%	87,18%	2,02%	0,81%	64,79%	2,49%	1,00%	28,86%	3,49%	1,40%	269,50%	3,98%	1,59%	44,03%	2,52%	1,01%	-18,68%
Labor - L	0,27%	0,16%	12,16%	1,57%	0,94%	75,57%	1,31%	0,78%	22,72%	-0,69%	-0,41%	-79,74%	1,37%	0,82%	22,76%	-4,69%	-2,81%	52,04%
T F P	0,01%	0,01%	0,66%	-0,50%	-0,50%	-40,37%	1,67%	1,67%	48,43%	-0,47%	-0,47%	-89,75%	1,20%	1,20%	33,21%	-3,60%	-3,60%	66,64%
G D P - Q	1,34%	1,34%	100,00%	1,25%	1,25%	100,00%	3,45%	3,45%	100,00%	0,52%	0,52%	100,00%	3,62%	3,62%	100,00%	-5,40%	-5,40%	100,00%
BULGARIA																		
Capital - K	2,58%	1,03%	88,37%	0,69%	0,28%	-10,62%	-0,52%	-0,21%	27,14%	4,70%	1,88%	52,08%	4,36%	1,75%	33,88%	5,38%	2,15%	-326,98%
Labor	-1,19%	-0,71%	-61,21%	-4,69%	-2,81%	107,73%	-1,64%	-0,98%	128,92%	0,49%	0,30%	8,20%	1,83%	1,10%	21,35%	-2,58%	-1,55%	234,73%
TFP	0,85%	0,85%	72,85%	-0,08%	-0,08%	2,90%	0,43%	0,43%	-56,06%	1,43%	1,43%	39,72%	2,31%	2,31%	44,78%	-1,27%	-1,27%	192,25%
GDP - Q	1,17%	1,17%	100,00%	-2,61%	-2,61%	100,00%	-0,76%	-0,76%	100,00%	3,61%	3,61%	100,00%	5,15%	5,15%	100,00%	-0,66%	-0,66%	100,00%
ROMANIA																		
Capital - K	2,66%	1,07%	75,64%	0,14%	0,06%	-2,72%	0,95%	0,38%	-97,60%	4,46%	1,78%	48,39%	4,01%	1,60%	25,62%	5,37%	2,15%	-168,28%
Labor	-1,54%	-0,93%	-65,79%	-2,62%	-1,57%	73,91%	-1,39%	-0,83%	213,96%	-1,16%	-0,70%	-18,85%	-0,96%	-0,96%	-15,25%	-0,28%	-0,17%	13,40%
TFP	1,27%	1,27%	90,15%	-0,61%	-0,61%	28,80%	0,06%	0,06%	-16,36%	2,60%	2,60%	70,46%	5,61%	5,61%	89,64%	-3,25%	-3,25%	254,88%
GDP - Q	1,41%	1,41%	100,00%	-2,12%	-2,12%	100,00%	-0,39%	-0,39%	100,00%	3,69%	3,69%	100,00%	6,26%	6,26%	100,00%	-1,28%	-1,28%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

Table A3: Sources of GDP growth for former Soviet Union countries – Energy importers group

COUNTRY	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
BELARUS	2.48%	0.99%	32.68%	2.41%	0.96%	-11.72%	0.00%	0.00%	-0.03%	3.78%	1.51%	22.47%	2.16%	0.87%	10.45%	7.08%	2.83%	76.94%
Capital - K	-1.96%	-1.18%	-38.76%	-2.78%	-1.67%	20.29%	-3.15%	-1.89%	-29.89%	-1.19%	-0.71%	-10.63%	-2.03%	-1.22%	-14.70%	0.50%	0.30%	8.22%
Labor - L	3.23%	3.23%	106.09%	-7.51%	-7.51%	91.43%	8.22%	8.22%	129.91%	5.93%	5.93%	88.16%	8.63%	8.63%	104.25%	0.55%	0.55%	14.84%
T F P	3.04%	3.04%	100.00%	-8.21%	-8.21%	100.00%	6.33%	6.33%	100.00%	6.72%	6.72%	100.00%	8.28%	8.28%	100.00%	3.68%	3.68%	100.00%
G D P - Q																		
ARMENIA																		
Capital - K	1.03%	0.41%	17.58%	0.59%	0.23%	-1.96%	-1.43%	-0.57%	-11.14%	2.30%	0.92%	11.88%	1.65%	0.66%	5.46%	3.62%	1.45%	-359.79%
Labor - L	-1.49%	-0.89%	-38.28%	-6.10%	-3.66%	30.55%	-0.85%	-0.51%	-9.92%	-0.17%	-0.10%	-1.33%	-3.52%	-2.11%	-17.50%	6.88%	4.13%	-1026.45%
T F P	2.82%	2.82%	120.70%	-8.56%	-8.56%	71.41%	6.21%	6.21%	121.06%	6.94%	6.94%	89.46%	13.53%	13.53%	112.04%	-5.98%	-5.98%	1486.24%
G D P - Q	2.34%	2.34%	100.00%	-11.99%	-11.99%	100.00%	5.13%	5.13%	100.00%	7.75%	7.75%	100.00%	12.08%	12.08%	100.00%	-0.40%	-0.40%	100.00%
KYGYSTAN																		
Capital - K	0.82%	0.33%	161.41%	0.94%	0.37%	-2.95%	-0.66%	-0.26%	-4.71%	1.48%	0.59%	15.44%	0.84%	0.34%	6.91%	2.78%	1.11%	60.68%
Labor - L	1.25%	0.75%	367.81%	0.34%	0.20%	-1.61%	1.12%	0.67%	12.03%	1.61%	0.97%	25.17%	1.33%	0.80%	16.48%	2.16%	1.30%	70.94%
T F P	-0.88%	-0.88%	-429.22%	-13.29%	-13.29%	104.55%	5.20%	5.20%	92.68%	2.28%	2.28%	59.39%	3.72%	3.72%	76.61%	-0.58%	-0.58%	-31.62%
G D P - Q	0.20%	0.20%	100.00%	-12.71%	-12.71%	100.00%	5.61%	5.61%	100.00%	3.83%	3.83%	100.00%	4.85%	4.85%	100.00%	1.83%	1.83%	100.00%
GEORGIA																		
Capital - K	0.34%	0.13%	-12.26%	-0.44%	-0.18%	0.79%	-1.24%	-0.50%	-8.47%	1.29%	0.52%	8.17%	1.35%	0.54%	7.17%	1.16%	0.46%	12.04%
Labor - L	-0.53%	-0.32%	28.93%	0.04%	0.02%	-0.10%	-2.25%	-1.35%	-23.11%	0.01%	0.01%	0.10%	-0.96%	-0.57%	-7.59%	1.97%	1.18%	30.74%
T F P	-0.91%	-0.91%	83.34%	-22.12%	-22.12%	99.32%	7.69%	7.69%	131.59%	5.78%	5.78%	91.73%	7.59%	7.59%	100.42%	2.20%	2.20%	57.22%
G D P - Q	-1.09%	-1.09%	100.00%	-22.27%	-22.27%	100.00%	5.85%	5.85%	100.00%	6.30%	6.30%	100.00%	7.55%	7.55%	100.00%	3.84%	3.84%	100.00%
MOLDAVA																		
Capital - K	-0.20%	-0.08%	3.58%	0.10%	0.04%	-0.23%	-1.62%	-0.65%	26.19%	0.28%	0.11%	2.36%	-0.08%	-0.03%	-0.50%	1.01%	0.40%	24.85%
Labor - L	-4.85%	-2.91%	130.16%	-1.85%	-1.11%	6.52%	-3.34%	-2.00%	80.90%	-6.45%	-3.87%	-81.22%	-7.15%	-4.29%	-67.37%	-5.03%	-3.02%	-185.60%
T F P	0.75%	0.75%	-33.74%	-15.92%	-15.92%	93.71%	0.18%	0.18%	-7.09%	8.52%	8.52%	178.86%	10.69%	10.69%	167.87%	4.24%	4.24%	260.75%
G D P - Q	-2.24%	-2.24%	100.00%	-16.99%	-16.99%	100.00%	-2.47%	-2.47%	100.00%	4.76%	4.76%	100.00%	6.37%	6.37%	100.00%	1.63%	1.63%	100.00%
TAJKISTAN																		
Capital - K	-0.19%	-0.08%	18.16%	0.91%	0.36%	-2.07%	-1.14%	-0.46%	-2982.00%	-0.18%	-0.07%	-0.95%	-0.58%	-0.23%	-2.65%	0.63%	0.25%	4.98%
Labor - L	2.01%	1.20%	-283.50%	1.86%	1.11%	-6.33%	0.96%	0.57%	3754.09%	2.50%	1.50%	19.89%	2.15%	1.29%	14.67%	3.21%	1.92%	37.76%
T F P	-1.55%	-1.55%	365.33%	-19.07%	-19.07%	108.41%	-0.10%	-0.10%	-672.09%	6.11%	6.11%	81.06%	7.73%	7.73%	87.98%	2.92%	2.92%	57.27%
G D P - Q	-0.43%	-0.43%	100.00%	-17.59%	-17.59%	100.00%	0.02%	0.02%	100.00%	7.54%	7.54%	100.00%	8.79%	8.79%	100.00%	5.10%	5.10%	100.00%
UKRAINA																		
Capital - K	-0.39%	-0.16%	9.48%	0.70%	0.28%	-2.03%	-1.90%	-0.76%	38.25%	-0.15%	-0.06%	-1.45%	-0.37%	-0.15%	-2.11%	0.30%	0.12%	-7.29%
Labor - L	-1.15%	-0.69%	42.12%	-1.14%	-0.69%	4.99%	-3.97%	-2.38%	120.06%	0.05%	0.03%	0.68%	0.08%	0.05%	0.68%	-0.02%	-0.01%	0.77%
T F P	-0.79%	-0.79%	48.40%	-13.34%	-13.34%	97.04%	1.16%	1.16%	-58.31%	4.08%	4.08%	100.77%	7.12%	7.12%	101.43%	-1.77%	-1.77%	106.52%
G D P - Q	-1.64%	-1.64%	100.00%	-13.74%	-13.74%	100.00%	-1.98%	-1.98%	100.00%	4.05%	4.05%	100.00%	7.02%	7.02%	100.00%	-1.66%	-1.66%	100.00%
MONGOLIA																		
Capital - K	2.57%	1.03%	24.61%	2.36%	0.94%	-33.43%	1.18%	0.47%	16.73%	3.45%	1.38%	17.60%	2.66%	1.07%	14.19%	5.03%	2.01%	23.70%
Labor - L	1.80%	1.08%	25.77%	1.81%	1.08%	-38.35%	1.56%	0.93%	33.05%	1.89%	1.14%	14.49%	0.64%	0.38%	5.11%	4.45%	2.67%	31.39%
T F P	2.07%	2.07%	49.61%	-4.86%	-4.86%	171.78%	1.42%	1.42%	50.22%	5.32%	5.32%	67.91%	6.06%	6.06%	80.70%	3.82%	3.82%	44.91%
G D P - Q	4.18%	4.18%	100.00%	-2.83%	-2.83%	100.00%	2.83%	2.83%	100.00%	7.83%	7.83%	100.00%	7.51%	7.51%	100.00%	8.50%	8.50%	100.00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.



Table A4: Sources of GDP growth for former Soviet Union countries – Energy Exporters group of countries

COUNTRY	1991-2012			1991-1995			1995-2000			2000-2012			2000-2008			2008-2012		
AZERBEIJAN	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%	GR	AC	%
Capital - K	5,01%	2,01%	50,94%	1,27%	0,51%	-3,17%	0,84%	0,34%	4,76%	8,55%	3,42%	28,06%	8,30%	3,32%	19,80%	9,05%	3,62%	102,14%
Labor - L	1,71%	1,03%	26,12%	2,73%	1,64%	-10,26%	1,12%	0,67%	9,56%	1,62%	0,97%	8,00%	1,05%	0,63%	3,75%	2,79%	1,67%	47,22%
T F P	0,90%	0,90%	22,94%	-18,12%	-18,12%	113,43%	6,04%	6,04%	85,68%	7,79%	7,79%	63,94%	12,82%	12,82%	76,46%	-1,75%	-1,75%	-49,36%
G D P - Q	3,94%	3,94%	100,00%	-15,98%	-15,98%	100,00%	7,05%	7,05%	100,00%	12,19%	12,19%	100,00%	16,77%	16,77%	100,00%	3,54%	3,54%	100,00%
KAZAHSTAN																		
Capital - K	0,17%	0,07%	2,63%	0,46%	0,18%	-1,96%	-1,70%	-0,68%	-27,23%	0,87%	0,35%	4,41%	0,21%	0,09%	0,92%	2,19%	0,88%	17,00%
Labor - L	0,64%	0,39%	15,38%	-1,64%	-0,98%	10,57%	-1,20%	-0,72%	-28,91%	2,20%	1,32%	16,75%	1,77%	1,06%	11,44%	3,07%	1,84%	35,78%
T F P	2,06%	2,06%	81,99%	-8,50%	-8,50%	91,39%	3,89%	3,89%	156,14%	6,22%	6,22%	78,84%	8,13%	8,13%	87,64%	2,43%	2,43%	47,21%
G D P - Q	2,51%	2,51%	100,00%	-9,30%	-9,30%	100,00%	2,49%	2,49%	100,00%	7,88%	7,88%	100,00%	9,28%	9,28%	100,00%	5,16%	5,16%	100,00%
RUSSIA																		
Capital - K	-0,18%	-0,07%	-10,67%	0,44%	0,17%	-1,91%	-1,76%	-0,71%	-44,13%	0,26%	0,10%	2,25%	-0,22%	-0,09%	-1,32%	1,23%	0,49%	50,82%
Labor - L	-0,23%	-0,14%	-20,22%	-3,76%	-2,26%	24,84%	-0,36%	-0,22%	-13,62%	1,03%	0,62%	13,26%	1,25%	0,75%	11,45%	0,59%	0,35%	36,52%
T F P	0,90%	0,90%	130,89%	-7,01%	-7,01%	77,07%	2,52%	2,52%	157,75%	3,94%	3,94%	84,49%	5,90%	5,90%	89,87%	0,12%	0,12%	12,66%
G D P - Q	0,68%	0,68%	100,00%	-9,09%	-9,09%	100,00%	1,60%	1,60%	100,00%	4,67%	4,67%	100,00%	6,57%	6,57%	100,00%	0,97%	0,97%	100,00%
TURKMENST																		
Capital - K	2,13%	0,85%	25,99%	2,11%	0,84%	-9,62%	1,11%	0,44%	9,93%	2,74%	1,10%	13,33%	0,92%	0,37%	4,78%	6,49%	2,60%	27,91%
Labor - L	1,65%	0,99%	30,20%	2,56%	1,54%	-17,53%	1,51%	0,91%	20,33%	1,40%	0,84%	10,22%	1,11%	0,67%	8,65%	1,99%	1,19%	12,84%
T F P	1,44%	1,44%	43,81%	-11,15%	-11,15%	127,14%	3,11%	3,11%	69,74%	6,30%	6,30%	76,45%	6,67%	6,67%	86,57%	5,51%	5,51%	59,25%
G D P - Q	3,28%	3,28%	100,00%	-8,77%	-8,77%	100,00%	4,46%	4,46%	100,00%	8,24%	8,24%	100,00%	7,71%	7,71%	100,00%	9,30%	9,30%	100,00%
UZBEKISTAN																		
Capital - K	1,73%	0,69%	18,46%	1,56%	0,62%	-15,18%	1,42%	0,57%	14,45%	2,07%	0,83%	11,59%	1,23%	0,49%	7,39%	3,76%	1,50%	18,66%
Labor - L	1,98%	1,19%	31,70%	1,62%	0,97%	-23,68%	2,02%	1,21%	30,82%	2,09%	1,26%	17,58%	1,60%	0,96%	14,35%	3,09%	1,85%	22,97%
T F P	1,87%	1,87%	49,83%	-5,69%	-5,69%	138,86%	2,15%	2,15%	54,72%	5,06%	5,06%	70,83%	5,23%	5,23%	78,26%	4,71%	4,71%	58,37%
G D P - Q	3,76%	3,76%	100,00%	-4,10%	-4,10%	100,00%	3,93%	3,93%	100,00%	7,14%	7,14%	100,00%	6,68%	6,68%	100,00%	8,07%	8,07%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

## ANNEX (B): Sources of GDP Per Capita Growth Analysis

Table B1: Sources of GDP per capita growth for Central European countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
HUNGARY	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%
Population - P	-0,19%			-0,13%			-0,19%			-0,22%			-0,21%			-0,21%		
Labor participation rate - L/P	-0,93%	-0,93%	-78,58%	-6,01%	-6,01%	269,52%	1,32%	1,32%	41,95%	0,32%	0,32%	17,68%	0,38%	0,38%	11,23%	0,20%	0,20%	-15,36%
Labor productivity - Q/L	2,11%	2,11%	178,58%	3,78%	3,78%	-169,52%	1,82%	1,82%	58,05%	1,50%	1,50%	82,32%	3,04%	3,04%	88,77%	-1,50%	-1,50%	115,36%
Capital labor ratio - K/L	3,85%	1,54%	129,89%	7,94%	3,17%	-142,32%	1,26%	0,50%	16,04%	3,15%	1,26%	69,01%	3,52%	1,41%	41,12%	2,41%	0,96%	-74,28%
T F P	0,58%	0,58%	48,69%	0,61%	0,61%	-27,20%	1,32%	1,32%	42,01%	0,24%	0,24%	13,30%	1,63%	1,63%	47,65%	-2,46%	-2,46%	189,64%
GDP per capita - Q/P	1,18%	1,18%	100,00%	-2,23%	-2,23%	100,00%	3,14%	3,14%	100,00%	1,83%	1,83%	100,00%	3,42%	3,42%	100,00%	-1,30%	-1,30%	100,00%
CZECH REPUBLIC																		
Population - P	0,08%			-0,01%			-0,14%			0,21%			0,16%			0,30%		
Labor participation rate - L/P	-0,36%	-0,36%	-20,14%	-1,36%	-1,36%	284,05%	-0,59%	-0,59%	-29,96%	0,16%	0,16%	5,94%	0,68%	0,68%	15,45%	-0,87%	-0,87%	133,48%
Labor productivity - Q/L	2,15%	2,15%	120,14%	0,88%	0,88%	-184,05%	2,57%	2,57%	129,96%	2,51%	2,51%	94,06%	3,70%	3,70%	84,55%	0,22%	0,22%	-33,48%
Capital labor ratio - K/L	2,82%	1,13%	63,07%	2,95%	1,18%	-245,97%	3,44%	1,38%	69,58%	2,51%	1,00%	37,53%	2,04%	0,82%	18,68%	3,43%	1,37%	-210,95%
T F P	1,02%	1,02%	57,07%	-0,30%	-0,30%	61,92%	1,20%	1,20%	60,39%	1,51%	1,51%	56,53%	2,88%	2,88%	65,87%	-1,16%	-1,16%	177,46%
GDP per capita - Q/P	1,79%	1,79%	100,00%	-0,48%	-0,48%	100,00%	1,98%	1,98%	100,00%	2,67%	2,67%	100,00%	4,37%	4,37%	100,00%	-0,65%	-0,65%	100,00%
SLOVAKIA																		
Population - P	0,09%			0,24%			0,10%			0,03%			-0,02%			0,13%		
Labor participation rate - L/P	-0,10%	-0,10%	-3,93%	-1,89%	-1,89%	94,20%	-0,53%	-0,53%	-16,16%	0,83%	0,83%	19,06%	1,87%	1,87%	30,49%	-1,22%	-1,22%	-140,47%
Labor productivity - Q/L	2,74%	2,74%	103,93%	-0,12%	-0,12%	5,80%	3,84%	3,84%	116,16%	3,53%	3,53%	80,94%	4,27%	4,27%	69,51%	2,10%	2,10%	240,47%
Capital labor ratio - K/L	1,68%	0,67%	25,45%	2,66%	1,06%	-52,95%	1,83%	0,73%	22,20%	1,20%	0,48%	11,01%	0,13%	0,05%	0,86%	3,31%	1,32%	151,66%
T F P	2,07%	2,07%	78,48%	-1,18%	-1,18%	58,75%	3,10%	3,10%	93,97%	3,05%	3,05%	69,93%	4,22%	4,22%	68,65%	0,77%	0,77%	88,82%
GDP per capita - Q/P	2,64%	2,64%	100,00%	-2,01%	-2,01%	100,00%	3,30%	3,30%	100,00%	4,36%	4,36%	100,00%	6,14%	6,14%	100,00%	0,87%	0,87%	100,00%
POLAND																		
Population - P	0,05%			0,25%			-0,17%			0,06%			-0,04%			0,27%		
Labor participation rate - L/P	-0,21%	-0,21%	-5,69%	-2,14%	-2,14%	-111,31%	-0,05%	-0,05%	-0,86%	0,53%	0,53%	14,27%	1,10%	1,10%	26,02%	-0,60%	-0,60%	-22,11%
Labor productivity - Q/L	3,94%	3,94%	105,69%	4,06%	4,06%	211,31%	5,64%	5,64%	100,86%	3,19%	3,19%	85,73%	3,13%	3,13%	73,98%	3,32%	3,32%	122,11%
Capital labor ratio - K/L	4,01%	1,61%	43,04%	3,74%	1,50%	77,92%	4,60%	1,84%	32,90%	3,89%	1,55%	41,77%	3,36%	1,34%	31,77%	4,94%	1,98%	72,73%
T F P	2,34%	2,34%	62,65%	2,56%	2,56%	133,39%	3,80%	3,80%	67,96%	1,64%	1,64%	43,96%	1,78%	1,78%	42,21%	1,34%	1,34%	49,38%
GDP per capita - Q/P	3,73%	3,73%	100,00%	1,92%	1,92%	100,00%	5,59%	5,59%	100,00%	3,72%	3,72%	100,00%	4,23%	4,23%	100,00%	2,72%	2,72%	100,00%
LITHUANIA																		
Population - P	-0,96%			-0,37%			-0,72%			-1,31%			-1,12%			-1,69%		
Labor participation rate - L/P	-0,27%	-0,27%	-14,75%	-2,02%	-2,02%	20,07%	-0,38%	-0,38%	-7,40%	0,51%	0,51%	8,92%	2,12%	2,12%	24,80%	-2,60%	-2,60%	-590,74%
Labor productivity - Q/L	2,09%	2,09%	114,75%	-8,06%	-8,06%	79,93%	5,55%	5,55%	107,40%	5,24%	5,24%	91,08%	6,42%	6,42%	75,20%	3,04%	3,04%	690,74%
Capital labor ratio - K/L	3,16%	1,26%	69,52%	3,19%	1,28%	-12,65%	1,55%	0,62%	12,00%	3,83%	1,53%	26,59%	2,11%	0,85%	9,90%	7,15%	2,86%	650,64%
T F P	0,82%	0,82%	45,24%	-9,34%	-9,34%	92,58%	4,93%	4,93%	95,40%	3,71%	3,71%	64,49%	5,57%	5,57%	65,30%	0,18%	0,18%	40,09%
GDP per capita - Q/P	1,82%	1,82%	100,00%	-10,09%	-10,09%	100,00%	5,17%	5,17%	100,00%	5,76%	5,76%	100,00%	8,53%	8,53%	100,00%	0,44%	0,44%	100,00%
LATVIA																		
Population - P	-1,22%			-1,37%			-0,96%			-1,26%			-1,04%			-1,68%		
Labor participation rate - L/P	-0,68%	-0,68%	-50,78%	-4,47%	-4,47%	38,17%	0,06%	0,06%	0,97%	0,63%	0,63%	12,31%	3,26%	3,26%	38,92%	-4,38%	-4,38%	456,08%
Labor productivity - Q/L	2,02%	2,02%	150,78%	-7,24%	-7,24%	61,83%	6,44%	6,44%	99,03%	4,52%	4,52%	87,69%	5,11%	5,11%	61,08%	3,42%	3,42%	-356,08%
Capital labor ratio - K/L	3,31%	1,32%	98,92%	5,40%	2,16%	-18,45%	0,08%	0,03%	0,48%	3,77%	1,51%	29,31%	1,39%	0,56%	6,64%	8,32%	3,33%	-346,54%
T F P	0,69%	0,69%	51,86%	-9,40%	-9,40%	80,28%	6,41%	6,41%	98,55%	3,01%	3,01%	58,38%	4,56%	4,56%	54,45%	0,09%	0,09%	-9,54%
GDP per capita - Q/P	1,34%	1,34%	100,00%	-11,71%	-11,71%	100,00%	6,50%	6,50%	100,00%	5,15%	5,15%	100,00%	8,37%	8,37%	100,00%	-0,96%	-0,96%	100,00%
ESTONIA																		
Population - P	-0,75%			-1,75%			-0,81%			-0,31%			-0,36%			-0,21%		
Labor participation rate - L/P	-0,24%	-0,24%	-9,06%	-2,86%	-2,86%	55,20%	-0,58%	-0,58%	-8,42%	1,03%	1,03%	23,78%	2,08%	2,08%	32,42%	-1,04%	-1,04%	-362,42%
Labor productivity - Q/L	2,88%	2,88%	109,06%	-2,32%	-2,32%	44,80%	7,49%	7,49%	108,42%	3,31%	3,31%	76,22%	4,35%	4,35%	67,58%	1,33%	1,33%	462,42%
Capital labor ratio - K/L	3,31%	1,33%	50,16%	5,26%	2,10%	-40,66%	1,92%	0,77%	11,14%	3,06%	1,22%	28,20%	2,49%	1,00%	15,50%	4,18%	1,67%	582,25%
T F P	1,56%	1,56%	58,90%	-4,42%	-4,42%	85,46%	6,72%	6,72%	97,28%	2,09%	2,09%	48,02%	3,35%	3,35%	52,08%	-0,34%	-0,34%	-119,82%
GDP per capita - Q/P	2,64%	2,64%	100,00%	-5,17%	-5,17%	100,00%	6,91%	6,91%	100,00%	4,34%	4,34%	100,00%	6,43%	6,43%	100,00%	0,29%	0,29%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

Table B2: Sources of GDP per capita growth for South-East European countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%
BOSNIA AND HERZEGOVINA																		
Population - P	-0.73%			-2.73%			-0.80%			0.14%			0.24%			-0.04%		
Labor participation rate - L/P	-0.38%	-0.38%	-4.85%	-3.05%	-3.05%	-62.05%	-3.04%	-3.04%	-12.66%	1.94%	1.94%	66.61%	3.96%	3.96%	85.74%	-1.98%	-1.98%	477.22%
Labor productivity - Q/L	8.22%	8.22%	104.85%	7.96%	7.96%	162.05%	27.02%	27.02%	112.66%	0.97%	0.97%	33.39%	0.66%	0.66%	14.26%	1.56%	1.56%	-377.22%
Capital labor ratio - K/L	8.52%	3.41%	43.46%	8.52%	3.41%	69.40%	14.83%	5.93%	24.73%	5.85%	2.34%	80.37%	4.87%	1.95%	42.12%	7.73%	3.09%	-745.64%
T F P	4.81%	4.81%	61.38%	4.55%	4.55%	92.65%	21.09%	21.09%	87.93%	-1.37%	-1.37%	-46.98%	-1.29%	-1.29%	-27.87%	-1.53%	-1.53%	368.42%
GDP per capita - Q/P	7.84%	7.84%	100.00%	4.91%	4.91%	100.00%	23.98%	23.98%	100.00%	2.91%	2.91%	100.00%	4.62%	4.62%	100.00%	-0.41%	-0.41%	100.00%
CROATIA																		
Population - P	-0.51%			-0.67%			-0.67%			-0.38%			-0.45%			-0.24%		
Labor participation rate - L/P	-0.26%	-0.26%	31.96%	-4.66%	-4.66%	83.64%	1.69%	1.69%	41.68%	0.82%	0.82%	36.80%	2.82%	2.82%	59.38%	-3.05%	-3.05%	117.38%
Labor productivity - Q/L	1.07%	1.07%	131.96%	-0.91%	-0.91%	16.36%	2.36%	2.36%	58.32%	1.41%	1.41%	63.20%	1.93%	1.93%	40.62%	0.45%	0.45%	-17.38%
Capital labor ratio - K/L	4.74%	1.90%	234.77%	7.41%	2.85%	51.11%	2.61%	1.04%	25.80%	4.59%	1.84%	82.04%	2.96%	1.48%	24.98%	7.74%	3.10%	-119.08%
T F P	-0.83%	-0.83%	-102.81%	-3.76%	-3.76%	67.47%	1.32%	1.32%	32.51%	-0.42%	-0.42%	-18.85%	0.74%	0.74%	15.64%	-2.64%	-2.64%	100.71%
GDP per capita - Q/P	0.81%	0.81%	100.00%	-5.57%	-5.57%	100.00%	4.05%	4.05%	100.00%	2.24%	2.24%	100.00%	4.74%	4.74%	100.00%	-2.60%	-2.60%	100.00%
MACEDONIA																		
Population - P	0.41%			0.86%			0.62%			0.14%			0.13%			0.17%		
Labor participation rate - L/P	-1.64%	-1.64%	-203.97%	-7.67%	-7.67%	192.12%	-2.33%	-2.33%	-99.32%	1.26%	1.26%	56.99%	1.15%	1.15%	40.40%	1.48%	1.48%	157.16%
Labor productivity - Q/L	2.45%	1.07%	303.97%	3.68%	3.68%	-92.12%	4.68%	4.68%	199.32%	0.95%	0.95%	43.01%	1.70%	1.70%	59.60%	-0.54%	-0.54%	-57.16%
Capital labor ratio - K/L	3.12%	1.25%	155.26%	8.99%	3.60%	-90.11%	3.06%	1.23%	52.18%	0.60%	0.24%	10.85%	0.42%	0.17%	5.84%	0.97%	0.39%	41.23%
T F P	1.20%	1.20%	148.71%	0.08%	0.08%	-2.01%	3.45%	3.45%	147.14%	0.71%	0.71%	32.16%	1.53%	1.53%	53.76%	-0.92%	-0.92%	-98.39%
GDP per capita - Q/P	0.80%	0.80%	100.00%	-3.99%	-3.99%	100.00%	2.35%	2.35%	100.00%	2.21%	2.21%	100.00%	2.85%	2.85%	100.00%	0.94%	0.94%	100.00%
MONTENEGRO																		
Population - P	0.06%			0.13%			-0.15%			0.11%			0.31%			-0.27%		
Labor participation rate - L/P	0.23%	0.23%	82.84%	-2.70%	-2.70%	20.76%	0.66%	0.66%	7.72%	1.30%	1.30%	44.12%	1.79%	1.79%	38.36%	0.32%	0.32%	-75.30%
Labor productivity - Q/L	0.05%	0.05%	17.16%	-10.29%	-10.29%	79.24%	7.84%	7.84%	92.28%	1.64%	1.64%	55.88%	2.88%	2.88%	61.64%	-0.74%	-0.74%	155.30%
Capital labor ratio - K/L	3.12%	1.25%	446.70%	5.34%	2.13%	-16.43%	1.12%	0.45%	5.26%	3.01%	1.21%	40.98%	1.39%	0.56%	11.89%	6.27%	2.51%	-592.77%
T F P	-1.20%	-1.20%	-429.54%	-12.43%	-12.43%	95.67%	7.40%	7.40%	87.02%	0.44%	0.44%	14.90%	2.33%	2.33%	49.75%	-3.25%	-3.25%	768.06%
GDP per capita - Q/P	0.28%	0.28%	100.00%	-12.99%	-12.99%	100.00%	8.50%	8.50%	100.00%	2.94%	2.94%	100.00%	4.68%	4.68%	100.00%	-0.42%	-0.42%	100.00%
SERBIA																		
Population - P	-0.32%			-0.25%			-0.29%			-0.36%			-0.28%			-0.52%		
Labor participation rate - L/P	-1.03%	-1.03%	90.51%	-2.28%	-2.28%	16.94%	-1.11%	-1.11%	-78.63%	-0.47%	-0.47%	-13.75%	0.87%	0.87%	16.64%	-3.08%	-3.08%	1779.51%
Labor productivity - Q/L	-0.11%	-0.11%	9.49%	-11.17%	-11.17%	83.06%	2.53%	2.53%	178.63%	3.86%	3.86%	113.75%	4.35%	4.35%	83.36%	2.90%	2.90%	-1679.51%
Capital labor ratio - K/L	4.12%	1.65%	-145.05%	4.10%	1.64%	-12.20%	1.49%	0.60%	42.00%	5.25%	2.10%	61.92%	3.23%	1.29%	24.72%	9.24%	3.70%	-2136.74%
T F P	-1.76%	-1.76%	154.54%	-12.81%	-12.81%	95.26%	1.94%	1.94%	136.63%	1.76%	1.76%	51.83%	3.06%	3.06%	58.64%	-0.79%	-0.79%	457.22%
GDP per capita - Q/P	-1.14%	-1.14%	100.00%	-13.45%	-13.45%	100.00%	1.42%	1.42%	100.00%	3.39%	3.39%	100.00%	5.22%	5.22%	100.00%	-0.17%	-0.17%	100.00%
SLOVENIA																		
Population - P	0.13%			-0.08%			-0.01%			0.28%			0.20%			0.44%		
Labor participation rate - L/P	0.27%	0.27%	14.54%	0.70%	0.70%	-140.50%	0.65%	0.65%	14.80%	-0.07%	-0.07%	-3.92%	1.06%	1.06%	26.11%	-2.31%	-2.31%	87.38%
Labor productivity - Q/L	1.57%	1.57%	85.46%	-1.20%	-1.20%	240.50%	3.72%	3.72%	85.20%	1.86%	1.86%	103.92%	3.01%	3.01%	73.89%	-0.33%	-0.33%	12.62%
Capital labor ratio - K/L	3.17%	1.27%	68.83%	1.30%	0.52%	-104.16%	2.91%	1.17%	26.68%	4.07%	1.63%	90.77%	3.60%	1.44%	35.30%	4.98%	1.99%	-75.43%
T F P	0.31%	0.31%	16.63%	-1.72%	-1.72%	344.65%	2.56%	2.56%	58.52%	0.24%	0.24%	13.15%	1.57%	1.57%	38.59%	-2.32%	-2.32%	88.05%
GDP per capita - Q/P	1.84%	1.84%	100.00%	-0.50%	-0.50%	100.00%	4.37%	4.37%	100.00%	1.79%	1.79%	100.00%	4.08%	4.08%	100.00%	-2.64%	-2.64%	100.00%
ALBANIA																		
Population - P	-0.39%			-0.52%			-0.32%			-0.37%			-0.57%			0.04%		
Labor participation rate - L/P	-0.98%	-0.98%	26.15%	-1.37%	-1.37%	85.60%	-0.94%	-0.94%	-17.39%	-0.83%	-0.83%	-15.52%	-0.72%	-0.72%	-10.91%	-1.04%	-1.04%	-36.95%
Labor productivity - Q/L	4.71%	4.71%	126.18%	-0.23%	-0.23%	14.40%	6.38%	6.38%	117.39%	6.15%	6.15%	115.52%	7.31%	7.31%	110.91%	3.86%	3.86%	136.95%
Capital labor ratio - K/L	3.36%	1.35%	36.06%	1.96%	0.78%	-49.18%	1.32%	0.53%	9.74%	4.83%	1.93%	36.26%	4.77%	1.91%	28.93%	4.95%	1.98%	70.17%
T F P	3.36%	3.36%	90.09%	-1.01%	-1.01%	63.58%	5.85%	5.85%	107.64%	4.22%	4.22%	79.25%	5.41%	5.41%	81.97%	1.88%	1.88%	66.77%
GDP per capita - Q/P	3.73%	3.73%	100.00%	-1.59%	-1.59%	100.00%	5.43%	5.43%	100.00%	5.33%	5.33%	100.00%	6.59%	6.59%	100.00%	2.82%	2.82%	100.00%
GREECE																		
Population - P	0.40%			0.92%			0.53%			0.13%			0.30%			-0.21%		
Labor participation rate - L/P	-0.13%	-0.13%	-13.71%	0.65%	0.65%	199.94%	0.78%	0.78%	26.66%	-0.82%	-0.82%	-213.14%	1.07%	1.07%	32.23%	-4.48%	-4.48%	86.19%
Labor productivity - Q/L	1.07%	1.07%	113.71%	-0.32%	-0.32%	-99.94%	2.14%	2.14%	73.34%	1.21%	1.21%	313.14%	2.24%	2.24%	67.77%	-0.72%	-0.72%	13.81%
Capital labor ratio - K/L	2.66%	1.06%	112.77%	0.45%	0.18%	55.48%	1.18%	0.47%	16.19%	4.18%	1.67%	433.82%	2.61%	1.04%	31.51%	7.21%	2.88%	-55.53%
T F P	0.01%	0.01%	0.94%	-0.50%	-0.50%	-155.43%	1.67%	1.67%	57.16%	-0.47%	-0.47%	-120.67%	1.20%	1.20%	36.27%	-3.60%	-3.60%	69.33%
GDP per capita - Q/P	0.94%	0.94%	100.00%	0.32%	0.32%	100.00%	2.92%	2.92%	100.00%	0.39%	0.39%	100.00%	3.31%	3.31%	100.00%	-5.19%	-5.19%	100.00%
BULGARIA																		
Population - P	-0.80%			-0.73%			-0.57%			-0.93%			-0.96%			-0.63%		
Labor participation rate - L/P	-0.39%	-0.39%	19.86%	-3.96%	-3.96%	210.24%	-1.07%	-1.07%	547.47%	1.42%	1.42%	31.30%	2.79%	2.79%	45.67%	-1.95%	-1.95%	6512.86%
Labor productivity - Q/L	2.36%	2.36%	119.86%	2.08%	2.08%	-110.24%	0.88%	0.88%	-447.47%	3.12%	3.12%	68.70%	3.32%	3.32%	54.33%	1.92%	1.92%	-6412.86%
Capital labor ratio - K/L	3.77%	1.51%	76.64%	5.38%	2.15%	-114.26%	1.12%	0.45%	-229.09%	4.21%	1.68%	37.09%	2.53%	1.01%	16.57%	7.96%	3.18%	-10646.39%
T F P	0.85%	0.85%	43.22%	-0.08%	-0.08%	4.02%	0.43%	0.43%	-218.37%	1.43%	1.43%	31.61%	2.31%	2.31%	37.76%	-1.27%	-1.27%	4233.53%
GDP per capita - Q/P	1.97%	1.97%	100.00%	-1.88%	-1.88%	100.00%	-0.20%	-0.20%	100.00%	4.54%	4.54%	100.00%	6.11%	6.11%	100.00%	-0.03%	-0.03%	100.00%
ROMANIA																		
Population - P	-0.41%			-0.32%			-0.53%			-0.39%			-0.50%			-0.16%		
Labor participation rate - L/P	-1.14%	-1.14%	-62.82%	-2.30%	-2.30%	127.27%	-0.86%	-0.86%	-631.80%	-0.77%	-0.77%	-18.82%	-1.09%	-1.09%	-16.07%	-0.12%	-0.12%	10.97%
Labor productivity - Q/L	2.95%	2.95%	162.82%	0.49%	0.49%	-27.27%	1.00%	1.00%	731.80%	4.85%	4.85%	118.82%	7.86%	7.86%	118.07%	-0.99%	-0.99%	89.03%
Capital labor ratio - K/L	4.21%	1.68%	92.81%	2.76%	1.10%	-61.15%	2.34%	0.94%	685.15%	5.62%	2.25%	55.11%	5.60%	2.24%	33.12%	5.65%	2.26%	-203.13%
T F P	1.27%	1.27%	70.01%	-0.61%	-0.61%	33.87%	0.06%	0.06%	46.65%	2.60%	2.60%	63.71%	5.61%	5.61%	82.95%	-3.25%	-3.25%	292.17%
GDP per capita - Q/P	1.81%	1.81%	100.00%	-1.81%	-1.81%	100.00%	0.14%	0.14%	100.00%	4.08%	4.08%	100.00%	6.77%	6.77%	100.00%	-1.11%	-1.11%	100.00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

Table B3: Sources of GDP per capita growth for former Soviet Union countries – Energy importer countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
ARMENIA	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%
Population - P	-0.80%			-1.88%			-0.93%			-0.29%			-0.41%			-0.07%		
Labor participation rate - L/P	-0.69%	-0.69%	-21.91%	-4.22%	-4.22%	41.76%	0.08%	0.08%	1.34%	0.12%	0.12%	1.52%	-3.12%	-3.12%	-24.96%	6.95%	6.95%	-2096.57%
Labor productivity - O/L	3.82%	3.82%	121.91%	-5.88%	-5.88%	58.24%	5.98%	5.98%	98.66%	7.93%	7.93%	98.48%	15.60%	15.60%	124.96%	-7.28%	-7.28%	2196.57%
Capital labor ratio - K/L	2.52%	1.01%	32.07%	6.69%	2.68%	-26.49%	-0.58%	-0.23%	-3.83%	2.47%	0.99%	12.30%	5.17%	2.07%	16.58%	-3.26%	-1.31%	393.65%
T F P	2.82%	2.82%	89.84%	-8.56%	-8.56%	84.73%	6.21%	6.21%	102.49%	6.94%	6.94%	86.18%	13.53%	13.53%	108.39%	-5.98%	-5.98%	1802.92%
GDP per capita - O/P	3.14%	3.14%	100.00%	-10.10%	-10.10%	100.00%	6.06%	6.06%	100.00%	8.05%	8.05%	100.00%	12.48%	12.48%	100.00%	-0.33%	-0.33%	100.00%
GEORGIA																		
Population - P	-0.30%			-0.28%			-1.37%			0.14%			-0.10%			0.60%		
Labor participation rate - L/P	-0.22%	-0.22%	28.28%	0.32%	0.32%	-1.47%	-0.88%	-0.88%	-12.20%	-0.13%	-0.13%	-2.04%	-0.86%	-0.86%	-11.20%	1.36%	1.36%	42.14%
Labor productivity - O/L	-0.57%	-0.57%	71.72%	-22.31%	-22.31%	101.47%	8.10%	8.10%	112.20%	6.29%	6.29%	102.04%	8.51%	8.51%	111.20%	1.87%	1.87%	57.86%
Capital labor ratio - K/L	0.86%	0.35%	-43.69%	-0.48%	-0.19%	0.87%	1.01%	0.41%	5.62%	1.28%	0.51%	8.29%	2.31%	0.92%	12.07%	-0.81%	-0.32%	-10.04%
T F P	-0.91%	-0.91%	115.41%	-22.12%	-22.12%	100.61%	7.69%	7.69%	106.59%	5.78%	5.78%	93.75%	7.59%	7.59%	99.13%	2.20%	2.20%	67.90%
GDP per capita - O/P	-0.79%	-0.79%	100.00%	-21.98%	-21.98%	100.00%	7.22%	7.22%	100.00%	6.17%	6.17%	100.00%	7.65%	7.65%	100.00%	3.24%	3.24%	100.00%
BELARUS																		
Population - P	-0.33%			0.01%			-0.37%			-0.46%			-0.61%			-0.17%		
Labor participation rate - L/P	-1.63%	-1.63%	-48.27%	-2.79%	-2.79%	33.90%	-2.78%	-2.78%	-41.46%	-0.73%	-0.73%	-10.15%	-1.42%	-1.42%	-15.98%	0.67%	0.67%	17.47%
Labor productivity - O/L	5.01%	5.01%	148.27%	-5.44%	-5.44%	66.10%	9.48%	9.48%	141.46%	7.91%	7.91%	110.15%	10.31%	10.31%	115.98%	3.18%	3.18%	82.53%
Capital labor ratio - K/L	4.45%	1.78%	52.71%	5.18%	2.07%	-25.22%	3.15%	1.26%	18.79%	4.97%	1.99%	27.66%	4.19%	1.68%	18.87%	6.58%	2.63%	68.34%
T F P	3.23%	3.23%	95.56%	-7.51%	-7.51%	91.32%	8.22%	8.22%	122.67%	5.93%	5.93%	82.49%	8.63%	8.63%	97.11%	0.55%	0.55%	14.19%
GDP per capita - O/P	3.38%	3.38%	100.00%	-8.22%	-8.22%	100.00%	6.70%	6.70%	100.00%	7.19%	7.19%	100.00%	8.89%	8.89%	100.00%	3.85%	3.85%	100.00%
MOLDAVA																		
Population - P	-0.17%			-0.11%			-0.19%			-0.19%			-0.24%			-0.07%		
Labor participation rate - L/P	-4.68%	-4.68%	226.60%	-1.73%	-1.73%	10.27%	-3.14%	-3.14%	137.80%	-6.26%	-6.26%	-126.56%	-6.91%	-6.91%	-104.55%	-4.95%	-4.95%	-291.45%
Labor productivity - O/L	2.61%	2.61%	-126.60%	-15.14%	-15.14%	89.73%	0.86%	0.86%	-37.80%	11.21%	11.21%	226.56%	13.52%	13.52%	204.55%	6.65%	6.65%	391.45%
Capital labor ratio - K/L	4.65%	1.86%	-90.07%	1.94%	0.78%	-4.60%	1.72%	0.69%	-30.11%	6.73%	2.69%	54.40%	7.07%	2.83%	42.79%	6.04%	2.42%	142.09%
T F P	0.75%	0.75%	-36.53%	-15.92%	-15.92%	94.34%	0.18%	0.18%	-7.69%	8.52%	8.52%	172.16%	10.69%	10.69%	161.76%	4.24%	4.24%	249.37%
GDP per capita - O/P	-2.07%	-2.07%	100.00%	-16.87%	-16.87%	100.00%	-2.28%	-2.28%	100.00%	4.95%	4.95%	100.00%	6.61%	6.61%	100.00%	1.70%	1.70%	100.00%
MONGOLIA																		
Population - P	1.13%			1.02%			0.85%			1.29%			1.18%			1.52%		
Labor participation rate - L/P	0.67%	0.67%	21.83%	0.78%	0.78%	-20.39%	0.71%	0.71%	35.74%	0.60%	0.60%	9.19%	-0.54%	-0.54%	-8.50%	2.93%	2.93%	41.94%
Labor productivity - O/L	2.39%	2.39%	78.17%	-4.63%	-4.63%	120.39%	1.27%	1.27%	64.26%	5.94%	5.94%	90.81%	6.87%	6.87%	108.50%	4.05%	4.05%	58.06%
Capital labor ratio - K/L	0.78%	0.31%	10.18%	0.56%	0.22%	-5.77%	-0.37%	-0.15%	-7.58%	1.56%	0.62%	9.51%	2.02%	0.81%	12.79%	0.59%	0.24%	3.37%
T F P	2.07%	2.07%	67.98%	-4.86%	-4.86%	126.16%	1.42%	1.42%	71.85%	5.32%	5.32%	81.31%	6.06%	6.06%	95.71%	3.82%	3.82%	54.69%
GDP per capita - O/P	3.05%	3.05%	100.00%	-3.85%	-3.85%	100.00%	1.98%	1.98%	100.00%	6.54%	6.54%	100.00%	6.33%	6.33%	100.00%	6.98%	6.98%	100.00%
KYRGYSTAN																		
Population - P	1.12%			0.76%			1.44%			1.13%			1.03%			1.33%		
Labor participation rate - L/P	0.13%	0.13%	-14.62%	-0.42%	-0.42%	3.11%	-0.32%	-0.32%	-7.57%	0.48%	0.48%	17.63%	0.30%	0.30%	7.82%	0.83%	0.83%	166.63%
Labor productivity - O/L	-1.05%	-1.05%	114.62%	-13.05%	-13.05%	96.89%	4.48%	4.48%	107.57%	2.23%	2.23%	82.37%	3.52%	3.52%	92.18%	-0.33%	-0.33%	-66.63%
Capital labor ratio - K/L	-0.43%	-0.17%	18.72%	0.60%	0.24%	-1.77%	-1.79%	-0.71%	-17.13%	-0.13%	-0.05%	-1.91%	-0.49%	-0.20%	-5.19%	0.61%	0.24%	48.90%
T F P	-0.88%	-0.88%	95.90%	-13.29%	-13.29%	98.66%	5.20%	5.20%	124.70%	2.28%	2.28%	84.28%	3.72%	3.72%	97.37%	-0.58%	-0.58%	-115.54%
GDP per capita - O/P	-0.91%	-0.91%	100.00%	-13.47%	-13.47%	100.00%	4.17%	4.17%	100.00%	2.70%	2.70%	100.00%	3.82%	3.82%	100.00%	0.50%	0.50%	100.00%
TAJKISTAN																		
Population - P	1.90%			1.77%			1.35%			2.18%			2.05%			2.43%		
Labor participation rate - L/P	0.11%	0.11%	-4.80%	0.08%	0.08%	-0.42%	-0.40%	-0.40%	29.56%	0.33%	0.33%	6.06%	0.10%	0.10%	1.50%	0.78%	0.78%	29.13%
Labor productivity - O/L	-2.43%	-2.43%	104.80%	-19.44%	-19.44%	100.42%	-0.94%	-0.94%	70.44%	5.04%	5.04%	93.94%	6.64%	6.64%	98.50%	1.89%	1.89%	70.87%
Capital labor ratio - K/L	-2.20%	-0.88%	37.92%	-0.94%	-0.38%	1.95%	-2.10%	-0.84%	62.75%	-2.68%	-1.07%	-19.96%	-2.73%	-1.09%	-16.21%	-2.57%	-1.03%	-38.61%
T F P	-1.55%	-1.55%	66.88%	-19.07%	-19.07%	98.47%	-0.10%	-0.10%	7.69%	6.11%	6.11%	113.91%	7.73%	7.73%	114.71%	2.92%	2.92%	109.48%
GDP per capita - O/P	-2.32%	-2.32%	100.00%	-19.36%	-19.36%	100.00%	-1.34%	-1.34%	100.00%	5.37%	5.37%	100.00%	6.74%	6.74%	100.00%	2.67%	2.67%	100.00%
UKRAINE																		
Population - P	-0.59%			-0.15%			-0.92%			-0.63%			-0.76%			-0.36%		
Labor participation rate - L/P	-0.56%	-0.56%	53.60%	-1.00%	-1.00%	7.33%	-3.05%	-3.05%	287.39%	0.67%	0.67%	14.42%	0.84%	0.84%	10.81%	0.34%	0.34%	-26.23%
Labor productivity - O/L	-0.49%	-0.49%	46.40%	-12.60%	-12.60%	92.67%	1.99%	1.99%	-187.39%	4.00%	4.00%	85.58%	6.94%	6.94%	89.19%	-1.64%	-1.64%	126.23%
Capital labor ratio - K/L	0.76%	0.30%	-28.97%	1.84%	0.74%	-5.41%	2.07%	0.83%	-78.24%	-0.19%	-0.08%	-1.65%	-0.45%	-0.18%	-2.31%	0.32%	0.13%	-9.97%
T F P	-0.79%	-0.79%	75.37%	-13.34%	-13.34%	98.08%	1.16%	1.16%	-109.15%	4.08%	4.08%	87.22%	7.12%	7.12%	91.50%	-1.77%	-1.77%	136.20%
GDP per capita - O/P	-1.05%	-1.05%	100.00%	-13.60%	-13.60%	100.00%	-1.06%	-1.06%	100.00%	4.67%	4.67%	100.00%	7.78%	7.78%	100.00%	-1.30%	-1.30%	100.00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

Table B4: Sources of GDP per capita growth for former Soviet Union countries – Energy Exporters group of countries

	1990-2012			1990-1995			1995-2000			2000-2012			2000-2008			2008-2012		
AZERBEIJAN	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%	RG	AC	%
Population - P	1.19%			1.43%			0.93%			1.21%			1.07%			1.49%		
Labor participation rate - L/P	0.52%	0.52%	18,96%	1.30%	1.30%	-7.50%	0.19%	0.19%	3.16%	0.42%	0.42%	3.79%	-0.02%	-0.02%	-0.14%	1.30%	1.30%	63.33%
Labor productivity - Q/L	2.22%	2.22%	81,04%	-18,71%	-18,71%	107,50%	5,92%	5,92%	96,84%	10,56%	10,56%	96,21%	15,73%	15,73%	100,14%	0,75%	0,75%	36,67%
Capital labor ratio - K/L	3.30%	1.32%	48,11%	-1,47%	-0,59%	3,37%	-0,28%	-0,11%	-1,85%	6,92%	2,77%	25,23%	7,25%	2,90%	18,48%	6,26%	2,50%	121,66%
T F P	0.90%	0.90%	32,93%	-18,12%	-18,12%	104,12%	6,04%	6,04%	98,69%	7,79%	7,79%	70,97%	12,82%	12,82%	81,66%	-1,75%	-1,75%	-84,99%
GDP per capita - Q/P	2.74%	2.74%	100,00%	-17,41%	-17,41%	100,00%	6,12%	6,12%	100,00%	10,98%	10,98%	100,00%	15,70%	15,70%	100,00%	2,06%	2,06%	100,00%
KAZAHSTAN																		
Population - P	0.12%			-0,66%			-1,21%			1,01%			0,65%			1,74%		
Labor participation rate - L/P	0.52%	0.52%	21,85%	-0,98%	-0,98%	11,32%	0,01%	0,01%	0,15%	1,19%	1,19%	17,33%	1,12%	1,12%	12,97%	1,34%	1,34%	39,14%
Labor productivity - Q/L	1.87%	1,87%	78,15%	-7,66%	-7,66%	88,68%	3,70%	3,70%	99,85%	5,68%	5,68%	82,67%	7,51%	7,51%	87,03%	2,08%	2,08%	60,86%
Capital labor ratio - K/L	-0.48%	-0,19%	-8,01%	2,09%	0,84%	-9,70%	-0,50%	-0,20%	-5,36%	-1,33%	-0,53%	-7,76%	-1,55%	-0,62%	-7,21%	-0,88%	-0,35%	-10,34%
T F P	2,06%	2,06%	86,17%	-8,50%	-8,50%	98,37%	3,89%	3,89%	105,22%	6,22%	6,22%	90,42%	8,13%	8,13%	94,24%	2,43%	2,43%	71,19%
GDP per capita - Q/P	2,39%	2,39%	100,00%	-8,64%	-8,64%	100,00%	3,70%	3,70%	100,00%	6,87%	6,87%	100,00%	8,63%	8,63%	100,00%	3,42%	3,42%	100,00%
RUSSIA																		
Population - P	-0,16%			-0,02%			-0,21%			-0,20%			-0,40%			0,21%		
Labor participation rate - L/P	-0,07%	-0,07%	-8,45%	-3,74%	-3,74%	41,27%	-0,15%	-0,15%	-8,50%	1,23%	1,23%	25,25%	1,66%	1,66%	23,75%	0,37%	0,37%	49,70%
Labor productivity - Q/L	0,92%	0,92%	108,45%	-5,33%	-5,33%	58,73%	1,96%	1,96%	108,50%	3,64%	3,64%	74,75%	5,31%	5,31%	76,25%	0,38%	0,38%	50,30%
Capital labor ratio - K/L	0,05%	0,02%	2,28%	4,20%	1,68%	-18,52%	-1,40%	-0,56%	-31,00%	-0,77%	-0,31%	-6,33%	-1,47%	-0,59%	-8,44%	0,64%	0,26%	34,03%
T F P	0,90%	0,90%	106,17%	-7,01%	-7,01%	77,25%	2,52%	2,52%	139,50%	3,94%	3,94%	81,08%	5,90%	5,90%	84,69%	0,12%	0,12%	16,27%
GDP per capita - Q/P	0,84%	0,84%	100,00%	-9,07%	-9,07%	100,00%	1,81%	1,81%	100,00%	4,86%	4,86%	100,00%	6,97%	6,97%	100,00%	0,75%	0,75%	100,00%
TURKMENISTAN																		
Population - P	1,57%			2,69%			1,45%			1,17%			1,11%			1,27%		
Labor participation rate - L/P	0,07%	0,07%	4,37%	-0,12%	-0,12%	1,09%	0,06%	0,06%	1,95%	0,24%	0,24%	3,37%	0,00%	0,00%	0,00%	0,72%	0,72%	8,93%
Labor productivity - Q/L	1,63%	1,63%	95,63%	-11,33%	-11,33%	98,91%	2,95%	2,95%	98,05%	6,83%	6,83%	96,63%	6,60%	6,60%	100,00%	7,31%	7,31%	91,07%
Capital labor ratio - K/L	0,48%	0,19%	11,28%	-0,45%	-0,18%	1,58%	-0,40%	-0,16%	-5,38%	1,34%	0,54%	7,59%	-0,19%	-0,08%	-1,15%	4,50%	1,80%	22,42%
T F P	1,44%	1,44%	84,35%	-11,15%	-11,15%	97,33%	3,11%	3,11%	103,42%	6,30%	6,30%	89,05%	6,67%	6,67%	101,15%	5,51%	5,51%	68,65%
GDP per capita - Q/P	1,70%	1,70%	100,00%	-11,46%	-11,46%	100,00%	3,01%	3,01%	100,00%	7,07%	7,07%	100,00%	6,60%	6,60%	100,00%	8,03%	8,03%	100,00%
UZBEKISTAN																		
Population - P	1,71%			2,13%			1,59%			1,59%			1,29%			2,19%		
Labor participation rate - L/P	0,28%	0,28%	13,48%	-0,51%	-0,51%	8,15%	0,43%	0,43%	18,50%	0,51%	0,51%	9,11%	0,31%	0,31%	5,79%	0,90%	0,90%	15,28%
Labor productivity - Q/L	1,77%	1,77%	86,52%	-5,72%	-5,72%	91,85%	1,91%	1,91%	81,50%	5,05%	5,05%	90,89%	5,08%	5,08%	94,21%	4,98%	4,98%	84,72%
Capital labor ratio - K/L	-0,25%	-0,10%	-4,90%	-0,06%	-0,02%	0,40%	-0,60%	-0,24%	-10,21%	-0,02%	-0,01%	-0,16%	-0,36%	-0,15%	-2,70%	0,67%	0,27%	4,59%
T F P	1,87%	1,87%	91,42%	-5,69%	-5,69%	91,45%	2,15%	2,15%	91,71%	5,06%	5,06%	91,05%	5,23%	5,23%	96,91%	4,71%	4,71%	80,13%
GDP per capita - Q/P	2,05%	2,05%	100,00%	-6,23%	-6,23%	100,00%	2,35%	2,35%	100,00%	5,55%	5,55%	100,00%	5,40%	5,40%	100,00%	5,87%	5,87%	100,00%

Sources: Authors' calculations based on following data: GDP and investment in fixed asset from UN Data Set; Employment calculated from WB data on labour force participation in population and employment participation in labour force.

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<sup>1</sup> For more detailed insight into the sources of growth analysis see: Acemogly (2008), Agnion and Howit (2009), Romer (2001), Baro and Sala-i-Martin (1995), Crafts and Toniolo (1996), Mankiw (1995), Mankiw at all (1992), Madison (1982, 1987), Denison E. (1967, 1985), Abramowitz (1956, 1993), Jorgenson and Griliches (1967).

<sup>2</sup> Exceptions are some studies for particular countries done by World Bank (2009, 2012), IMF (2009, 2012), Jongen (2004), Földvári, P. and Van Leeuwen (2009), Popovic (2013), Popovic and Čizmović (2013) and a lot of other based very often on dubious data sources. First comparative study is one done by Iradian (2007).

<sup>3</sup> Recently Piketty (2014) questioned, among other things, empirical validity of constant factors share assumption. By presenting data for five countries in 19<sup>th</sup> century, he showed that in so called old *belle époque*, period after



industrial revolution in Europe and before IWW, capital share was much larger than what it used to be during most of the 20<sup>th</sup> century. Interestingly enough, in recent *belle époque*, one which appeared after modern technological revolution and before most recent economic crisis, developed countries experienced again significant increase of non-labor incomes share in GDP. For further insights in this and other issues regarding distribution and inequalities in last couple of decades see Stiglitz (2012).

<sup>4</sup> Note, however, that technological progress is uncertain activity and that sometimes strong technological shocks can cause capital-labor ratio to increase for a long time at higher rate than wage-profit ratio in which case we can experience increase of capital share and decrease of labor share in GDP for prolonged period of time. Economic and social consequences of this kind of shocks can be devastating indeed. So, at the end these “inventions” might act, at least for people who live in such “interesting times”, more like “destructive creations” than like “creative destructions”. This is exactly what happened in both, old and new, *belle époques*.

<sup>5</sup> In this research, gross value of capital is supposed to be appropriate measure of “number of machine”. Estimation is based on assumption that constructions have life span of 70 years, while equipment and other elements of physical capital have life span of 10 years. Also, assumed is “one hoss shay” decay pattern. It means that on average physical capital has life span of about 40 years, which is in accordance to results of numerous researches that have used Nehru and Dharehwar (1993) methodology in estimating average life span of physical capital.

<sup>6</sup> POUM hypothesis, formulated by Benabou and Ok (2001), claims that we should take into account individuals’ expected stream of net benefits and, in that respect especially, a possibility of upward mobility to solve the puzzle that in democratic societies people do not vote for redistributive policy that would lead toward egalitarian society, something that might be natural to expect if we know that a share of those who have a below average income is much larger, around 75%, than a share of those who have higher than average income. While this hypothesis might be questioned from many viewpoints, another one that we can establish on the basis of communist countries experience is much more convincing and interesting: human beings might be ready to give up democracy for an increased level of upward mobility. “Fighting for democracy” and “civil disobedience” was rare in communist countries as long as totalitarian regimes were able to provide high expectations regarding upward mobility. By using the strategy of “big push” and consequent rapid industrialization and urbanization, communist regimes were able to keep a high level of upward mobility and to hold power for so long. Similarly, the one-party-capitalism in China wouldn’t be possible without a huge reserve for further urbanization and industrialization that is supposed to generate long run expectations of a high level of upward mobility.

<sup>7</sup> Relative import price growth rates are in this paper calculated using expression  $r_{mp} = \left[ \frac{(1+r_{mp})}{(1+r_{xp})} - 1 \right]$  where  $r_{mp}$  and  $r_{xp}$  stand for growth rates for import and export prices. This can also be approximated with differences between these two growth rates,  $(r_{mp} - r_{xp})$ . On the other hand, growth rates of import / export prices are calculated as a differences between growth rate of import / export measured in current prices ( $r_{mpt}$  and  $r_{xpt}$ ) and those measured in constant prices ( $r_{mp0}$  and  $r_{xp0}$ ). More formally, it was calculated using expression  $(r_{mpt} - r_{mp0})$ , for import prices, and  $(r_{xpt} - r_{xp0})$ , for export prices.

<sup>8</sup> For analysis of this phenomena in the case of MENA countries in the context of growth analysis see, for example, Bhattacharaya, R. & Wolde, H. (2010), Dahi, O. S. & Demir, F. (2008), Hakura, D. (2006), Makdisi, S., Fattah, Z. & Limmam, I. (2000).

<sup>9</sup> For brief insights and references on the issue of economics of happiness see, for example, Layard (2003, 2005) and Graham (2010).

<sup>10</sup> It is interesting that the concept of optimal exchange rate is still not developed within the economic theory. Instead, economist developed the concept of the long run equilibrium real exchange rate. Theoretically, later can be defined as the rate at which conditions for both, internal and external macroeconomic stability are satisfied (Baffes et al., 1997; Montiel, 1997, 1999, 2001; Taulaboe, 2001). Internal macroeconomic stability assumes that demand and supply for untradeables are equal. External macroeconomic stability, on the other hand, assumes compatibility between the current account position and the long-run sustainable capital account inflow / outflow (Krugman and Obstfeld, 2009). The problem with this concept is that it does not explain clearly what is either the long-run or sustainable level of capital account inflow / outflow. In different econometric exercises it has been defined pretty arbitrarily. The concept of optimal exchange rate is much more relevant and it, naturally, should be developed within the framework of welfare economics and the framework of optimal inter-temporal allocation within the international trade context. As far as I know there is only one research that explicitly uses the concept of the optimal exchange rate (Rodrik, 2008). Although not defined in the framework of welfare economics, but as the exchange rate that maximizes the GDP growth rate, this research is very important, especially its findings that almost all

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episodes of high growth rates in different countries from 1954 to 2004 have been accompanied by the depreciated real exchange rate.