The Returns to Education: Some Empirical Findings for Slovenia

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For the ten new members, the EU enlargement raises a number of challenges and opportunities related to the reduction of the technological gap with respect to advanced EU member countries. The results of contemporary economic analysis suggest that a higher growth of technological progress is closely connected with the growth of human capital. Hence, for a great majority of social scientist, the most important challenge of each society is the human capital formation.

The aim of this paper is to present the appropriate theoretical framework, that can, connected with the role of education, successfully explain the nature of the economic growth in transition countries and can be also used as the source of suggestions for future economic policy measures in order successfully to realize the advantages of the EU enlargement process. Firstly, this paper presents the human capital as an economic category – it looks at the theoretical findings examining the impact of education (via human capital formation) on economic growth. Secondly, we present a theoretical growth model and some possibilities for the inclusion of the human capital variable into the aggregate production function. We present an original solution that is based on the human capital index estimation. Section three surveys the role of education (via human capital) for economic growth of the Slovenian economy during the transition period 1992–2001 and section four presents appropriate economic interpretation of the empirical findings.

INTRODUCTION

The former centrally planned or (in the case of Slovenia) semi command economies favored an extensive growth strategy that worked well approximately until 1960, as the first signs of growth slowdown appeared,

followed by the collapse of the socialist experiment in 1989, as transition began to emerge.

Following the expectations, examined by Kiguel and Liviatan (1989), Kornai (1994), Blanchard (1997), the transition of former socialists countries towards market economies should stimulate the economic dynamic because of the following arguments (Campos and Coricelli 2002):

- Liberalization of prices, dismantling of trade barriers, and elimination of the pervasive state should have brought large efficiency gains.
- Based on the experience of programs implemented in developing market economies, stabilization per se should not have caused a sharp fall in output.
- The previous economic system was characterized by a myriad of distortions. One might have expected that removing most of them would lead to a large increase, not decrease, in output.

Contrary to these optimistic expectations, transition countries have experienced a sharp fall in output. In contemporary theory, after more than ten years of experience with transition, this fact still remains a puzzle. There is no common economic theory with clear answers about the causes of the initial fall in output at the beginning of transition. Up to this point we know of only two theoretical concepts (not theories): Credit market imperfections (Calvo and Coricelli 1993; Marin and Schnitzer 1999, Johnson et al. 1997) and Disorganization (Blanchard and Kremer 1997; Roland 2000), which tries to explain the reality of economic growth in transition.

Additionally to those two theoretical concepts, which are obviously restricted only to explanations of initial output fall, the so-called Creative destruction approach is becoming even more popular. This explanation describes the transition path of output dynamics connected with sector reallocation of resources. As resources (for almost labor) move out of the state firms into the private sector, and as labor in the private sector moves from decreasing to propulsive industries, productivity increases. The initial fall in output is possible only because of adjustment costs. After the private sector has reached the sufficient size, and structural change becomes driven by the market forces, output starts to increase.

This (Shumpetrian) Creative destruction approach seemed to be convenient because (in contrast to Credit market imperfections or Disorganization) it endeavors to explain not only the reasons for the initial

output fall, but also the determined path and speed of the transition process. If we accept this hypothesis, that reallocation of resources between the state and private sector and within the industries explains the output path during the transition period, then we confront the questions about the factors that determine the speed of this adjustment of production factors between and within industries.

Following the contemporary economic analysis, the main factor that determines the speed of structure change is the flexibility and mobility of the labor force. The faster the labor force can fluctuate between and within industries, the faster and more efficient will be the adjustment. Because the flexibility and mobility of the labor force depends on society's stock of human capital, we have to analyze the process of human capital formation. Analyzing the human capital in transition countries is not only crucial for explanations of the economic growth during the transition period, but is also applicable to future growth perspectives. Namely, with expected EU enlargement, there arise for ten transition countries numerous challenges and opportunities related to the reduction of the technological gap with respect to the advanced EU member countries.

In this paper we present some empirical results of the study about human capital formation and its contribution to economic growth (i. e. returns to education) for Slovenia. Firstly, this paper presents the human capital as an economic category – it looks at the theoretical findings examining the impact of education (via human capital formation) on economic growth. Secondly, we present a theoretical growth model and some possibilities for the inclusion of the human capital variable into the aggregate production function. We present an original solution that is based on the human capital index estimation. Section three surveys the role of education (via human capital) for economic growth of the Slovenian economy during the transition period 1992–2001 and section four presents appropriate economic interpretation of the empirical findings.

THEORETICAL FRAMEWORKS

Our empirical analysis follows formally the convenient neoclassical growth-accounting framework but with some important distinctions. Therefore we first conduct the theoretical discussion with the aim of presenting and discussing the solutions that we have taking into account during the empirical analysis.

Human Capital as an Economic Category

There exists clear microeconomic evidence about the provision of education. But microeconomic analysis is individual level analysis of the private returns to education that underestimate (or perhaps overlook) the full returns of education to society. The benefits of individually acquired education are not restricted only to the individual but spill over to other individuals within industry, the region or over the whole economy. Channels for these types of externalities include the possibility that educated worker will raise the productivity of less educated co-workers. Furthermore better educated workers are more appropriate for the new technologies. An environment with a higher level of acquired education may entail a higher incidence of learning from others; hence if we conduct a microeconomic analysis we will be confronted with estimation bias – therefore macroeconomic analysis is preferable.

In macroeconomic analysis of economic growth the role of education is analyzed via human capital. Human capital consists (Romer 1994) of the abilities, skills and knowledge of workers. As an economic category it plays a dual role in the process of economic growth (Mincer 1989, 1):

- as a stock of skills – produced by education – it is a factor of production and
- as a stock of knowledge it is a source of innovation.

Human capital is thus a production factor that can be simply built into the convenient aggregate production function (simple growth model). Furthermore on the basis of estimated parameters of an aggregate production function, we can calculate the contribution of human capital to economic growth, which is an approximate estimate of returns to education on the aggregate level.

Specification of Aggregate Production Function

In economic analysis the growth process is described by the aggregate production function, which defines the technical connection between output and used inputs (production factors).

$$Q = f(K, L, A)$$

Symbols:
Q – output,
K – capital,

L – labour,
A – efficiency parameter.

The growth of output is thus decomposed into its parts: growth of K, L and A. But as Griliches (1996) expressed it: 'accounting is no explanation.' Therefore New Growth Theories tries to emphasize the endogenous determination of growth of production factors. A further disadvantage of the neo-classical growth theory is that education has no role for economic growth in opposite to the new approaches, which have explicitly brought the role of education with the inclusion of an additional explanatory variable into the production function.

$$Q = f(K, L, H, A)$$

Symbols:
Q – output,
K – capital,
L – labour,
H – human capital,
A – efficiency parameter.

This is the so-called augmented neo-classical model; it simply extends the basic production function framework to allow an extra input to enter the production function. But in both models there is an inappropriate implicit assumption, that the labor force is a homogenous production factor. In practice this means, for example that an unskilled worker can do the job of the surgeon, which is a quite unrealistic and inappropriate assumption. To surmount this weakness we have to redefine the explanatory variable for the labor force. Our starting point in searching for an appropriate solution to the stated problem was the analysis of different methods of measurement of human capital. On the basis of the reference literature studied (Barro 1991; Benhabib and Spiegel 1994; Rebelo 1998; Durlauf and Quah 1998; Card 1999; Frankel and Hemmer 1999; Acemoglu and Angrist 2000; Sianesi and Reenen 2002; Friere-Seren 2001) we found, that there are four different measurements of human capital on the aggregate level.

1. Human capital as returns on investments on individual level:

$$hk_i = \sum_{t=e}^{n} \frac{Y_{hk2} - C}{(1 + r)^{t-e}} - \sum_{t=e}^{n} \frac{Y_{hk1}}{(1 + r)^{t-e}} + h_0.$$

2. Human capital as returns on investments on aggregate level:

$$H = \sum_{i=1}^{p} hk_i.$$

Symbols:
n – activity period (in years),
t – expected lifetime (in years),
e – education period (in years),
r – expected return on investment in education,
hk_i – stock of human capital of i-th individual,
Y_{hk2} – income of the i-th individual with higher level of education,
Y_{hk1} – income of the i-th individual with initial level of education,
H – amount of human capital on aggregate level.

3. Human capital as the substitute for the physical capital:

$$H = H_{t-1} + I_{H_t} - \delta H_{t-1} = I_{H_t} + (1 + \delta)H_{t-1}.$$

Symbols:
H_t – stock of human capital at the time t,
H_{t-1} – stock of human capital in the previous period,
I_{H_t} – investments in human capital in at the time,
δ – depreciation rate of human capital.

4. Human capital as the effective labor force:

$$HKI = \sum_{t=1}^{k} W_i \cdot K_i \Rightarrow EL_t = HKI_t \cdot L_t.$$

Symbols:
HKI – human capital index,
W_i – real wage coefficient for i-th level of acquired education,
K_i – share of active labour force with i-th level of acquired education,
EL_t – effective labour force,
L_t – labour force.

Measuring the size of human capital as returns on investment is confronted with the problem of objective estimation of expected returns on investment (parameter r). We have also to anticipate that this parameter will not be constant but will vary over time. Similar difficulties arise if we

use the second approach, where the stock of human capital is measured in a similar way to the stock of physical capital – how then should we estimate the value of amortization rate for human capital? Perhaps the best solution to our problem would be to measure the human capital in units of the effective labor force.

By using this approach we calculate the values for the human capital variable in two steps: first, we calculate the human capital index that is (in the second step) used as multiplier for the labor force. In this way we simply combine two separate explanatory variables (labor force (L) and human capital (H)) in one common explanatory variable named as effective labor force.

$$HKI = \sum_{t=1}^{k} W_i \cdot K_i, EL_t = HKI_t \cdot L_t.$$

Symbols:
HKI – human capital index,
W_i – real wage coefficient for i-th level of acquired education,
K_i – share of active labour force with i-th level
    of acquired education,
EL_t – effective labour force,
L_t – labour force.

Following our findings and suggestions from this theoretical discussion, our analytical approach can be placed between the neo-classical and augmented neo-classical model. As in the neo-classical framework it is assumed that there are only two production factors, but the approach takes into account the fact that the labor force is not a homogenous production factor. Our model includes among the explanatory variables human capital, and hence allows us to infer about the role of education for past economic growth, as is the case in the augmented neo-classical model. Theoretically, our model that will be applied to empirical analysis is specified as follows:

$$Q = f(K, EL, A)$$

Symbols:
Q – output,
K – physical capital,
EL – effective labour force,
A – efficiency parameter.

The above presented model is given as non-deterministic, i. e. it does not tell us which statistical data we will use for empirical analysis – except for effective labor – or which definition of technical progress (Harrod neutral, Hicks neutral or Sollow neutral) should be represented by efficiency parameter (A). The analytical discussion of this question (presented in Novak (2003, 18–21)) shows that the series of physical capital may express the payments of investment and that the efficiency parameter should present Hick's definition of the neutral technical progress.

EMPIRICAL RESULTS

We will realize our empirical research in two steps. First we examined the characteristics of the production process in the Slovenian economy for the period 1992–2001, which can be deduced from econometric estimations of aggregate production functions. In the second step, we evaluated the growth accounting equation that presents how much of the output growth can be attributed to each particular production factor.

Econometric Estimates

Because there are different possibilities for mathematical specifications of production functions, we have used the three most popular specifications: Cobb-Douglas function, CES function and universal specification of power function.

- Power function (theoretical specification):

$$Q = A \cdot K^{\beta} \cdot L^{\beta}.$$

- Power function (log-linear form used for econometric estimation):

$$\ln(BDP_t) = \ln(b_1) + b_2 \cdot \ln(INV_t) + b_3 \cdot \ln(EFD_t) + \epsilon_t.$$

- Cobb-Douglas (theoretical) specification:

$$Q = A \cdot K^{\alpha} \cdot L^{1-\alpha}.$$

- Cobb-Douglas specification (log-linear form used for econometric estimation):

$$\ln(BDPefd_t) = \ln(b_1) + b_2 \cdot \ln(INVefd_t) + \epsilon_t.$$

- CES function:

$$Q = A[\delta K^{-\psi} + (1 - \delta)L^{-\psi}]^{\frac{\rho}{-\psi}}.$$

- CES function (log-linear form used for econometric estimation):

$$\ln(BDP_t) = \ln(b_1) + b_2 \cdot \ln(INV_t) + b_3 \cdot \ln(EFD_t)$$

$$+ b_4 \cdot \ln(INVefd2_t) + \epsilon_t.$$

Symbols:
Q – product (in the regression equation measured as BDP),
A – efficiency parameter,
K – capital (in the regression equation noted as INV – spending for investments),
L – labor (in the regression equation noted as EFD – effective labor force),
α – partial elasticity of product with respect to capital,
β – partial elasticity of product with respect to labor,
$1 - \alpha$ – partial elasticity of product with respect to labor,
δ – distribution parameter,
ψ – parameter of substitution,
ρ – parameter of homogeneity.

The *INVefd* variable is expressed as a quotient between the variables *INV* and *EFD*, the *INVefd2* variable is expressed as the square of the quotient between the variables *INV* and *EFD*.

The results of estimated coefficients with the relevant test statistics are summarized in Table 1. Generally we can set the following cognition: All three estimated regression functions have good analytical power ($R^2_{adj.}$), the residuals are normally distributed (JB-test) and the serial correlation is not present in any estimation, hence we may expect that the established definitions of the explanatory variables and the choice of statistical data for their measurements are correct. On the basis of the results obtained from the structural stability test we may conclude that all estimated aggregate productions functions are structurally stable. The behaviour pattern of the economic subjects did not change. Irrespective of whatever period we might have chosen in our empirical test we would have found that the differences would not be statistically significant.

Between the variables *INV* and *INVefd2* included in the CES specification of production function there exists a high rate of multicolinearity.

Table 1: Results of econometric estimations and tests

	Power Function	Cobb-Douglas Function	CES Function
Parameter estimates			
$\ln(b_1)$	2.661	0.047	4.146
	(1.999)	(2.244)	(1.734)
	[0.054]	[0.031]	[0.092]
b_2	0.149	0.134	0.345
	(13.677)	(17.181)	(1.622)
	[0.000]	[0.000]	[0.114]
b_3	0.662	...	0.448
	(6.325)		(1.387)
	[0.000]		[0.175]
b_4	...	...	0.011
			(0.750)
			[0.459]
Jarque-Bera test			
LB	1.469	0.616	1.254
	[0.450]	[0.735]	[0.534]
Breusch-Godfrey test			
LM(1)	0.447	0.939	0.114
	(3.841)*	(3.841)*	(3.841)*
LM(2)	0.804	1.150	0.514
	(5.997)*	(5.997)*	(5.997)*
LM(4)	1.199	1.585	1.212
	(9.488)*	(9.488)*	(9.448)*
LM(6)	1.867	2.516	2.098
	(12.592)*	(12.592)*	(12.592)*

Therefore we can explain why the fourth regression coefficient in this function is not statistically significant at an acceptable level of significance. The statement suggests that the CES function does not differ from the Cobb-Douglas function. With regard to these criteria we could not carry out a grounded selection between the power function and Cobb-Douglas specification (for this reason the elimination of the CES function is justified), therefore, we decided to make another test on the characteristics of returns to scale. The results show that inclusions of a priori expectations of a constant returns scale, which are inherent to the Cobb-Douglas specification, are not justifiable.

Table 1 (continued): Results of econometric estimations and tests

	Power Function	Cobb-Douglas Function	CES Function
White test of homoscedasticity			
$n \cdot R^2$	5.545 (11.071)*	3.417 (5.991)*	7.148 (15.507)*
Multicollinearity			
$VIF_{\ln(EFD):\ln(EFD)}$	2.512	...	2.512
$VIF_{\ln(EFD):\ln(INVefd2)}$	...	...	50.253
$EFD_{\ln(EFD):\ln(INVefd2)}$	...	...	1.881
F-*test of adjusted* R^2			
R^2_{adj}	0.962 [0.000]	0.879 [0.000]	0.964 [0.000]
Chow test of structural stability			
$p \le 0.01$	0	0	0
$0.01 < p \le 0.05$	0	0	0
$0.05 < p \le 0.10$	0	0	1
$0.10 < p$	29	29	28

Note: the calculated test statistics are mentioned in round brackets. In squared brackets the exact level of significance (p value) is mentioned. Symbol * denotes the critical value of test statistic at the 0.05 level of significance. Source: own calculations.

The described parameters represent objective criteria for the choice of the most suitable production function, from which we can derive the explanation and the characteristics of the production process in the observed period. The statistically insignificant parameters in the CES function, and also the insignificant constant returns to scale in the Cobb-Douglas specification, suggest the power function as a suitable production function.

Growth Accounting

Estimated power function explains for Slovenia the observed economic growth during the transition period 1992–2001 as the result of a combination of three elements: physical and human capital (measured as effective labour force) and the level of technology. How much separate factors have contributed to economic growth can be deduced from the growth accounting equation.

In order to construct this equation one needs coefficients for par-

Table 2: Data used for developing the growth accounting equation

Trend Growth Rate	$r_{BDP} = 0.010486$	$r_{INV} = 0.039399$	$r_{EFD} = 0.004576$
Partial Elasticity		$\epsilon_{BDP,INV} = 0.149133$	$\epsilon_{BDP,EFD} = 0.661527$

Note: r_{BDP} – trend growth rate of quarterly real gross domestic product (constant prices 1995), r_{INV} – trend growth rate payments for investments (constant prices 1995), r_{EFD} – trend growth rate of effective labour, $\epsilon_{BDP,INV}$ and $\epsilon_{BDP,EFD}$ – coefficient of partial elasticity. Source: own calculations.

Table 3: Contributions of production factors to economic growth

Contribution of physical capital	$\approx 56.04\%$
Contribution of human capital	$\approx 28.87\%$
Contribution of total factor productivity	$\approx 15.09\%$

Source: own calculations.

tial elasticity from the estimated production function and growth rates for each variable (output, physical capital, human capital and technical progress). Here we use the trend growth rates received as a result of econometric estimation of the exponent trend. The selected results are mentioned in Tables 2–3.

From the data in the table we can estimate the growth rate of total factor productivity:

$$r_{BDP} = r_A + \epsilon_{BDP,INV} \cdot r_{INV} + \epsilon_{BDP,EFD} \cdot r_{EFD}$$
$$r_A = r_{BDP} - \epsilon_{BDP,INV} \cdot r_{INV} - \epsilon_{BDP,EFD} \cdot r_{EFD}$$
$$r_A = 0.010486 - 0.005876 - 0.003027$$
$$r_A = 0.001583$$

From this we receive all known parameters for writing down the final growth accounting equation:

$$r_{BDP} = r_A + \epsilon_{BDP,INV} \cdot r_{INV} + \epsilon_{BDP,EFD} \cdot r_{EFD}$$
$$0.010486 = 0.001583 + 0.005876 + 0.003027$$

If we want to find out the share part of growth of individual production factors in the explanation of the 1.048 percentage of the trend growth rate of gross domestic product, we have to divide the last equation by this growth rate:

$$\frac{0.010486}{0.010486} = \frac{0.001583}{0.010486} + \frac{0.005876}{0.010486} + \frac{0.003027}{0.010486}$$

$$1 = 0.150963 + 0.560366 + 0.288671$$

From the results of the empirical study (econometric estimates of aggregate production function and growth accounting equation) we can make the following inferences:

- Economic growth during the transition period remains extensive.
- For the production process on the aggregate level, decreasing returns to scale are significant.
- The growth of human capital contributed approximately one-third to the past growth.
- Growth of total factor productivity (*TFP*) was extremely low.

ECONOMIC INTERPRETATIONS

Empirical analysis of returns on education, in the early days of its existence, was restricted to advanced market economies (first group) and developing countries (second group). Centrally planned (in the case of Slovenia semi command) economies (third group) were omitted from this analysis. But after the collapse of the socialist experiment with the economic system, education acquires a role in explaining economic growth during the transition period. At the beginning of this article we have exposed the Creative destruction as an appropriate theoretical framework to explain the path and the speed of output growth in transition countries. The core of its content put forward the process of reallocation of production factors towards propulsive industries, which depends above all on the flexibility and mobility of the labour force. Following our assumption that this already depends on the amount of society's stock of human capital we tested the explanatory power of Creative destruction in the case of the Slovenian economy. According to empirical findings the (extensive) past growth was notably influenced by the growth of human capital, measured in terms of the effective labour force, decreasing returns to scale and the slow growth of total factor productivity.

The increase of calculated human capital index (*HKI*), represented in Table 4, and the structural change of active labour force in relation to the level of acquired education (see Table 5) can explain the notable contribution of human capital to the past growth.

But why does this lead to a low growth rate of total factor productivity and decreasing returns to scale? One of the possible explanations can be deduced from the analysis of sector reallocation of production factors within the entire labour force (see Table 6).

Table 4: Human capital index for Slovenia

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
HKI	0.979	0.985	1.005	1.013	1.954	1.061	1.071	1.114	1.139	1.139

Table 5: Structure of active labor force by level of acquired education

Year	PhD	Masc.	Non-university	Secon-dary	Lower	Highly skilled workers	Skilled workers	Semi-skilled workers	Un-skilled
1992	0.22%	7.38%	7.52%	22.13%	2.36%	3.80%	29.23%	8.33%	19.04%
1996	0.24%	10.54%	9.87%	25.51%	1.32%	1.81%	29.23%	6.41%	15.07%
2000	0.24%	11.76%	9.92%	26.90%	1.33%	1.43%	29.70%	6.55%	12.15%
MIN	0.22%	7.38%	7.52%	22.13%	1.32%	1.43%	29.23%	6.41%	12.15%
MAX	0.24%	11.76%	9.92%	26.90%	2.36%	3.80%	29.70%	8.33%	19.04%

Source: SURS, own calculations.

Straightforward comparison of statistical data about the distribution of the labour force and the movements of relative real wages among industries between 1996 and 2000 shows that in four years there appeared only a marginal change. In 1996 about 62 percent of the active labour force was employed in industries in which the average level of real wage was below the average of the economy. By 2000 this share has fallen only to approximately 60 percent. The required structural change of labour force adjustment movements towards propulsive industries had obviously not been realised during the studied period. This simply indicates that the growth of employment in industries with an average real wage below the national average was faster than the growth of human capital index in the whole economy. Employment of the labour force obviously rises faster in less productive industries (this is indicated by the fact that the average real wage of these industries was/is below the national average) than in propulsive industries with an average real wage above the national average. This also explains why there was such a low growth of total factor productivity.

From the point of view of economic interpretations, all empirically estimated findings are related to the unfinished process of structural change, which is the principle of the Creative Destruction explanation of the economic growth path during the transition period in the Slovenian economy. Hence this framework can be also the source of suggestions

Table 6: Structural change of active labor force in relation to the level of acquired education

	PL 1996	PL 2000	DAK 1996	DAK 2000
Agriculture, hunting, forestry	0.9536	0.9463	0.0656	0.0599
Fishing	0.9480	0.9380	0.0004	0.0003
Mining and quarrying	1.1372	1.1116	0.0102	0.0092
Manufacturing	0.8220	0.8356	0.3229	0.3086
Electricity, gas and water supply	1.1487	1.1300	0.0159	0.0153
	0.8463	0.8483	0.0709	0.0726
Wholesale, retail; certain repair	0.9914	0.9559	0.1246	0.1242
Hotels and restaurants	0.9421	0.8037	0.0355	0.0372
Transport, storage and communications	1.1037	1.1037	0.0593	0.0621
Financial intermediation	1.5096	1.4715	1.4715	0.0246
Real estate, renting and business service	0.0246	1.0771	0.0549	0.0588
Public administration	1.3280	1.2814	0.0569	0.0564
Education	1.0734	1.1087	0.0682	0.0688
Health and social work	1.1801	1.1534	0.0615	0.0691
Other community and personal services	1.3113	1.3566	0.0293	0.0321

PL 1996 – relative real wage by industries in year 1996.
PL 2000 – relative real wage by industries in year 2000.
DAK 1996 – share of active labor force by industries in year 1996.
DAK 2000 – share of active labor force by industries in year 2000.
Source: SURS and own calculations.

for future economic policy measures in order successfully to realise the advantages of the EU enlargement process.

CONCLUSIONS

The purpose of this paper was to lad out the empirical study about the role of education for economic growth for Slovenian economy. For this purpose we tested the explanatory power of Creative destruction explanations of the nature of the economic growth during the transition period 1992–2001. We selected this theoretical framework because of two reasons:

- it endeavors to explain not only the reasons for the initial output fall

at the beginning of the transition period, but also the determined path and speed of the transition process,

- it allows us to study the role of education (via human capital variable) for the past growth.

From the results of the empirical study we concluded that the (extensive) past growth was notably influenced by the growth of human capital, measured in terms of the effective labour force, decreasing returns to scale and the slow growth of total factor productivity. The notable contribution of human capital to the past growth can be explained by the (raise of human capital index and by the structural change of active labor force in relation to the level of acquired education) changes that are not related to Creative destruction. But remaining findings about the past growth are, according to the results of economic analysis, the consequence of unfinished process of labor force reallocation (which is the principle of the Creative destruction explanation of the economic growth in transition countries) towards propulsive industries. Employment of the labour force rises faster in less productive industries (this is indicated by the fact that the average real wage of these industries was/is below the national average) than in propulsive industries with an average real wage above the national average. This explains the decreasing returns to scale and evidential low growth of total factor productivity.

We can conclude our analysis with two findings: firstly the Creative destruction represents the appropriate theoretical framework for explaining the nature of economic growth for Slovenia during the transition period 1992–2001, secondly, the unfinished process of sector reallocation of labor force toward propulsive industries will be the main barrier for successfully to realise the economic advantages of the EU enlargement process.

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