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Institutional Reforms and Income Distribution: Evidence from Post-Transition EU Countries

Summary: This paper provides an explanation of income dynamics in the post-transition EU countries from the perspective of institutional changes. As a result of seemingly-unrelated regressions analysis on panel data from 1990-2014, we find robust evidence of the relationship between income shares and institutional reforms. The impact of reforms on the top and below-average income shares is negative, whereas this effect on above above-average income share is positive. Decline of income share for the richest class during the post-transitional period can be attributed to the loss of privileges associated with the existence of an institutional vacuum in the first years of transition. Although transition increased wages for workers at the end of income distribution, the job losses had a stronger effect than wage increase, so the overall effect on income share of this group is negative. The winners of reforms appear as the workers with above-average income, whose skills are complementary to the changes instituted by transition to market economy and integration in the EU.

Key words: Institutional changes, Income inequality, European Union, Post-transition countries.

JEL: D63, O15, P30.

Distributive consequences of the transformation from centrally planned to market economy has not attracted large attention at the beginning of the transition process (Roland Gérard 2001; David Aristei and Cristiano Perugini 2012). The focus was on the effects of transition on macroeconomic aggregates, such as economic growth, unemployment, inflation or public debt. Accordingly, in this period literature on the relationship between transition and income inequality was relatively scarce. This situation has changed since the end of 1990s, when it became apparent that income differentiation is not a temporary phenomenon.

It was expected that income inequality would decrease as the transition processes continued (Anneli Kaasa 2003). However, the post-transition countries exhibited different income dynamics, ranging from fairly egalitarian to class divided societies (Pradeep Mitra and Ruslan Yemtsiv 2006). Moreover, income inequality remained high and continues to grow in some of the post-transition countries after their accession into the European Union (Jolanta Aidukaite 2011), indicating that there are deeper

causes of rising income inequality than transitional depression. This has resulted in the growth of theoretical and empirical literature on the relationship between institutional reforms and income inequality.

Given that the process of transition in the post-communist countries in Central and Eastern Europe is completed, the pace of such research is now slower. The focus is shifted to the distributive effect of institutional changes outside of Europe, especially in China (Michelle Jackson and Geoffrey Evans 2017). However, the difference between short-term and long-term effects of institutional changes on income distribution in post-transition countries justifies this type of research even three decades later, which motivated our research. More specifically, we try to explain why the share of some income groups, in the distribution of total income in the post-transition EU countries, has changed over time from the perspective of institutional reforms in transition and the post-transition period.

The paper is organized into five sections. In the first section we will briefly review a part of the vast theoretical and empirical literature on determinants of income inequality in post-transition countries that emphasizes the role of institutional reforms, in order to show how our paper contributes to the literature. The second section provides the stylized facts and conceptual framework we use to define the research hypothesis. Section 3 describes data and presents the econometric model relating income inequality to institutional reforms. Section 4 contains a discussion of the econometric results. A summary of the main findings and policy recommendations are given in the final section.

1. Literature Review

A widespread view in the literature is that the post-communist transformation led to a significant shift in income distribution (for example see, Branko Milanović 1998; Francisco H. G. Ferreira 1999; Mitra and Yemtsiv 2006; Nauro F. Campos, Paul De Grauwe, and Yuemei Ji 2018). During transition, income equality as one of the central features of socialism has been replaced by sharp income differentiation (Irena Grosfeld and Claudia Senik 2010; Alexander Libman and Anastassia Obydenkova 2019).

Analyzing almost all of the transition countries over the period 1990-1998, Kaasa (2003) provides a survey of the factors that affect income inequality, dividing them into five groups: the economic growth and overall development, the macroeconomic factors, demographic factors, political factors, and the historical, cultural and natural factors. A similar survey was provided in Mitra and Yemtsiv (2006), who summarize principal determinants of inequality in transition countries, which prevails in the literature, into the six groups: wage decompression and growth of the private sector; restructuring and unemployment; reverting to subsistence economy; changes in government expenditure and taxation; price liberalization inflation, and arrears; asset transfer and growth of property income; technological change, increased mobility, and globalization. According to Nina Bandelj and Matthew C. Mahutga (2010), there are four social processes that are central to post-communist transformation that led to an increase in income inequality: privatization, redistributive state retrenchment, ethnonationalist discrimination, and foreign investment penetration.

The above factors did not shaped income distribution to the same extent and speed. A large number of authors argue that institutional changes are the main force responsible for inequality growth in the process of transition (Ferreira 1999; Milanović 1999; Mitra and Yemtsiv 2006; Perugini and Fabrizio Pompei 2016; Michal Brzezinski 2018). Indeed, some authors (for example, Michael Dunford 2005; Maria Ivanova 2007) argue that the increase in income inequality in post-transition countries is a natural outcome of chosen flexible and liberal model of society. Specific literature that links institutional changes to income dynamics in post-transition countries started to appear in the second half of the 1990s.

Concerning the theoretical literature, most of the models are derived from the research of the impact of institutional changes on economic growth. Given that economic growth and income distribution cannot be dissociated, the distributive effects of institutional changes are not only inevitable results but often a key dimension of such research (Campos, De Grauwe, and Ji 2018).

For example, Ferreira (1999) developed the theoretical model that can be used to investigate the distributional consequences of policies and developments associated with the transition from centrally planned to market economy. The model suggests that institutional changes designed to be egalitarian may lead to increases in income inequality even in the post-transition period, implying that greater efficiency does not automatically imply higher social welfare.

That institutional changes are associated with rising income inequality could be derived from theoretical model of transition by Milanović (1999). The model implies that the main driver of inequality in the post-transition countries was increased wage inequality. This happened as a result of the replacement of the state-sector, with a compressed wage distribution, with private-sector that has a more dispersed wage distribution. The similar process is modelled in a general equilibrium framework by Philippe Aghion and Simon Commander (1999), which allows us to simulate the way in which changes to a set of institutional variables can affect income inequality over the transition. In the model, reallocation of workers between a low wage state sector and a high wage private sector is recognized as one of the main factor driving up inequality.

Considering the transition from the political economy point of view, Tomasz Mickiewicz (2010) develops the model of transition as a welfare issue. According to him, although it is theoretically possible to have reforms that benefit everybody, in reality it is unlikely to happen and there will be losers and winners of transition. Reforms affect different groups differently so that different compensational issues may arise, including the possibility that effect of some reforms may balance each other.

An example of more recent theoretical contribution to this discussion is paper by Campos, De Grauwe, and Ji (2018). They propose a theoretical framework that distinguishes between one linear and two versions of the non-linear view of the relationship between economic growth and structural reforms with effects on income distribution. Under the reforms, economy becomes more flexible, creating winners and losers from transition. On the one hand, there are groups who will improve their income share dramatically, while other groups will experience declines in their incomes.

The empirical literature on the relationship between institutional changes and income inequality in post-transition countries is large. The most relavant recent review

we could find in papers by Perugini and Pompei (2016) and Campos, De Grauwe, and Ji (2018).

Most of the literature focused on single countries or on a few components of reforms. The reasons for this lies in the difficulties in obtaining data on institutional changes and inequality during the first period of transition, and their comparability across countries. There is little literature that provides a detailed and comparative picture. Examples of the first such comprehensive studies are Milanović (1999), John Stanton Flemming and John Micklewright (2000) and Mitra and Yemtsiv (2006).

In most empirical papers on the relationship between institutional reforms and income inequality, changes in income distribution are measured by aggregate indicators, such as the Gini index. The distinctive feature of the paper by Milanović and Lire Ersado (2012) is that they provide a more detailed picture. Instead of single inequality index, they use decile shares and also break the single measure of reform into its component parts. The results of their analysis, based on household survey data from 26 post-communist countries over the period 1990-2005, shows that reforms were strongly negatively associated with income shares of the bottom four deciles, and positively associated with income shares of the top two deciles.

Such findings are closely related to the literature on income stratification under transition. For example, Vladimir Mikhalev (2003), examining the processes and outcomes of social change in the post-transition countries of Central and Eastern Europe and the Former Soviet Union, recognizes a new class division: new elites, middle class, a large low income class and lowest class consisted of deprived and marginalised people. Since the benefits and costs of post-communist transformation are unevenly distributed across the society, it is possible to talk about the winners and losers of transition (Tito Boeri and Katherine Terrell 2002; Jan Drahokoupil 2008; Ellu Saar 2011; Kosta Josifidis, Novica Supić, and Olgica Glavaški 2018), which in turn has had an impact on institutional reforms.

In this context, it is worth mentioning the paper by Aristei and Perugini (2014). They investigate the explicit link between different transition reform approaches, in terms of speed and sequencing, and inequality dynamics. Using dynamic panel-data analysis on data for 27 post-communist countries over the period 1989-2009, they find that different patterns of transition affected inequality with different strengths. Relatively more successful were the post-transition EU countries thanks to a coordination of reforms especially in specific fields compared to the former Soviet Union countries.

Institutional reforms in the post-transition countries didn't have the linear effect on income inequality. For example, Josifidis, Supić, and Glavaški (2018) show, on the sample of ten new EU member states from 1989 to 2015, that the reforms in the post-transition EU countries at the beginning of the transition process were associated with the rise in income inequality, but after reaching a critical level of progress, the reforms contributed to more equal income distribution. Another interesting finding of this study is that the persistent high income inequality in some of the post-transition EU countries could be attributed to so-called post-transitional tolerance for inequality, reflecting not only economic but also possible evolution of values in these countries.

The post-communist transformation has affected income distribution, but income inequality has also influenced people's attitudes towards reforms (Grosfeld and

Senik 2010). At the beginning of the transition process, it is believed that reforms generate transitional costs in the form of rising income inequality before they begin to produce long-standing economic gains (Joel S. Hellman 1998). Latter in the transition process, uneven income distribution became a factor that slows down and makes the reforms more difficult (Antonio Savoia, Joshy Easaw, and Andrew McKay 2010).

From the review of the literature it may be seen that the most papers on the effect of institutional reforms on income inequality in post-transition countries use aggregate measure of inequality, as the Gini coefficient or, if they are based on income shares the analysis includes individual countries. To the best of our knowledge, the exception is the paper by Milanović and Ersado (2012), which analyzes the impact of institutional reforms on income share in a cross-country perspective. However, their research covers a period from 1990 to 2005 so that the great part of the post-transition period, characterized by the convergence of income inequality in the new EU member states towards the EU average, is not covered. In this context, our paper adds to the literature by providing an analysis of the institutional determinants of changes in income distribution, considering income shares in cross-country perspective during the whole transition and post-transition period.

2. Conceptual Framework and Stylized Facts

Institutional changes in the post-transition EU countries can be divided into two groups. The first group includes institutional reforms in the period from the abandonment of socialism to the start of negotiations on EU membership. This period could be labelled as a transition period. The second group of institutional changes refers to the institutional reforms associated with the European integration process during post-transition period.

During the transition period, institutional transformation was radical and rapid, with the final aim to entirely replace socialist institutions by the institutions comparable to those of Western Europe. This period was characterized by an institutional vacuum (for more, see Rasto Ovin 2001), since the abolition of institutions of socialism was not synchronized with the introduction of institutions of the modern market economy and of democratic society. Another important characteristic is a dominant role of the International Monetary Fund (IMF) and the World Bank in shaping institutional environment. Financial and technical assistance programs, provided by IMF and World Bank, were conditioned by the implementation of liberal economic reforms and the by the establishment of hard budget constraint.

The empirical evidence reveals that income distribution has deteriorated in new EU (8+2) as a group as well as in each particular countries prior to their entry into the European (Figures 1 and 2). The main drivers behind this trend included a reduction in the number of employees, retrenchment and restructuring of the welfare state, increasing wage inequality and greater diversity in income sources. Although these factors generate an increase in income inequality in developed countries (see for example, Philip Arestis, Elena Bárcena-Martín, and Salvador Pérez-Moreno 2018; Josifidis and Supic 2018), the causes was different in the sense that were associated with inherited social problems from the socialist society but also with newly emerging social problems.

During transition, unsolved social problems inherited by the former system, became open social problems. In the process of privatization, unproductive jobs were eliminated, but privatization did not create productive jobs at the same pace. As a result, all the post-transition EU countries experienced a considerable drop in the employment rate and consequently the rise in income inequality.

New social problems also arise, since the shock therapy, enforced by IMF and the World Bank, disregarded political, social and cultural elements of the socialistic society, which were seen as constraints to transition to market economy (Aristidis Bitzenis and John Marangos 2007). Social policy becomes less protective and generous. The welfare state reform was characterized by: a shift from universal state benefits to compulsory insurance, the introduction of private schemes as a complement to social insurance, the expansion of targeted social assistance, introduce or increase fees and advance the off-budget financing of social security (Jiři Večerník 1999). Moreover, retrenchment and restructuring of the welfare state is seen as an instrument to attract investments and promote competitiveness.

In the absence of business environment and the lack of domestic investors, foreign ownership is seen as the most desirable form of capital to replace the state ownership in the economy and way to integrate the national into the global economy. Hence, the reforms were contingent upon the foreign investors and not sensitive to the interests of the losers of the transition process. Penetration of foreign capital increases income inequality by creating a wage gap between the foreign and domestically owned enterprises, between management and workers, and especially between less-skilled and more skilled-workers within the foreign enterprises. The rise in unemployment and the decline in income share were more pronounced for the less-skilled workers than for the more skilled-workers because of less flexibility of the letter income group to technological and organizational changes associated with foreign capital inflows.

An important source of increased inequality was a greater diversity in income sources, as a result of the abolition of the monopoly of state ownership. During socialism, the household income was almost entirely composed of labour income, since the state was the owner of the means of production. Hence, the emergence of a new business owners and consequently the rise of capital income share in household revenues has contributed to the rise in income inequality (István György Tóth and Márton Medgyesi 2011).

The post-transition period has been shaped by the institutional changes associated with the European integration process. The EU accession conditions (so-called "Copenhagen criteria") required the reforms in three areas: political, legal and economic, codified by 35 chapters of Acquis Communautaire (the corpus of European Union law). Economic criteria refers to "the existence of a functional market economy as well as the capacity to cope with competitive pressures and market forces within the Union" (European Council in Copenhagen 1993). Hence, privatization, macroeconomic stabilization and liberalisation started in the first decade of transition, continued within the EU framework.

Concerning social policy and employment, Chapter nineteen of Acquis communautaire promotes the harmonization with the EU standards in the areas of labour law, equality, health and safety at work and anti-discrimination. The final aim is to

implement the concept of flexicurity, European style of labour market policy, which combines flexible labour market, active labour market policy and generous unemployment benefits. It gives employers the freedom to make changes in the employment in response to firm performance, but the government should play an active role in providing training, education and assistance for the unemployed.
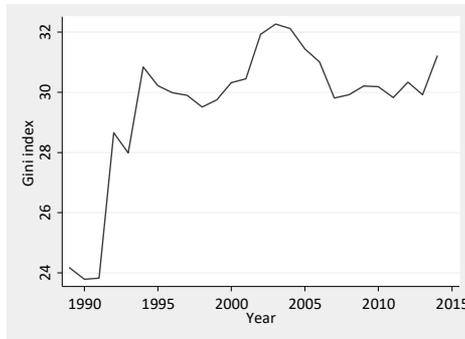
Source: Authors' illustration (2020) using STATA 14 software.

Figure 1 Income Inequality in the Post-Transition EU Countries, 1989-2014, Group Average
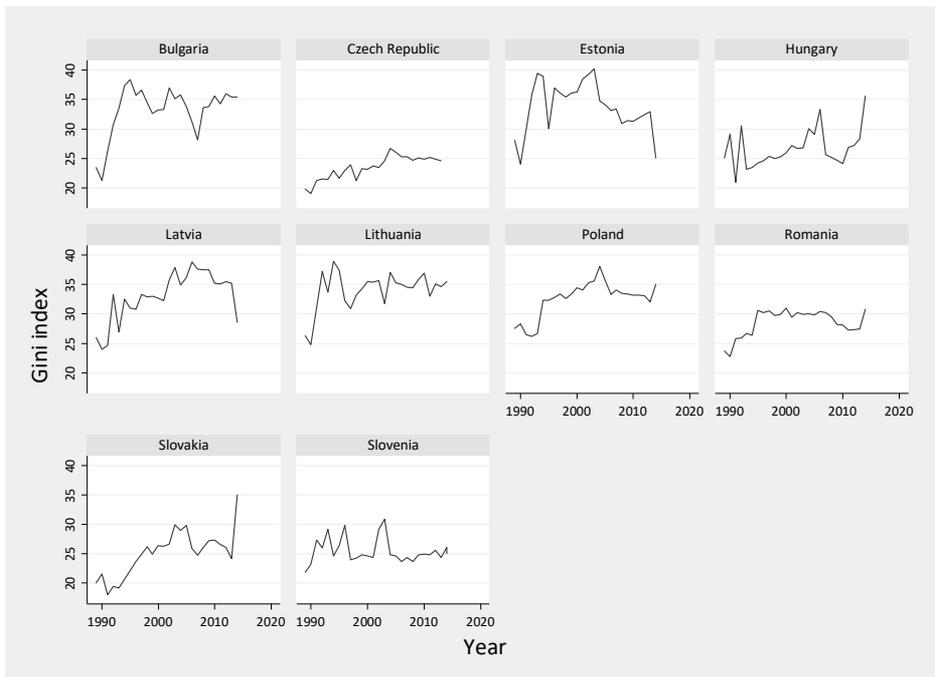
Source: Authors' illustration (2020) using STATA 14 software.

Figure 2 Income Inequality in the Post-Transition EU Countries, 1989-2014

Although institutional changes associated with the EU enlargement includes the elements of both a shock therapy and gradualist approach to transition, shock therapy prevails over gradualism. First, new EU post-transition countries were policy takers rather than policy makers and, second, they led a common scheme in the process of legislative adjustments to Acquis Communautaire with no much possibility to conclude individual arrangements (Ovin 2001).

Unlike the transition period in which income distribution has been worsening in all of the EU transition countries, during the post-transition period income inequality stagnates or declines in the most of the EU (8+2) countries (Figures 1 and 2). Moreover, some the post-transition EU countries (Slovakia, Slovenia and the Czech Republic) belong to the most equal EU countries, together with the countries such as Finland, Belgium and the Netherlands. According to the Eurostat data, a half of the new member states have the Gini coefficient below, and half below, the EU-28 average in 2017. Within the EU transition group, there is significant heterogeneity in income distribution. Thus, Slovakia, Slovenia and the Czech Republic have the smallest, while Bulgaria, Lithuania and Latvia the largest income inequality, measured by Gini index, in the EU-28 in 2017.

Changes in the dynamics of income inequality in the transition and post-transition periods indicates that the institutional changes did not have the same impact on different income groups. In socialism, income inequality and poverty were not a problem specific to certain groups, given institutional efforts to create a classless society. In the institutional vacuum that followed the fall of socialism, economic and political power has been captured by transformed nomenklatura and rent seekers, leading to economic polarization and the rise in income inequality. The process of European integration has been associated with the emergence of a new elite as well as with new source of income income differentiation, which in turn creates a very different income distribution patters in the new EU member states, ranging from most equal to most unequal. It implies that institutional reforms in the post-transition countries generated costs in the form of rising income inequality and dividing the society into winners and losers of transition.

3. Empirical Strategy and Model Specification

The general conclusion that may be reached from the presented conceptual framework and stylized facts is that institutional changes have played an essential role in shaping income inequality dynamics in the post-transition EU countries during the whole, transitional and post-transitional, period, and that the impact of institutional reforms on income distribution was not uniform for different income groups.

We formalize this conclusion into a specific hypothesis that the creation of an institutional environment in the post-transition EU countries comparable to the rest of the EU was associated with decline in below-average and top income shares and increase in above-average income share.

To test this hypothesis, we define the following model:

$$Bottom50_{it} = \beta_0 + \beta_1 Reform_{it} + \beta_2 Growth_{it} + \beta_3 FDI_{it} + \beta_4 Global_{it} + \beta_5 Transf_{it} \\ + \beta_6 EdNoTert_{it} + \beta_7 Unempl_{it} + e_{it}, \tag{1}$$

$$Middle40_{it} = \beta_0 + \beta_1 Reform_{it} + \beta_2 Growth_{it} + \beta_3 FDI_{it} + \beta_4 Global_{it} + \beta_5 Transf_{it} \\ + \beta_6 EdTert_{it} + \beta_7 Unempl_{it} + e_{it}, \tag{2}$$

$$Top10_{it} = \beta_0 + \beta_1 Reform_{it} + \beta_2 Growth_{it} + \beta_3 FDI_{it} + \beta_4 Global_{it} + \beta_5 Transf_{it} \\ + \beta_6 President_{it} + \beta_7 Parliament_{it} + e_{it}. \tag{3}$$

In the model, the dependent variables are the top 10%, the middle 40% and the bottom 50% income share (*Top10*, *Middle40*, *Bottom50*, respectively). As for the explanatory variables, we use: *Reform* = institutional reforms, measured by the unweighted average value of the EBRD transition indicators; *Growth* = real GDP growth; *FDI* = FDI stock; *Global* = globalization, expressed as an openness of the economy (import + export % of GDP); *Transf* = social security transfers (% of GDP); *EdNoTert* = percentage of population with completed primary and secondary education; *EdTert* = percentage of population with completed tertiary education; *Unempl* = unemployment rate; *President* is a dummy variable that takes a value of one in every country-year in which the political system is presidential and value zero otherwise; *Parliament* is a dummy variable taking a value of one in every country-year in which the political system is parliamentary and value zero otherwise. Subscript *i* stands for country, *t* is period (three-year average) and e_{it} is the disturbance term. Variable definitions, data sources and descriptive statistics used in the model are presented in Table A1 (Appendix).

The logic of the model is that institutional reforms do not have the same impact on different income groups. As a result, the model consists of the three equations, where the dependent variables show different income share that are regressed on the same institutional variable.

All equations include the controls for: the institutional factors (transition reforms), the factors that describe general economic conditions in country (economic growth), the factors related to external determinants of income distribution (globalization and FDI) and the factors that cover the effects of redistributive policies on income distribution (social security transfers). In addition to the variables common to all income shares, we introduced into each equation one or more variables specific to the particular income share. The variables specific for the bottom 50% are the percentage of population with primary and secondary education; for the middle 40% - percentage of population with tertiary education and for the top 10% income share - variable describing political system.

Education is not included in the top 10% income share equation because education was not a factor that significantly influenced the concentration of the highest incomes in the post-communist countries. There are two reasons why the link between education and the top income was not expressed in the first years of transition. First, the transition to a market economy entailed radical changes in the production system and consequently required new knowledge and skills of the labour force. Given that the socialist education system did not produce the kind of intellectuals required by a modern market system, this period was characterized by the gap between skills acquired in school and the occupational attainment. In the post-transition period, the education system was reformed to address the education standards that exist in developed western countries and labour market needs. However, although a stronger link between education and income has been established, the significant percentage of top income

earners in the post-transition countries still lacks higher education (for more, see Andreas Ammermüller, Hans Heijke, and Ludger Wößmann 2005; Irena Kogan and Marge Unt 2005).

The reason why unemployment does not appear in the top 10% equation is to control the fact that labour income accounts for less of a proportion of total income for the top income earners compared to the above-average and lower-income earners. In addition, the risk of unemployment is on average less pronounced for those with higher wage than for those with lower wage, taking into account the differences in flexibility with respect to technological change and business cycles.

The political variable is included only in the equation for the top 10% income share, to indicate the asymmetry in political power depending on the size of the income. The assumption is that low- and middle-income groups have less political influence than top-income group.

Particular attention was given to the choice of indicators and the construction of the variable that represents institutional changes. There are several theoretical and methodological issues that must be considered when selecting indicators of reforms. From theoretical point of view, institutional reforms can take many forms and may have different effects on income distribution. Consequently, the theoretical channels that link institutional changes to income inequality are complex and multiple. From methodological point of view, institutional reforms are difficult to measure accurately and in a consistent way, since reforms vary across countries and over time. In addition, most of institutional reforms are implemented together so that the individual indicators of institutional reforms are often correlated which further complicates econometric analysis.

As the most appropriate measure of reforms for our analysis, we use the European Bank for Reconstruction and Development (EBRD) transition indicators (for more about benefits and limitations of using the EBRD transition indicators see in Mickiewicz 2010). In order to rule out the potential problem multicollinearity between individual indicators (Table 1), we calculated a single variable entitled *Reform* as unweighted average of six EBRD indicators: (1) small-scale privatization; (2) large-scale privatization; (3) governance and enterprise restructuring; (4) price liberalization; (5) trade and foreign exchange system; (6) competition policy (see similar approach in Elisabetta Falcetti, Tatiana Lysenko, and Peter Sanfey 2006; Martin Raiser et al. 2008; Milanović and Ersado 2012). The index calculated in this way shows the average intensity of institutional reforms. The EBDR transition indicators take values ranging from 1 to 4. A higher value indicates a greater progress in institutional reforms in line with market economy and vice versa; a lower score indicates a lower progress in institutional reforms relative to centrally planned economy.

Given that different income shares have some common underlying determinants, we assume that the errors may be correlated across the equations. The Breusch-Pagan Lagrange multiplier test for error independence (chi2(3) = 24.21, p = 0.000) indicates that our assumption is correct, i.e. there is statistically significant cross-equation correlations. To take into account these correlations, the model is estimated by applying the Seemingly Unrelated Regression (SUR) technique. More precisely, we use panel SUR estimation method (XTSUR command in STATA) developed by Erik Biørn (2004) and Minh Nguyen and Hoa Nguyen (2010). In the literature, we can find

examples of the use of SUR estimator in a similar research (for example, see Pablo Beramendi 2003; Milanović and Ersado 2012; Luca Agnello and Ricardo M. Sousa 2014).

Our database includes new EU (8+2) countries EU(8): the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, and EU(2): Bulgaria and Romania) over the period 1990-2014. Since they have similar socialist and post-socialist experiences, these countries represent a relatively homogeneous group. The panel dataset is unbalanced, because of missing observations for some series. The choice of time period is determined by the data availability for the variable Reform, since there are no updates for this variable after 2014.

We run regression on three-year average data. The reason why we prefer three-year averages to annual data are threefold. First, income shares, as a measure of income inequality, don't vary significantly on an annual basis. To put in other words, annual changes in independent variables have little effect on income distribution, so that this influence is much more obvious when we look at three-year periods. Second, using the averages reduces the impact of business cycles and thus allows the analysis of structural relationships in the model. Third, three-year average dataset is more balanced, since the annual data are not fully available for some series.

Table 1 The Effects of Institutional Reforms on Income Distribution, the Post-Transition EU Countries, 1990-2014

Variables	(1) Bottom50	(2) Middle40	(3) Top10
Reform	-6.096***	5.942***	-2.613**
	(1.162)	(1.180)	(1.170)
Growth	0.095***	-0.125**	0.116***
	(0.034)	(0.063)	(0.031)
FDI	0.0401**	-0.880	1.002**
	(0.0160)	(0.822)	(0.489)
Globalization	0.0371***	-0.0339***	0.565
	(0.00983)	(0.0127)	(0.652)
Social transfers	0.716***	-0.279**	-0.0912
	(0.0721)	(0.115)	(0.0594)
Unemployment	-0.525***	-0.142**	
	(0.040)	(0.063)	
Non-tertiary education	0.162***		
	(0.027)		
Tertiary education		0.110***	
		(0.0336)	
President			-2.650***
			(0.614)
Parliament			-3.196***
			(0.431)
Observations	52	52	52
Countries	10	10	10

Notes: Level of significance: *** for p-value < 0.01, ** for p-value < 0.05, * for p-value < 0.1.

Source: Authors' calculation (2020) using STATA 14 software.

Table 2 Robustness Check: Parsimonious Model

Variables	(1) Bottom50	(2) Middle40	(3) Top10
Reform	-4.460***	5.009***	-2.363***
	(0.928)	(0.635)	(0.798)
Growth	0.102***	-0.103**	0.104***
	(0.028)	(0.051)	(0.033)
FDI			0.996**
			(0.439)
Globalization	0.0292***	-0.0400***	
	(0.009)	(0.008)	
Social transfers	0.784***	-0.276***	
	(0.0573)	(0.087)	
Unemployment	-0.432***	-0.098**	
	(0.035)	(0.049)	
Non-tertiary education	0.074***		
	(0.023)		
Tertiary education		0.0944***	
		(0.026)	
President		-4.362***	
		(0.559)	
Parliament		-4.410***	
		(0.419)	
Observations	52	52	52
Countries	10	10	10

Notes: Level of significance: *** for p-value < 0.01, ** for p-value < 0.05, * for p-value < 0.1.

Source: Authors' calculation (2020) using STATA 14 software.

Given that independent variables have a delayed, rather than immediate, effect on dependent variable, the independent variables take values at the start of each three-year period. In this way, we also control the problem of endogeneity caused by reverse causation.

We tested the robustness of our results in three ways. First, we drop one country after another from the main model in order to check if there are outliner countries that may drive the results. Second, following the same idea we re-estimate the model by dropping one year after another. This is done to test the distortion that may be caused by deviant year (the results of the first two tests are available upon request). Third, we report the coefficient estimates for a parsimonious model from which all insignificant variables were removed (Table 2). These tests show that our results are insensitive to subsample estimates and that insignificant variables do not affect the key findings.

4. Discussion

The results of econometric analysis (Table 1) are consistent with our expectations, as described in the hypothesis. Given our purpose to explore the effect of institutional changes on income distribution, we will first explain the coefficient estimate for the variable that indicates institutional reforms in detail. Institutional reforms have a statistically significant, but not a uniform effect, on income distribution. The transition

from a centrally planned to a market economy and integration into the European Union increases above-average income share, while across the rest of the income distribution, the effect of reforms are negative. Regarding the similarity of our findings to those of other studies, in general, they are comparable to similar research in the case of individual countries as well as in a cross-country perspective (for example see Daniel Berkowitz and John E. Jackson 2005; Milanović and Ersado 2012; Askar Akayevich Akayev et al. 2016, Josifidis, Supić, and Glavaški 2018).

If we contrast the result of econometric analysis with income share dynamics in the post-transition EU countries, we obtain interesting complementary information. As is illustrated in Figure 3, an increasing trend is evident in the case of middle 40% income share, except in the first five years of transition; since 2005, the decrease is recorded for the top 10% income share, while the bottom 50% income share has experienced the decline during the whole observed period. Although this figure is based on the average data for the whole group, and hence represents the general trend, a similar conclusion can be drawn for the most of the post-transition countries.
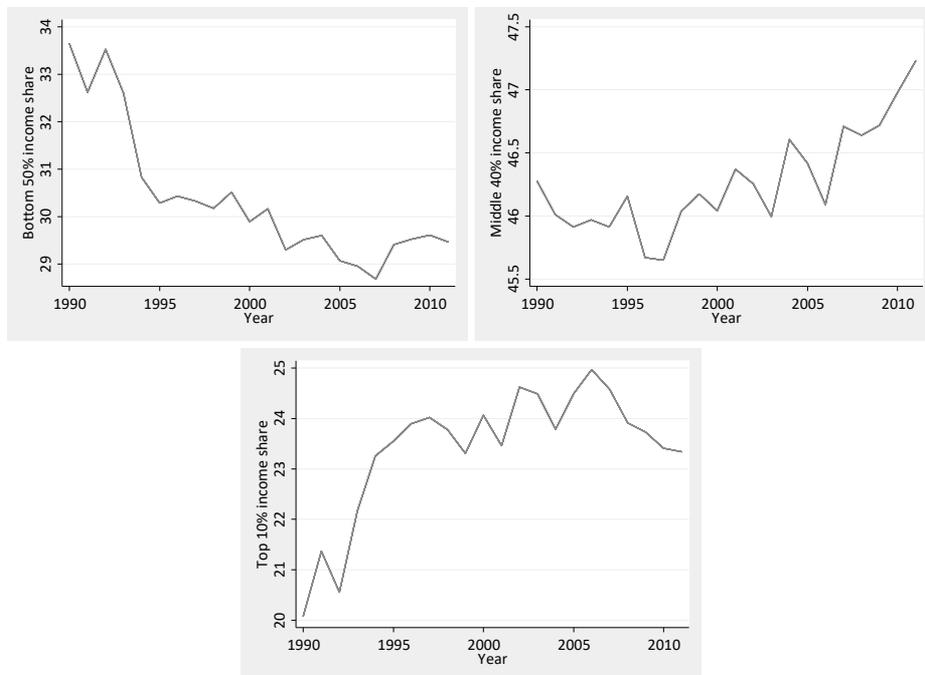
Source: Authors' illustration (2020) using STATA 14 software.

Figure 3 Dynamics of Income Shares in the Post-Transition EU Countries, 1989-2014, Group Average

This outcome for the below-average income share may be explained by the fact that transition reduced the number of jobs for lower-paid workers more than it has contributed to an increase in their wage. Privatization and restructuring of state owned enterprises resulted in a decline in employment (unemployment effect) but also in an increase in wage for remaining workers (wage effect). The net effect of income share

depends on the ratio between unemployment effect and wage effect. Thus, if positive effect on wage is greater than negative effect on employment, the group is moving to a higher income position and *vice versa*, if unemployment effect is stronger relative to wage effect, the result is a decline in income share. Which of these effects will be dominant is determined by the flexibility of workers to adapt to technological and organizational changes. As lower-paid workers are likely to be less skilled and thus less flexible, the unemployment effect prevailed over wage effect for this type of workers in transition period. With regard to the post-transition period, the stagnation of below-income share may be explained by a similar mechanism. Lower paid-workers have a slower rate of wage increase and they are more likely to experience unemployment compared with higher-paid workers.

Greater level of institutional reforms is negatively associated with the top income share. The decline in top income share is a result of interaction of several factors. The institutional vacuum during the first years of transition has contributed to the enormous enrichment of a small group of people, so-called transitional elite at expense of the rest of society, who were faced with a sharp decrease in living standards. However, the progress in institutional reforms, especially in the context of EU harmonisation and accession, limited the opportunities for further enrichment of the transition elite. The completion of the privatization process, the harmonization of the legal system with the European Union, the penetration of foreign capital and increased labour mobility have reduced the political and economic power of the transition elite and consequently its relative share in income distribution.

The shift from the institutional vacuum to the EU institutional framework has led to a significant change in the composition of top income earners and shrink in their size. The elite who appeared during the transition period include the mix of individuals and groups with different social and ideological roots and source of power: transformed nomenklatura who occupied the key economic positions, insiders in state owned enterprises who become new owners through privatization, technocrats nominated by governments to take positions in administration and economy, representatives of religious communities, former dissidents and remaining elites from the pre-communist period as well as so-called mafiosi who have gained wealth quickly undermining the creation of a legal foundation for the market economy (Hellman 1998; Krzysztof Jasiecki 2008). The post-transitional elite are also very heterogeneous but with a quite different source of power. Links with ruling party, monopoly rents, and corruption are replaced by innovations, meritocratic values and links with foreign capital, leading to greater income mobility and hence more equal income distribution. This interpretation is consistent with the evidence provided by Drahokoupil (2008), Pia Horvat and Evans (2010) and Josifidis, Supić, and Glavaški (2018).

It is interesting to note that a negative relationship between institutional reforms and income share is also observed for the below-average income share. However, it does mean that we can use the same factors and mechanisms in explaining these findings. If we look at the estimated coefficients, we can see that institutional reforms reduce the top income share, but did so less than compared with below-average income share. For example, one-point increase in the reform index results in 2.6 percentage decrease in the top 10% income share. In the case of the below-average income share,

this effect is more than two times stronger – 6.1 %. It implies that institutional reforms have reduced to a greater extent the income share of the poorest than the richest income group.

Such result can be explained by the differences between short-term and long-term winners/losers of the transition process. In this context, the below-average income group may be labelled as short and long-term loser in the transition process, while the top income group may be classified as short-term winner, but long-term loser of the reform. The below-average income group belong to the short- and long-term losers of transition, taking into account the general trend of decline in its income share since the beginning of the transition. Given the lowest flexibility on the labour market, this income group tend to be trapped permanently at lower-paid jobs. On the contrary, the top income group is short- term winner, but long-term losers of reforms, since the progress in reforms eliminated the institutional distortions upon which their early transition gains were based.

The positive relationship between institutional reform and income share is found for the above-average income share and, likewise the coefficients on the below-average and top income share, is statistically significant. This income group can be classified as a long-term winner of post-communism transformation. Generally speaking, above-average income group has a higher upward income mobility compared with below-average income group and less volatile income compared with the top income earners.

By the higher upward income mobility we mean that the above-average income group is more flexible to technological and organizational changes thanks to higher level of education than below-average income group. Indeed, whereas the below-average income group is more oriented to the social policy as a source of income in the case of failure on the labour market, the above-average income group is rather market oriented, with expressed entrepreneurial and innovative preferences and behaviour, which, in turn, strongly affect the income pattern.

Less income volatility means that the above-average income group has a more guaranteed income stream than one of the top income earners. The shift from transitional to post-transitional elite, during and after EU integration, has been accompanied by the reduction in size of old elite, since they have lost transition rent as a source of income. On the contrary, in new institutional context, the above-average income group has experienced not only high income growth but also consolidation of income of the group, given that changes in the labour market in the post-transition period are to a large extent complementary to the skills of this group.

The different impact of institutional reforms on individual income classes and a general trend of decline in income inequality in the post-transition period suggest that the effect of reforms on income inequality in post-transtion EU countries take the form of J-curve. Simply stated, the reforms first worsened income distribution and then gradually improved it. In the short term, institutional reforms generate transitional costs in the form of higher income inequality, but it seems that the reforms were necessary to achieve the long-term efficiency gains and lead to income distribution comparable to some western European countries.

With regard to other results, we will consider them briefly. Real GDP growth has a positive impact on the bottom 50% and the top 10% income share, and negative on the middle 40% income share. This doesn't imply that growth has contributed equally at the end and at the top of income distribution. The estimated coefficients reveal that this effect is stronger for the top income share than for the below-average income share. In the literature, we find the support for our findings according to which the growth is pro-inequality even though income of the poor increased (for example, Mwangi S. Kimenyi 2006; Milanović and Ersado 2012).

Globalization, expressed by the share of exports plus imports in GDP, influences negatively the middle 40% income share and positively the bottom 50% income share. This result may be interpreted that lower-paid jobs are less exposed to the negative influence of international trade than higher-paid jobs. On the one hand, the comparative advantages of the post-transition EU countries are more prevalent in sectors that employ below-average than above-average paid workers. However, many lower-paid jobs are concentrated in non-tradable sectors and hence they are less affected by international competition. Different impacts of globalisation across workers is not unexpected considering the available literature (e.g., Martin Rama 2002; Fritz Breuss 2007).

Secondary and tertiary education, as expected, have a positive impact on the bottom 50% and middle 40% income shares. That income position depends on educational achievement is well documented in the literature. Thus, Boeri and Terrell (2002) find that during communism a year of education increased wage between 2 and 5 percent, while by the mid-1990s, wage premium in transition countries was between 5 and 9 percent per year of education, similar to some western European countries.

The effect of unemployment is clear. Higher unemployment is negatively associated with the bottom 50% and middle 40% income share. This is consistent with existing evidence in the literature (e.g. Naci H. Mocan 1999) as well as with our expectations. With respect to social spending, a more generous welfare state is positively related to the bottom 50%, but negatively to the middle 40% and top 10% income share. This result may be interpreted in a way that redistribution contributes to the welfare of people at the end of income distribution at the expense of the people at the upper end of income distribution. That social transfers have a strong redistributive effects is documented in the literature (for example, see Isabelle Joumard, Mauro Pisu, and Debbie Bloch 2013) and corresponds with our expectations.

The penetration of foreign capital has positive impact on the top 10% income share but also on the bottom 50% income share. This somewhat surprising finding can be explained by the fact the foreign investors are large employers in the case of workers belonging to the below-average income group (for example, see Slavo Radosevic, Urmas Varblane, and Mickiewicz 2003; Cristina Jude and Monica Ioana Pop Silaghi 2016). At the same time, the managerial FDI elite and domestic investors connected with foreign capital represent a significant part of the top 10% income group (Drahokoupil 2008). Finally, we find the negative relationship between dummy variables describing political system and the top 10% income share. This results imply that there is no difference in impact of change of political system on concentration of top income.

It seems that more democracy is anti-inequality which is in line with our expectations and corresponds with the literature (for example, see Milanović and Ersado 2012).

5. Conclusion and Policy Recommendation

This paper attempts to measure the effects of institutional changes on income distribution post-transition EU countries. The specific contribution of the paper, given that the process of post-communist transformation has been competed, is that we offer an explanation of the relationship between economic reforms and income inequality considering the different institutional context of the reforms in transition and post-transition period. In this way, we are able to make a clearer distinction between short-term and long-term winners and losers of the transition process. In both periods, institutional changes were not autonomous and evolutionary, but external and revolutionary with a strong implication on income distribution. During the transitional period, reforms were shaped by the International Monetary Fund and the World Bank, while in the post-transitional period, the European Commission has played a key role.

The results of econometric analysis, based on the panel data for new EU (8+2) countries from 1990-2014, provide support to the research hypothesis. We find robust evidence that the creation of an institutional environment in the post-transition EU countries comparable to the rest of the EU was associated with decline in below-average and top income shares and increase in above-average income share.

The below-average income group is recognized as both short-and long-term losers of transition, due to its lower flexibility on the labour market than the other income groups. During transition period, lower flexibility led that privatization caused job losses to a greater extent than wages increased for workers at the end of income distribution. The decline in below-average income share in post-transitional period may be explained in a similar way: a slower rate of wage increase and the greater likelihood to be unemployed compared with higher-paid workers.

The top income group seems to be a short-term winner, but long-term losers of reforms. Rapid increase in top income share was based on the institutional vacuum and distortions during the first years of transition. Institutional transformation during the process of European integration reduced the political and economic power of the transitional elite, change its composition and led to more equal income distribution.

The long-term winner of reforms appears to be above-average income group, who have higher upward income mobility compared with below-average income group and less volatile income than the top-income earners. Thanks to a higher level of education, the above-average income group has shown a greater flexibility to technological and organizational changes and hence higher upward mobility at income ladder than below-average income group. Also, above-average income group has a more certain income stream than top-income group. The post-transition period for the richest class was associated with the loss of transitional rent, while changes in the labour market in the post-transition period has been largely complementary to the skills of above-average income group.

What policy implications emerge from the findings of our study? First, it is important to look at the institutional reforms as a factor that plays a crucial role in determining income inequality. Second, institutional changes may be an instrument to

reduce inequality, but the reforms do not have a linear effect on income distribution. Third, the winners and losers of the reform process are not the same in the short and long-term.

Although the paper finds empirical evidence to support the hypothesis about the distributive effect of institutional reforms in the post-transition EU countries, the findings should be considered tentative. We do not investigate explicitly the effect of speed and sequencing of the reforms on income inequality or the impact of initial conditions, such as the legacy of socialism and economic development, on reforms. Furthermore, since we been unable to find comparable institutional dataset from other sources, the paper lacks in the robustness check based on different measure of institutional reforms.

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Appendix

Table A1 Variable Description (Three-Year Average Data)

Name	Description	Source	Obs.	Mean	Std. dev.	Min.	Max.
Bottom50	Proportions of total income earned by the bottom 50% (income shares of individuals between the first percentile and percentile 50)	The world wealth and income database	78	29.81	2.97	24.19	35.51
Middle40	Proportions of total income earned by the middle 40% (income shares of individuals between percentile 50 and percentile 90)	The world wealth and income database	78	46.35	1.08	43.64	50
Top10	Proportions of total income earned by the top 10% (income shares of individuals between percentile 90 and percentile 100)	The world wealth and income database	78	23.82	2.85	17.92	31.35
Reform	European Bank for Reconstruction and Development (2016)	Transition indicators - average	77	3.59	0.41	2.28	4
Growth	GDP growth (annual %)	World Bank - World Development Indicators (2018)	79	2.93	4.08	-16.23	10.69
FDI	Foreign direct investment, inward stock (% of GDP)	World Bank - World Development Indicators (2018)	80	32.81	22.01	0.76	83.01
Global	Openness of the economy: (imports + exports) / GDP	Comparative political data set (1960-2014)	80	109.08	34.43	40.52	180.06
Transf	Social security transfers, % of GDP	OECD (2018)	70	12.28	2.41	8.09	17.18
EdTert	Labor force with tertiary education (% of total)	World Bank - World Development Indicators (2018)	71	21.55	8.65	8.1	43.2
EdNoTert	Labor force with primary and secondary education (% of total)	World Bank - World Development Indicators (2018)	71	78.28	8.56	56.8	91.89
Unempl.	Unemployment rate, % of civilian labour force	World Bank - World Development Indicators (2018)	76	9.77	3.82	3.8	20
President	Political system: presidential = 1; the other = 0	The QOG Basic Dataset (2018)	70	-	-	0	1
Parliament	Political system: parliamentary = 1; the other = 0	The QOG Basic Dataset (2018)	70	-	-	0	1

Source: Authors' compilation.

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