

INSTITUTIONAL CHANGES AND INCOME INEQUALITY: SOME ASPECTS OF ECONOMIC AND EVOLUTION OF VALUES IN THE CEE COUNTRIES

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Abstract: The goal of this paper is to contribute to a better understanding of the effects of institutional changes on income inequality in the post-communist CEE countries. Following this intention, the authors develop and empirically test the theoretical model according to which institutional changes and changes in relative power between income classes is associated with the dynamics of inequality and redistribution. The results, based on robust panel technique, suggest a nonlinear relationship between institutional reforms and net income inequality. They also reveal the presence of specific post-transitional tolerance for inequality, which reflects not only economic evolution, but also possible evolution of values in the CEE countries.

Keywords: Institutional changes, income inequality, economic evolution, evolution of values, the CEE countries

JEL: B50, D63, I31

Introduction

At the end of the 1980s, the CEE countries began to establish a new economic and political system. State ownership and multi-year planning were replaced with privatization, macroeconomic stabilization and liberalization, while the monopoly of the Communist Party gave way to parliamentary democracy. The transition to market economy and democracy had a strong impact on redistribution and inequality. Institutional changes have not only been at the centre of these transformations, but also the transition in post-communist societies reinforced the institutionalist perspective in economics, and forced us to think about institutions not in a static way, but in a dynamic way (Gérard, Roland 2002). Consequently, the changes in income distribution in the CEE countries are reflection of their economic evolution, as well as the evolution of social values.

Inspired by a desire to shed more light on the relationship between institutional changes and income inequality in the CEE countries, the paper is organized into five sections. In the first part,

we present some of the key concepts and findings in the literature that link dynamics of inequality and redistribution with institutional reforms in the post-communist countries. The second part is dedicated to recognizing the specificity of the CEE countries in the theoretical framework under which income distribution outcomes are explained by institutional and changes in relative power between income classes. Methodology of empirical research; from hypothesis and model specification, through different tests and the model estimation, to robustness check; is presented in the third part. Discussion of the obtained results, in the context of the given theoretical approach, is provided in the fourth part. The fifth part refers to the conclusions and key messages.

1. Literature survey

Changes in income inequality in the CEE countries are the topic of numerous studies, resulting in different explanations of causes for the worsening income distribution immediately, during and after the transition. Although the socialist system did not erase income inequality, there is a broad agreement that inequality in socialistic countries was lower than inequality in other countries at similar levels of development, and that the transition from planned to market economy has led to substantial increases in income inequality (Aghion, Philippe, and Simon Commander 1999; Keane, Michael P., and Eswar S. Prasad 2002; Ivaschenko, Oleksiy 2002; Mitra, Pradeep, and Ruslan Yemtsov 2006; Milanović, Branko, and Lire Ersado 2010; Pryor, Frederic 2014).

If transition is defined as “the removal of legal restrictions on the private sector” (Milanović, Branko 1998), it is no surprise that many authors argue that a shift from state sector employment, with compressed wage structure, to private sector employment, with broader wage distribution, was a main driver of income inequality in post-communist countries (Milanović, Branko 1999; Keane, Michael P., and Eswar S. Prasad 2002; Jens Hölscher 2006; Alvaredo, Facundo, and Leonardo Gasparini 2013; Holzner, Mario 2015). During the transition, the CEE countries experienced dramatic changes in the structure of employment and wages (Onaran, Özlem, and Engelbert Stockhammer 2008).

This view on determinants of income inequality in post-communist countries does not contradict the conventional view on income inequality. According to Thomas Piketty (2015), the variation in disposal income between workers is close to variation in wages, so that income inequality is small in the countries in which wage inequality is low and vice versa. In addition to the expansion of the private sector, rising income inequality in the CEE countries could be connected with retrenchment of the redistributive state; the social exclusion of ethno-national minorities and penetration of foreign capital (Bandelj, Nina, and Matthew C. Mahutga, 2010).

The common denominator for all of these factors of growing income inequality is institutional and system transformation. In the post-communist countries, inequality was not merely a byproduct of macroeconomic policies, but also a natural outcome of the chosen model of society

(Ivanova, Maria 2007). Distribution is an instituted process, where term “institutions” is used to specify the complex of organizations that produce correlated patterns of behaviour and define the parameters of acceptable conduct in human affairs (Brown, Christopher 2005). In other words, inequality stems not from natural market forces, but from the way in which particular markets are instituted (Clark, Charles MA, and Catherine Kavanagh 1996).

At the beginning of the transition process, the CEE countries were faced with institutional collapse (Murrell, Peter 1991; Calvo, Guillermo A., and Fabrizio Coricelli 1992; Ellman Michael 1997; Kornai, János 1994; Stiglitz, Joseph E. 1996; Barkley Rosser, and Marina Vcherashnaya Rosser 1999), so that transition from central planning to a market economy produced dramatic institutional changes (Tilcsik, András 2010). Moreover, Bourguignon François (2007) argues that the post-communist countries are perhaps the best example of the major role that institutions can play in the process of economic development.

Institutional reforms in post-communist countries were mostly anti-poor, especially in the early years of transition and throughout most of the 1990's. Concerning constitutive parts of reform, Milanović, Branko, and Lire Ersado (2010) find that large-scale privatization and infrastructure reform has a pro-inequality effect, while small scale privatization and democratization tends to have a pro-equality effect. Institutional structure of society is transformed in the way that collective interests, guarded by the redistributive state, take backstage to private interests and individual self-reliance (Bandelj, Nina, and Matthew C. Mahutga 2010), resulting in a high concentration of income at the top of the income distribution scale.

Institutional changes in post-communist countries were also elite-led (Bourguignon, François 2007). Changes in income distribution were accompanied by changes in the relative position of social groups (Milanović, Branko 1998). According to Gerry, Christopher J., and Tomasz M. Mickiewicz (2008), elites in transition economies clearly did not see social cohesion as being a top priority. International institutions and other outsiders promoted rapid privatization, capital market liberalization, and tight monetary policies, but at least some of these policies served particular interests, and those interests might have prevailed even without outside pressure (Hoff, Karla, and Joseph E. Stiglitz 2002).

Deep institutional transformation in the CEE countries was associated not only with economic evolution, but also with the evolution in values regarding income distribution. During transition, income equality, as one of the key features of socialist system, was replaced by income differentiation, where perception of inequality becomes one of the key elements of the social attitudes towards reforms (Grosfeld, Irena, and Claudia Senik 2010). Since capitalism could be proven as superior over communism only if it could combine a sufficiently higher degree of equality with superior economic efficiency (Heise, Arne 2008), questions concerning elites and stratification patterns in post-communist countries are certainly crucial for the future of inequality (Heyns, Barbara 2005). Such approaches make the topic of our research relevant even if transition is considered a completed process for the CEE countries.

Regarding the way of thinking about these issues, we prefer Post Keynesian to the neoclassical school. The Post Keynesian model of transition focuses on uncertainty, non-equilibrium and the role and stability of institutions, and appears to be more competent in accounting for post-communist realities in comparison with the neoclassical paradigm (Lah, Marko, and Andrej Sušjan 1999; Marangos, John 2006; Scricciu, S. Șerban, and Lindsay C. Stringer 2008). Inspired by the Post Keynesian model of transition, our contribution to existing literature could be recognized in an attempt to explain the dynamics of net income inequality in the CEE countries by the changing nature of institutional transformation (in terms of contrasting the first and second decade of transition), and consequently the power relations among social classes with different redistributive preferences.

2. Theoretical framework

2.1. Starting point

The key assumption on which the theoretical framework, and consequently the empirical research, is based is that income distribution reflects distribution of power in society. By studying the factors that affect distribution of power, we can explain why a growing number of countries are faced with increasing inequality, as well as which recommendations should be followed by policy-makers in meeting the challenges of rising and persistent income polarization (Josifidis, Kosta, and Alpar Lošonc 2014; Josifidis, Kosta, and Novica Supic 2016). Of course, this assumption is not limited only to the former communist countries. However, this group of countries is perhaps the best available sample for testing the hypothesis about mutual dependence of institutional changes in relative power between income classes on one hand, and inequality and redistribution on the other hand.

Inequality in market income (inequality before taxes and social transfers) arises from differences in economic power between social classes. A key source of economic power is possession, or control, of factors of production¹. By applying redistribution mechanisms, the government can correct the initial market distribution of income. As a result, inequality in disposable income (inequality after taxes and transfers) depends on market income inequality, but also on the relative political power between social classes with different preferences towards redistribution.

One question to address is how to ensure a more equal distribution of power in society, and consequently less inequality? Democratization of institutions, in terms of changes that allow greater involvement of citizens in the process of defining public policy, plays a key role. Macroeconomic policies are, in fact, political decisions and, if not accompanied by a democratic process, remain despotic. In this context, it is expected that democracy ensure the process of decision-making reflect the preferences of individuals (Marangos, John 2006).

¹ Distribution of market income is not only the result of market forces. However, the ex-post role of government in income distribution is more direct and more pronounced compared with the effects of government intervention on income before taxes and transfers.

Democratization of the institutions could be seen as a mechanism by which political power is transferred from elites to citizens. Since elites are far less numerous compared with income classes at the lower end of income distribution, it is expected that democratization leads to greater redistribution and lower inequality. However, elites, through investment in *de facto* political power, can reduce or even eliminate the effects of democratization on inequality. Given undue political influence of the top 1% of the influential group in the political system, tackling unequal distribution is an area where very little progress has been undertaken (Arestis, Philip, and Ana Rosa Gonzalez-Martinez 2016). Moreover, in the redistribution area, government demonstrates its lack of power in preventing profligacy and hypocrisy inappropriateness of the capital (Josifidis, Kosta 2010).

By keeping privileged positions, elites limit income and status mobility in society. The probability that elites will be able to compensate the decline in *de jure* power by the increase in *de facto* power is greater if institutional changes are associated with the emergence of institutional vacuum, or when the changes are endogenous by their nature. In both cases, it is evident an asymmetry of power in favour of elites exists. The term institutional vacuum refers to presence of time gap in replacing the existing institutions with new ones. A key feature of endogenous changes is inertia, as opposed to exogenous changes that usually lead to radical institutional reconfiguration and dispersion of power. In the long term, the absence of significant redistributive effects of institutional changes, either due to the institutional vacuum or inertia of the previous system, contributes to the formation of social conventions according to which substantial disparities in income distribution are accepted as inevitable in the given circumstances.

2.2. Elaboration

An important step is to determine whether, and to what extent, the presented theoretical framework could be recognized in the CEE countries. In the transition and post-transition period, there was a strong influence of institutional changes, primarily in terms of democratization and market transformation, on income inequality. Moreover, by influencing the distribution of transition winners and losers on the one hand, and the financiers and beneficiaries of the welfare state on the other hand, the institutional changes have modified the very nature of distributional conflict.

After the collapse of the Soviet Union, the institutional transformation of the CEE countries took place in two periods. In the first period, from the 1990s to the 2000s, policy-makers were faced with the urgent need to establish market institutions and policies under circumstances that lacked theoretical and empirical knowledge about how to make the transition from one political-economic system to the other. Based on different and sometimes mutually exclusive advice and recommendations, the institutional changes were dominantly revolutionary. As a result, many areas appeared to exist in an institutional vacuum. The pendulum swung from too much government to too little (Stiglitz, Joseph 2014). The welfare state was particularly exposed to the

consequence of the institutional vacuum, since the dismantling of “social net” of socialism was not synchronized with the construction of a new system of social security.

The second period refers to the period of the 2000s, during which exogeneity was a key feature of institutional changes. In this period, the EU has played the leading role in shaping the institutions. According to the Copenhagen criteria (1993), the adoption and implementation of EU's *acquis communautaire* is explicitly mentioned as one of the conditions for EU membership. Indeed, the trend of institutional harmonization has continued after the membership through the process of policy harmonization within the EU bodies. A significant impact on institutional design in the CEE countries had international organizations (IMF, WB, EBRD), which also supports our thesis about dominantly exogenous nature of institutional changes during the second period of transition.

The democratization of institutions in the CEE countries was accompanied by transfer of *de jure* political power from nomenklatura to citizens. However, *de jure* disempowering of nomenclature was not also accompanied by a wider dispersion of *de facto* political and especially economic power in society. By transforming political and social capital into economic capital, a significant part of the former communist elite appears as the new elite in the first years of transition. Instead of delegated position in the party hierarchy, the main source of power of the new-old elite is becoming privileged access to market and ownership of economic resources acquired during privatization. Moreover, some authors (see Frydman, Roman, Kenneth Murphy, and Andrzej Rapaczynski 1996; Kaufmann, Daniel, and Paul Siegelbaum 1997 Freeland, Chrystia 2000) argue in favour of the transformation of the nomenklatura into a kleptoklatura.

Unlike the communist era, the elites are no longer monolithic. In addition to the reformed parts of nomenklatura, the emerging elite consist of individuals and groups with different social and ideological roots: technocrats, former dissidents, representatives of religious communities, including the remaining elite from pre-communist period. The formation of the new elite coincides with the presence of an institutional vacuum in the transition process. The combination of rapid system changes, the absence of the institutional framework, and the pronounced asymmetry of power together contribute to the fact that the first decade of transition was marked by significant income differentiation.

In the second decade of transition, there have been noticeable changes in the composition of the elite. The reconfiguration refers to the emergence of a new elitist class whose sources of power are linked to foreign capital and meritocratic values. Unlike short-term winners of the transition process, who represented the dominant income class in the first period of transition, the new elitist class do not need to institutionalize their dominance through political process, and therefore are less tied to the ruling party. In this context, Jan Drahoukoupil (2008) argues that the elite emerged around the foreign companies were the final winners of transition process, especially in the Visegrad group.

The institutional consolidation, economic reconstruction and from them derived changes in relative power between income classes have been accompanied by greater income and status mobility and, at the same time, by increase in social tolerance for inequality. Consequently, the dynamics of inequality and redistribution in the CEE countries cannot be viewed solely as a result of the economic evolution, but it also includes elements of evolution of values.

3. Methodology

3.1. Model Specification

On the basis of the presented theoretical framework, we define the hypothesis according to which the deterioration of income distribution in the CEE countries can be linked with institutional changes and consequently a shift in power between income classes. In an attempt to explain the differences in the dynamics of inequality in the first (growth) and second (convergence) decade of transition, two more specific hypotheses are derived:

H1. The worsening of income distribution in the first decade of transition is associated with systemic transformation in which, due to the existence of an institutional vacuum, short-term winners of the transition process had the dominant role in shaping public policies.

H2. Consolidation and income convergence between the CEE countries in the second decade of transition are correlated with exogenous institutional changes and the gradual shift of power favouring long-term winners of the transition process.

It is important to note that the short-term and long-term winners of the transition differ not only in their sources of power and their means and goals of public actions, but also in their number. Short-term winners include the small elite with the highest but unstable income. Long-term winners account for a more numerous population that include, in addition to the FDI managerial elite, the upper middle class with stable earnings and prospects of further improvement of living standards.

The hypotheses are tested on a sample of 10 new EU member states from the former communist countries in Eastern and Central Europe using the unbalanced panel model (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia)². These countries represent a set of the most comparable post-communist cases because of their common membership in the European Union and the similar political and economic changes that acquiring such membership implies (Mahutga, Matthew C., and Nina Bandelj 2008).

The model is written as:

² Croatia is excluded from the analysis because of the specific self-management model of socialism applied in the former Yugoslavia, but also due to problems related to the quality of the data collected during the war in this country (1990-1995).

$$\text{Log GiniNet}_{it} = \beta_0 + \beta_1 \text{Log GiniMarket}_{it} + \beta_2 \text{Log Taxes}_{it} + \beta_3 \text{Log Reform}_{it} + \beta_4 \text{Log Reform}_{it}^2 + \beta_5 \text{Log Power}_{it} * \text{D}_t + \text{u}_i + \text{e}_{it} \quad (1)$$

Where subscript **i** stands for the cross-sections, **t** represents the time period; **GiniNet_{it}** – inequality in disposable income measured by Gini index after taxes and social transfers; **GiniMarket_{it}** - inequality in market income measured by Gini index before taxes and social transfers; **Taxes_{it}** – Taxes on income as percentage of GDP; **Reform_{it}** – the average unweighted EBRD reform index; **Power_{it}** – power ratio between two income classes; **u_i** and **D_t** - are country and time specific effects, respectively, and **e_{it}** is the idiosyncratic error term. The first two explanatory variables are control variables, while the remaining variables are the institutional and power determinants on inequality. Definitions, data sources, and descriptive statistics for each of the variables are given in the Table 1 (Appendix).

The logic of the model is that the dynamics of the net, ex post, inequality in the CEE countries can be explained by the changes in market, ex ante, inequality, fiscal redistribution, institutional reform and related changes in the relative power between income classes. Net income inequality is presented by the variable GiniNet, while the proxy for market income inequality is GiniMarket. It is assumed that the variable GiniMarket approximates the influence of all market determinants on income distribution (such as employment or wage). The impact of state intervention on income inequality is controlled by the variable Taxes. Since income tax is more progressive compared to total taxes, we use the percentage share of income tax in GDP as the indicator of fiscal redistribution (about the problem of proportional impact of total taxes on disposable income, seen in Piketty, Thomas 2015).

Given that this paper is focused on the impact of institutional changes on inequality, special attention should be paid to the method of calculation and the meaning of the two remaining variables: Reform and Power. Variable Reform is the unweighted average of six partial indicators of progress in transition, published by the EBRD (large-scale privatization, small-scale privatization, governance and enterprise restructuring, price liberalization, trade and foreign exchange system, competition policy). The index values are ranged from 1 to 4. A score of 1 indicates very little institutional change relative to the typical situation in a centrally planned economy and a score of 4 indicates that the creation of market-supporting institutions in this area is largely complete and the standards of developed market economies have been reached (Di Tommaso, Maria L., Martin Raiser, and Melvyn Weeks 2007).

Variable Power is calculated as the ratio of share in total income for the richest social class to the share in total income for the poorest social class. The poorest class is covered by the first quintile, while the highest class is represented by the fifth quintile. The middle class comprises the population in the second, third and fourth quintile of income distribution. For research purposes, the richest 1% is treated as a separate class, the elite. The assumption is that the lowest

and the middle class prefer more fiscal redistribution, whereas the highest class and the elite prefer less redistribution.

The model contains one non-linear relationship and one interaction. The point of introducing a nonlinear relationship between reform and net inequality is to test the hypothesis that institutional changes were associated with the growth of inequality at the beginning of transition, but after reaching a certain level of institutional progress, this influence was changed in the opposite direction. The temporary effect of change in relative power between classes on net inequality is controlled by introducing the interaction between the variables power and time and the individual effects D_i in the model.

3.2. Tests and estimation

The first step in choosing the method of estimation of the model is to check the stationarity of the variables. Unit root tests in panel data are divided into the first and the second generation tests, depending on whether it is determined the presence of residual cross section dependence (CS dependence) exists. If residual CS dependence is ignored, it could lead to the substantial size bias and distortions (Pesaran, M. Hashem 2006).

Given that in our sample T is greater than N (22:10), CS dependence is tested by using the Breusch-Pagan LM test (1980). The test's result (chisq = 88.8226; p-value = 0.0001) indicates the presence of CS dependence, i.e. the null hypothesis of cross-sectional independence was rejected. In addition, CS dependence is tested by using Pesaran CD (2004) test that is applied to variable series instead of model's residuals³. The results in this case also indicate the presence of CS dependence (Table 2).

Table 2 Pesaran CD (2004) CS dependence test

Variable	CD-test	p-value	CS depend.
Gini Net	15.47	0.000	Yes
Gini Market	16.10	0.000	Yes
Taxes	7.32	0.000	Yes
Reform	29.37	0.000	Yes
High/Middle	1.65	0.099	No
Elite/Middle	7.62	0.000	Yes

Note: Null Hypotheses is no cross-section correlation.

Source: Authors' calculation (2016). STATA 14 software.

³ Such test should be treated as descriptive rather than formal, and would be revealing if it points in the same direction as the formal CD test on model's residuals (Fayad, Ghada 2010).

The CS dependence is expected. In macro panels ($N < T$), CS dependence is usually interpreted by common shocks and spill-over effects among countries (De Hoyos, Rafael E., and Vasilis Sarafidi 2016). The CEE countries share a similar recent history and have undergone a similar process of institutional reforms, which have strong implications on the welfare state and income inequality. The shock therapy was a prevailing model of reform in the first period of transition, whereas the majority of institutional reforms in the second period of transition were based on the implementation of the EU's *acquis communautaire*.

Table 3 shows the results of Pesaran's CIPS (2007) panel unit root test, which is robust on the CS dependence problem. The optimal lag is chosen using Akaike's information criterion (AIC). From Table 3, it is apparent that the variable taxes exhibits a non-stationary behaviour (I(1)), whereas the others are stationary. The unit root problem is addressed by calculating the first difference and analyzing change in variable instead of its level.

Table 3 Pesaran CIPS (2007) unit root test

Variable	Level		First difference		Conclusion
	Stat. (Z-bar)	p-value	Stat. (Z-bar)	p-value	
Gini Net	-2.637	0.004	-2.977	0.001	I(0)
Gini Market	-2.831	0.002	-2.164	0.015	I(0)
Taxes	-0.310	0.378	-1.783	0.037	I(1)
Reform	-3.618	0.000	-7.927	0.000	I(0)
High/Middle	-2.967	0.002	-4.910	0.000	I(0)
Elite/Middle	-1.702	0.044	-1.857	0.032	I(0)

Notes: Null hypothesis is the series is I(1). Test regressions include constant term.

Source: Authors' calculation (2016). STATA 14 software.

Before selecting the model's estimation, we check whether the assumptions of homoscedasticity and no serial autocorrelation are violated. The results of the Wooldridge-Drukker test detected the presence of first-order serial correlation ($F(1, 9) = 47.621$; $p\text{-value} = 0.0001$), while the Modified Wald test for groupwise heteroskedasticity revealed that that the model is also heteroskedastic ($\chi^2(10) = 195.20$; $p\text{-value} = 0.000$).

Given the TSCS (Time-Series Cross-Section) nature of the panel data set, CS dependence, heteroskedasticity and autocorrelation, we run the OLS regression with panel-corrected standard errors (PCSE) following suggestions by Beck, Nathaniel, and Jonathan N. Katz (1995, 2001). The baseline model consists of two specifications (PCSE1 and PCSE2), which differ depending on whether they control the effect of change in relative power between the high and medium class, or between the elite and middle class on net inequality, respectively.

In order to control for the possible reverse causation between the class power ratio and institutional changes on the one hand, and net inequality on the other hand, we also estimate the model in which the variables represent class power and reform are lagged one year. In the case of the control variables, GiniMarket and taxes, there is less reason for concern of the simultaneity problem. It is obvious that net inequality comes from market inequality corrected by taxes and social transfers, but not vice versa.

Table 4 OLS regression with panel-corrected standard errors

VARIABLES	DEPENDENT VARIABLE: NET INEQUALITY					
	(1) PCSE1	(2) PCSE2	(3) PCSE1 StdBeta	(4) PCSE2 StdBeta	(5) PCSE1 Endogeneity	(6) PCSE2 Endogeneity
Log GiniMarket	0.731*** (0.0320)	0.619*** (0.0416)	0.767*** (0.0336)	0.619*** (0.0416)	0.736*** (0.0204)	0.663*** (0.0316)
D.LogTaxes	-0.0271** (0.0115)	-0.0348*** (0.0113)	-0.0193 (0.008)	-0.0348*** (0.0113)	-0.0294*** (0.0104)	-0.0190* (0.0101)
Log Reform	1.432*** (0.440)	1.002** (0.452)	0.134*** (0.0560)	1.002** (0.452)	0.741** (0.315)	0.728** (0.305)
Log Reform ²	-0.639*** (0.203)	-0.450** (0.207)	-0.029*** (0.0094)	-0.450** (0.207)	-0.304** (0.146)	-0.303** (0.139)
Log (High/Middle)	0.0912** (0.0380)		0.059*** (0.0248)		0.101*** (0.0275)	
Log (Elite/Middle)		0.0981*** (0.0252)		0.0981*** (0.0252)		0.0909*** (0.0147)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0180 (0.265)	0.832** (0.358)	0.762*** (0.1807)	0.832** (0.358)	0.307 (0.200)	0.790*** (0.241)
Observations	143	143	143	143	142	142
Number of states	10	10	10	10	10	10

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Standardized coefficients are calculated by using StdBeta program version 1.7 (Hemken, Doug 2016)

Source: Authors' calculation (2016). STATA 14 software.

3.3. Robustness check

The robustness of the results is tested by employing several tests. First, in order to assess whether the results are driven by specific country/year, we re-estimate the baseline model by excluding one country/year after another⁴. Second, we analyse what is happened with the estimates when we exclude the overly influential observations. For controlling outliers, we use the Stata's DFBETA routine. The DFBETA for a particular observation is the difference between the regression coefficient for an included variable calculated for all of the data and the regression coefficient calculated with the observation deleted, scaled by the standard error calculated with the observation deleted (Rethemeyer, Karl 2007). The idea behind this method is to estimate the

⁴ These results would be made available by the authors upon request.

model without observations with abnormal high impact on coefficient estimates ($|DFBETA| > 2/\sqrt{n}$, where n is the number of observations). The third robustness test is based on idea of using an unbounded measure of inequality, since the Gini index is limited by an interval (0, 1). For that purpose, we estimate the model in which the original values are replaced by logistic transformed values of the Gini index (Gini Logistic = $Gini / (1 - Gini)$). The results of all the tests confirm that explanatory variables stayed robust despite the shortening of the sample; controlling outliers and introducing a new measure of Gini index.

Table 5 Robustness check

VARIABLES	DEPENDENT VARIABLE: NET INEQUALITY			
	(1)	(2)	(3)	(4)
	PCSE1 DFBETA	PCSE2 DFBETA	PCSE1 Logistic Gini	PCSE2 Logistic Gini
GiniMarket	0.759*** (0.0389)	0.650*** (0.0554)	0.661*** (0.0266)	0.547*** (0.0376)
Taxes	-0.0269** (0.0117)	-0.0214* (0.0128)	-0.0384** (0.0162)	-0.0452*** (0.0145)
Reform	1.153* (0.629)	0.204 (0.788)	2.252*** (0.601)	1.469** (0.581)
Reform ²	-0.392* (0.252)	-0.114 (0.327)	-1.019*** (0.276)	-0.654** (0.267)
High/Middle	0.170*** (0.0401)		0.104** (0.0522)	
Elite/Middle		0.0777*** (0.0290)		0.163*** (0.0370)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	No	Yes	Yes	Yes
Constant	-0.124 (0.410)	1.192** (0.575)	-1.704*** (0.336)	-1.012*** (0.335)
Observations	103	119	143	143
Number of states	10	10	10	10

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' calculation (2016). STATA 14 software.

4. Discussion

The obtained results are consistent with the theoretical predictions. Market income inequality has been transformed into net income inequality (the positive and statistically significant coefficient of GiniMarket), with the corrective role of the state, implemented through fiscal redistribution (the negative and statistically significant coefficient of Taxes). The control variables indicate the presence of a redistributive gap – i.e. deterioration of net inequality in the CEE countries can be explained by the difference between the required and actual dynamics of fiscal redistribution as a response of society to rising market income inequality.

The analysis of economic significance (McCloskey, Deirdre N., and Stephen T. Ziliak 1996) based on standardized coefficients, shows that the deteriorating effect of market inequality on the distribution of disposable income is more pronounced than the equalizing effect of fiscal redistribution (table 4, columns 3 and 4). Such results are not surprising. Disintegration of socialist safety nets was accompanied by the fall in employment and real wages, while the negative influence of neoliberal reforms was more pronounced compared to the positive influence of the European social model in establishing new institutions and policies of welfare state (Guillén, Ana M., and Bruno Palier 2004).

Lagging redistribution to market inequality can be linked with the shift of relative power in favour of the income classes with a lesser preference towards redistribution. The values of coefficients High/Middle and Elite/Middle (Table 4, column 1 and 2) indicate that the strengthening of the elite and high class over the middle class resulted in an increase in net inequality, and that the observed effect is statistically significant.

The institutional reforms have had a statistically significant effect on net inequality (the value of coefficient of Reform). However, the observed relationship is not linear (statistically significant coefficient of Reform²). Since the effect of reform on net inequality is quadratic and concave downward (the negative value of the first derivative of the variable GiniNet versus the variable Reform), it is possible to determine the critical level of institutional progress in dealing with a worsening of income distribution during transition.

By calculating the first derivative of the function

$$\text{Log GiniNet}_{it} = 1.432 \text{ LogReform}_{it} - 0.639 \text{ LogReform}_{it}^2 \quad (2)$$

we get

$$\frac{\partial \text{LogGiniNet}}{\partial \text{Logreform}} = 1.432 - 1.278 \text{ LogReform}_{it} \quad (3)$$

The maximum of the function (3) is reached at the point where $\text{LogReform}_{it} = 1.12$ (the average value of transition index 3.1). This indicates that the transitional reforms deteriorate the distribution of disposable income in the countries where the average value of the quality of institutional change was below 3.1. The counterbalancing effect of reform on inequality is evident in the countries where this index was greater than 3.1.

Figure 1 and Figure 2 show the institutional progress over time for the CEE countries, separate from the Luxembourg and Helsinki group. As can be seen between the Luxembourg and Helsinki group, there are no significant differences related to the number of years that are necessary to change the impact of reforms on net inequality—from the initial deterioration to mitigate the differences in income distribution. The exceptions were Bulgaria and Romania,

which spent almost twice as much time to reach a critical level of institutional progress compared with the average time of the other new EU members from the CEE.

Figure 1 The average value of the quality reform indices for the CEE ‘Luxembourg Group’

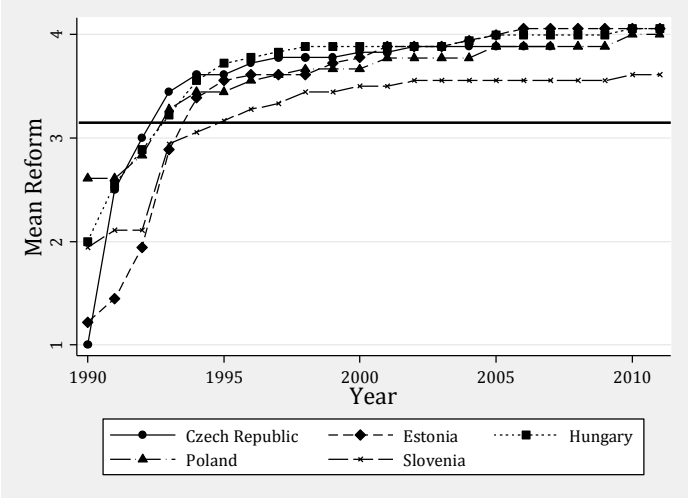
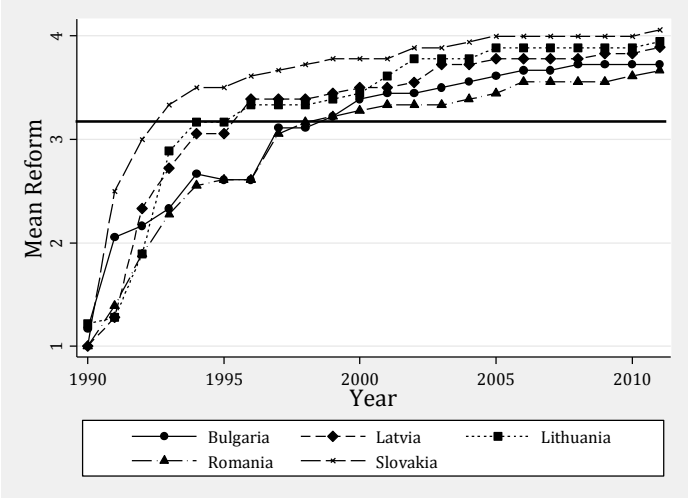


Figure 2 The average value of the quality reform indices for the CEE ‘Helsinki Group’



Source: Authors’ illustration (2016). STATA 14 software.

By comparing Figure 1 and Figure 2, and Figure 3 and Figure 4, we observe that there is a stagnation and gradual convergence of income inequality since the mid-1990s, which coincides with the period where most of the CEE countries had reached a critical level of institutional progress in the transition process.

Figure 3 Net inequality, the CEE ‘Luxembourg Group’, 1990-2011.

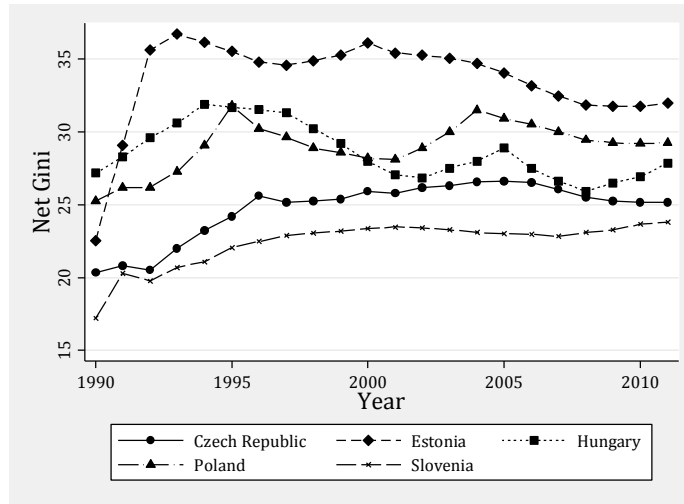
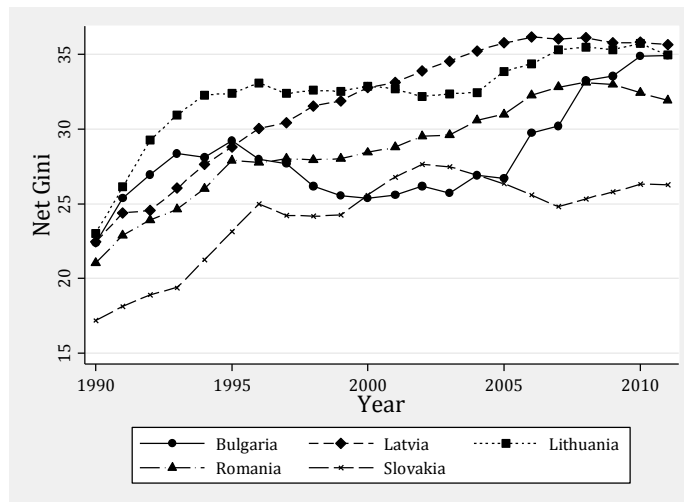


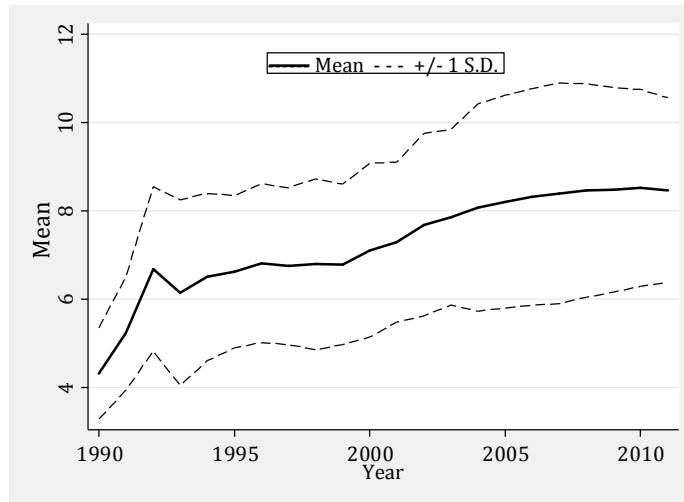
Figure 4 Net inequality, the CEE ‘Helsinki Group’, 1990-2011.



Source: Authors’ illustration (2016). STATA 14 software.

Figure 5 and Figure 6 provide a deeper insight into the dynamics of net inequality in the CEE countries. The rapid growth of income of the wealthiest 1% has slowed down since the mid-1990s, which is also the beginning of the period in which first, a consolidation, and later a slight increase, in income of the middle class have been recorded. Changes in relative power between classes can also be linked to progress in the area of institutional reforms, which is indicated by their time synchronization (the figures 1 and 2 on the one hand, and the figures 5 and 6 on the other hand).

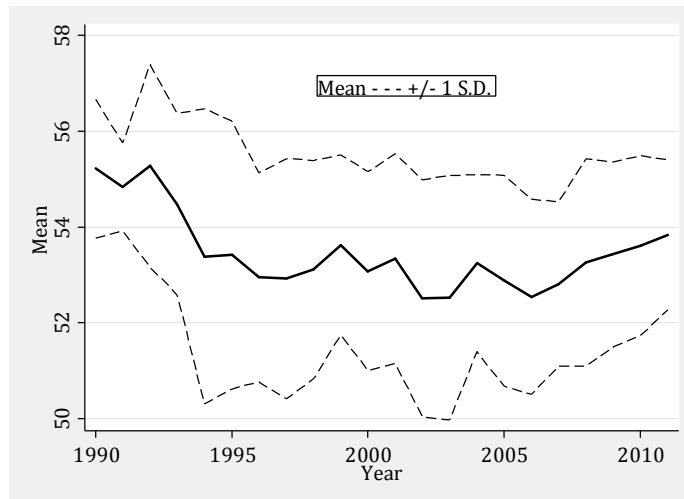
Figure 5 The dynamics of the 1 percent of richest population's share of total income (in % of total income)



Note: The solid line is the unweighted average of 10 CEE countries. The dotted line is the unweighted average plus/minus one standard deviation.

Source: Authors' illustration (2016). STATA 14 software.

Figure 6 The middle class in the CEE countries – share in the total income



Note: The solid line is the unweighted average of 10 CEE countries. The dotted line is the unweighted average plus/minus one standard deviation.

Source: Authors' illustration (2016). STATA 14 software.

In order to shed more light on the link between institutional progress (and with it relative changes between income classes) and the interaction between the variables $Power_{it}$ and time specific effects Dt are introduced in the model. The intention is to interpret the time determined effects of changes in relative power between classes on net inequality through the changes in institutional environment. If there were differences in the statistical significance of conditional effects over time, it might suggest the evolutionary changes in society about income

concentration. The results of this model estimation related to the interactions are presented by conditional marginal effects (Figure 7 and Figure 8).

Figure 7 Influence of the change in power between elite and middle class on net income inequality over time

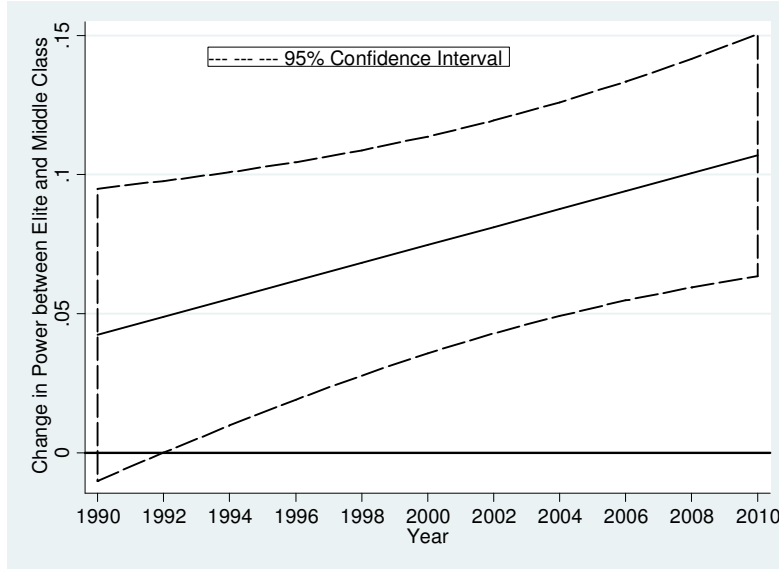
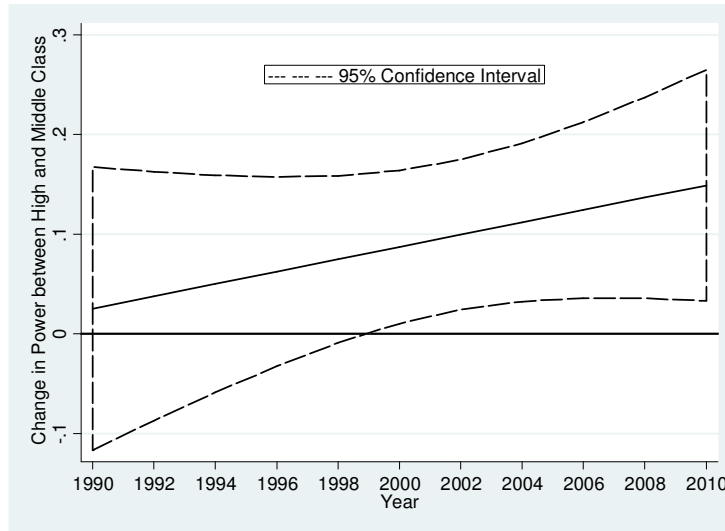


Figure 8 Influence of the change in power between high and middle class on net income inequality over time



Source: Authors' calculation (2016). STATA 14 software.

From Figure 7, it is evident that the strengthening of the elite (1% of the richest population) compared to the middle class was associated with an increase in net inequality and that this effect was statistically significant throughout the whole period. Figure 8 shows a somewhat different situation: an increase in power of the high class relative to the middle class has also generated an increase in inequality, but this effect was not significant during the first decade of transition.

Why is the impact of a concentration of power by the high class on income distribution significant in the second, but not the first, decade of transition? The observed differences can be explained by the effects of institutional changes on the social tolerance for inequality. The institutional changes in the second period of transition were associated with a specific evolution of values that has increased the tolerance for inequality, and thus the impact of the high class on income distribution. The tolerance for inequality, to some degree, was also presented in the first period of transition, but it was determined by different factors. The first kind of tolerance could be labelled as post-transition, while the second one could be labelled as a transitional tolerance for inequality.

The transitional tolerance for inequality should be seen as a consequence of weakening the potential for protest movements of transition losers, rather than as the result of evolution of values in society. By dividing transition losers into the subclass with mutually conflicting interests and weak social connections, the elites reduced the risk of large-scale unrest due to rising inequality and poverty. As an example, Vanhuysse Pieter (2006) points out the governments in Hungary and Poland diffused the potential for protests by using early and disability retirement in the first years of transition. A similar effect had an uneven distribution of revenues from privatization among workers in successful and failed state-owned enterprises.

Unlike the first decade of transition, marked by an institutional vacuum and the dominance of short-term transition winners, long-term transition winners consisted mainly of high and upper middle class, which come to the fore in the second decade of transition. In the new institutional environment, the concentration of income is more a function of meritocratic values rather than a result of instability and uncertainty, leading to increase in social tolerance for inequality. Income mobility and changes in the composition of the elite have enabled a greater percentage of the population to influence the dynamics of inequality and redistribution. However, a greater dispersion of power between income classes has not resulted in a greater institutionalization for redistributive preferences.

The observed post-transitional tolerance for inequality does not mean that the subjective perception of the reforms by the majority is positive. On the contrary, the negative opinions about the effects of the transition on the standard of living have prevailed, but it has not led to greater social and political instability. It is possible to link post-transition tolerance to the specific evolution of values in the context of emerging social conventions where the concentration of income is not justified, but seems to be accepted as an inevitable consequence of integration into the European and global economic processes. The convergence of income inequality between the CEE countries in the post-transition period could be treated as evidence in favour of such a conclusion.

5. Conclusion

Inspired by the specifics of the dynamics of inequality and redistribution in the CEE countries after the fall of communism, in the transition and post-transition period, we have developed the theoretical framework that points to the key role of institutional changes in economic evolution and in the evolution of values in the post-communist countries. Considering the institutional changes and changes in relative power between income classes with different redistributive preferences on the one hand, and the distribution of net income on the other hand, the two hypotheses are defined. According to the first hypothesis, the worsening of income distribution in the first decade of transition is associated with the systemic transformation in which, due to the existence of an institutional vacuum, the dominant role in shaping public policies have had the short-term winners of transition. Consolidation and income convergence between the CEE countries in the second decade of transition, according to the second hypothesis, are linked to the exogenous institutional changes and shifting relative power in favour of the long-term winners of transition.

The results, obtained by using the robust panel data method on the sample of the 10 NMS from CEE in the period from 1990 to 2011, are consistent with the theoretical predictions. There is a statistically significant and non-linear relationship between institutional reforms and net income inequality. At the beginning of the transition process, the reforms worsened income distribution, but after reaching a critical level of progress in the reforms, the institutional changes contribute to reducing inequality. The analysis of conditional marginal effects shows that strengthening of the relative power of elite and high class compared to the middle class is associated with a worsening in income distribution, but with the difference that the observed effect on net inequality in the case of high class was not significant during the first decade of transition. This finding could be interpreted by the emergence of a specific tolerance for inequality, which coincides with the transition from shock therapy to the model of institutional reforms based on implementation of the EU's *acquis communautaire*. Greater income mobility and the promotion of meritocratic values could be recognized as the key factors of post-transitional tolerance for inequality. Consequently, the dynamics of inequality and redistribution in the CEE countries has to be considered in the context of not only economic evolution, but also the arising of social conventions where a high concentration of income is not justified, but seems to be accepted as inevitable in the process of integrating a national economy into the European and global economic processes.

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Appendix

Table 1 Variable description

Name	Source	Description	Obs.	Mean	Std. Dev.	Min	Max
Gini Net	Standardizing the world income inequality (database — SWIID, version 2014).	Gini index of inequality in disposable (post-tax, post-transfer) income	220	28.34	4.51	17.18	36.72
Gini Market	Standardizing the world income inequality (database — SWIID, version 2014).	Gini index of inequality in market (pre-tax, pre-transfer) income	220	39.25	6.39	22.81	51.83
Taxes	The QoG Standard dataset	Taxes on income (% of GDP)	175	7.65	1.46	4.3	11.1
Reform	European Bank for Reconstruction and Development	Transition indicators - average	216	3.37	0.71	1	4
High/Middle	World Income Inequality Database - WIID (Version 3.3)	Income share High Class/ Income share Middle Class	178	1.14	0.11	0.93	1.37
Elite/Middle	World Income Inequality Database – WIID (Version 3.3)	Income Elite/ Income share Middle Class	178	0.14	0.04	0.07	0.25