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Institutional determinants of inequality in chosen post-socialist countries: the role of political freedom

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Abstract

Motivation: economic literature indicates that differences in the inequality levels among modern countries can be attributed to many factors or processes such as: economic performance, natural resources endowments, demographical structure or institutional framework. It seems to be important to emphasize that in the case of post-socialist countries where many predetermined trajectories of inequalities were adopted policies and institutions played an important role in shaping inequality.
Aim: in this context the question about the role of political freedom — as one of the key aspects of institutional framework — for the levels of inequality in these countries seems to be especially important. The aim of this paper is to evaluate the role of different political institutions adopted in post-socialist countries for the levels of income inequalities observed among them.
Results: the obtained results indicate that the post-socialist countries which managed to create more inclusive political institutions experience lower inequalities in the distribution of disposable income.

Keywords: political freedom; post-socialist countries; inequality
JEL: E02; D63; N33

1. Introduction

In the 1980s the level of income inequalities observed in the socialist countries was low (c.f. Bukowski & Novokmet, 2017; Novokmet ,2017). It resulted primarily from the ideological motives — the authorities of these countries set the salary levels of employees with the aim of flattening the pay structure. Consequently, income inequalities in these countries were low compared to the capitalist countries at a similar stage of development. However, it must be noted that in socialist countries inequalities in consumption were considerably higher than those in income. It was due to the scarcity of consumption goods, the access to which was regulated and unequal — obtaining the rare products depended on the personal connections, the membership in the communist party, as well as on the position in the party hierarchy (the famous shops 'behind the yellow curtains' the access to which was the privilege of party activists, UB and SB (Security Agency and Security Service) officers, army officers, militia officers and higher-rank clerks). In the era of the post-socialist transformation in the 90s of the 20th century the level of income inequalities significantly changed — not only did these inequalities increase, but they also diversified in this group of countries.

The article addresses the question about the reasons for inequalities. Post-socialist countries are a good research group for studying the way in which institutions affect inequalities. The post-socialist transformation was predominantly a huge institutional change in the social, political and economic sphere (Ratajczak, 2009, pp. 233–251). The results of these changes were varied. Some post-socialist countries have successfully built democracy and market economy, whereas others created authoritarian states with a limited scope of economic freedom (Piątek, 2016). The article aims to analyse the relationship between political institutions and income inequalities in post-socialist countries. We focus on political freedom as the institution which influences the other political and economic institutions. In order to assess the relation between political freedom and inequalities in the studied countries, in addition to the basic statistical analysis Granger causality tests for panel data were used. These analyses allow not only to assess the relationship between the two sets of variables, but also the inter-relationships within the sets.

2. A review of the literature on institutions and inequality

The literature divides the sources of inequalities into endogenic ones and those resulting from the exogenous factors (Malinowski, 2016, p. 33). It is pointed out that some sources of inequalities are to be sought in human beings themselves — in this case inequalities are caused by the endogenic factors, i.e. certain individual qualities such as: intelligence, personality, charisma, power. However, inequalities may also result from the social, political and economic environment of individuals. In this case inequalities are the effect of exogenous factors, such as: technological progress, economic processes (globalisation, financialisation), as well as formal and informal institutions. This study focuses on the formal institutions, which, according to North's (1990, p. 3) definition, are treated as 'the rules of social game, or more formally, as invented limitations which shape human interactions'.

The possible correlations between institutions and inequalities will be presented by means of the model proposed by Acemoglu et al. (2005, pp. 385–472), as well as Acemoglu & Robinson (2014). These authors underline the fact that there are strong correlations between political and economic institutions and these are the institutions that to a large extent determine both economic results and inequalities. These authors also present a model which displays relations between political and economic institutions and economic results and income distribution. Acemoglu et al. (2005, pp. 385–472) point out that economic institutions affect the economic growth rate by shaping the incentives influencing economic entities (c.f. scheme 1). Nevertheless, economic institutions are not exogenous, but endogenic. They are shaped by the entities which exercise political authority in a given country. Those who hold political power decide about economic institutions and, consequently, about economic results and income distribution. However, these are the political institutions, in other words the rules governing the stimuli in politics, which determine who is in power (Acemoglu & Robinson, 2014, p. 95). Political institutions decide about the manner in which authorities are elected and who may lawfully be in power. Political institutions are shaped by the entities which rule the country. Beside the de jure authority there is also de facto authority, which is not based on the binding law, but rather results from the possessed wealth.

The presented model shows not only the strong links between political and economic institutions, but also their interaction. Acemoglu and Robinson (2014, p. 89 et seq.) introduced a division into extractive political and economic institutions, which do not foster economic growth and at the same time increase inequalities, and inclusive political and economic institutions, which contribute to the growing wealth of the citizens and reduce the wealth inequalities (see scheme 1).

The extractive political institutions are characterised by a very limited distribution of power — authority is exercised by a narrow group. Moreover, the authorities' actions are not subject to any control or law (lack of the rule of law) and in this sense their power is virtually unlimited. The extractive political institutions give rise to the extractive economic institutions. The objective of the entities creating such institutions is exploitation. i.e. taking over the output of other entities. Economic institutions are an instrument for the redistribution of income and property, which results in the appearance of economic rents which are appropriated by those in power. In societies of this kind the level of inequalities is high. It is characteristic of the extractive economic institutions that they differentiate rights and obligations depending on whether an entity belongs to the ruling elite, or to the rest of the society. The ruling ones enjoy a higher degree of economic freedom and protection of property. Not only does the rest of the society have fewer rights, but they are also frequently broken — in the absence of the rule of law. The ruling elite creates monopolies, restrict the access to professions and economic activity, deprive the citizens of their rights, or force them to work. These actions are aimed at increasing the income for those in power and the groups supporting them, through the distribution of the economic output (wealth) which is beneficial for them.

As far as the inclusive political institutions are concerned, it should be noted that they not only spread power in society, but also impose limitations on power. It means that elections are democratic (political freedom is ensured) and the rule of law is respected. Inclusive political institutions give rise to inclusive economic institutions. Such institutions allow for and encourage participation in the economy. In the sphere of the economy this entails economic freedom, protection of property and the rule of law. The state is the guarantor of the law, order, private property, the binding effect of agreements and it is also the provider of public services. A sufficiently strong and centralised state is the condition for the existence of inclusive institutions. Inclusive economic institutions contribute to the economic growth, because they encourage and reward socially productive activity, allow for the choice of economic activity in relation to the possessed talents, as well as encourage investment in physical and human capital and innovation (Acemoglu & Robinson, 2014, pp. 94–95). Inclusive institutions create the conditions for much lower inequalities than those in the conditions created by extractive institutions.

The existence of inclusive economic institutions is possible due to the existence of inclusive political institutions, which allow a large part of society to participate in exercising power. The limited political power makes it harder for those who exercise it to create extractive economic institutions. At the same time, economic institutions ensure a more equal income distribution, which, in turn, supports inclusive political institutions. Not only does it reduce income inequalities, which can be used for exerting unlawful pressure on the authorities, but also exercising (limited) power is not related to material benefits. Therefore, losing power does not significantly deteriorate one's material situation.

In the presented model inequalities depend on the existing political and economic institutions, but they also influence the future shape of these institutions. Besides, political institutions affect inequalities through economic institutions. Therefore, the relationship between institutions and inequalities is complex and dynamic. This study focuses on one aspect of this relationship: the influence of political institutions on inequalities. The major political institution, whose effect on inequalities is broadly described in literature is political freedom (democracy).

A great deal of research has been conducted into the influence of political freedom on the economy. However, most authors focus on the relationship between political freedom and economic growth (a summary of the discussion (c.f. Doucouliagos & Ulubasoglu, 2008, pp. 61–83)), whereas fewer studies are devoted to its effect on inequalities. It is normally pointed out that the growth of political freedom understood as the spread of voting rights leads to a more equal income distribution (Lenski, 1966). Poorer households tend to vote for politicians favouring higher redistribution and higher taxes, thus reducing inequalities (Meltzer & Richard, 1981, pp. 914–927). Acemoglu & Robinson (2000, pp. 1167–1199) indicate on the basis of the United Kingdom's experience that not only does democratisation raise redistribution, but it also leads to the spread of education and these two facts combined result in reduced inequalities. However, Beitz (1982, pp. 145–166) represents an opinion that authoritarian regimes may better protect the interests of the poorest social groups. He argues that in the conditions of democracy the poorest have de facto a lower influence on the authorities than the rich ones and the elected politicians cater for their voters' interests. On the other hand, a higher redistribution may be also seen as the price for holding power, because, as Alesina & Perotti (1996, pp. 1203–1228) and Perotti (1996, pp. 149–187) point out, inequalities result in political instability. According to Bourguignon & Verdier (2000, pp. 285–313), the higher inequalities, the more probable is democratisation.

Initially, empirical research did not convincingly confirm or refute the above presented opinions. As Sirowy & Inkeles (1990, pp. 126–157) point out, the number of studies confirming the hypothesis about the positive influence of democracy on inequalities is similar to the number of papers verifying the opposite hypothesis. The improved quality of statistical data, as well as a bigger number of observations allowed for conducting further research (Gradstein & Milanovic, 2004, pp. 515–537). Its findings indicate that democracy reduces inequalities (Li et al., 1998, pp. 26–43), increases the share of employees' income in GDP (Rodrik, 1999, pp. 707–738) and contributes to the increased share of the lowest quintile in the income (Lundberg & Squire, 1999, as cited in: Gradstein & Milanovic, 2004, pp. 515–537). Chong & Gradstein (2007, pp. 454–465) point out that not only democracy reduces inequalities, but also lower inequalities positively affect democracy. Milanovic & Ersado (2010) established that democratisation lowers inflation in the transformation period, which, in turn, contributes to the higher share of the lowest decile in the income.

3. Inequality and democracy in post-socialist countries

It may seem that democratisation in post-socialist countries should reduce inequalities. Still, paradoxically, during the period of transformation this group of countries[1] is experiencing a growth in inequalities (tables 1 and 2). Upon

[1] Due to limited availability of reliable empirical material for some of post-socialist countries the study was conducted for 21 chosen post-socialist countries, see tables 1 and 2.

reflection, however, it is not very surprising. In the period of the centrally managed economy the authorities of socialist countries aimed at maintaining low inequalities for ideological reasons, mainly through establishing a flat pay structure. As a result, income inequalities were low in socialist countries, compared to capitalist ones at a similar stage of development, although inequalities in consumption were higher than shown in the official data, due to the rationing of products.

The political transformation initiated in the 90s of the 20th century was aimed at replacing the authoritarian system with democracy and introducing market economy (instead of the centrally controlled economy). Abandoning the socialist ideology, which allowed the government to set the levels of salaries, introducing the principles of the market economy and the privatisation of state-owned companies resulted in a higher income inequality. This fact gives grounds for a conclusion that the introduction of the market economy and privatisation of state-owned companies lead to a growth in inequalities. However, this part of the inequalities increase may be deemed justified and, in a sense, inevitable. At the same time, it must be pointed out that the growth in inequalities in the post-socialist countries was also caused by other, more disconcerting phenomena at the junction between politics and economy. Namely, many countries were not able to build a properly functioning democracy (tables 3 and 4). The lower the scope of political freedom, the smaller is the control over politicians' actions. In such conditions corruption flourishes, including buying beneficial legal solutions from politicians by interest groups. In literature this phenomenon is referred to as 'state capture' or 'crony capitalism' and it is pointed out that it often occurs in post-socialist countries (Havrylyshyn, 2006; Sonin, 2018). It increases inequalities, but also, inversely, hinders the development of political freedom.

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The conducted literature studies, as well as the analysis of the empirical data illustrating inequalities and political freedom in post-socialist countries allowed for formulating two research hypotheses. One of them reads as follows: there is a negative correlation between political freedom and the observed inequalities in post-socialist countries. The other hypothesis is: the difference between market inequalities and inequalities in disposable income is higher in the post-socialist countries which offer a higher political freedom than in those where political freedom is scarce.

4. Income inequality and political institutions in transition countries — empirical verification

The empirical analysis was conducted on the sample of 21 post-socialist countries over the period 1992–2015. Authors decided to choose 1992 year as a first year of the analysis due to the lack of data.

Although many different indicators can be used as a measure of income inequality, the most commonly used measure of income inequality is the one based on income distribution i.e. the Gini index (coefficient) (Cowell 2018, p. 6394). In case of this indicator inequality is measured as the level of income distribution ranging on an index between 0 and 1 (0–100), where 0 indicates perfect equality and 1 (100) indicates perfect inequality. Being aware of the drawbacks of this measure, as well as the problems with its availability, especially evident in the case of post-socialist countries (Atkinson & Micklewright, 1992; Bukowski & Novokmet, 2017; Ivaschenko, 2002; Mitra & Yemstow, 2006), the authors of this study decided to use as a measure of inequality the values of Gini index provided by the Standardized World Income Inequality Database (SWIID) developed by Solt (2018). This dataset has provided income inequality data that seek to maximize comparability while providing the broadest possible coverage of countries and years. Basing on SWIID data two Gini inequality indexes i.e. one of net disposable that is, post-tax, post-transfer income (*gini_disp*) and one of market (pre-tax, pre-transfer) income inequality (*gini_mkt*) were used.

In order to study the relation between the political institutions and inequality levels in post-socialist countries the authors decided to use the political freedom indexes provided by Freedom House (2018). Using this source, the Freedom House Political Rights index (*FH_PR*), the Freedom House Civil Rights index (*FH_CL*) and the arithmetic average of these two indexes (*FH_A*) were used. The above indicators range on a scale from 1 (most free) to 7 (least free). Additionally, basing on Freedom House methodology the studied countries were divided into 2 subgroups by the level of political freedom i.e. free and not free (or partly free). What is interesting, this division corresponds to the EU membership of particular country. Table 5 shows the descriptive statistic of the collected data (averages for the years 1992–2015). The presented data shows that in the case of political institutions and between the analysed subgroups some important differences can be noticed. The most obvious ones display much lower mean levels of analysed institutional indicators, another one is the difference in the variation level, which is almost 3 times as high in the case of not or partly free countries as in the case the group of free countries. The similar pattern in variation can be observed in the case of inequality measures. But it is important to underline that as opposed to the differences between the mean value of inequalities in disposable incomes, the mean levels of market inequalities are slightly higher in the case of the free countries.

A more detailed analysis of the data referring to the relationship between political institutions (expressed as the mean value of the sub-indices of freedom *FH_PR* and *FH_CL*) and the shape of inequalities in the market income (*gini_mkt*) and the disposable income (*gini_disp*) (cf. chart 2) demonstrated that in the case of the market income no statistically significant correlation can be observed. However, such correlation exists in the case of the disposable income. Which may result from the fact that countries with higher political freedom are more efficient in limiting the level of market inequalities. This conclusion is a partial corroboration of the first hypothesis which assumes the existence of a correlation between political freedom and the levels in inequalities in post-socialist countries.

With a view to the empirical verification of the hypothesis about the statistically significant influence of political institutions (political freedom and citizen rights) on the level of inequalities in the disposable income, the Granger causality test was conducted in the analysed countries. Due to the nature of the analysed data, a modified procedure of the causality test, proposed by Dumitrescu & Hurlin (2012, pp. 1450–1460) was used. This procedure provides an extended test designed to detect causality in the panel data. The underlying regression writes as follows:

$$Y_{i,t} = \alpha_i + \sum_{k=1}^{K} \beta_{i,k} Y_{i,t-k} + \sum_{k=1}^{K} \gamma_{i,k} X_{i,t-k} + \varepsilon_{i,t}, \qquad (1)$$

where $X_{i,t}$ and $Y_{i,t}$ are the observations of two stationary variables (Political institutions and *gini_disp*) for individual country (i) in year (t). As in Granger (1969, pp. 424–438), the procedure to determine the existence of causality is to test for significant effects of past values of X on the present value of Y. The null hypothesis is therefore defined as:

$$H_0 : \gamma_{i1} = \ldots = \gamma_{i1} = 0 \quad \forall\ i = 1, \ldots, N, \qquad (2)$$

which corresponds to the absence of causality for all individuals in the panel. The test assumes that there can be causality for some individuals but not necessarily for all. The alternative hypothesis thus writes:

$$H_1 : \gamma_{i1} = \ldots = \gamma_{i1} = 0 \quad \forall\ i = 1,\ldots,N_1,$$
$$\gamma_{i1} \neq 0 \quad or \quad \gamma_{iK} \neq 0 \quad \forall\ i = N_1 + 1,\ldots,N, \tag{3}$$

where $N_1 \in (0, N-1)$ is unknown. If $N_1=0$, there is causality for all individuals in the panel. N_1 is strictly smaller than N, otherwise there is no causality for all individuals and H_1 reduces to N_0. Against this backdrop, Dumitrescu & Hurlin (2012, pp. 1450–1460) propose the following procedure: run the N individual regressions implicitly enclosed in (3), perform F-tests of the K linear hypotheses $\beta_{i1}=\ldots=\beta_{iK}=0$ to retrieve the individual Wald statistic Wi, and finally compute the average Wald statistic W[2]:

$$\bar{W} = \frac{1}{N}\sum\nolimits_{i=1}^{N} W_i. \tag{4}$$

Under the assumption that the Wald statistics Wi are independently and identically distributed across individuals, it can be showed that the standardized statistic Z-bar when $T\rightarrow\infty$ first and then $N\rightarrow\infty$ (sometimes interpreted as 'T should be large relative to N') follows a standard normal distribution:

$$\bar{Z} = \sqrt{\frac{N}{2K}}\left(\bar{W} - K\right) \quad \xrightarrow[T,\,N \to\infty]{d} \left(n\left(0,1\right)\right). \tag{5}$$

Also, for a fixed T dimension with $T>5+3K$, the approximated standardized statistic Z-bar tilde follows a standard normal distribution. The testing procedure of the null hypothesis in (3) is finally based on Z-bar and Z-bar tilde. If these are larger than the standard critical values, then one should reject H_0 and conclude that Granger causality exist. The obtained results were presented in table 6.

The results of the causality tests allow for refuting the hypothesis about a lack of a statistically significant causal relationship between political freedom and the levels of inequalities in disposable income, which gives grounds for accepting an alternative hypothesis assuming the existence of the relationship of this type between the studied values. This results are consistent with the first hypothesis, and confirm the occurrence of negative dependence between the political institutions and disposable inequality levels, i.e. better political institutions settings coexist with the lower levels of disposable income inequality.

Evaluating the differences between the levels of market inequalities and inequalities in disposable income in the countries characterised by various levels of political institutions (cf. charts 3 and 4), it can be observed that the analysed groups displayed similar levels of market income inequalities, whereas some-

[2] See Dumitrescu & Hurlin (2012, p. 1453) for the mathematical definition of *Wi*.

what higher values were observed in the group of free countries, especially in the recent years. The analysis of the levels of inequalities in disposable income shows that their levels in the group of the free countries are considerably lower than in the remaining countries. Consequently, the mean differences between the values of the Gini index for market income and disposable income were significantly higher in the case of the free countries at the level of 15.67%, whereas for the not- or partly free it was 9.18 in the analysed period. These observations confirm the hypothesis which assumes that the differences between the market inequalities and the disposable income inequalities is higher in the post-socialist countries which offer more political freedom than in those countries where political freedom is scarce.

Another confirmation of the existence of a significant difference in the observed levels of inequalities in disposable income between groups of countries characterized by a lower index of political institutions and those with the worse (higher) indices of political freedom are the results of the two-sample Kolmogorov–Smirnov test for equality of distribution functions for studied subgroups (see table 7). The first line tests the hypothesis that *gini_disp* for free countries is smaller than for group of not or partly free, second test the opposite assumption and third the assumption that the two distributions are equal.

The conducted tests allow for the corroboration of the hypothesis about the statistically significant difference between the levels of inequalities in disposable income in the observed groups of countries. The analysis indicates that the mean differences between the market inequalities and inequalities in disposable income — with the comparable levels of the market inequalities in both groups of countries — are higher in the case of the countries regarded as free. This test tends to support the second hypothesis, which state that the differences between market and disposable income inequalities are grater in case of countries that offer greater political freedom, than in case of partly or not free countries.

5. Conclusion

The objective of this study was a theoretical — empirical analysis of the relationship between political institutions and income inequalities in post-socialist countries. The literature includes the opinion that political freedom may be conducive to inequalities, but also the opposite view is represented. According to the presented Acemoglu's and Robinson's (2014) model, political freedom, as an inclusive institution, contributes to the reduction of inequalities in income distribution. In the recent years, a growing number of empirical analyses have confirmed the existence of a negative correlation between the scope of political freedom and the level of inequalities. Nevertheless, the experience of the post-socialist countries may be seen as a challenge to this thesis, as during the transformation period they experienced both the growth in political freedom and inequalities.

In this study two research hypotheses were subject to verification. One of them assumes the existence of a negative relationship between political freedom and inequalities observed in post-socialist countries. The other hypothesis claims that the difference between market inequalities and the inequalities in the disposable income is higher in the post-socialist countries which offer more political freedom than in those where political freedom is scarce.

These hypotheses were verified through the statistical verification of the relationship between the measures of inequalities and political freedom, as well as by means of the Granger causality test and the two-sample Kolmogorov–Smirnov test for equality of distribution. The conducted research allowed for the acceptance of the hypothesis assuming the negative correlation between political freedom and inequalities in post-socialist countries. However, it must be emphasised that this relationship was observed exclusively in the case of inequalities in disposable income. The study also corroborated the hypothesis claiming that the difference between market inequalities and inequalities in disposable income is higher in the post-socialist countries with greater political freedom than in those where political freedom is scarce.

The obtained results can be also seen as a confirmation of the relations described by Acemoglu at al. (2005, pp. 385–472). The post-socialist countries which managed to create more inclusive political institutions experience lower inequalities in the distribution of disposable income.

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Appendix

Table 1.
Market inequalities in post-socialist countries in the period 1992–2003

Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Armenia	46.6	47.8	49.1	50.3	51.6	52.2	52.7	53.1	52.5	51.9	51.1	51.0
Belarus	30.3	30.5	30.7	31.0	31.3	31.6	32.0	32.2	32.4	32.3	32.2	32.1
Bulgaria	34.1	34.2	34.3	34.5	34.6	34.6	34.6	34.5	34.6	34.7	34.7	34.8
Croatia	42.9	43.0	43.0	43.1	43.1	43.2	43.2	43.2	43.2	43.3	43.3	43.4
Czech Republic	40.1	40.6	41.4	42.2	43.0	43.5	43.9	44.4	44.9	45.4	46.0	46.0
Estonia	45.7	46.5	47.1	47.7	48.0	48.6	49.1	49.6	50.1	49.8	49.6	49.5
Georgia	44.7	45.3	45.8	46.3	46.8	47.4	47.9	48.1	48.3	48.5	48.7	48.9
Hungary	49.8	50.8	51.8	52.0	52.2	52.3	52.4	52.5	52.9	53.3	53.8	54.5
Kazakhstan	36.7	37.0	37.2	37.5	37.8	37.8	37.8	37.8	37.9	37.9	37.5	37.1
Kyrgyzstan	42.7	44.1	45.2	45.6	46.0	46.1	45.6	44.7	43.7	42.8	42.2	42.1
Latvia	41.2	41.6	42.1	42.7	43.2	43.7	44.3	44.8	45.2	45.7	46.2	46.7
Lithuania	45.7	46.4	47.0	47.4	47.8	48.1	48.4	48.7	49.0	49.3	49.5	49.8
Macedonia	46.0	49.7	52.7	52.9	53.2	53.4	53.7	54.0	54.3	54.7	55.0	55.3
Moldova	54.3	54.6	54.9	55.3	55.6	55.9	56.2	56.4	56.5	56.6	56.7	56.6
Poland	42.7	45.6	48.4	51.7	50.3	49.9	49.7	49.6	50.2	50.9	51.6	52.3
Romania	33.7	34.9	36.1	37.4	37.5	37.6	38.3	38.9	39.5	40.2	40.8	41.3
Russia	44.4	46.3	47.7	48.7	49.4	49.4	49.6	49.9	50.4	50.0	49.6	49.6
Slovakia	40.1	40.4	41.2	42.0	42.8	43.1	43.4	43.6	43.9	44.2	44.4	44.6
Slovenia	37.2	37.4	37.3	37.3	37.2	37.0	37.2	37.4	37.6	37.8	38.1	38.7
Tajikistan	37.5	37.7	37.9	38.0	38.2	38.3	38.5	38.6	38.5	38.4	38.4	38.3
Ukraine	23.1	24.9	26.7	28.5	29.1	29.1	29.0	29.3	29.6	29.8	29.9	29.9

Source: Solt (2018).

Table 2.
Market inequalities in post-socialist countries in the period 2004–2015

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Armenia	50.7	50.1	49.4	48.8	48.1	47.8	47.6	47.3	48.0	48.5	48.9	49.2
Belarus	31.9	31.9	32.1	32.1	32.1	32.2	32.2	32.2	32.3	32.2	32.2	32.2
Bulgaria	34.8	34.8	34.8	34.9	34.9	34.9	35.1	35.1	35.2	35.3	35.4	35.4
Croatia	43.5	43.6	43.7	43.8	44.0	44.2	44.4	44.6	44.7	44.8	44.9	44.9
Czech Republic	46.0	45.7	45.3	44.9	44.8	44.8	44.9	44.9	45.1	45.4	45.3	45.3
Estonia	49.2	48.4	47.6	46.6	46.8	47.3	48.0	48.4	49.0	49.8	49.6	49.3
Georgia	49.1	49.5	49.8	50.2	50.6	51.1	51.7	50.9	50.1	49.3	49.1	49.0
Hungary	55.0	55.3	56.4	57.5	58.1	59.0	59.3	59.7	60.2	60.3	60.3	60.3
Kazakhstan	36.6	36.1	35.6	35.1	34.7	34.2	33.8	33.5	33.2	33.0	32.8	32.8
Kyrgyzstan	42.6	42.9	42.9	42.6	42.1	41.6	41.3	41.1	41.1	41.2	41.3	41.3
Latvia	47.1	47.4	47.6	47.8	48.0	48.0	48.1	48.1	48.1	48.1	48.0	48.0
Lithuania	50.2	50.2	50.0	50.3	50.9	51.4	51.6	51.0	51.2	51.3	51.8	51.9
Macedonia	55.6	55.8	56.1	56.3	56.5	56.7	56.9	56.9	57.0	57.0	57.1	57.1
Moldova	56.6	56.7	56.6	56.6	56.4	56.3	56.1	55.9	55.8	55.6	55.5	55.5
Poland	52.9	52.3	51.4	50.5	50.0	49.6	49.1	49.3	49.6	50.2	49.7	49.4
Romania	41.8	42.2	42.5	42.7	42.6	42.6	42.6	42.6	42.7	42.8	43.0	43.0
Russia	49.4	49.0	49.0	48.9	49.0	48.6	48.8	48.9	49.1	49.2	49.2	49.2
Slovakia	44.7	44.1	43.1	42.3	42.3	42.5	42.6	42.3	42.1	42.1	41.7	41.6
Slovenia	39.4	39.8	39.9	40.0	40.4	41.1	41.8	42.6	43.7	43.4	43.2	43.1
Tajikistan	38.1	37.9	37.8	37.6	37.4	37.2	37.1	37.0	36.9	36.9	37.0	37.1
Ukraine	29.8	29.5	29.1	28.4	28.0	27.8	28.0	28.1	28.2	28.3	28.4	28.4

Source: Solt (2018).

Table 3.
Political freedom in post-socialist countries in the period 1992–2003

Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Armenia	5.0	3.5	3.5	3.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0
Belarus	4.0	3.5	4.5	4.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Bulgaria	2.5	2.5	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.0	1.5
Croatia	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.5	2.0	2.0
Czech Republic	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Estonia	2.5	3.0	2.5	2.5	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Georgia	5.5	4.5	5.0	5.0	4.5	4.0	3.5	3.5	3.5	4.0	4.0	4.0
Hungary	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Kazakhstan	4.5	5.0	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Kyrgyzstan	4.5	3.0	4.0	3.5	4.0	4.0	4.0	5.0	5.0	5.5	5.5	5.5
Latvia	2.5	3.0	3.0	2.5	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5
Lithuania	2.5	2.5	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Macedonia	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.0	3.0	3.5	4.0	3.0
Moldova	4.5	5.0	5.0	4.0	4.0	3.5	3.5	3.0	3.0	3.0	3.0	3.5
Poland	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Romania	5.0	4.0	4.0	3.5	3.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Russia	3.0	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.5	5.0	5.0	5.0
Slovakia	2.0	2.0	3.5	2.5	2.5	3.0	3.0	2.0	1.5	1.5	1.5	1.5
Slovenia	2.5	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.0
Tajikistan	5.0	6.0	7.0	7.0	7.0	7.0	6.0	6.0	6.0	6.0	6.0	5.5
Ukraine	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0

Source: Solt (2018).

Table 4.
Political freedom in post-socialist countries in the period 2004–2015

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Armenia	4.0	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	4.5	4.5	4.5
Belarus	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Bulgaria	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Croatia	2.0	2.0	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.5
Czech Republic	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Estonia	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Georgia	4.0	3.5	3.0	3.0	4.0	4.0	4.0	3.5	3.5	3.0	3.0	3.0
Hungary	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	2.0
Kazakhstan	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Kyrgyzstan	5.5	5.5	4.5	4.5	4.5	4.5	5.5	5.0	5.0	5.0	5.0	5.0
Latvia	1.5	1.5	1.0	1.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0
Lithuania	1.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Macedonia	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5
Moldova	3.5	3.5	3.5	3.5	3.5	4.0	3.5	3.0	3.0	3.0	3.0	3.0
Poland	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Romania	2.0	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Russia	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0
Slovakia	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Slovenia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tajikistan	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0
Ukraine	4.0	3.5	2.5	2.5	2.5	2.5	2.5	3.0	3.5	3.5	3.5	3.0

Source: Solt (2018).

Table 5.
Descriptive statistics: political institutions and inequality measures in post-socialist countries

Specification	Statistic	*FH_PR*	*FH_CL*	*FH_A*	*gini_disp*	*gini_mkt*	Countries
free (UE members)	mean	1.52	1.91	1.71	29.28	44.95	free: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia
	standard deviation	0.80	0.79	0.74	3.82	5.83	
	minimum	1.00	1.00	1.00	19.10	33.70	
	maximum	5.00	5.00	5.00	36.30	60.30	
	variance	0.64	0.63	0.55	14.56	34.00	
	skewness	1.81	0.98	1.61	−0.21	0.15	
	kurtosis	6.22	4.29	6.02	2.11	2.92	
partly and not free (non UE members)	mean	4.63	4.34	4.49	34.31	43.49	not or partly free: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Macedonia, Moldova, Russia, Tajikistan, Ukraine
	standard deviation	1.36	1.05	1.15	6.17	9.28	
	minimum	2.00	2.00	2.5	22.90	23.10	
	maximum	7.00	7.00	7.00	43.70	57.10	
	variance	1.84	1.10	1.31	38.06	86.05	
	skewness	0.03	0.13	0.19	−0.32	−0.20	
	kurtosis	1.71	2.63	1.90	2.13	1.77	
total	mean	3.00	3.07	3.03	31.67	44.25	
	standard deviation	1.91	1.53	1.68	5.66	7.69	
	minimum	1.00	1.00	1.00	19.10	23.10	
	maximum	7.00	7.00	7.00	43.70	60.30	
	variance	3.64	2.33	2.84	32.02	59.19	
	skewness	0.53	0.38	0.49	0.26	−0.26	
	kurtosis	1.95	2.12	2.01	2.37	2.41	

Source: Own elaboration based on Solt (2018) and Freedom House (2018).

Table 6.
Political institutions and disposable income inequalities: causality test

Dumitrescu & Hurlin (2012, pp. 1450–1460) Granger non-causality test results:
Lag order: 1
W-bar=5.9710
Z-bar=16.1080 (p-value=0.0000****)
Z-bar tilde=13.0062 (p-value=0.0000***)
H_0: *FH_A* does not Granger-cause *gini_disp*.
H_1: *FH_A* does Granger-cause *gini_disp* for at least one panel var(id).

Note:

Causality tests were carried out (based on AIC criterion) for lags of 1 (t–1). The cases in which the null hypothesis was rejected (i.e. the causative relationship in Granger's sense was confirmed) at the levels of significance 10%, 5%, and 1% were marked with *, **, and ***, respectively.

Source: Own elaboration.

Table 7.
Two-sample Kolmogorov–Smirnov test for disposable inequality values

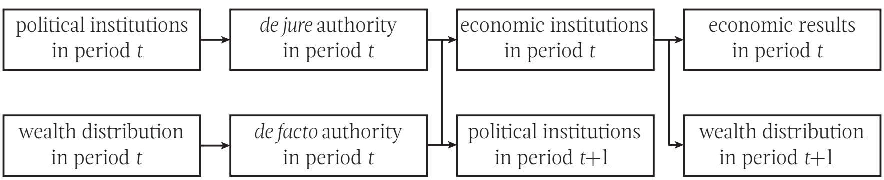
Tested hipotesis	*D*	p-value	Decision
gini_disp values for free countries group are smaller than for not or partly free	0.0205	0.900	fail to reject, accepted
gini_disp values for free countries group are higher than for not or partly free	–0.4697	0.009***	rejected
combined K–S, the two distributions are equal	0.497	0.000***	rejected

Note:

The cases in which the null hypothesis was rejected at the levels of significance 10%, 5%, and 1% were marked with *, **, and ***, respectively.

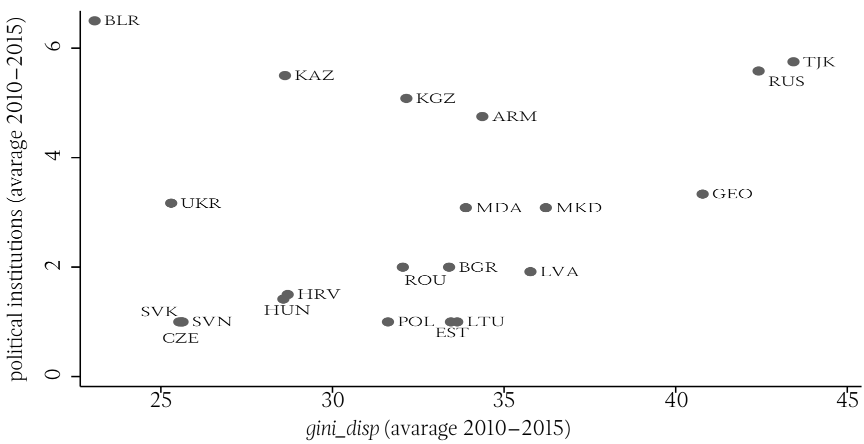
Source: Own elaboration.

Scheme 1.
Political institutions vs. economic inequalities



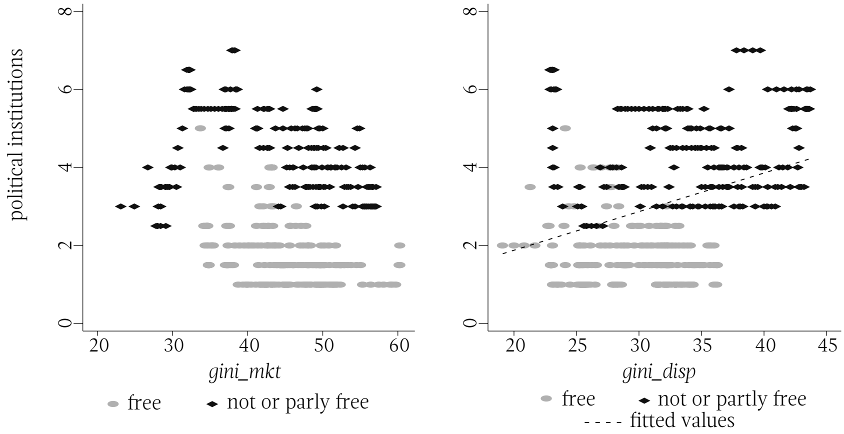
Source: Own preparation based on Acemoglu et al. (2005, p. 392).

Chart 1.
Political freedom and inequalities in post-socialist countries



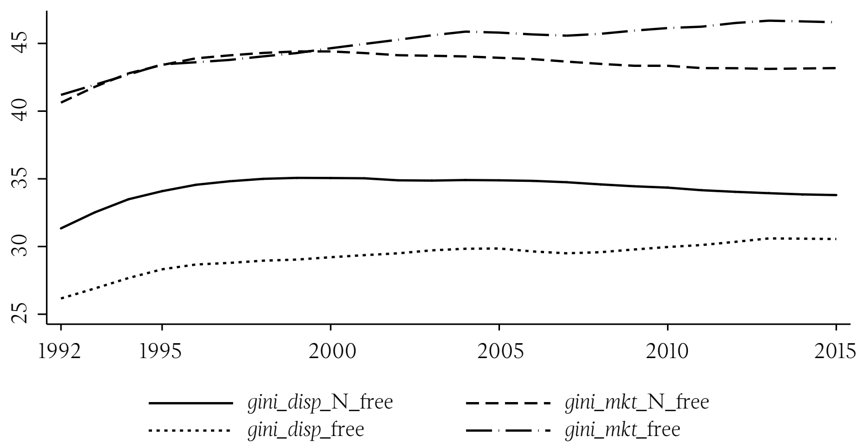
Source: Own elaboration based on Solt (2018) and Freedom House (2018).

Chart 2.
Political freedom and inequalities in post-socialist countries



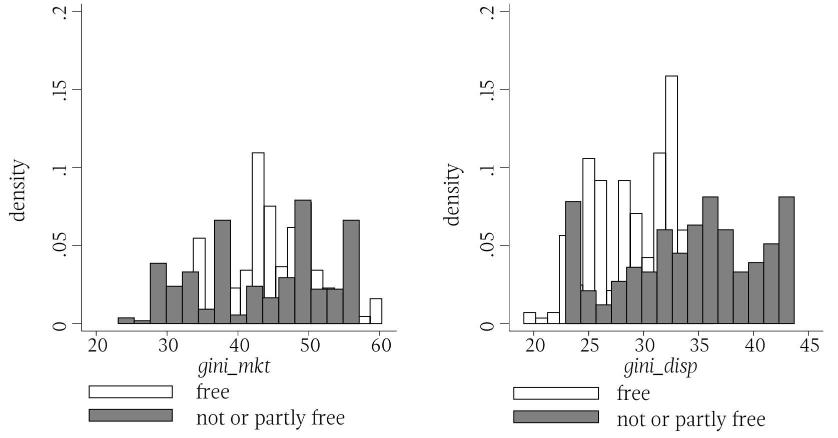
Source: Own elaboration based on Solt (2018) and Freedom House (2018).

Chart 3.
Gini index for market and disposable incomes in post-socialist countries



Source: Own elaboration based on Solt (2018).

Chart 4.
Differences in Gini index for market and disposable incomes



Source: Own elaboration based on Solt (2018).