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Electoral Systems and Income Inequality: A Tale of Political Equality*

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Abstract

Political economy literature has so far failed to offer a consensus on the effect of political institutions such as regime type (democracy *vs.* autocracy) and electoral systems (majoritarian *vs.* proportional representation) on within-country income inequality. Beyond the inequality effects of these *de jure* political institutions, this paper finds robust evidence that *de facto* distribution of political power crucially matters to income inequality. Based on a panel database of 121 countries for the period from 1960 to 2007, the results consistently associate even distributions of political power across socio-economic groups with lower levels of income inequality. The scale of this effect hinges upon the proportionality of electoral systems. However, regime type and electoral system are not consistently associated with a significant impact on income inequality.

1 Introduction

This paper looks at the distribution of political and economic power among citizens within countries. This research is motivated by the rising levels of income inequality, specifically in rich democracies, over the last decades. It is facilitated by the current availability of data on both income inequality and political equality across countries and time periods (Milanovic, 2000; Verba and Orren, 1985). Although scholars differ on how to define and measure economic inequality, they share a common concern about inequality which is intrinsically linked to social justice and fairness. Further, any discussion on the cause and consequences of inequality should, as stated in Bonica, McCarty, Poole and Rosenthal (2013), include political and public policy considerations. In fact, the link between political institutions and income inequality is at the core of democratic theory and political economy (Przeworski, 2010).

At first glance, democratic regimes might be expected to be more likely to implement inequality-correcting policies and should thus be associated with lower levels of income inequality¹. Against this prior, empirical evidence shows that democratic governments coexist quite blithely with rising levels of income inequality. The underlying arguments in the literature stress that societies are divided along multifaceted cleavages that go beyond economic distribution (Roemer, 2009; Scheve and Stasavage, 2017). Another reason underlying rising inequality in democracies is political capture by an elite through either *de jure* or *de facto* political institutions (Acemoglu, Naidu, Restrepo and Robinson, 2015). Yet empirical literature on democracy and inequality seems far from reaching a consensus².

One strand of political economy literature uses variation within democracies to study the inequality consequences of electoral systems, which are usually divided into majoritarian systems and proportional representation systems (Lijphart, 2012). Austen-Smith (2000) observes that proportional representation systems, usually characterized by more than two parties, exhibit higher tax rates and flatter income distribution than the typical two-party majoritarian electoral systems. Empirical research on these mechanisms tends to associate more proportional electoral systems with lower levels of within-country income inequality (Birchfield and Crepaz, 1998; Verardi, 2005). Nevertheless, the literature suggests a need for more complex specifications to give sound empirical leverage to the link between electoral systems and income inequality.

This paper argues that *de facto* distribution of political power might -at the very least- distort the impact of *de jure* political institutions (e.g. regime type and electoral systems)

¹The workhorse model of democracy-inequality literature is provided in Meltzer and Richard (1981), which has been widely challenged both by theoretical and empirical scholarship (Benabou, 2000; Milanovic, 2000)

²Empirical research associates democracy with either a negligible or increasing effects on income inequality (Dreher and Gaston, 2008; Scheve and Stasavage, 2009; Acemoglu et al., 2015)

on inequality. The distribution of political power across socio-economic positions, i.e. political equality, refers to the extent to which members of a polity possess equal political power (Pemstein, Marquardt, Tzelgov, Wang and Miri, 2015). Policy outcomes, and thus inequality, might crucially depend on the distribution of power (Acemoglu et al., 2015). By studying political equality we test whether democratic institutions fail to implement inequality-correcting policies due to political capture by an elite (e.g. economic elite). Existing empirical analyses are silent about the role of political equality on income inequality, mainly due to the complexity of measuring the phenomenon (Verba and Orren, 1985; Bartels, 2017). This paper adds to the literature by employing a novel measure of political equality taken from the Varieties of Democracy (V-Dem) Database. Although they have similar roots, democracy -as a political regime type- and political equality are in fact two separate concepts. As I argue here, the difference between them stems from the *de jure* nature of the former and the *de facto* nature of the latter. Descriptively, the data on political equality employed here varies substantially across democracies. This suggests that not all democracies perfectly represent individuals from all socio-economic positions, which is a recurrent claim in the field (Gilens and Page, 2014; Bartels, 2009; Houle, 2018).

The aim of this paper is to test whether the interplay between *de jure* political institutions (e.g. democracy and electoral systems) and the *de facto* distribution of political power affects within-country income inequality. More precisely, I surmise that the effect of electoral systems on income inequality hinges upon political equality. To estimate this relationship, I specify fixed-effects interactive models using a panel of 121 countries for the period from 1960 to 2007. The main results suggest that increasing political equality reduces income inequality. This effect is greater in majoritarian electoral systems than in proportional representation systems. The estimates do not associate political regimes and electoral systems with significant effects on inequality, although more proportional parliaments may reduce inequality in advanced economies.

The rest of the paper is structured as follows. Section 2 presents the hypothesis. Section 3 explains the data and empirical strategy. Section 4 shows the main findings and Section 5 checks the sensitivity of the results. Section 6 concludes.

2 Stylized facts and hypothesis

The prevailing wisdom among scholars entails strong stylized facts about the effects of electoral systems on the economy at large, and on redistribution and inequality in particular. This body of research speaks to the sensitivity of governments to cater to different groups in the electorate, which may in turn lead to different levels of income inequality. The features of electoral systems have been studied for instance on the basis of geographic concentration (Rickard, 2012) and strength of lobbying activities (Naoi and

Krauss, 2009). Other inequality effects of electoral systems have been established on the basis of trade-oriented economies (Kono, 2009), the political representation of minorities (Norris et al., 2004), and left *vs.* right leaning of governments (Iversen and Soskice, 2006). Overall, the evidence tends to show that proportional representation systems have greater redistribution and public spending than majoritarian systems (Persson and Tabellini, 2004; Persson, Roland, Tabellini et al., 2007; Lizzeri and Persico, 2001). It follows that proportional systems should be associated with lower income inequality.

Verardi (2005) focuses on the effect of district magnitude of electoral systems on income inequality. Using data on 28 countries and a four-year time span, he finds that when the degree of proportionality increases, income inequality decreases. Along similar lines, Birchfield and Crepaz (1998) considers the larger number of effective parties under proportional representation than in majoritarian systems to study the link between electoral systems and income inequality. Using data on 18 countries at two points in time, they find that proportional representation systems (majoritarian systems) are associated with lower (higher) income inequality.

Nonetheless, policy outcomes and inequality depend not only on *de jure* but also on *de facto* political institutions (Acemoglu et al., 2015). This argument is theoretically modelled by Acemoglu and Robinson (2008), who show that changes in *de jure* political institutions (e.g. electoral systems) create incentives for former or new elites to invest in *de facto* political power to offset those changes.

“De facto power is often essential for the determination of economic policies and the distribution of economic resources, but it is not allocated by institutions; rather, it is possessed by groups as a result of their wealth, weapons, or ability to solve the collective action problem. A change in political institutions that modifies the distribution of de jure power need not lead to a change in equilibrium economic institutions if it is associated with an offsetting change in the distribution of de facto political power (e.g., in the form of bribery, the capture of political parties, or use of paramilitaries)”. (Ibid., 2008: 268)

Here, I hypothesize that whatever effect changes between proportional and majoritarian systems may exert on income inequality, it must be contingent upon the distribution of political power. In a sense, the current paper may serve as an empirical test for the theoretical model of Acemoglu and Robinson. I estimate the joint effect of changes in electoral systems (as a *de jure* political institution) and political equality (as a *de facto* political institution) on within-country income inequality. The data coverage used and the complexity of the mechanism proposed here are intended to supplement previous approaches to examine the effects that electoral systems in particular, and political institutions at large, exert on income inequality.

3 Data and empirical analysis

I estimate combined cross-country time-series regressions using data for 121 countries over the period from 1960 to 2007. The dependent variable is within-country household gross income inequality, also known as market income inequality, which refers to income inequality before taxes and transfers. Gross income inequality is measured by the Gini coefficient taken from the version 5.1 of the Standardized World Income Inequality Database (SWIID). The Gini coefficients are provided in percentage terms, ranging theoretically from 0 (perfectly equal income distribution) to 100 (one household possesses all the income in the country). The SWIID methodology uses multiple imputations to extend the UNU-WIDER homogeneous inequality series for missing data (Solt, 2016).

The primary goal of the SWIID is to meet the needs of cross-national comparisons, enabling scholars to overcome the well-known limitations regarding country and time coverage, harmonization of definitions, and other shortcomings. The SWIID also provides the Gini net coefficient of income inequality (post-tax, post-transfer), and measures of absolute redistribution (market-income inequality minus net-income inequality) and relative redistribution (market-income inequality minus net-income inequality, divided by market-income inequality). The data on these alternative measures of inequality and redistribution are used as dependent variables in subsequent Sections to check the sensitivity of the main results.

The imputation model employed by Solt (2016) provides a substantial data coverage in terms of countries and time periods. However, it comes at the cost of potential bias and precisions issues (Jenkins, 2015). Hence, I check the external validity of the main results by using the World Bank All the Ginis Database (Milanovic, 2014) as an alternative data source on income inequality³.

I propose the following interactive fixed-effects model to estimate the effects of political equality, electoral systems and the interaction between them on the distribution of income.

$$\begin{aligned} Y_{ct} &= \beta_0 + \beta_1 PolEq_{c,t-1} + \beta_2 PR_{c,t-1} + \beta_3 PolEq_{c,t-1} * PR_{c,t-1} + \alpha X_{c,t-1} + u_{ct} \\ u_{ct} &= \delta_c + \gamma_t + \epsilon_{ct} \\ c &= \text{country}; t = \text{year} \end{aligned} \tag{1}$$

where the dependent variable Y_{ct} is gross Gini in logarithms, using SWIID unless otherwise stated, in country c in year t . The focal explanatory variables are political equality ($PolEq$) and proportional representation (PR) in year $t - 1$. $X_{c,t-1}$ stands for a set of control variables in year $t - 1$, and δ_c and γ_t are country and time fixed-effects respectively. All the models include clustered standard errors at country level to accurately account for heteroskedasticity and autocorrelation. Overall, this specification aims to

³I also used the University of Texas Inequality Project (UTIP) data on household income inequality, which are not included here to save space but are available upon request.

correct previous research by controlling for country fixed-effects, since its omission might give false results due to omitted variable bias, as noted in Acemoglu et al. (2015). The data sources, sample of countries and summary statistics are relegated to Tables ?? and A1 in the Appendix.

A note of caution should be struck regarding reverse causality issues. Political institutions are able to profoundly shape the economy through policy platforms, but economic actors have a massive impact on the workings of political authority (Hacker and Pierson, 2010). To alleviate this concern, all the independent variables are one period lagged. Section 5.4 tackles the issue of reverse causality in detail.

3.1 Independent variables

3.1.1 Electoral systems

Electoral systems are measured by means of a dichotomous variable which is set to one for proportional representation systems (PR, hereafter) and zero otherwise (majoritarian or mixed systems), taken from ? database. During the period considered in the estimations (1960-2007), the countries in the database underwent 29 electoral changes, as shown in Table A3 in the Appendix.

Figure 1: Income Inequality by Electoral System



Figure 1 shows average gross and net Gini coefficients for PR and non-PR systems for 1960-2015. It shows that income inequality moves similarly under the two types of system. PR countries show slightly higher levels of gross income inequality, but lower levels of net income inequality than non-PR countries. The literature finds that the

banking crisis may be an important driver of income inequality (De Haan and Sturm, 2017). Consequently, I restrict the data to the years prior to the Great Recession and the estimations use data for 1960-2007.

3.1.2 Political equality

The V-Dem project defines political equality as the extent to which political power is evenly distributed according to socio-economic groups of individuals⁴. As the V-Dem codebook states, the conceptualization of political equality is built on the real political power that a group of individuals wield on the basis of whether they a) actively participate in politics (by voting, etc. et al.); b) are involved in civil society organizations; c) secure representation in government; d) are able to set the political agenda; e) influence political decisions; and f) influence the implementation of those decisions (Pemstein et al., 2015).

Country experts are instructed to use a continuous scale from 0 to 4 to assign the distribution of political power among the citizenry based on different socio-economic groups. Starting from 0 (wealthy people enjoy a virtual monopoly on political power), 1 (wealthy people enjoy a dominant hold on political power), 2 (wealthy people have a very strong hold on political power), 3 (wealthy people have more political power than others), and 4 (wealthy people have no more political power than those whose economic status is average or poor). The observation with the lowest level of political equality is that for Ukraine in 2000 (0.094) and the highest is for Sweden in 1983 (3.799).

Figure 2: Political Equality and Income Inequality (2005)



⁴For the purposes of this research, I focus on socio-economic groups. The V-Dem dataset also provides data on the political equality of groups of individuals according to social groups (e.g. caste, ethnicity, language, religion), gender and sexual orientation.

Figure 2 shows the measure of political equality and gross and net Gini coefficients of income inequality. In both cases, higher levels of political equality among socio-economic groups are related to lower levels of income inequality. The appendix also includes scatter plots on political equality and redistribution (Figure A1).

3.1.3 Control variables

X_{ct} in Equation (1) includes a set of control variables. The specification controls for a political regime dummy for democratic regimes in country c in period t taken from Boix, Miller and Rosato (2013) (BMR hereafter). The inclusion of this variable is crucial to disentangle the effect of political equality from the type of political regime. A country is considered democratic if it satisfies conditions for both contestation i) "The executive is directly or indirectly elected in popular elections and is responsible either directly to voters or to a legislature"; ii) "the legislature (or the executive if elected directly) is chosen in free and fair elections", and participation iii) "a majority of adult men has the right to vote" (Boix, Miller and Rosato, 2013). With this definition at hand, the difference between democracy and political equality is straightforward.

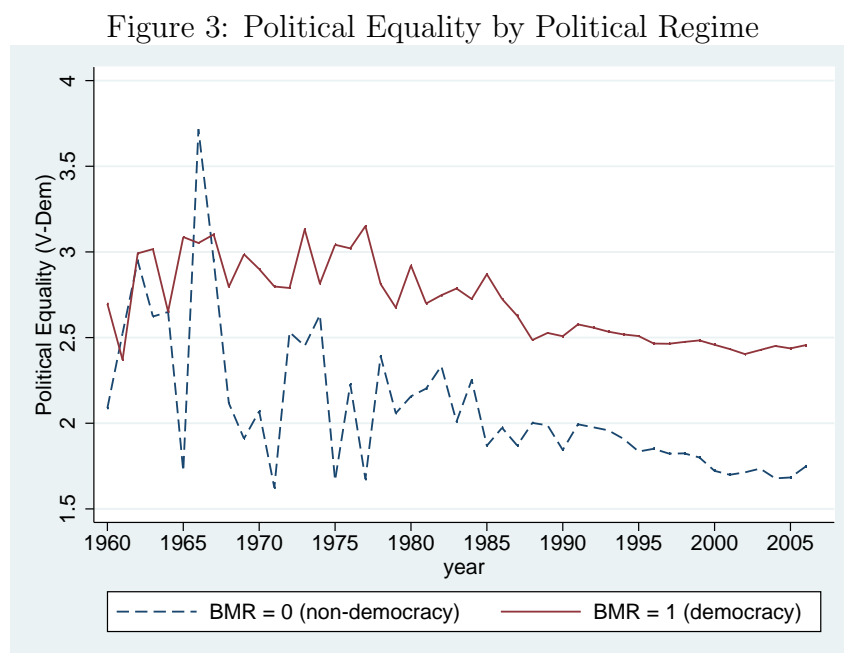


Figure 3 shows that despite the generally higher levels of political equality under democracies (BMR equals 1), both democratic and non-democratic countries show similar trends in political equality from 1960 to 2007. It is worth noting that the minimum figure for political equality in non-democracies is higher than in democracies, and that the variability in political equality is greater for democracies than for non-democracies (see Table A5 in the Appendix).

As highlighted in Acemoglu et al. (2015), the duration of democratic history is neither

tackled nor recognized in the extant literature. Although it lies beyond the scope of the current paper, the link between historical democratic experience and income inequality seems an important feature in isolating the inequality effect of political equality. Thus, in subsequent models I include the number of consecutive years of democratic experience of countries (Age of democracy), also taken from the Boix, Miller and Rosato (2013) database.

Concern must be shown for collinearity issues arising from the relationship between the political institutional variables included in the model. Table A4 in the Appendix shows pair-wise correlations between political equality, regime type (BMR), electoral systems (PR), and duration of democratic experience. None of these correlations posits a problem in the estimations and they further corroborate the split between the concept of democracy and political equality.

The models include the logarithms of level and squared of gross domestic product (GDP) per capita. The so-called inverted-U shaped relationship between economic development and inequality formalized by Kuznets (1955) states that income inequality first increases in the course of economic development, then peaks, and then decreases. However, there is growing evidence to support a U-shape rather than an inverted U-shape relationship between economic development and inequality (Dreher and Gaston, 2008), suggesting that inequality is high for low levels of development, decreases in the course of economic development and increases again in affluent countries. Indeed, Lessmann and Seidel (2017) explore the non-linearity of the GDP-inequality linkage in the context of regional inequality and find a cubic function by which GDP might have an N-shaped effect on inequality. This possibility is also considered in the set of regressions below.

I follow standard literature on income inequality to control for the educational attainment of the population, the dependency ratio, the inflation rate and trade openness. Education is measured by the average number of years of education of the population over 15 year-old, and the dependency ratio is measured by the ratio of people over 65 years-old to the total population. Empirical evidence suggests that increasing human capital is associated with reducing income distribution (Gregorio and Lee, 2002). By contrast, a larger proportion of elderly people is associated with an inequality-enhancing effect (Deaton and Paxson, 1998). For inflation, Bulř (2001) finds a non-linear effect of inflation on income inequality by which reductions from hyperinflation tend to reduce inequality, while very low levels of inflation are associated with a negligible or increasing effect in income inequality. For trade openness, which is included in the models as exports and imports as proportion of GDP, the literature is inconclusive. Indeed, economic globalization might have different effects on developed and developing countries (Dreher and Gaston, 2008).

I seek to supplement previous research on the effect of electoral institutions on income inequality by controlling for additional financial globalization features. The final set of

controls refers to the growing evidence that different components of financial globalization might have opposite effects on income inequality (Asteriou, Dimelis and Moudatsou, 2014). I explore here whether the results are affected by the inclusion of composite measures of economic globalization (using the KOF index of economic globalization), or different components of economic globalization, such as stock market capitalization and foreign direct investment (FDI), as a percentage of GDP in both cases.

4 Results

Table 1 shows the estimates of Equation (1) using the annual gross Gini coefficient as the dependent variable. Generally, the results suggest that increasing political equality, the age of democracy, and financial indicators are determinants of income inequality.

Column 1 of Table 1 shows estimates of a model on PR and political equality without its interaction and a subset of controls that do not consider financial indicators. Political equality is always associated with a statistically significant coefficient, but PR is not associated with a significant effect on income inequality. GDP per capita in levels is generally associated with an inequality-decreasing effect, as in Dreher and Gaston (2008). However, the squared GDP per capita is not associated with a significant effect. These results remain when the KOF index of economic globalization (Column 2) and decomposed indicators of financial internationalization are considered (Column 3). The estimates suggest that the stock market is significant, so the subsequent models include that covariate. The direction of this finding points to an inequality-reducing effect of the stock market, as found in Asteriou, Dimelis and Moudatsou (2014). As regards other control variables, most of the models estimated point to a reducing-effect of educational attainment and an increasing effect of the dependency ratio on income inequality. Both associations are consistent with previous studies. Inflation is associated with an increasing but small effect on inequality.

Column 4 of Table 1 includes the interaction between PR and political equality. The constitutive term of political equality remains statistically significant and PR remains not significant. However, the interaction is significant, meaning that the effect exerted by political equality on income inequality depends on the electoral system used in each country. The positive sign of the interaction means that the inequality-reducing effect associated with political equality is lower when countries are PR. Note that BMR is never associated with a significant role in inequality. Consistently with the model by Acemoglu and Robinson (2008), *de facto* distribution of power has a stronger effect on inequality than changes in *de jure* political institutions. Indeed, based on the results here, changes in electoral institutions (PR and non-PR) are not associated with a significant effect on income inequality. To the contrary, political equality is robustly associated with an inequality-diminishing effect.

Table 1: Baseline and Preferred Models

Dependent variable: SWIID gross Gini (log)						
	(1)	(2)	(3)	(4)	(5)	(6)
L.Political Equality	-0.045** (0.021)	-0.036* (0.019)	-0.039** (0.015)	-0.070*** (0.017)	-0.072*** (0.017)	-0.071*** (0.018)
L.PR	0.032 (0.025)	0.035 (0.027)	0.037 (0.027)	-0.060 (0.045)	-0.056 (0.045)	-0.062 (0.046)
L.Interaction				0.047** (0.019)	0.044** (0.020)	0.048** (0.020)
L.GDPpc (log)	-0.360* (0.208)	-0.372 (0.234)	-0.211 (0.388)	-0.214 (0.384)	-0.209 (0.375)	5.535** (2.773)
L.Squared GDPpc (log)	0.017 (0.012)	0.018 (0.014)	0.014 (0.021)	0.015 (0.021)	0.014 (0.020)	-0.632** (0.315)
L.Cubic GDPpc (log)						0.024** (0.012)
L.BMR	-0.011 (0.019)	-0.012 (0.020)	-0.012 (0.017)	-0.019 (0.016)		
L.Age of democracy					0.000*** (0.000)	0.000** (0.000)
L.Education	-0.010 (0.025)	-0.009 (0.024)	-0.056*** (0.017)	-0.057*** (0.018)	-0.057*** (0.017)	-0.049*** (0.018)
L.Dependency ratio	0.019*** (0.007)	0.020*** (0.007)	0.014* (0.008)	0.016** (0.008)	0.016** (0.008)	0.018** (0.007)
L.Inflation	0.000 (0.000)	0.000* (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000* (0.000)
L.Trade	0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)	-0.001 (0.000)	-0.001 (0.000)	-0.000 (0.000)
L.KOFecon		0.001 (0.001)				
L.Stock market			-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
L.FDI			0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Constant	5.608*** (0.894)	5.545*** (0.992)	4.805** (1.828)	4.828*** (1.806)	4.810*** (1.757)	-12.180 (8.124)

continues on next page

Table 1: Baseline and Preferred Models

Dependent variable: SWIID gross Gini (log)						
	(1)	(2)	(3)	(4)	(5)	(6)
No. of Obs.	2099	2039	1099	1099	1102	1102
No. of Groups	121.000	121.000	75.000	75.000	76.000	76.000
log-likelihood	2759.993	2715.767	1786.341	1796.589	1805.094	1812.373
Within R-squared	0.300	0.297	0.501	0.510	0.512	0.518

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

* $p < .1$, ** $p < .05$, *** $p < .01$

Country-level clustered standard errors in parentheses

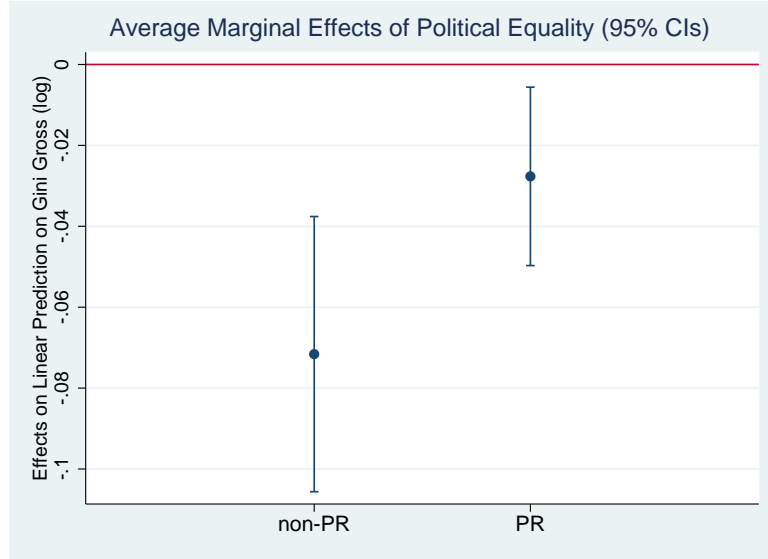
Within-group estimates, year fixed-effects included but not reported.

$Interaction_{ct}$ refers to the joint effect of Political Equality and Proportional Representation.

The preferred model is estimated in Column 5 of Table 1, which controls for the democratic experience rather than the political regime index (BMR). The political regime dummy was not associated with a significant coefficient, but the age of democracy is associated with a positive and significant effect on income inequality. Therefore, this results suggests that the cumulative democratic experience has an inequality-increasing effect.

The inequality-increasing effect associated with greater democratic experience can be interpreted along the lines of the so-called sclerotic hypothesis of Olson (1982). Scholars working in democracy-growth literature find a negative impact of the longer democratic experience on economic growth rates. It is suggested that democratising countries are likely to pursue growth-enhancing reforms in the short-run but may abandon them with the passage of time (Olson, 1982; Przeworski, 1991). Applying the sclerotic hypothesis to the context of income inequality, early stages of the democratization process may have an economic equalization effect that then vanishes over time, resulting in a cumulative negative effect of democratic experience on within-country income inequality.

Figure 4: Marginal Inequality Effects of Political Equality



The point estimates in Column 5 of Table 1 imply that a unit increase in political equality last year decreases the gross Gini coefficient at the current year by about 7.2% under non-PR electoral systems. Figure 4 shows more clearly the marginal effects of a unit increase in political equality conditional upon each type of electoral system. In both cases more political equality is associated with a reducing effect in income inequality, but it is smaller reduced under PR systems. Under PR systems, one additional unit in the political equality score is associated with a reducing income inequality of about 2.8%. Column 6 of Table 1 controls for the cubic function of GDP per capita to study the N-Shape relationship between economic development and income inequality. The estimates seem to provide leverage for the findings in Lessmann and Seidel (2017) in the context of regional inequality. However, the coefficient associated with GDP per capita in levels is remarkably large, so I do not include the N-shape conjecture in subsequent models. Nevertheless, the results for the core variables of this research remain unaltered.

5 Sensitivity checks

This Section follows in the footsteps of the sensitivity checks usually conducted in the existing literature on income inequality. I first use alternative data sources, measures of income inequality and redistribution. Second, I split the sample of countries into OECD and non-OECD countries. Third, I explore whether social or political globalization and features of voter turnout alter the main findings of the current research. Finally, I check the issue of reverse causality. Overall, the finding that political equality has a reducing effect on income inequality is consistent throughout the empirical analyses conducted in this paper.

5.1 Alternative data sources and measures of inequality

Columns 1 and 2 of Table 2 use data on income inequality taken from the All the Ginis database. Column 1 uses the logarithm of gross Gini coefficient as the dependent variable while Column 2 uses the logarithm of net Gini coefficient. The results associate both political equality and changes towards PR systems with reducing effects on income inequality, while the interaction between them remains significant and positive. However, it should be noted that the number of countries included in All the Ginis database, and thus the number of observations in these regressions is remarkably lower than when the SWIID is used.

Column 3 (Table 2) uses the logarithm of net Gini coefficients collected from SWIID as the dependent variable. In this case political equality is associated with a significant role in reducing inequality, but PR and the interaction between them are not significant. Columns 4 and 5 further explore the workings of political equality and redistribution by using as dependent variables the relative and absolute redistribution measures, respectively. *De facto* distribution of political power is associated with lower redistribution at 0.1 and 0.05 levels of significance. However, the interaction between political equality and PR is significant at the 0.05 level only for the case of relative redistribution, suggesting that increasing political equality enhances redistribution provided that the country has a PR system. As for the control variables, the U-shape function of GDP per capita seems to apply in redistribution, while the dependency ratio increases redistribution in both relative and absolute terms. Ultimately, the alternative results provide some empirical clues that political equality might be at the heart of both redistribution and income inequality in electoral democracies.

Table 2: Alternative Data Sources and Measures

Dependent variable: Alternative inequality or redistribution measures					
	WIDER		SWIID		
	(1)	(2)	(3)	(4)	(5)
	gross Gini	net Gini	net Gini	Rel. Redis.	Abs. Redis.
L.Political Equality	-0.137*** (0.045)	-0.158*** (0.053)	-0.045*** (0.015)	-1.624* (0.881)	-1.719** (0.805)
L.PR	-0.385** (0.147)	-0.468** (0.186)	-0.045 (0.045)	-5.668 (4.900)	-2.205 (3.685)
L.Interaction	0.145** (0.054)	0.177** (0.068)	0.021 (0.019)	3.340** (1.596)	1.789 (1.216)
L.GDPpc (log)	1.513**	0.772	0.238	-49.253**	-27.761**

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Table 2: Alternative Data Sources and Measures

Dependent variable: Alternative inequality or redistribution measures					
	WIDER		SWIID		
	(1)	(2)	(3)	(4)	(5)
	gross Gini	net Gini	net Gini	Rel. Redis.	Abs. Redis.
	(0.719)	(1.021)	(0.341)	(21.185)	(13.085)
L.Squared GDPpc (log)	-0.070*	-0.033	-0.013	2.745**	1.549**
	(0.039)	(0.055)	(0.018)	(1.170)	(0.721)
L.Age of democracy	0.001***	0.001***	0.000***	-0.007	-0.001
	(0.000)	(0.000)	(0.000)	(0.005)	(0.003)
L.Education	0.070**	0.055*	-0.044**	-0.813	-0.822
	(0.028)	(0.030)	(0.018)	(1.181)	(0.721)
L.Dependency ratio	0.019*	0.020*	0.002	1.230***	0.622***
	(0.010)	(0.011)	(0.005)	(0.409)	(0.210)
L.Inflation	0.000*	0.000**	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
L.Trade	0.001	0.000	-0.000	-0.022	-0.012
	(0.001)	(0.001)	(0.000)	(0.016)	(0.011)
L.Stock market	0.001***	0.000*	-0.000	-0.024***	-0.014***
	(0.000)	(0.000)	(0.000)	(0.008)	(0.004)
L.FDI	-0.000	0.000	0.001	-0.041	-0.013
	(0.001)	(0.001)	(0.001)	(0.053)	(0.034)
Constant	-4.738	-0.914	2.707*	241.563**	135.927**
	(3.234)	(4.680)	(1.576)	(94.603)	(59.173)
No. of Obs.	353	386	1102	849	849
No. of Groups	46.000	52.000	76.000	51.000	51.000
log-likelihood	438.624	464.092	1878.907	-2035.022	-1568.453
Within R-squared	0.259	0.211	0.383	0.237	0.398

* $p < .1$, ** $p < .05$, *** $p < .01$

Country-level clustered standard errors in parentheses

Within-group estimates, year fixed-effects included but not reported.

$Interaction_{ct}$ refers to the joint effect of Political Equality and Proportional Representation.

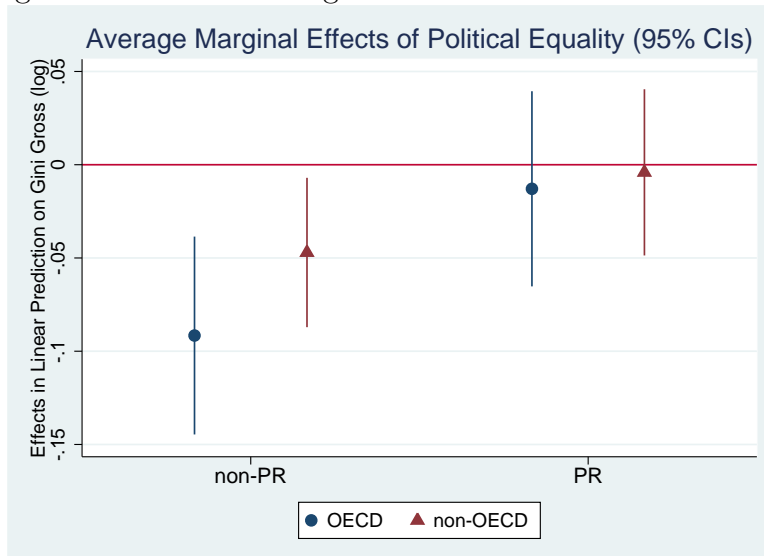
5.2 OECD versus non-OECD economies

Table 3 provides further sensitivity checks on the main results of the paper. Previous research has observed differences in the workings of the democracy-inequality between OECD and non-OECD countries, with the link being found to be stronger in OECD

countries (Dreher and Gaston, 2008). Indeed, my results might serve to clarify this previous evidence.

Columns 1 and 2 (Table 3) use OECD and non-OECD countries separately to run the model in Equation (1). I focus on the results for the marginal effects of political equality under PR and non-PR separately for the two sub-samples, which are shown in Figure 5. The impact of increasing political equality in depressing income inequality seems to be stronger in OECD countries. Consistently with my previous results, the pro-income-equality effect of political equality is lower under PR. The point estimates suggest that in OECD countries increasing a one unit increase in political equality in the preceding year has an impact of -9.1% on income inequality in the current year under non-PR and of -8.1% under PR systems. For non-OECD countries, the effect of political equality on income inequality is lower: -4.7% under non-PR and of -0.4% under PR systems.

Figure 5: Estimates using OECD and non-OECD countries



Note that using the OECD sub-sample, the estimates associate both political equality and PR with a significant, negative effect on income inequality. This suggests that electoral systems play a role in advanced economies. In the case of non-OECD countries, political equality is associated with a significant effect but the impact of PR is not significant. In both country subsets, the interaction between political equality and electoral systems is significant. The results confirm again that interplay between *de jure* and *de facto* political institutions may be an important determinant of within-country income inequality. Furthermore, the split between OECD and non-OECD countries may show that *de jure* institutions work differently depending on the level of economic development of countries. However, the analysis of this triple interplay goes beyond the scope of this paper.

In both sub-samples, increasing democratic experience is associated with increasing levels of income inequality, which provides further leverage for Olson's sclerotic hypothesis

applied to the democracy-inequality link. Nonetheless, the OECD and non-OECD sub-sample show differences in the estimates of other control variables. Education is not associated with a significant equalization effect in advanced economies, which might be driven by the homogeneity of educational attainment across OECD countries. In the non-OECD sub-sample, education is associated with reducing income inequality. Similarly, the proportion of elderly people seems to increase inequality in advanced economies but not in non-OECD countries. This may be related to population ageing in the former group of countries.

Table 3: Sensitivity Checks

Dependent variable: Annual or 5-yr mean SWIID gross Gini (log)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OECD	non-OECD	KOFsoc	KOFpol	Turnout	Non-mand		5-yr mean
L.Political Equality	-0.092*** (0.027)	-0.047** (0.020)	-0.071*** (0.017)	-0.072*** (0.017)	-0.069*** (0.018)	-0.074*** (0.017)		
L5.Political Equality							-0.034** (0.016)	-0.050** (0.020)
L.PR	-0.144** (0.069)	-0.045 (0.043)	-0.058 (0.047)	-0.056 (0.046)	-0.066 (0.046)	-0.059 (0.044)		
L5.PR							0.006 (0.049)	-0.032 (0.050)
L.Interaction	0.079** (0.032)	0.043* (0.025)	0.044** (0.020)	0.045** (0.019)	0.048** (0.020)	0.048** (0.019)		
L5.Interaction							0.009 (0.018)	0.021 (0.020)
L.GDPpc (log)	-0.356	-0.374	-0.149	-0.190	-0.116	-0.174		
L5.GDPpc (log)							-0.722* (0.408)	-0.656* (0.374)
L.Squared GDPpc (log)	(1.187)	(0.871)	(0.431)	(0.381)	(0.359)	(0.343)		
	0.018	0.027	0.011	0.013	0.009	0.012		
	(0.062)	(0.052)	(0.023)	(0.020)	(0.020)	(0.019)		

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Table 3: Sensitivity Checks

Dependent variable: Annual or 5-yr mean SWIID gross Gini (log)							
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
	OECD	non-OECD	KOFsoc	KOFpol	Turnout	Non-mand	5-yr mean
L5.Squared GDPpc (log)							0.044* (0.022)
L.Age of democracy	0.000** (0.000)	0.002** (0.001)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.041* (0.021)
L5.Age of democracy							0.000 (0.000)
L.Education	-0.032 (0.034)	-0.069*** (0.022)	-0.056*** (0.018)	-0.055*** (0.018)	-0.056*** (0.017)	-0.058*** (0.018)	
L5.Education							-0.039** (0.017)
L.Dependency ratio	0.017** (0.007)	-0.015 (0.018)	0.016** (0.008)	0.016** (0.008)	0.016** (0.008)	0.015* (0.008)	0.014** (0.006)
L5.Dependency ratio							0.013** (0.006)
L.Inflation	0.001 (0.001)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000* (0.000)
L5.Inflation							0.000 (0.000)

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Table 3: Sensitivity Checks

Dependent variable: Annual or 5-yr mean SWIID gross Gini (log)							
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
	OECD	non-OECD	KOFsoc	KOFpol	Turnout	Non-mand	5-yr mean
L.Trade	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.000)	-0.000 (0.000)	-0.001 (0.000)	-0.000 (0.000)	
L5.Trade							-0.001* (0.000) -0.001** (0.000)
L.Stock market	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	
L5.Stock market							-0.000** (0.000) -0.000** (0.000)
L.FDI	0.000 (0.001)	0.003 (0.002)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	
L5.FDI							0.000 (0.001) -0.000 (0.002)
L.KOFsoc			-0.001 (0.002)				
L.KOFpol				-0.001 (0.001)			
L.Turnout					-0.001 (0.001)		

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Table 3: Sensitivity Checks

Dependent variable: Annual or 5-yr mean SWIID gross Gini (log)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OECD	non-OECD	KOFsoc	KOFpol	Turnout	Non-mand		5-yr mean
L.Non-compulsory voting						0.018		
						(0.034)		
Constant	5.679	5.348	4.563**	4.736**	4.428***	4.634***	6.956***	6.616***
	(5.726)	(3.722)	(1.945)	(1.798)	(1.667)	(1.596)	(1.850)	(1.671)
N	629	468	1097	1097	1093	1102	1089	302
R^2	0.600	0.337	0.512	0.512	0.510	0.512	0.460	0.474
No. of Groups	34.000	41.000	76.000	76.000	76.000	76.000	75.000	76.000
log-likelihood	983.123	882.837	1796.795	1796.835	1790.821	1805.830	1909.092	529.086
Within R-squared	0.600	0.337	0.512	0.512	0.510	0.512	0.460	0.474

* $p < .1$, ** $p < .05$, *** $p < .01$

Country-level clustered standard errors in parentheses

Within-group estimates, year fixed-effects included but not reported.

$Interaction_{ct}$ refers to the joint effect of Political Equality and Proportional Representation.

Column 7 employs the fifth lag of independent variables.

Column 8 employs 5-yr averages of all variables in non-overlapping periods 1980-2010.

5.3 Voter turnout, social and political globalization

Columns 3-6 in Table 3 expand the set of controls. I first check whether my results hold after including the KOF index of social (Column 3) and political globalization (Column 4). As suggested in Bergh and Nilsson (2010), a purely economic perspective on globalization might be too narrow in analysing distributional effects across countries. They find significant effects of social globalization on net Gini coefficients using SWIID in a panel of 80 countries for 1970-2005. Based on the estimates presented here, none of these covariates is associated with a significant impact on income inequality. Importantly, the main results associated with political equality and its interaction with PR remain the same.

The relationship between inequality and electoral turnout seems to differ across countries. Less developed and highly unequal societies are associated with higher turnouts, while more developed countries are associated with lower turnouts (Stokes, Dunning, Nazareno and Brusco, 2013). The mechanisms behind political participation and inequality might be not fully captured by the measure of political equality. Therefore, Columns 5-6 include respectively voter turnout, taken from Vanhanen and Lundell (2014) and non mandatory voting, taken from the V-Dem database. The results fail to associate turnout features with a significant impact on income inequality, but the main results of the paper remain unaltered.

5.4 Causality issues

The final step of the sensitivity check is to take further issue on reverse causality. Following Acemoglu et al. (2015), Column 7 in Table 3 shows estimates of Equation (1) using the fifth lag of the independent variables rather than one year lag. Notwithstanding that the effect of political equality remains, its interaction with PR is not significantly associated with an income inequality effect. Similar results are found when 5-year averages are used for all variables in non-overlapping periods between 1980 and 2010, as proceed in Dreher and Gaston (2008). These further checks suggest that *de facto* political institutions -such as the distribution of political power- might be a crucial determinant of within-country income inequality, whereas *de jure* political institutions might have a minor impact or none at all.

6 Conclusions

The starting point of this paper is the observation of rising income inequality in established democracies. In theory, democratic governments should be able to correct for rising inequality through the processes of enfranchisement and political competition. In practice, democracy and income inequality have coexisted without undue concern over the

last few decades. Indeed, the literature is still inconclusive on the final effect of political institutions on income inequality. This paper suggests that *de jure* political institutions such as political regimes (democracy *vs.* autocracy) and electoral systems (majoritarian *vs.* proportional systems) play a minor role compared to the *de facto* distribution of political power.

Earlier studies associate more proportional systems with lower levels of income inequality. However, I draw on the theoretical model in Acemoglu and Robinson (2008) to argue that changes towards supposedly pro-equality *de jure* political institutions might be offset if political power is not evenly distributed among the socio-economic groups that make up the electorate. In this paper I show that political equality plays a stronger role than changes in electoral systems, which might serve as an empirical test of Acemoglu and Robinson's theoretical model.

I use the SWIID data on income inequality for a panel data of 121 countries for 1960-2007. I link this data with a measure of political equality taken from the V-Dem database, along with information on electoral systems and political regime type, and other inequality drivers already proposed in the standard literature. My main findings associate political equality with a reducing effect on income inequality. This effect is found to hinge upon electoral systems, which means that political equality tends to exert a stronger effect under non proportional representation systems than in proportional systems. In any case, the impact of greater political equality is associated everywhere with an inequality-diminishing effect. The estimates fail to associate political regime types *per se* with a significant impact on income inequality, although electoral systems are associated with some explanatory power over income inequality in OECD countries.

This paper finds a robust partial and negative correlation between political equality and income inequality that partly depends on the electoral system. Notwithstanding that these results have a tentative causal interpretation under the usual assumptions of fixed-effects panel data models, I cannot deny the possibility of omitted factors driving both political and economic inequality. Likewise, a reverse causation from income inequality to political equality and electoral systems cannot be ruled out (Acemoglu et al., 2015; Scheve and Stasavage, 2017).

Finally, the natural next step to extend this research is to consider whether political equality among social groups, gender and sexual orientations (rather than among socio-economic groups) also plays a role in the within-country income distribution. Additionally, it would be interesting to consider other *de jure* political institutions rather than electoral systems.

References

- Acemoglu, Daron and James A Robinson. 2008. "Persistence of Power, Elites, and Institutions." *American Economic Review* 98(1):267.
- Acemoglu, Daron, Suresh Naidu, Pascual Restrepo and James A Robinson. 2015. Democracy, redistribution, and inequality. In *Handbook of income distribution*. Vol. 2 Elsevier pp. 1885–1966.
- Asteriou, Dimitrios, Sophia Dimelis and Argiro Moudatsou. 2014. "Globalization and income inequality: A panel data econometric approach for the EU 27 countries." *Economic Modelling* 36:592–599.
- Austen-Smith, David. 2000. "Redistributing income under proportional representation." *Journal of Political Economy* 108(6):1235–1269.
- Bartels, Larry M. 2009. *Unequal democracy: The political economy of the new gilded age*. Princeton University Press.
- Bartels, Larry M. 2017. "Political Inequality in Affluent Democracies: The Social Welfare Deficit."
- Benabou, Roland. 2000. "Unequal societies: Income distribution and the social contract." *American Economic Review* pp. 96–129.
- Bergh, Andreas and Therese Nilsson. 2010. "Do liberalization and globalization increase income inequality?" *European Journal of political economy* 26(4):488–505.
- Birchfield, Vicki and Markus ML Crepaz. 1998. "The impact of constitutional structures and collective and competitive veto points on income inequality in industrialized democracies." *European Journal of Political Research* 34(2):175–200.
- Boix, Carles, Michael Miller and Sebastian Rosato. 2013. "A Complete Data Set of Political Regimes, 1800–2007." *Comparative Political Studies* 46(12):1523–1554.
- Bonica, Adam, Nolan McCarty, Keith T Poole and Howard Rosenthal. 2013. "Why hasn't democracy slowed rising inequality?" *Journal of Economic Perspectives* 27(3):103–123.
- Bormann, Nils-Christian and Matt Golder. 2013. "Democratic electoral systems around the world, 1946–2011." *Electoral Studies* 32(2):360–369.
- Bulíř, Aleš. 2001. "Income inequality: does inflation matter?" *IMF Staff papers* 48(1):139–159.
- De Haan, Jakob and Jan-Egbert Sturm. 2017. "Finance and income inequality: A review and new evidence." *European Journal of Political Economy* 50:171–195.

- Deaton, Angus S and Christina H Paxson. 1998. "Aging and inequality in income and health." *The American Economic Review* 88(2):248–253.
- Dreher, Axel and Noel Gaston. 2008. "Has globalization increased inequality?" *Review of International Economics* 16(3):516–536.
- Gilens, Martin and Benjamin I Page. 2014. "Testing theories of American politics: Elites, interest groups, and average citizens." *Perspectives on politics* 12(03):564–581.
- Gregorio, Jose De and Jong-Wha Lee. 2002. "Education and income inequality: new evidence from cross-country data." *Review of income and wealth* 48(3):395–416.
- Gygli, Savina, Florian Haelg and Jan-Egbert Sturm. 2018. "The KOF Globalisation Index–Revisited." *KOF Working Papers* 439.
- Hacker, Jacob S and Paul Pierson. 2010. "Winner-take-all politics: Public policy, political organization, and the precipitous rise of top incomes in the United States." *Politics & Society* 38(2):152–204.
- Houle, Christian. 2018. "Does economic inequality breed political inequality?" *Democratization* pp. 1–19.
- Iversen, Torben and David Soskice. 2006. "Electoral institutions and the politics of coalitions: Why some democracies redistribute more than others." *American Political Science Review* 100(02):165–181.
- Jenkins, Stephen P. 2015. "World income inequality databases: an assessment of WIID and SWIID." *Journal of Economic Inequality* 13(4):629–671.
- Kono, Daniel Yuichi. 2009. "Market structure, electoral institutions, and trade policy." *International Studies Quarterly* 53(4):885–906.
- Kuznets, Simon. 1955. "Economic growth and income inequality." *The American economic review* 45(1):1–28.
- Lessmann, Christian and André Seidel. 2017. "Regional inequality, convergence, and its determinants—A view from outer space." *European Economic Review* 92:110–132.
- Lijphart, Arend. 2012. *Patterns of democracy: Government forms and performance in thirty-six countries*. Yale University Press.
- Lizzeri, Alessandro and Nicola Persico. 2001. "The provision of public goods under alternative electoral incentives." *American Economic Review* pp. 225–239.
- Meltzer, Allan H and Scott F Richard. 1981. "A rational theory of the size of government." *Journal of Political Economy* pp. 914–927.

- Milanovic, Branko. 2000. "The median-voter hypothesis, income inequality, and income redistribution: an empirical test with the required data." *European Journal of Political Economy* 16(3):367–410.
- Milanovic, Branko. 2014. "Description of All the Ginis dataset." *New York: Luxembourg Income Study* .
- Naoi, Megumi and Ellis Krauss. 2009. "Who lobbies whom? Special interest politics under alternative electoral systems." *American Journal of Political Science* 53(4):874–892.
- Norris, Pippa et al. 2004. *Electoral engineering: Voting rules and political behavior*. Cambridge university press.
- Olson, Mancur. 1982. *The rise and decline of nations: Economic growth, stagflation, and economic rigidities*. Yale University Press, New Haven and London.
- Pemstein, Daniel, Kyle L Marquardt, Eitan Tzelgov, Yi-ting Wang and Farhad Miri. 2015. "The V-Dem Measurement Model: Latent Variable Analysis for Cross-National and Cross-Temporal Expert-Coded Data." *V-Dem Working Paper* 21.
- Persson, Torsten, Gerard Roland, Guido Tabellini et al. 2007. "Electoral rules and government spending in parliamentary democracies." *Quarterly Journal of Political Science* 2(2):155–188.
- Persson, Torsten and Guido Tabellini. 2004. "Constitutions and economic policy." *Journal of Economic Perspectives* 18(1):75–98.
- Przeworski, Adam. 1991. *Democracy and the market: Political and economic reforms in Eastern Europe and Latin America*. Cambridge University Press.
- Przeworski, Adam. 2010. *Democracy and the limits of self-government*. Vol. 9 Cambridge University Press.
- Rickard, Stephanie J. 2012. "Electoral Systems, Voters' Interests and Geographic Dispersion." *British Journal of Political Science* 42(4):855–877.
- Roemer, John E. 2009. *Political competition: Theory and applications*. Harvard University Press.
- Scheve, Kenneth and David Stasavage. 2009. "Institutions, partisanship, and inequality in the long run." *World Politics* 61(02):215–253.
- Scheve, Kenneth and David Stasavage. 2017. "Wealth Inequality and Democracy." *Annual Review of Political Science* 20:451–468.

- Solt, Frederick. 2016. "The standardized world income inequality database." *Social Science Quarterly* .
- Stokes, Susan C, Thad Dunning, Marcelo Nazareno and Valeria Brusco. 2013. *Brokers, voters, and clientelism: The puzzle of distributive politics*. Cambridge University Press.
- Vanhanen, Tatu and Krister Lundell. 2014. "Measures of Democracy 1810-2012, version 6.0." *Finish Social Science Data Archive, Tampere (FI)* 13.
- Verardi, Vincenzo. 2005. "Electoral systems and income inequality." *Economics Letters* 86(1):7–12.
- Verba, Sidney and Gary R Orren. 1985. *Equality in America: The view from the top*. Harvard University Press.

Appendix

Table A1: Data Sources

Variable	Description	Data Source
Political Equality	Continuous measure assessing whether political power is distributed independently of socio-economic position, ranging from 0 to 4.	V-Dem database
PR	Dichotomous variable with 1 indicating proportional representation system and 0 otherwise.	Bormann and Golder (2013)
GDPpc (log)	Natural logarithm of gross domestic product (GDP) per capita, in constant 2010 US dollars	World Bank
BMR	Dichotomous measure of democracy on the basis of contestation -i) the executive is directly or indirectly elected in popular elections and is responsible either directly to voters or to a legislature; ii) the legislature (or the executive if elected directly) is chosen in free and fair elections, and participation -iii) a majority of adult men has the right to vote.	Boix, Miller and Rosato (2013)
Dependency ratio	Age dependency ratio is the ratio of dependants (aged under 15 or over 64) to the working-age population (those aged 15-64). Percentage.	World Bank
Inflation	Annual inflation rate	V-Dem & Clio Infra (clio-infra.eu)
Trade	Exports and imports as a percentage of GDP	World Bank
Age of democracy	Consecutive years of democratic regime type	Boix, Miller and Rosato (2013)
Education	Average years of education among citizens older than 15.	V-Dem database
Stock market	Domestic and foreign shares traded multiplied by their respective matching prices as a percentage of GDP. Data are end of year values.	World Bank

Table A2: Data Sources Additional Covariates

Variable	Description	Data Source
FDI	Net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, as a percentage of GDP.	World Bank
KOFecon	KOF index of Economic Globalization	Gygli, Haelg and Sturm (2018)
KOFsoc	KOF index of Social Globalization	Gygli, Haelg and Sturm (2018)
KOFpol	KOF index of Political Globalization	Gygli, Haelg and Sturm (2018)
Turnout	Percentage of the total population who voted in the same election	Vanhanen and Lundell (2014)
No compulsory voting	Dichotomous variable equal to 0 for compulsory voting for those eligible to vote in national elections and 1 otherwise.	V-Dem database

Table A3: Changes in Electoral Systems

Algeria	1997	Kyrgyz Republic	2007
Bolivia	1997	Madagascar	1998
Bulgaria	1991	Moldova	1994
Bulgaria	2009	Morocco	2002
Bulgaria	2013	Poland	1991
Cameroon	1997	Portugal	1980
Sri Lanka	1989	Romania	2008
Croatia	2000	Sierra Leone	2002
Ecuador	1998	Turkey	1987
Ecuador	2002	Turkey	1995
Greece	2007	Ukraine	2006
Greece	2012	Macedonia FYR	2002
Italy	1994	Russian Federation	2007
Italy	2006	Venezuela RB	1993
Kazakhstan	2007		

Figure A1: Political Equality and Redistribution (2005)

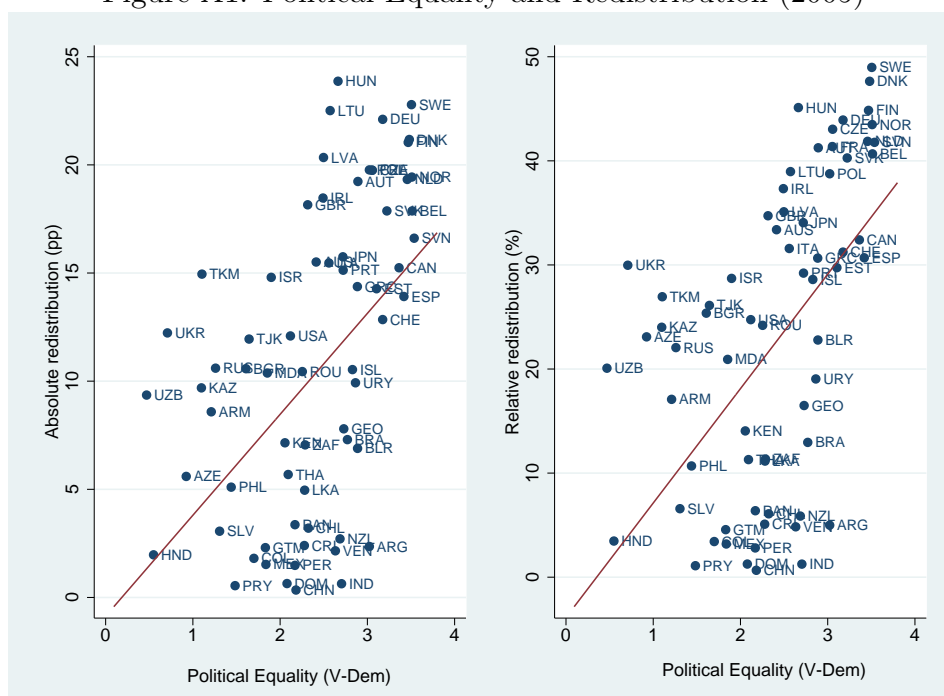


Table A4: Cross-correlation of Political Variables

Variables	PR	Political Equality	Democracy (BMR)
Political Equality	0.160		
Democracy (BMR)	0.337	0.379	
Age of democracy	-0.069	0.241	-0.025

Table A5: Political Equality by Type of Regime

Variable	Mean	Std. Dev.	Min.	Max.
Non-democracies				
Political Equality	1.89	.892	.126	3.726
Democracies				
Political Equality	2.556	.721	.094	3.799