

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

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Abstract

Do electoral institutions have an effect on income inequality? Does political inequality play a role in the potential aftermath of electoral rules on income inequality? This paper provides a Downsian model of political competition in which electoral systems represent differently the individuals' preferences of income inequality. Empirically, I employ a panel data of 118 democracies during 1960-2015, and find that proportional systems might improve income inequality through its interaction with political equality. Unpacking this mechanism and understanding how it works is of crucial importance to the design of pro-equality electoral systems, and democratic institutions at large.

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"If income and wealth are political resources, and if they are distributed unequally, then how can citizens be political equals?"

Robert A. Dahl (1996; 646)

1 Introduction

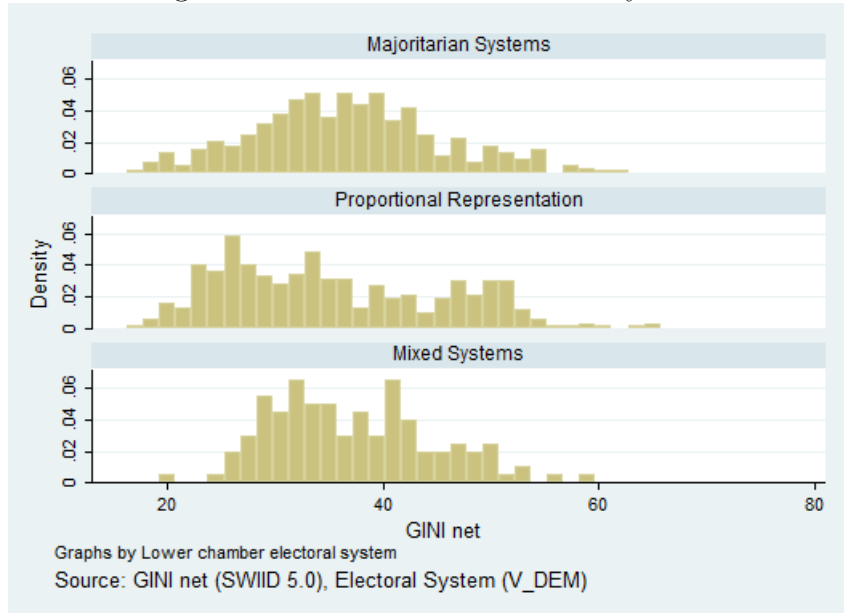
This paper aims at furthering our understanding of how income inequality is generated. To do so, this research surmises a channel through which electoral systems promote an unequal distribution of political power. Consequently, we should expect different levels of economic inequality under alternative systems. This investigation endorses the division of electoral systems in Bormann and Golder (2013), which divides them into three major categories - majoritarian, proportional representation and mixed systems. Additionally, I also highlight the differences of electoral systems in terms of a broader theoretical framework, i.e. majoritarian democracies and consensual democracies, as proposed by the extant literatures on comparative politics and rational choice institutionalism¹.

Rising income inequality has been recently brought at the center of mainstream economics' debate, as the growing scholarship on this topic accounts for. Although scholars and pundits alike differ in their definition and measurement of economic inequality, they share a common concern about inequality, which is intrinsically linked to social justice and fairness. Two great challenges surrounding the study of economic inequality have been recently tackled by economic theory. As suggested in Brady et al. (2016), increasing academic interests in economic inequality has been possible thanks to first the better data, and second the debate sparked by the remarkable increase in income inequality in rich democracies. This rising inequality has proved former models and explanations wrong, and thus academic interest has sprang to solve this conundrum. Do different types of democracies redistribute differently? Do some democracies promote higher levels of income inequality?

Mounting evidence in both theoretical and empirical strands of the political economy literature points to a diverse effect of electoral institutions on policy outcomes. Drawing on

¹See Lijphart (2012) for a full explanation of this particular division of democracies or other recent works Birchfield (2012).

Figure 1: GINI net and Electoral Systems



that, I wonder whether alternative electoral rules² -majoritarian systems versus proportional representation-, have an effect on income inequality. Figure 1 catches a glimpse of a differential distribution of income inequality across electoral systems. The scholarship in the mechanism through which electoral rules -by their precise interplay with decision-making process regarding *inter alia* redistributive, resource allocation or economic policies-, has hitherto shed some light on the bearings of electoral institutions on income inequality. However, there are still some puzzling questions in the literature that I try to answer in what follows.

One central hypothesis that has long been used to understand income inequality and political participation in a wide variety of scenarios, is the Meltzer and Richard (1981)'s median-voter. It states that greater levels of inequality would lead to higher redistribution in democracies. However, the influential works of Milanovic (2000), Ansell and Samuels (2014) or Campante (2011) challenge this view and therefore, promote the academic effort in the field to design new models and hypotheses that would enjoy greater external validity. Other models, such

²Although different, I refer throughout this paper to electoral rules and electoral systems interchangeably, since the main distinction I make about electoral systems is the use of majoritarian rules (aka first-take-the post or winner-takes-all) vs proportional representation rules.

as the Acemoglu-Robinson-Boix³ include micro-assumptions to model how income inequality affects democratizations prospects at the macro-level⁴.

The goal of this paper is much more modest. I want to discern whether electoral systems play a role in income inequality, and whether this effect is a consequence of a direct channel of alternative electoral systems on political inequality. The contribution of this paper is twofold. First, I provide a theoretical model suggesting that alternative electoral systems might be more or less sensitive to higher levels of income inequality. Second, I bring the issue of how political power is distributed across individuals by empirically testing whether individuals' preferences over income inequality are equally represented in parliaments across electoral systems, and its potential aftermath on income inequality.

This paper is organized as follows. I begin with reviewing what the political economy and comparative politics literatures tell about the different aftermath of electoral systems, and the commonly agreed stylized facts on income redistribution. A third section introduces a Downsian model of political competition that helps to understand why we should expect different levels of income inequality across electoral systems. Fourth section proposes an empirical analysis on the effects of electoral systems in their interaction with political equality on income inequality, using panel data techniques. A final section concludes.

2 Literature Review

The scholarly wisdom brings strong stylized facts about the effects of alternative electoral systems on public spending, redistribution, economic growth and economic inequality. These stylized facts speak to the sensitivity of governments to special interest groups, lobbying activities, more trade-oriented economies, geographic concentration of interests, representation of minorities, and center-left versus center-right governments, among several other features. Notwithstanding these strides in our knowledge of how electoral democracies work, there is still a gap on this literature concerning the effects that electoral institutions have on inequality, and it regards precisely the distribution of political power among citizens. Are electoral

³For a better understanding of their formulation, see Boix (2015), Acemoglu et al. (2007) and Acemoglu et al. (2013).

⁴See Knutsen and Wegmann (2016) for a great insight in redistribution and democratization.

rules directly or indirectly linked with income inequality? Is this impact a consequence of the aftermath of electoral rules in the distribution of political power? Solving this puzzle requires therefore tackling the causality of the relationship between income inequality and political inequality. In that sense, it becomes crucial to differentiate the exogenous effect attributable to electoral institutional factors on inequality from the conditions that influence the choice of electoral systems and political institutions at large⁵.

Previous attempts to understand the effect of electoral systems⁶ in income inequality are focused on disproportionality (Verardi (2005)), the effective number of parties (Birchfield and Crepaz (1998)), center-left versus center-right governments (Iversen and Soskice (2006)), wage bargaining centralization (Ansell (2010)) or partisanship (Scheve and Stasavage (2009)) -to mention a few. This scholarship brings compelling evidence of a pro-equality effect of more proportional systems. Along these lines, one might consider the well-known trade-off between accountability -majoritarian electoral systems- and representation -proportional representation systems- that the choice of electoral systems entails⁷.

Existing works on the interaction between electoral rules and policy outcomes brought consistent evidence on that policy outcomes are contingent to alternative electoral rules (Persson and Tabellini (2004), Persson et al. (2007), Lizzeri and Persico (2001)), showing different sizes of the government and public goods' provision among other policy issues.

This paper builds also on the insights on economic inequality and political inequality through political mobilization (Amat and Beramendi (2015)), and the implications of economic and political inequality as a whole (Acemoglu et al. (2007)), as crucial works to understand the interplay between income inequality and political inequality.

⁵An insightful comment on endogeneity is found in Jamal (2009), that warns about its dangers for the fruitful development of social sciences

⁶The commonplace approach to study the effects of electoral systems is divide them into majoritarian or plurality systems versus proportional representation systems, in line with the mindset proposed in Lijphart (2012). However, one might consider that this duality leaves behind some interesting features of mixed systems or other dimensions of electoral systems.

⁷As regards accountability and representation, the findings of Przeworski and Stokes (1999), Ashworth (2012), Benhabib and Przeworski (2005) and Manin (1997) could apply for the trade-off that electoral systems display in terms of lack of accountability or unequal representation and how they threaten the foundational principles of electoral democracy.

At a glance, the extant empirical results in the literature point out that proportional representation governments spend more in public goods than their majoritarian counterparts. Different propensity to cater to special interests groups at the expense of general public policies between majoritarian and proportional governments should also be considered as a source of income inequality (Lizzeri and Persico (2001), Persson and Tabellini (2004)), as well as the provision of incentives for lobbying (Naoi and Krauss (2009)). This body of evidence states that electoral systems operates differently and motivates my conjecture that these differences affect the levels of economic inequality.

The mechanism I offer here suggests that alternative electoral systems have a *direct* effect on political inequality, and consequently, an *indirect* effect on income inequality. Based on previous research (Persson and Tabellini (1999), Gallagher (1991)), I hypothesize that politicians under proportional representation systems are more worried about reducing income inequality than under majoritarian governments. Since proportional representation systems are associated with higher degrees of proportionality between vote-shares and seat-shares⁸, politicians cannot neglect the policy preferences of groups of citizens as easy as under majoritarian rules. I go on by modeling this intuition in the next section.

3 Theoretical Model

A Downsian electoral competition model of two office-oriented candidates is proposed here. The model aims at showing how the two broad types of electoral systems, and thus electoral democracies-majoritarian or plural democracies vs consensual or proportional representation democracies-, shape the equilibrium level of representation of individuals' preferences for income inequality. The intuition suggests an indirect effect in income inequality: electoral rules first display an uneven distribution of political power (i.e. political inequality).

As in that of Persson et al. (2007), this model considers that electoral systems or rules have no direct but indirect effect in policy outcome (redistribution, special interest groups,

⁸This is a direct consequence of the electoral engineering of districts. The extreme case of proportionality, as in Israel, is a nation-wide electoral district. Majoritarian systems generally are single-member districts, whereas proportional or mixed systems are multi-member districts.

etc). Based on that, I surmise that electoral rules have an *indirect* effect on inequality. By rendering different representation across different groups - that is, unequal distribution of political power-, electoral rules impact indirectly in income inequality.

In the spirit of Lizzeri and Persico (2001), I propose two scenarios. First, a nation-wide electoral district (the candidate who obtains the majority of the votes is elected), and second, an electoral college (winning candidate obtains the majority of the votes in the majority of districts). Thus, the latter just needs to care about 1/4 of the vote share (1/2 of the 1/2). This could be thought as a source of inequality in the distribution of political power.

3.1 Individual's Utility

Individuals derive utility from their income (net transfer that they get from government) and the level of inequality in the society (σ , standard deviation of the net transfers of the whole society). The population (N) is a continuum that is normalized to 1.

$$U_i(q_i) = y_i + x_i + b_i - \delta\sigma$$

The terms x_i and b_i compose the policy platform (Q^A) of the candidate A, in which she decides the level of transfer x_i and tax for each individual b_i . Therefore, the candidate has to decide a policy platform consisting of $Q = [q_1, \dots, q_N]$, and the distribution can vary as much as she will: the extreme case would be that she gives all to one individual (e.g. $Q = [0, \dots, 1]$), or evenly distribute the payoffs ($Q = [\frac{q}{n}, \dots, \frac{q}{n}]$). Each individual perceives q_i ⁹. The cream of the crop is the term σ , that is the level of income inequality of the society, being the standard deviation¹⁰ of net transfers in the society ($\sigma = \sqrt{\frac{1}{N} \sum (q_i - \bar{q})^2}$). The parameter δ could be a measure of the accuracy of the information that citizens have about the income inequality itself, or even the incumbent's performance in fighting against¹¹ income inequality. For simplicity, δ is equal to one. The policy platform is chosen by the candidate to maximize her

⁹Further assumptions could be included regarding x_i and b_i

¹⁰It could be also used the Gini's coefficient

¹¹Put it differently, the accountability of the incumbents regarding income distribution

odds for reelection/election. Income (y_i) is fixed and equal to one for the whole society¹². The budget constraint is given by the fact that transfers cannot exceed taxes ($\sum x_i \leq \sum b_i$). I unify x_i and b_i in the term q_i : we can think of q_i as the net transfer that each individual gets from the government.

$$U_i(q_i) = y_i + q_i - \sigma$$

3.2 Candidate's Probability of Election

There are two office-oriented candidates which face an upcoming election ($C = A, B$). Voters vote for the candidate that gives them more utility. Candidate A wins the election if $\sum U_i^A > \sum U_i^B$. The vote share of each candidate could be expressed:

$$\pi^A = \sum U_i(Q^A) - \sum U_i(Q^B) = \sum (y_i + q_i^A - \sigma^A) - \sum (y_i + q_i^B - \sigma^B)$$

The vote share for B (π^B) would be equal to $1 - \pi^A$.

3.3 Electoral Rules in the Model

The probability of winning is contingent to the electoral rule used in forming the parliament: vote share is maximized differently under alternative systems. The basic setting is that under proportional representation there is one national voting district which comprises all the votes in the population (N votes). A candidate needs to obtain at least 50% of the total votes to win. To the contrary, under majoritarian elections the population is divided into single-candidate electoral districts. For a candidate to win the election under MR it is needed to win the majority of the votes of a majority of the districts (Persson and Tabellini (1999))

- Proportional System: the probability of A winning the election (φ).

$$\varphi^{A,PR} = Prob[\sum \pi^A \geq \frac{1}{2}]$$

¹²Although it would be more realistic to let income vary across individuals, and be a consequence of previous policy platforms

- Majoritarian System: The setting under majoritarian system goes as follow: the nation is divided in three electoral districts ($j = 1, 2, 3$), in which the national population is equally distributed ($\frac{N}{3}$). Income is again equal for every citizen (y).

Under majoritarian rules:

$$U_i^j = y_i + q_i^j + \sigma$$

Here the candidate is allowed to choose different platforms in each electoral district, so the whole policy platform she can choose from can be of the form:

$$Q_{mr}^A = Q_i^j = \begin{bmatrix} Q_i^1 \\ Q_i^2 \\ Q_i^3 \end{bmatrix}$$

Where Q_i^j refers the policy platform for each electoral district, net transfers can vary as much as the candidate please provided that $\sum X_i = \sum B_i$.

The probability of winning A under MR is that winning two of the three districts. Clearly, district $j = 3$ can be neglected by majoritarian politicians, and therefore, we should expect a higher level of inequality in societies under majoritarian rules.

$$\varphi^{A,MR} = Prob[\sum \pi^{A,1} > 1/2 + \sum \pi^{A,2} > 1/2]$$

4 Empirical Analysis

4.1 Data

I employ a panel dataset consisting of the type of electoral system in 118 democracies¹³ over the period 1960 to 2015. I collect data on income inequality, political equality and a set of controls for economic indicators (GDP per capita, inflation, exchange rate and exports), as

¹³The sample consists of 37% majoritarian systems, 49% porportional representation and 14% mixed systems

well as sociodemographic indicators (human capital, population and land area).

Two main data sources are employed in this paper. Regarding income inequality data, I employ the Standardized World Income Inequality Database version 5.0 (SWIID)¹⁴ that uses multiple imputations to extend the UNU-WIDER homogeneous inequality series to missing data. Its primary goal -to meet the needs of cross-national comparisons- allows scholars to overcome the well-known limitations regarding country and time coverage, harmonization of definitions, among other shortcomings. It is worth noting that the analytical validity of the SWIID is based on a multiple imputation method, which is challenged in Jenkins (2015). The SWIID data provides the following four variables: a) inequality in net (post-tax, post-transfer) income, (b) inequality in market (pre-tax, pre-transfer) income, (c) absolute redistribution (market-income inequality minus net-income inequality), or (d) relative redistribution (market-income inequality minus net-income inequality, divided by market-income inequality). I acknowledge the benefit-cost trade-off that the use of SWIID engages, and therefore, a note of caution should be struck when interpreting the results brought in this investigation.

Data on electoral systems¹⁵ is collected from the Varieties of Democracy (V-Dem) database¹⁶. The three different sets of control variables are also collected from the V-Dem database¹⁷. Democracies in the sample are characterized in terms of the type of electoral system¹⁸ and political equality¹⁹, that is defined in this paper in the sense of Pemstein et al. (2015).

¹⁴Find a thorough explanation of the SWIID methodology in Solt (2016)

¹⁵Sources for imputation of Electoral Systems are Golder (2006); CLEA (Kollman et al. 2011); Chronicle of Parliamentary Elections (IPU); IFES; Nohlen and colleagues (1999, 2002, 2005, 2010)

¹⁶Coppedge, Michael, John Gerring, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, M. Steven Fish, Adam Glynn, Allen Hicken, Carl Henrik Knutsen, Kyle Marquardt, Kelly McMann, Farhad Miri, Pamela Paxton, Daniel Pemstein, Jeffrey Staton, Eitan Tzelgov, Yi-ting Wang, and Brigitte Zimmerman. 2016. V-Dem [Country-Year/Country-Date] Dataset v6.2. Varieties of Democracy (V-Dem) Project.

¹⁷For a full explanation of the methodology and sources see V-Dem codebook v6 in Coppedge et al. (2016b)

¹⁸Electoral system is a categorical variable codified as 0 (majoritarian systems), 1 (proportional representation), and 2 (mixed systems)

¹⁹Political equality is defined as the way that political power is distributed according to socioeconomic positions. The political equality indicator is a categorical variable that ranges from 0 (wealthy people enjoy a virtual monopoly on political power), 1 (wealthy people enjoy a dominant hold on political power), 2 (wealthy

4.2 Specifications and Results

Table 1 displays OLS estimations of the following specification:

$$GINInet_{it} = \beta_0 + \beta_1 ElectoralSystem_{it} + \beta_2 PoliticalEquality_{it} + \beta_3 ElectoralSystem * PoliticalEquality_{it} + \alpha X_{it} + u_{it} \quad (1)$$

where $u_{it} = \gamma_t + \epsilon_{it}; i = country; t = year$

For the sake of completeness, I employ two different sources of income inequality, namely the SWIID 5.0 and the UNU-WIDER. Columns 1 and 2 use the SWIID GINI net indicator, whereas columns 3 and 4 use the GINI index collected from UNU-WIDER database. Similar results are brought using alternative sources.

Regarding the key explanatory variables, I find that electoral systems are positively correlated with income inequality. This means that proportional representation and mixed systems exert an increasing effect on income inequality relative to majoritarian electoral systems. However, once the interaction between electoral systems and political equality is included in the set of independent variables, both the constitutive term of electoral systems and the interaction are not statistically significant. Political equality is negatively associated with income inequality. I believe that this finding breathes new life into our understanding of the interaction between economic and political inequality.

Among the control variables, only human capital seems to explain income inequality. Higher levels of human capital are associated with a reduction of income inequality.

Specification in (2) delves deeper into the effects that proportional representation systems have on net income inequality.

$$GINInet_{it} = \beta_0 + \beta_1 PR_{it} + \beta_2 PoliticalEquality_{it} + \beta_3 PR * PoliticalEquality_{it} + \alpha X_{it} + u_{it} \quad (2)$$

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)

where $u_{it} = \gamma_t + \epsilon_{it}; i = \text{country}; t = \text{year}$

PR_{it} is a dummy of 1 being under a proportional representation rule and 0 otherwise. Table 2 presents estimates using more accurate panel data techniques, allowing for control country and time fixed-effects.

As displayed in Table 2, proportional representation is associated with a negative coefficient, meaning that being under proportional systems improves income equality relative to majoritarian or mixed systems. This relationship is statistically significant once the interaction between proportional representation and political equality is included in the model. Consistently with the results above, political equality is negatively associated with income inequality. The interaction between these two variables is positive and statistically significant using the GINI net indicator from both data sources (SWIID 5.0 and UNU-WIDER). Thus, the negative effect that proportional representation exerts on income inequality is reduced for high levels of political equality. One might interpret this result as proportional representation being pro-equality in those societies in which political power is unequally distributed. However, in politically equal societies, the effects of proportional representation do not promote an equal distribution of economic resources.

5 Concluding Remarks

Rising income inequality levels have brought to the center of the political economy literature the debate on the role that democracy plays in redistribution. Placed at both theoretical and empirical strands of the political economy literature, this paper suggests that electoral institutions have an indirect effect on income inequality. I surmise a channel through which alternative electoral rules - majoritarian rules vs proportional representation-, are key determinants of political equality among the citizenry. This unequal distribution of political power implies therefore an unequal distribution of wealth and income.

I propose a Downsian model of political competition to show that under proportional representation systems, politicians have higher incentives for redistribution. These findings are in line with those in Iversen and Soskice (2006), Persson and Tabellini (1999), and Lizzeri

and Persico (2001), although I depart from previous literature in my theoretical setting. The model in here assumes that citizens care about the level of income inequality, but their political preferences are unequally represented contingent on electoral institutions. I focus on the division into electoral districts and the single-member district nature of majoritarian systems and the nation-wide district in the extreme case of proportional representation. Consequently, the model predicts that under majoritarian systems politicians can renege redistribution policies in certain districts, which as a last resort, increases the level of income inequality in this sort of systems.

I use a panel data of 118 democracies over 1960-2015. Two alternative data sources are employed for the sake of comparison: Standardized World Income Inequality Database (SWIID 5.0) and the United Nations University World Institute for Development (UNU-WIDER). I present a striking empirical result that associates proportional representation with an improving effect on income inequality. Additionally, I find a positive and statistically significant interaction between electoral systems and political equality on income inequality.

Future drafts of this research will convey two main natural steps. First, the use of alternative definitions of income inequality and redistribution. In this sense, the specifications above should consider as dependent variables inequality in market, absolute and relative redistribution. Second, and in theoretical terms, it would be interesting to alter the assumptions in the utility function that defines the voting choices of the citizenry.

This investigation so far points to an unequal effect of alternative electoral institutions on income inequality. The interaction between electoral rules and political equality seems to explain different income inequality levels across democracies. These results, together with the theoretical model here offered, could have implications for the design of democratic institutions and their impacts on economic and political equality.

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Appendix

Table 1: Electoral Systems, Political Equality and Income Inequality

	(1)	(2)	(3)	(4)
	SWIID5.0	SWIID5.0	UNU-WIDER	UNU-WIDER
GDP pc	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Inflation	0.002*** (0.001)	0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)
Exchange Rate	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Exports	0.000*** (0.000)	0.000*** (0.000)	0.000* (0.000)	0.000* (0.000)
Human Capital	-1.089*** (0.154)	-1.081*** (0.158)	-0.679*** (0.192)	-0.657*** (0.196)
Land Area	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Electoral System	1.332*** (0.388)	1.034 (1.225)	0.976** (0.483)	0.198 (1.526)
Pol. Equality	-3.339*** (0.388)	-3.442*** (0.560)	-3.947*** (0.484)	-4.218*** (0.699)
ES*Pol. Equality		0.132 (0.514)		0.344 (0.640)
_cons	51.682*** (1.037)	51.867*** (1.264)	55.272*** (1.295)	55.756*** (1.578)
<i>N</i>	694	694	690	690
<i>R</i> ²	0.443	0.443	0.357	0.357

Standard errors in parentheses

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

Table 2: PR, Political Equality and Income Inequality

	(1)	(2)	(3)	(4)
	SWIID5.0	SWIID5.0	UNU-WIDER	UNU-WIDER
GDP pc	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Inflation	0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	-0.001 (0.000)
Exchange Rate	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Exports	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Human Capital	-0.141 (0.858)	-0.051 (0.842)	-0.890 (1.116)	-0.796 (1.101)
Land Area	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
PR	0.016 (0.828)	-5.047*** (1.803)	1.276 (0.955)	-3.705 (2.915)
Pol. Equality	-1.132 (0.698)	-1.958*** (0.692)	-1.106 (0.869)	-1.940* (1.023)
PR*Pol. Equality		2.350*** (0.809)		2.306* (1.267)
_cons	42.708*** (3.698)	44.525*** (3.667)	46.287*** (6.502)	48.083*** (6.595)
<i>N</i>	694	694	690	690
<i>R</i> ²	0.207	0.229	0.182	0.191
No. of Groups	118	118	116	116
log-likelihood	-1613.697	-1604.104	-1929.889	-1926.357
Within R-squared	0.207	0.229	0.182	0.191
Between R-squared	0.003	0.002	0.067	0.046
Overall R-squared	0.008	0.000	0.050	0.037

Clustered standard errors in parentheses (country level), time effects not reported

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