

**When land votes: Rural interests and the Determinants of Unequal  
Representation, 1860-1945**

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*Abstract: The paper is focussed on the historical determinants of malapportionment in the lower chamber of seven Western countries since 1860 to 1945. We show that economic modernization during the XIX century tended to increase malapportionment because internal migrations and economic growth. Conversely, when the country increased the enfranchisement, proxy of the incorporation of new actors and rules to political life, malapportionment tended to be reduced. Thirdly, contrary to traditional literature, we find a positive effect of district magnitude. Finally, we found that malapportionment tended to be higher in those contexts where land inequality and the political openness of the system was high. This relates with the will of traditional elites to bias the electoral system with malapportionment only when the lower chamber plays a role in electing the executive.*

## **Introduction**

Studies focusing on electoral politics have played a growing attention to how institutions shape the behavior of political elites (North, 1990; Acemoglu and Robinson, 2000). In specific, electoral systems have received special attention since this institution play a crucial role translating votes into seats in democratic regimes (Golder, 2005). Among those very different effects caused by electoral systems there are the number of parties (Duverger, 1959; Cox, 1997), biases in political representation (Grofman et al., 1997; Monroe and Rose, 2002), the stability of democratic systems (Farrell, 2001), coalition dynamics (Iversen and Soskice, 2006) or policy output (Persson and Tabellini, 2003) among others.

One dimension of electoral systems that is increasingly studied is malapportionment, namely, the discrepancy between the shares of legislative seats and the shares of population held by geographical units (Samuels and Snyder, 2001: 652). This approach entails taking seriously the extent to which a country violates the principle “one person, one vote”, a well-known “pathology of electoral systems” (Taagepera and Shugart, 1989; Snyder and Samuels, 2004). In a perfectly apportioned electoral system the size of the population in a given district corresponds, roughly speaking, with the share of legislative seats. The bias takes place when some districts have more (less) seats that those which correspond in a perfect apportionment, delivering a cheaper (more expensive) return of representation.

A malapportioned polity in which preferences are equally distributed across the territory does not necessarily entails political implications. Nevertheless, electoral support tends to relate with geography; some parties perform better in specific strongholds than others. This explains why, as evidence points out, pre-democratic elites may have use this bias to preserve their power in the new democratic regime, expecting that overrepresented districts will be more supportive (Bruh et al, 2008). But this bias is not only related with politics, but also with policies. Empirical evidence has pointed out that the allocation of public spending and resources are strongly correlated with overrepresented districts (Dragu and Rodden, 2009) and it affect the sources of fiscal revenues (Ardanaz and Scartascini, 2013). Public investments are higher where electoral returns are alike.

Our research wants to focus its attention on the historical roots of malapportionment. As Samuels and Snyder posited, “those interested in developing a theory of the politics of reapportionment could (...) benefit from studying the historical origins of malapportionment. In many contemporary democracies, the roots of malapportionment may lie in historical processes of state-building and nation-building” (2001: 670). In this sense, it can be argued that malapportionment was introduced as a concession or urban-nation builders to rural elites. However, it can be also possible that those rural elites used malapportionment to prevent the influence of those elites in a new competitive democratic system. To explore this idea, our research contributes to electoral systems and economic history literature by focusing on the geography of electoral results and the value of votes over time.

To develop the longitudinal perspective of malapportionment, we analyze a period comprised between 1860 and 1945 in seven countries (United Kingdom, Denmark, Netherlands, Germany, Australia, Norway and Italy). The focus of our attention is the malapportionment in lower chambers and the contribution of the paper is threefold. First, we show that malapportionment in parliaments is historically correlated, as can be inferred from previous literature, with economic growth and population of the country. Processes of structural modernization and urbanization during the second half of 19<sup>th</sup> and beginning of 20<sup>th</sup> century tended to foster this bias, entailing that political elites should have faced the decision (or not) of a reapportionment reform.

Second, we show that the increase in the enfranchisement tends to be correlated with lower malapportionment. Enfranchisement tended to be associated with the relative strength of the labor movement, so it is inclined to push for a fairer rule of game. Finally, we show that the instrumental use of malapportionment is more common when the progressive openness of the political system took place in country with important land inequality. It shows therefore that when land lords interests were more powerful, they were more prone to use malapportionment to preserve their political influence. Only when legislature played a role controlling or electing governments – more accountable regimes – it makes sense that political and agrarian elites used malapportionment as a source of political advantage. Otherwise, they could use other mechanisms to guarantee their political leverage.

The paper is organized as follows. The next section is centered on the theoretical discussion of malapportionment with special attention to its determinants. Section three is centered on the description and measurement of the variables. The next section presents and discusses the empirical results. The last section concludes.

### **Theoretical discussion**

The electoral system a crucial mechanism of representative democracies it defines how votes are cast and seats are allocated (Cox, 1997; Blais and Massicotte, 2002; Colomer, 2004). Among the different dimensions of electoral systems, a growing attention is diverting to malapportionment, namely, the situation in which a chamber presents a discrepancy between the share of legislative seats and the share of population held by district (Samuels and Snyder, 2001; Dragu and Rodden, 2009). In a perfect apportioned electoral system, each vote has a perfect translation into seats irrespectively of the district were citizens are entitled. Conversely, in a completely malapportioned legislative system one single voter decides 99% of the seats and the rest of the population only can elect 1%. Since malapportionment increases the political weight of some districts, it gives them political leverage in the policy-making process because parties are interested on winning in those districts in which vis-a-vis the vote is cheaper.

To understand the determinants of malapportionment the historical approach provides interesting insights. It has been argued that in many contemporary democracies the roots of malapportionment lie in the processes of state-building and nation-building (Samuels and Snyder, 2001). In the initial stages of the liberal representative institutions, there were significant variations in population, turnout and political representation across districts due to the persistence of traditional rural societies and clientelism. Parties were locally oriented and the representation of territories was unequal. However, marginal and peripheral positions tended to disappear with urbanization and migrations to urban areas, functional cleavages increased their importance (Caramani, 2004: 77). Yet, as Western societies modernized, parties competed more nationally oriented and the

number of non-competed seats decreased – parties presented candidacies across the whole nation (Schattschneider, 1975)<sup>1</sup>.

During the ninetieth and first half of twentieth century, urbanization and the economic modernization entailed internal migrations to cities that led to an over-representation of the rural districts (Dye, 1965). Nevertheless, not all the countries faced the same transformative pressures. While countries in the core of Western Europe rapidly changed, peripheries of Europe or ultra-peripheral dominions took longer time and did not face those changes until well advanced the 20<sup>th</sup> Century (Kemp, 2014). Thus, our expectation is that those countries that faced rapid transformations linked with modernization and urbanization will have, *ceteris paribus*, higher levels of malapportionment. The implication therefore is:

*H<sub>1</sub>: The higher the economic and demographic development, the higher the expected malapportionment.*

In response to these demographic changes, some Western European and North American countries reapportioned the number of seats attributed to each electoral district and/ or changed their electoral systems (Snyder and Samuels, 2004; Bruhn, Gallego and Onorato, 2008; Boix, 1999). For example, the United Kingdom modified the size of the House of Commons and the boundaries of electoral districts almost each legislative election from 1874 to World War One (in 1884 single-member districts became the general rule)<sup>2</sup>. However, other countries did not reapportion their systems and the over-representation of the rural interests continued. For instance, in the case of Sweden rural-urban districts were clearly delimited in the electoral law to preserve the representation of the formers. Thus, in some countries there were frequent changes in districts' borders increasing the relative power of urban areas and change and assembly size others did not. Why did this variation across countries occurred?

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<sup>1</sup> Simultaneously, executive-legislative relation changed; cabinet and party discipline in parliamentary systems was imposed by “the efficient secret” (Cox, 2005).

<sup>2</sup> The Third Reform Act of 1884 established a uniform franchise throughout the country. Because of this Act, most areas returned only one Member to Parliament, although 23 seats, including the City of London and Bath, continued to return two Members until 1910. Parliament and the political landscape changed greatly over the 19th century, beginning with a small ruling elite in Parliament and gradually increasing to be more democratic and representative.

One of the most important phenomenon taking place during the period was the progressive emergence of mass parties (Duverger, 1959), also oriented in the fight for the enfranchisement of population. In the early days, the franchise was restricted because some citizens did not meet specific requirements like a minimum richness, gender, ethnic or religious affiliation or because their age (Aidt et al., 2004)<sup>3</sup>. Those restrictions were gradually removed as the rising working class wanted to gain access to the legislatures. By the end of 1920 almost all Western European countries had universal male suffrage and, by the end of II World War, women gain the right to vote (Carstairs, 1980).

Still, in parallel to this movement other reforms were taking place, most of them demanded by labor movements<sup>4</sup>. Progressively, most countries adopted direct election of their legislature instead intermediary bodies (any kind of board of electors that appoints the member of parliaments). Despite some countries voted by show their hands or by oral acclamation, open ballot became the general rule during the nineteenth century – despite progressively the closed ballot also started to be used (Colomer, 2005). Similarly, as demand of the labor movement, secret ballot started to be introduced – Germany was the last country of Western Europe that introduced it in the Weimar Republic. All those reforms were introduced simultaneously, in occasions also paralleled with social reforms (see Blais et al., 2005). Thus, enfranchisement acted as a proxy of the relative strong of outsider actors – mainly linked with the labor movement – claiming for fairer elections. As consequence, it makes sense to argue that the progressive enfranchisement of citizens should tend to be negatively correlated with malapportionment.

*H<sub>2</sub>: The more the citizens enfranchised, the less malapportionment expected in the lower chamber.*

Nevertheless, parallel to the change on the size of the electorate and the fairness of the electoral procedures, there were changes in electoral rules as well. The general rule in Western countries was multimember systems with open ballot using with run-off (Andrews and Jackman, 1995: 71). We can distinguish two venues of reforms during the period prior to Second World War. In a first wave, during the not-fully-

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<sup>3</sup> Literacy requirements were common in United States, but never were implemented in Western Europe.

<sup>4</sup> Many of these demands emerged from the Chartism, a working-class movement for political reform in Britain that existed from 1838 to 1857.

enfranchisement period, there were changes from multimember systems with majority rule (MMM) to single member systems (SMD) with run-off or first-past the post (FPTP). For example, the Netherlands in 1887 changed its system from bi-nominal and tri-nominal districts to SMD. In a second wave, there was a progressive introduction of proportional representation (PR). It was introduced first in Belgium (1899), Finland (1906), Sweden (1907) and by 1930 almost all European countries a sort proportional representation, despite countries like France, Greece and Spain shifted back and forth to majoritarian, (or plurality) and PR systems<sup>5</sup>.

The traditional literature has defended that SMD systems, whether FPTP or run-off, tend to be correlated with malapportionment in lower chambers (Samuels and Snyder, 2001: 663). Two complementary mechanisms have been provided. On the one hand, if seats are fixed to one and the districts cannot be subsumed, malapportionment will arise. Conversely, when seats are variable (like in MMS), reapportionment is easier since does not entail re-drawing districts. On the other hand, the legislators will tend to resist more to reapportionment in SMD since their district can be targeted, losing their stronghold. As consequence it can be posited that:

*H<sub>3a</sub>: The lower the district magnitude, the higher the malapportionment.*

Nevertheless, this argument may be not well suited to the period prior to Second World War. Most of the alternative MMS today are PR or mixed member systems. Nevertheless, during the XIX the more common systems were majoritarian multi-member and the reforms were towards the creation of limited ballot or SMD (Andrews and Jackman, 1995; Colomer, 2005). Those gradual changes, despite different authors will qualify many of the changes as “minor reforms” (Jacobs and Layenaar, 2011), should have weaken the defenders of the *status quo* (Renwick, 2010) – those potential legislators resisting reapportionment. Thus, reforms opened the opportunity to reduce the potential differences across territories in political representation, a better correspondence between population and seats. The implication therefore is that MMS systems will be more prone to keep reflecting the traditional rural-urban cleavage, and should present malapportionment in a higher extent. This hypothesis is the opposite that what traditional literature stands for:

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<sup>5</sup> Despite some authors argued that this adoption was driven by a survival strategy of traditional parties (Boix, 1999), other stress it adopted without much opposition (Blais et al, 2004).

*H<sub>3b</sub>: The higher the district magnitude, the higher the malapportionment.*

Aside from modernization, the power-maximization explanation has been the prevalent in the literature when malapportionment is explained. The main argument is that legislative malapportionment is one tool of influential groups to preserve their political and economic interests (Acemoglu and Robinson, 2008; Bruhn et al, 2010). Elites that have to face electoral competition have strong temptation of manipulate the electoral system in their favor (Boix, 1999; Benoit, 2004). Since this electoral bias over-represent districts where parties or political parties of the elites are strong, it can give to them advantage in the electoral contest. For example, in Australia the practice of allowing rural electoral divisions to be overrepresented from city districts derived from the conservative interest to mitigate the political influence of urban areas (Economou, 2007). In a similar vein, the Prussian Chamber of Deputies during XIX and XX century was biased to over represent the political representation of conservative landowners in the German Empire (Ziblatt, 2008). Nevertheless, two elements require to be considered from this power-maximization perspective; opportunity and necessity.

Opportunity of preserving malapportionment will depend strongly on the structure of the land, in specific land inequality. Empirical evidence has pointed out that the allocation of public spending and resources is strongly correlated with overrepresented districts. This correlation, known as “the iron law of malapportionment” (Dragu and Rodden, 2009; Bruhn, Gallego and Onorato, 2008), has been tested in very different context like the United States (Ansolabehere et al, 2002), Latin America (Gibson et al, 2004), the European Union (Rodden, 2002) or Japan (Horuichi and Saito, 2003). What this idea suggests is the reverse causation; inequality is previous to malapportionment and the structure of land properties play a decisive role in order to enact it.

On the one hand, landholding inequality operates as a proxy of robust forms of pre-industrial power in which social, economic and political influence tend to be located on the hands of landowners. On the other hand, this inequality also gives leverage to those hierarchies that want to prevent changes in the *statu quo* (Acemoglu and Robinson, 2008). This makes that investment and influence are diverted by a pre-existing influence of land structure. In fact, autocracies with equal land distribution are more likely to democratize (Ansell and Samuels, 2010). Moreover, those countries with historically



more unequal distributions of wealth and income tend to be associated with higher levels of legislative malapportionment (Ardanaz and Scartascini, 2013).

Necessity of preserving malapportionment in the lower house will crucially depend on the extent to which governments are accountable to legislative bodies. As the nineteenth century advanced, executive started to be responsible to elected parliaments, mainly to the lower chamber. The traditional rule was that the monarch appointed directly the Chancellor or Prime Minister and the continuity of a cabinet depended on his support. Parliaments had powers in some appointments or in budget approval, but open elections, investiture votes and the possibility of a non-confidence motion varied across countries (Marshall and Jagers, 2000).

It is important to stress that this dimension is irrespective of enfranchisement. For example, in 1890 universal male suffrage was approved in Spain but the President of the Government still appointed by the King (Cabrera, 2017). Aside from the fraud in the electoral contest, prior to 1930 the Congress has no powers to remove the cabinet and it could remain closed if the government decided to do so under the “decree of exceptional circumstances” (that were frequent). In Germany, between 1871 and 1918, the executive was not accountable to the parliament elected by all males above 25 years old (Abrams, 2005). The Chancellor and its ministers were appointed by the Kaiser. Conversely, in Belgium or United Kingdom, despite having limited suffrage or double ballot prior to 1890, have governments fully accountable of their lower (and upper) chambers (Cox, 1997; Delwit, 2012).

Thus, it makes sense to expect that when the parliaments played a significant role in politics, traditional leaders faced more incentives to preserve or increase malapportionment for their political advantage. Conversely, when lower chambers operated as a consultative body, it is not so problematic to address re-apportionment – since there were other mechanisms out of the legislature to preserve their power. As consequence it can be assumed that when landowners were powerful and the legislative played a significant role in controlling/electing the executive, la malapportionment will be higher. This hypothesis is posited as follows:

*H<sub>5</sub>: The higher the land inequality and the openness of the executive recruitment, the higher the malapportionment expected in lower chamber.*

## Data and methods

### *The variables of the study*

The dependent variable of the research is malapportionment in lower chambers of Western countries in the period between 1860 and 1945. To calculate malapportionment, we have followed the method by Samuels and Snyder (2001). The formula takes the absolute value of the difference between each district's seat and population shares, adds them, and then divides by two. The formula is:

$$MAL = \left(\frac{1}{2}\right) \sum |s_i - v_i|$$

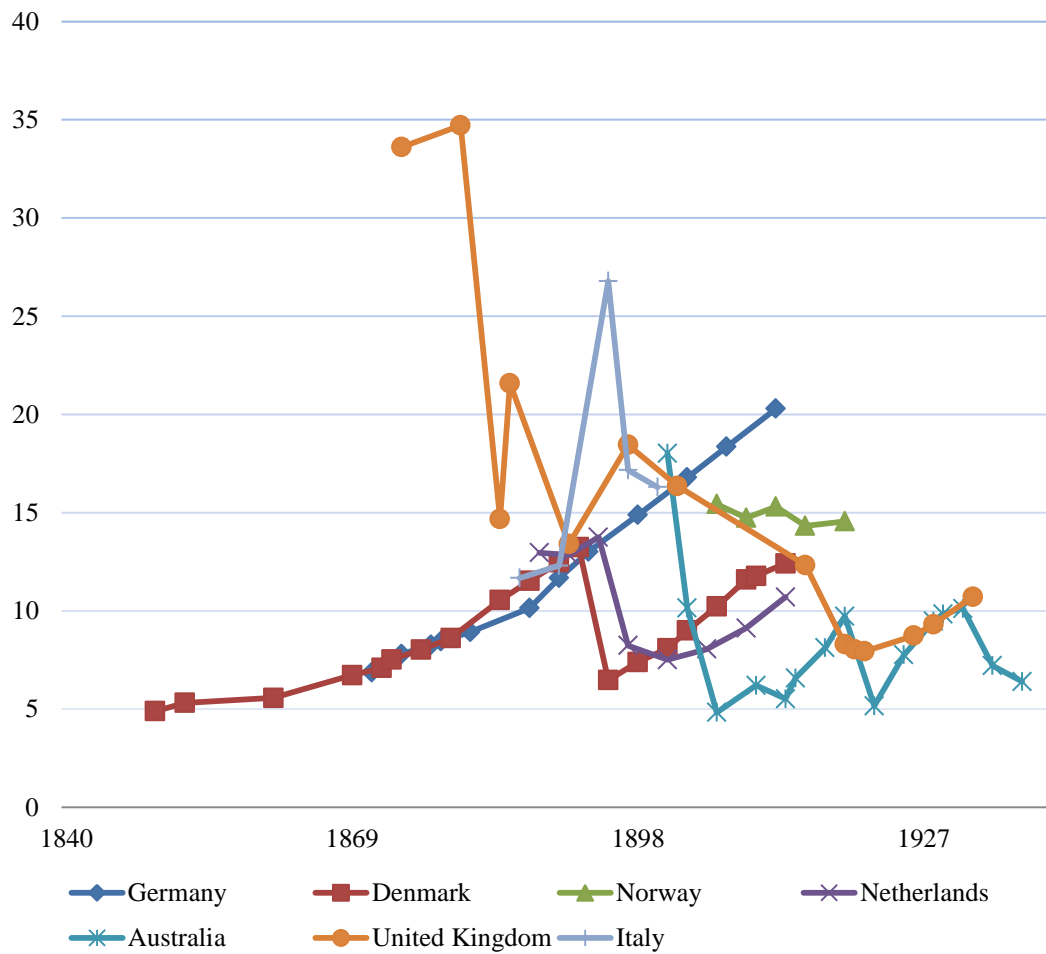
Data collection is a challenge when period prior to Second World War is addressed. To calculate malapportionment three pieces of information are required; the type of electoral system, the seats allocated per district and the number of citizens entitled to vote. Despite there are information and literature about the first element (Carstaris, 1980; Caramani, 2000; Colomer, 2005) it is more difficult to obtain the information about the other two. To do so, we have research on each country yearbook and official census; at least to the extent we have access to the archives. Each yearbook includes very different pieces of information –annual livestock production, ordinary legislation, and so on – but not in all cases presents the persons entitled to vote by district. Moreover, in some cases it does not specify the seats contested – in some cases, the official documents at district level were destroyed after the election. For example, in the case of Spain many of the *Ministerio del Interior* official information is, simply, missing.

This has restricted our sample (for the moment) to seven countries in different periods of time; Australia, Denmark, Germany, Norway, Netherlands, Italy and United Kingdom<sup>6</sup>. Therefore, there is no theoretical decisions for choosing that countries, only data availability. Malapportionment in lower chambers in the sample is represented in the following figure:

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<sup>6</sup> We are increasing the number of observations. More information in Table A of the Appendix.

**Figure 1: Malapportionment in Lower Chambers**



As can be seen there are variation in the sample from general values from 20 to 5 % of malapportionment. If we analyse the differences across countries, while Australia remains with low values of malapportionment, Norway and Germany are the top. Analysis over time reveals that countries such as Denmark or United Kingdom reformed their systems several times to guarantee a better correspondence between seats and people entitled to vote. Probably Denmark represents as its best these changes. Malapportionment gradually increases from 1860 in advance until the end of the century, when it reapportioned its *Folketing* and reduced it. Again, the following years increased until the end of the period. Conversely, Germany did not reapportioned the *Reichstag* and malapportionment increased, while Norway remained with no changes. Therefore, the sample guarantee enough variation both over time and across countries.

The first hypothesis is related with the processes of modernization of the different countries. Two variables are used to capture this element. On the one hand, we use total population and the relative change in population from one election to the next. On the other hand, we follow the same logic with the domestic gross product<sup>7</sup>. Data for the period under analysis are obtained from Maddison (2003). We use this information as a proxy of industrialization and migration to the cities so we expect, *ceteris paribus*, a positive correlation with malapportionment.

The variable related with the level of enfranchisement has been adapted from Carstairs (1980). It distinguishes for each country between economic restriction for suffrage (0), universal male franchise (1) and universal suffrage (2). In the sample, the countries that changed to male universal suffrage during the period studied did in different moments; Germany did from the very beginning but the majority did about First World War. The expectation is that in general it correlates negatively with malapportionment. District magnitude has been calculated with the average of the seats elected by country in a given election. This captures different electoral reforms taking place during the period, but also the difference across countries. There are two alternative hypotheses for this variable, so it can be positively or negatively correlated with malapportionment.

Land inequality is calculated using the data from Frankema (2010). This data is based on the Gini coefficient that takes into account the distribution of land by country and we follow the literature in the assumption that it is correlated with the relative power of landowners (about measurement and implications see a discussion in Frankema: 2009: 450). As a Gini index, land inequality points out the extent to which property of land is more or less equally distributed. The higher, the more unequal the distribution is.

We use two alternative elements to measure the political regime of the countries in the sample. The first one is the Polity Index, an indicator that provides a set of indicators about political competition and openness of the system (Marshall and Jaggers, 2000). The index combines information on the degree of *the facto* competition and it is formed by the merge of a) the way the executive is recruited, b) the type of constraints imposed on the chief executive once in office and c) the extent to which competition is open. The

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<sup>7</sup> We have tested alternative models with the four variables but they are highly correlated among them (above 0.80). To avoid this problem we will keep variation in population, the more directly related with malapportionment. Nevertheless, the models are robust when the other variables are used.

indicator ranges from -10 to 10, from a less to more open political regime. The second indicator is focused on the recruitment of the executive, one dimension of the Polity index and the one interest us the most. The variable ranges from 1 to 8 and it develops a) if the executive is regulated or it is chosen informally by political elite b) the executive is formed according to election results or as result of appointment o heritage and c) the chief executives are determined by hereditary authorities, based on an agreement between the monarch and al elected body or only the latter appoints the executive.

The expectation is that the interaction between land inequality and the political openness of the regime (the two indices) is positively related malapportionment.

Table 1: Descriptive statistics

Variable	Mean	Std. dev	Min	Max
Malapportionment	11.54	5.62	4.83	34.71
Variation pop	680.2	1105.88	-2203	4210
Enfranchisement	0.65	0.81	0	2
Land Gini	61.94	9.62	47.5	73.4
District mg.	1.07	0.52	1	7.04
Polity2	1.12	6.5	-9	10
Recruitment	3.96	2.94	1	8

The sample is based on cross-sectional data of malapportionment for legislative elections since 1860 to World War II. Pool data requires dealing with the fact that errors correlate over time and across countries, because they tend to show heteroscedasticity problems that conceal unit and period effects (Podestà, 2002). To deal with this

problem, we have specified models with a pooled time-series cross-section analysis and we consider both random and fixed effects in the models. Unfortunately, data of land inequality present two shortcomings. First, there is no variation over time and, as consequence, models including this variable cannot be replicated with fixed effects. Second, there are no this data for the Netherlands, so one country drops of the sample when the models are conducted with this independent variable.

The sample has a low number of observations, so the models are estimated to maximize them and avoid potential problems of degrees of freedom. Two different sets of models have been specified: one that takes into account the independent effect of variables, and the other that introduces the interaction term. The first specification test step-by-step the linear impact of the variables. The equation is as follows:

$$(1) \text{ Mal} = \alpha + \beta_1 \Delta \text{Population} + \beta_2 \text{ Enfranchisement} + \beta_3 \text{ Dist.mg} + \beta_4 \text{ Polity2} + \beta_5 \text{ Land Gini} + \varepsilon$$

In a second set, two different sets of models have been specified: one that takes into account the independent effect of variables, and the other that introduces the interaction term. In those including the multiplicative interaction effects, constitutive terms have also been included in order to avoid inferential errors (Brambor *et al.*, 2005). Thus, models have been defined as follows:

$$(2) \text{ Mal} = \alpha + \beta_1 \text{ Land Gini} + \beta_2 \text{ Polity2}$$

$$(3) \text{ Mal} = \alpha + \beta_1 \text{ Land Gini} + \beta_2 \text{ Polity2} + \beta_3 \text{ Land Gini} * \text{ Polity2} + \varepsilon$$

Multicollinearity problems can arise when several institutional variables are considered in the same model, because they usually present an association among themselves. Although in the second model a multicollinearity problem is expected due to the presence of the interaction term (Brambor *et al.*, 2005: 70), the additive model might be equally flawed if the two independent terms are highly correlated, but it is not the case<sup>8</sup>.

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<sup>8</sup> Correlation between Polity2 and Land Gini is 0.27 while Recruitment and Land Gini is 0.32 (both statistically significant at a 1% level). Klein's test discarded the possibility of multicollinearity in the specifications presented above.

## Empirical results

The empirical models based on the linear specification (step-by-step) are presented in table number 2. In models from one to eight the observations are 72 elections and the seven countries of our initial sample. Models provides clear evidence in favour of hypothesis one. The first variable, changes in population from one election to the next, tended to increase the malapportionment. This effect is positive and statistically significant at a 1% level in all the models. When this variable is replaced by population, GDP or relative variation in GDP, they remain positive and statistically significant<sup>9</sup>. Thus, in the case of our sample, the conventional wisdom about how modernization prone malapportionment in lower chambers is confirmed.

In the empirical analysis we also find that enfranchisement, as expected, is negatively correlated with malapportionment. The coefficient ranges from -3.3 to -4.4 in the different models specified, irrespectively of fixed or random effects. The variable is always statistically significant at a 1% level. Therefore, we show that this variable that *proxy* the pressures for the entrance of new actors in politics tended to bring rules that balanced representation across territories. When district magnitude is addressed, we discussed two alternatives; the negative correlation (Samuels and Snyder, 2001) and the positive one. In the models is clearly shown that district magnitude has a positive effect on malapportionment in lower chambers. In all the cases the variable district magnitude is positive and statistically significant at a 1% level.

Models seven and eight present the impact of Polity2 index<sup>10</sup>. As can be seen, in both cases the coefficient is positive, in line with the theoretical expectations. Nevertheless, only with random effects it is statistically significant at a 5% level. In model 9, land inequality is introduced in the model. It lowers the observations to 65, excluding the Netherlands. Now Polity2 index is statistically significant at a 1% level. Land inequality has a positive coefficient. However, it is not statistically at the conventional levels.

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<sup>9</sup> Models are not shown in the paper.

<sup>10</sup> They have been replicated with the variable of recruitment of the executive. The coefficient is positive but it is not statistically significant.

Table 2: Determinants of malapportionment

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
$\Delta$ Population	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.000)	0.002** (0.001)	0.002** (0.000)	0.002** (0.001)	0.002** (0.000)
Enfranchisement			-3.708** (0.947)	-4.178** (1.056)	-3.366** (0.888)	-4.122** (1.002)	-4.176** (0.926)	-4.486** (1.020)	-4.437** (1.012)
District magnitude					1.817** (0.609)	1.831** (0.646)	2.001** (0.595)	1.922** (0.642)	2.140** (0.614)
Polity2 Index							0.356* (0.151)	0.283 (0.187)	0.432** (0.107)
Land inequality									0.122 (0.075)
Constant	10.579** (1.486)	9.566** (0.595)	13.969** (1.772)	13.279** (1.081)	11.360** (1.765)	11.230** (1.254)	10.765** (1.727)	10.547** (1.321)	1.892 (3.783)
Observations	72	72	72	72	72	72	72	72	65
Countries	7	7	7	7	7	7	7	7	6
	Random effects	Fixed effects	Random effects	Fixed effects	Random effects	Fixed effects	Random effects	Fixed effects	Random effects
$R^2$	0.219	0.220	0.374	0.375	0.443	0.447	0.464	0.467	0.466

Standard errors in parentheses  
 +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$



In the table 3 we present the models with the interaction between land inequality and the political regimen variables<sup>11</sup>:

Table 3: Malapportionment, land inequality and political openness

	Model 1	Model 2	Model 3	Model 4
Land Inequality	-0.077 (0.201)	-0.122 (0.101)	-0.127 (0.191)	-0.480* (0.217)
Polity2	-0.112 (0.207)	1.700+ (0.996)		
Land Inequality*Polity2		0.028+ (0.015)		
Recruitment			-0.262 (0.572)	6.760+ (3.480)
Land inequality*Recruit.				0.108* (0.053)
Constant	8.111 (13.016)	4.993 (6.368)	4.796 (12.256)	-17.898 (13.921)
Observations	71	71	59	59
Countries	6	6	6	6
R <sup>2</sup>	0.10	0.12	0.27	0.31

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

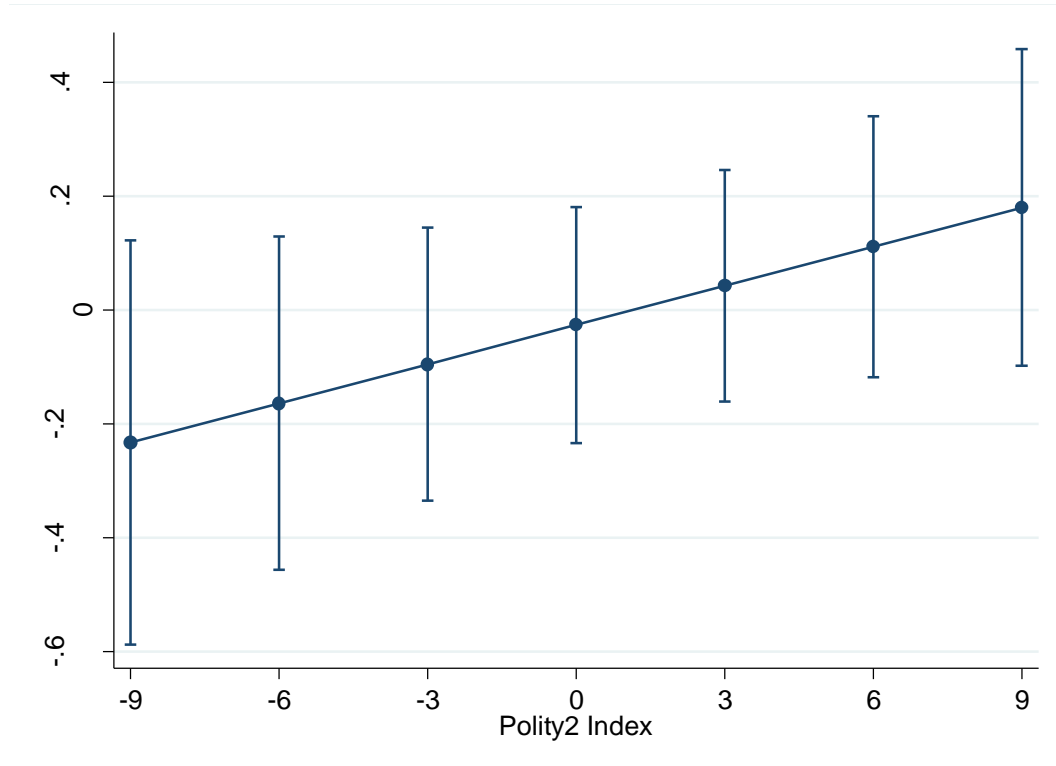
In model we find no relation between the independent variables and malapportionment. In model number 2, with the interactive term, a different picture arises. Polity2 is positive and statistically significant at ten percent level, its value when land inequality equals zero. The interactive term is positive and statistically significant at a ten percent level. Models three and four replicate a similar picture. The former shows no relation between the independents and the dependent variable. The latter shows again a positive relation of the independent term of political regime and, more relevant a positive and statistically significant at a 5% level relation of the interactive term with the dependent variable.

To show the real impact of the interactions, it is necessary to represent the marginal effect of the variables. In Figure number 2 it is represented the average marginal effect

<sup>11</sup> The different number of observations between models one and two and models three and four is due the lack of information about “recruitment” in specific years of Denmark, Germany and Italy.

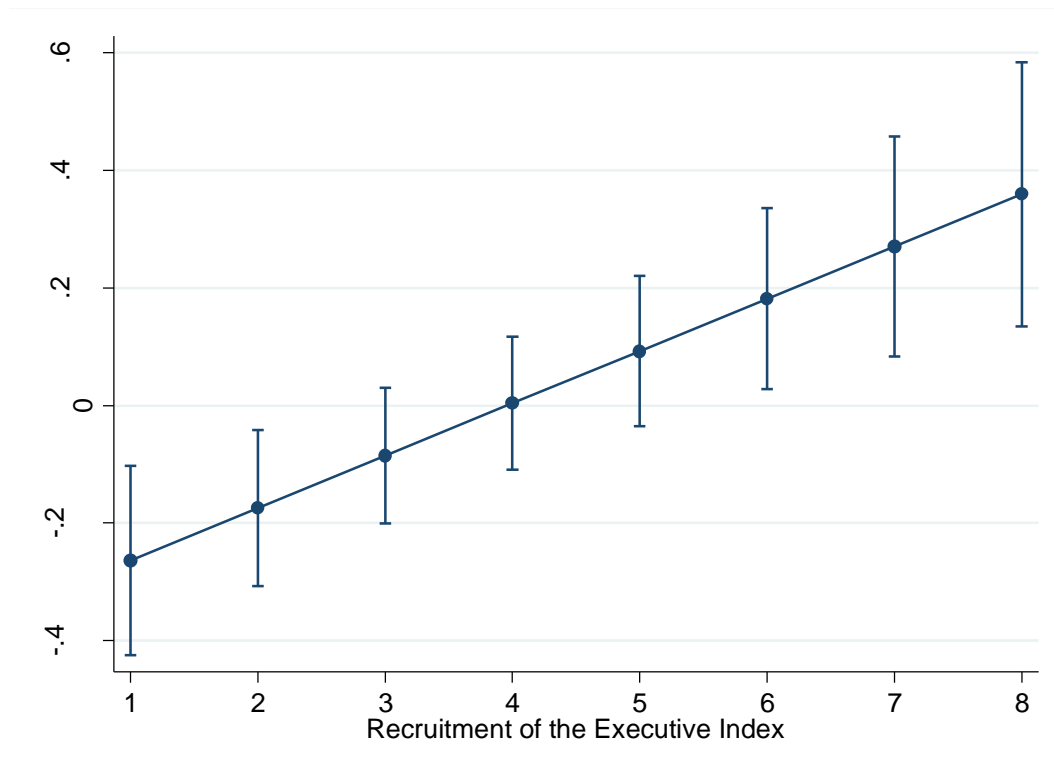
of land inequality depending on the values of polity 2 index. As can be seen, none of the values are statistically significant at a 95% level of confidence. Therefore, despite the interactive term is statistically significant at a 10% level, we cannot consider that the interactive effect of polity index and land inequality matters for explaining malapportionment.

**Figure 2: Average marginal effects of land inequality (95% CIs)**



A different picture emerges in Figure number three, the representation of model number 4. As in the case of the interactive term, now the effect is statistically significant in the representation. As the openness in the recruitment of the executive increases, the land inequality plays a more important role in predicting the level of malapportionment in the lower chamber of a country. This is especially true when we compare cases like Australia and the United Kingdom, where the executive was totally accountable to the Parliament, with the cases of the German Empire or the Italian Republic.

**Figure 3: Average marginal effects of land inequality (95% CIs)**



As can be summarized, the implication of the analysis gives strong evidence to the traditional explanation to the emergence of malapportionment. Internal migrations and modernization changed the rural-urban equilibrium in political representation, increasing the malapportionment (Samuels and Snyder, 2001). Nevertheless, it is at this point when the political decisions started to matter. Enfranchisement, a process that parallels this modernization, entailed a major challenge for traditional elites (Boix, 1999). In those cases in which this movement towards universal franchise was faster, the pressures (and the margin of traditional elites) to maintain malapportionment were lower. Whether they lost control of the reform or have fewer capacities to avoid it, reapportionment was more common.

Concerning district magnitude, our evidence challenges the conventional wisdom. We have shown that district magnitude tends to be associated with more malapportionment. Against, we suggest that it is due not only to the more frequent reforms, but also about the kind of reforms – from MMM to SMD – that made territorial dimension of

representation more salient. Finally, we have dealt with the political economy of malapportionment. As it is shown, land inequality (the *proxy* of landowners' interests) tends to increase the malapportionment in lower chambers when it was combined with a relative openness in the recruitment of the executive. When legislatures play a role in controlling/electing the executive, then traditional elites used malapportionment to bias the system and strengthen their political position.

## **Conclusions**

What are the determinants of malapportionment? Or, said in other words; why in some countries emerge a higher discrepancy between the shares of legislative seats and the shares of population held by geographical units than in others? To deal with this question, we have focussed on its historical roots. We have used data of seven Western countries in the period between 1860 and 1945 to show the extent to which malapportionment may lie in historical processes of state-building and nation-building. Our data proves that modernization in general tends to be linked with the presence of malapportionment in lower chambers.

We have also shown that enfranchisement tend to be correlated with lower malapportionment while district magnitude operates the other way around. The former shows the strength of a claim for fairer elections while the second correlates with electoral reforms. Finally, we show that the instrumental use of malapportionment is more common when the progressive accountability of executives in the political system took place in country with important land inequality. It shows therefore that when landlords' interests were more powerful, they were more prone to use malapportionment to preserve their political influence in the lower chamber.

In any case, our research presents important limitations. Additional efforts have to be done to increase the sample of countries and elections covered. Data mining still a challenge, but new countries can be incorporated very soon. Also, testing the mechanisms at the district level is crucial to make more robust inferences. Nevertheless, this first paper opens interesting venues of research. For example, it allows testing the potential implication of malapportionment in other historical phenomena. Recently,

Fernández (forthcoming) has argued that the choices of electoral systems in Europe favored the increasing support of farmers. According to this author, proportional electoral systems tended to produce a system of farm support based on market intervention and subsidies. This argument can be translated to legislative malapportionment. Moreover, it is necessary to explore how this new data can help us to uncover the mechanisms behind the implementation of malapportionment. We can focus on specific re-apportionment reforms and a discourse analysis of its debate. This can be useful to uncover the justification that lies behind electoral reforms in general.

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## Appendix

**Table A: Countries and elections in the sample**

<b>Country</b>	<b>Elections</b>
Germany	1871, 1874, 1877, 1878, 1881, 1887, 1890, 1893, 1898, 1903, 1907, 1912
Denmark	1861, 1869, 1872, 1873, 1876, 1879, 1884, 1887, 1890, 1892, 1895, 1898, 1901, 1903, 1906, 1909, 1910, 1913
Norway	1906, 1909, 1910, 1912, 1915, 1919
Netherlands	1888, 1891, 1894, 1897, 1901, 1905, 1909, 1913
Australia	1901, 1903, 1906, 1910, 1913, 1914, 1917, 1919, 1922, 1925, 1928, 1929, 1931, 1934, 1937
Italy	1886, 1890, 1896, 1897, 1900, 1902
United Kingdom	1874, 1880, 1884, 1885, 1891, 1897, 1902, 1915, 1919, 1920, 1921, 1926, 1928, 1932