

LEGISLATIVE MALAPPORTIONMENT AND INSTITUTIONAL PERSISTENCE

Miriam Bruhn

Francisco Gallego

Massimiliano Onorato

This Version: February 2010

First Version: June 2007

Abstract

This paper argues that legislative malapportionment, denoting a discrepancy between the share of legislative seats and the share of population held by electoral districts, serves as a tool for pre-democratic elites to preserve their political power and economic interests in a democracy. It thus provides an explanation for why economic growth-reducing institutions may persist even after transition to democracy. We argue that legislative malapportionment enhances the elite's political influence by over-representing areas that are more likely to vote for parties aligned with the elite. This biased political representation survives in equilibrium as long as it helps democratic consolidation. We use data from Latin America to document empirically that malapportionment promotes democratic consolidation. Moreover, we show that overrepresented electoral districts are more likely to vote for parties close to pre-democracy ruling groups. Overrepresented states also have lower levels of political competition, and they receive more transfers per capita from the central government, both of which favor the persistence of power of pre-democracy elites.

Keywords: democracy, dictatorship, institutions, Latin America, persistence, political economy.

JEL Classification: H1, N46, N10, P16, P48.

“The rules of the game in a society or, more formally [...] the humanely devised constraints that shape human interaction, [...] structure incentives in human exchange, whether political, social or economic”

North (1990, p. 3)

1 Introduction

A broad and relatively recent literature investigates the effects of legal and political institutions on long-run economic development. The papers in this literature typically claim that institutions were shaped at some time in history, for example during the colonial era. These institutions then persist over time and influence economic outcomes today. A number of papers illustrate that countries where institutions were shaped by economic and political elites in order to promote their own interests tend to be less developed economically today (see for example Acemoglu, Johnson and Robinson, 2001, 2002 and 2006, and Engerman and Sokoloff, 1997).

A fundamental question about this argument is, why and how do these institutions persist? If some institutions benefit only a minority in society (the elite) and hinder economic growth, then why don't they change when the country transitions to democracy? A recent paper by Acemoglu and Robinson (2008) provides an answer to these questions by developing a theoretical model that predicts that transition to democracy does not necessarily lead to a loss of economic and political power of the elite. In this model, the elite can influence democratic decision-making by undertaking several forms of investment, such as lobbying, paramilitary forces, and patronage. This implies that institutions and policies are not necessarily different in a democracy from what they are in a non-democracy⁽¹⁾.

Our paper contributes to this literature by illustrating that a specific feature of democratic regimes – legislative malapportionment – can also serve as a political tool for pre-democratic elites to preserve their political power and economic interests in a democracy. Legislative malapportionment refers to a discrepancy between the share of lower house seats and the share of the total population held by each electoral district. Many constitutions explicitly state that electoral districts should have the same share of lower house representatives as their respective share of the national population in order to guarantee the legal equality of each citizen's vote. However, this principle does not always hold in practice, and consequently the lower houses in many countries are malapportioned.

¹ Mulligan, Gil, and Sala-I-Martin (2004) show empirically that democracies do not necessarily have very different public policies from authoritarian regimes.

This paper first offers a political economy rationale for the emergence and persistence of legislative malapportionment. We base this rationale on Acemoglu and Robinson's (2006) argument that, at the time of transition to democracy, groups holding political power have strong incentives to manipulate the newly established political institutions, in order to protect their political and economic interests. We claim that legislative malapportionment provides these groups with a way of enhancing their *de jure* power by over-representing certain geographic areas and by favoring certain political parties versus others. This skewed political representation survives in equilibrium as long as it makes democratic consolidation more likely. At the same time, it is associated with lower political competition and distorts public policies, which also helps to preserve the power of pre-democratic elites.

The paper then provides empirical evidence for this theoretical argument. In contrast to other institutional arrangements of democracies, such as clientelist policies, corruption or lobbying, malapportionment is clearly defined and measurable, allowing us to test the predictions of our argument empirically. We first use panel data for 11 Latin American countries going from the late XIX century to the present, to show that higher legislative malapportionment makes democratic consolidation more likely, possibly because it helps to safeguard the interests of the groups that held political power before the transition to democracy occurred.

We then rely on within country data for a number of Latin American countries to examine the political tendencies of districts that are overrepresented in the sense that they have a higher share of representatives in the lower house than their population share⁽²⁾. Consistent with our theoretical argument, we show that, in the first election after transition to democracy, overrepresented districts are more likely to vote for parties that are close to pre-democracy ruling groups.

We also examine other political and economic policy consequences of malapportionment. In our within country dataset, we find that overrepresented districts have lower levels of political competition. Finally, even though overrepresented districts are not different from underrepresented districts with respect to output per capita and inequality, they receive a larger amount of transfers per capita from the central government. This last finding goes against the insights from traditional models of redistributive politics and confirms that unequal representation can translate into a higher ability to gain monetary benefits.

Although we provide evidence suggesting that malapportionment preserves the political power of pre-democratic elites, we do not show explicitly that this is linked to the persistence of specific

² We chose to limit the analysis to Latin America for two reasons. First, Latin American countries have more time series data available on legislative malapportionment. Second, the relatively higher degree of historical homogeneity of this sample of countries may allow us to better gauge the effect of legislative malapportionment on political and economic outcomes.

institutions. Other papers have identified specific institutions such as property rights or contracting institutions that can affect economic development (see Acemoglu and Johnson, 2005). We do not have a sufficient amount of panel or within country data on these institutions to test whether they are correlated with malapportionment. However, we interpret our findings as indicating that malapportionment helps pre-democratic elites to preserve the “rules of the game in a society” (North 1990, p. 3) that the elite put into place before transition to democracy. We thus view malapportionment as being linked to a broad definition of institutions, following Douglass North’s definition of institutions as being the “humanely devised constraints that shape human interaction”.

The paper is organized follows. Section 2 provides a short discussion of malapportionment and develops our theoretical argument for the emergence and persistence of legislative malapportionment. It also outlines the possible channels through which legislative malapportionment could affect political and economic policy outcomes. Section 3 describes our data. Section 4 includes the empirical analysis, and Section 5 concludes.

2 Motivating Theory

This section first discusses several general features of malapportionment and then lays out our theoretical argument for the origins and consequences of malapportionment.

A long standing literature in political science identifies malapportionment as a formal and often deliberate “pathology of electoral systems” (Taagepera and Shugart, 1989; Snyder and Samuels, 2004). Malapportionment – a discrepancy between the share of legislative seats and the share of population held by electoral districts – violates the “one person, one vote” principle that authors like Robert Dahl (1971, 1989) consider to be a basic pillar of fair democratic regimes. Even though this principle is often guaranteed by constitutional charts, in many countries it has been disregarded or implemented only after judicial intervention⁽³⁾.

Countries with a bicameral system can display a high level of malapportionment in the upper chamber since this chamber usually represents all geographic units more or less equally. While upper chamber malapportionment is normatively justifiable, there is no *a priori* reason for weighing the votes of citizens unequally in the lower chamber. This paper thus focuses only on lower chamber malapportionment.

³ For example, with two verdicts, *Baker v. Carr* in 1962 and *Wesberry v. Sanders* in 1964, the US Supreme Court ruled in favor of redesigning electoral districts since they were characterized by high levels of malapportionment. The Supreme Court’s motivation for these sentences was the necessity to safeguard the “one man, one vote” principle (see Casper, 1973).

Lower chamber malapportionment can arise spontaneously over time due to migration or different regional patterns of population growth. Western European and North American democracies typically have low levels of malapportionment since they periodically reapportion the number of seats attributed to electoral districts in response to these demographic changes (Snyder and Samuels, 2004).

On the other hand, the data from Samuels and Snyder (2001) and Snyder and Samuels (2004) reported in Tables 1 and 2, suggest that many of the countries with legislative malapportionment are newly established or consolidating democracies, implying that democratic regimes can also start out with high levels of malapportionment. It therefore seems unlikely that malapportionment is only the result of medium to long-run phenomena such as migration and differential patterns of regional demographic change. In addition, the evidence from Latin America reported in Table 2 suggests that malapportionment not only characterizes democracies around the time of their establishment, but that it tends to persist over time in some countries⁽⁴⁾.

In this paper, we argue that pre-democratic elites strive to promote malapportionment as a political tool for preserving the political and economic power they had before the transition to democracy. This argument builds on the model of transition to democracy developed by Acemoglu and Robinson (2006). We rely on the main insights of this model to study the origins and the persistence of malapportionment.

Acemoglu and Robinson (2006) highlight how elite groups that hold power in dictatorships can manipulate *de jure* or *de facto* democratic institutions in order to preserve their political and economic interests. Acemoglu and Robinson's model assumes the existence of two groups: (i) an "elite", the (typically) richest fraction of the population that holds political power during a dictatorship, and (ii) the "citizens", the (typically) poorest fraction of the population⁽⁵⁾. In addition, the model assumes that political contracts are incomplete, meaning that the elite promising benefits to the citizens is not incentive compatible ex-post, and that the citizens can threaten the elite with revolution if they do not receive enough income transfers⁽⁶⁾. In this set-up, redistributive policies are only sustainable and credible if the elite transfer political power, at least in part, to the citizens.

The main insight of this model is that in a Markovian equilibrium democratization acts as a credible commitment to pro-citizen policies. In this equilibrium, the elite has to democratize in

⁴ Snyder and Samuels (2004) report that, among the Latin American countries listed in Table 2, only Colombia, Uruguay and Venezuela do not have formal constitutional provisions that guarantee the "one citizen - one vote" principle. The remaining countries (with the exception of Peru) display high levels of malapportionment despite the fact that their constitutions formally prescribe the equality of each citizen's vote.

⁵ In general, the elite does not need to be the richest group in the population. They could be any small group that earns political or economic rents during a dictatorship. These rents could be lost as a consequence of the transition to democracy.

⁶ An exogenous distribution determines the likelihood that citizens will threaten the elite with revolution.

order avoid strikes, riots or - in the limit - a revolution. However, it is possible for the elite to build a distorted or “captured” democracy, where the elite holds proportionally more political power than their population share. A transition to a distorted democracy is more likely to occur whenever the elite has vested economic interests that are potentially threatened by the policies preferred by the citizens in the new democratic regime⁽⁷⁾. In addition, if – for ideological or economic reasons – the citizens prefer to live in a democratic regime, they may accept these biased political institutions, thereby committing not to harm the elite’s interests.

In a related paper, Acemoglu and Robinson (2008) build a model that predicts that policies remain invariant across authoritarian and democratic regimes in equilibrium. In this model, the elite has incentives to manipulate democracy in order to avoid losing their rents to the citizens. The elite can affect democratic decision-making by undertaking several forms of investment, such as lobbying, paramilitary forces, and patronage.

Applying this political economy framework to our paper, we view malapportionment as a device that the elite can employ to keep *de jure* political power after the transition to democracy⁽⁸⁾. That is, malapportionment could allow a democracy to emerge and persist but in a “captured” form with the elite still being able to impose their preferred policies. Malapportionment can act as a substitute for other mechanisms such as coups, lobbying, and vote buying that the elite can use to keep *de facto* power in a democracy but that involve collective action problems. This argument is also related to Dahl (1971), who states that democracies can be defined in terms of (i) institutionalization and (ii) representation. Successful democracies start with (i) and later move to (ii). In contrast, failures start with (ii) and follow with (i). Malapportionment could thus be present in the early stages of successful democracies and could help their consolidation. In Section 4, we test empirically whether malapportionment fosters democratic consolidation.

Our argument also relies on a number of case studies of Latin American countries discussed in Snyder and Samuels (2004). They document that the military dictatorships in Argentina and Brazil redistributed seats in the lower house just before the transition to democracy (1983 in Argentina, 1982 in Brazil) in order to over-represent conservative areas. As a consequence,

⁷ Acemoglu and Robinson (2006) use the example of the Chilean “*democracia protegida*” after the Pinochet dictatorship as an example of a distorted democracy in which the former dictator and its followers hold a disproportionate quota of *de jure* political power. In general, the model implies that countries where elite groups hold a larger share of national income are more likely to be characterized by distorted democratic institutions.

⁸ Several papers investigate the endogenous choice of democratic institutions. Aghion, Alesina, and Trebbi (2004) focus on the political economy of choosing the size of the minority needed to block legislation and the optimal size of the supermajority necessary to govern. Similarly, Trebbi, Aghion, and Alesina (2008) develop a theoretical model to show how the majority of a population can have strong incentives to manipulate electoral rules as the size of the minority changes. Evidence on the electoral rules of southern US cities is consistent with this theoretical argument. Finally, Ticchi and Vindigni (2003) model the determinants of the choice between majoritarian and consensual democracies. They show that more unequal countries are more likely to choose majoritarian democracy since it is more likely to have a political economic equilibrium with lower taxation and a smaller size of government.

Argentinean provinces that have only 31% of the national population control 44% of seats in the Chamber of Deputies and Brazilian regions that hold 42% of the population are endowed with 51% of the Lower Chamber's seats. In Chile, the Pinochet regime (1973 - 1990) behaved in a similar manner. Before Chile transitioned to democracy, the electoral system was redesigned to guarantee the over-representation of areas with more conservative political tendencies. Therefore, areas with 35% of the Chilean population control half of the seats in the Lower Chamber. We investigate this argument empirically in a larger set of countries. Section 4 tests whether overrepresented areas in 14 Latin American countries tend to lend political support to conservative parties that are close to pre-democratic political elites.

Overall, we thus argue that malapportionment is a tool that pre-democratic elites can use to achieve a certain degree of institutional persistence. That is, even after a country formally transitions to democracy, policies can still be shaped by the elite's preferences since malapportionment increases the number of lower house votes of parties aligned with the elite. Moreover, if malapportionment is indeed a way of preserving power for the elite, then it is basically self-enforcing, such that it persists over time. Since malapportionment is a legal device, any change to it will require a plurality of votes in parliament. However, such a plurality is unlikely to be achieved since malapportionment distorts the allocation of seats in favor of the groups that stand to gain from this preserving this distortion.

Moreover, malapportionment could lead to the persistence of the elite's political power by affecting the degree of political competition within electoral districts. Cox and Katz (1999) document that the redistricting that took place in US after the Supreme Court's intervention was associated with the disappearance of the long lasting pro-Republican bias in the translation of votes into seats in non-southern congressional elections. Section 4 of this paper tests empirically whether malapportionment is correlated with lower political competition.

Finally, malapportionment could also foster the persistence of the elite's political power by changing the allocation of public funds to areas in which the members of the elites have more political representation. Several empirical papers establish a link between malapportionment and the distribution of public spending. McCubbins and Schwartz (1988) and Ansolabehere, Gerber and Snyder (2002) study the effects of court ordered redistricting in the US. They document that reapportionment did not change the overall level of public spending, but significantly affected its distribution among electoral districts. Similarly, Horiuchi and Saito (2003) analyze the consequences for public spending of the reapportionment that took place in Japan in 1994. They find that this reform was associated with the equalization across municipalities of public transfers per capita. Other studies such as Gibson, Calvo and Falletti (2004) for Latin America and Knight

(2004) for the US Senate highlight that overrepresented areas get a larger share of federal funds. Samuels (2002) shows that the composition of several Brazilian budgetary committees (such as the Joint Committee for Planning, Public Budgets and Oversight or CMO) reflects the legislative chambers' patterns of geographical over/under representation. He also documents that this translates into a biased redistribution of public spending among Brazilian States. Aghion, Boustan, Hoxby, and Vandebussche (2006) show that members of the appropriation committee in the US legislature are able to channel more resources to electoral districts located in areas they represent. Although these papers document empirically that malapportionment influences that allocation of public resources, we test whether this relationship is also present in our dataset.

3 Data description

This section describes the data used in the empirical analysis. We first provide a definition of our measures of legislative malapportionment and then turn to the description of the other data. The panel and within country data used in this paper only cover Latin American countries.

3.1 Measures of legislative malapportionment

This paper uses two main measures of lower chamber legislative malapportionment. The first measure is an index of malapportionment at the country level provided by Samuels and Snyder (2001) and Snyder and Samuels (2004). Their measure is a slight modification of the Loosemore–Hanby index of disproportionality for electoral systems. Country j 's overall level of lower house malapportionment is computed as:

$$MAL_j = \frac{1}{2} \sum_{i=1}^N |s_i - v_i| \quad (1)$$

where s_i is the percentage of all seats allocated to district i and v_i is the percentage of the overall population that resides in district i . Each district's deviation from perfect apportionment is given by the difference between its share of seats and of the population. The formula sums over all N electoral districts in country j . The index thus denotes the share of seats allocated to districts that would not have received those seats if there were no legislative malapportionment.

A score of 0 corresponds to the case of a perfectly apportioned lower chamber where no citizen's vote weighs more than another's. Full malapportionment corresponds to a score of 1 and denotes a situation where a single district with only one voter has the right to choose all the

legislators. A value 0.25 of the index means that one fourth of the seats are allocated to districts that would not have them in the absence of legislative malapportionment.

We also use a within country variant on the measure of malapportionment in our empirical analysis. To measure electoral district i 's degree of over- or under-representation we follow the existing approach in the literature (see Ansolabehere et al., 2002) and adopt the following measure:

$$rep_i = \frac{s_i}{v_i} \tag{2}$$

where s_i is the share of seats allocated to the district i and v_i is district i 's share of the population. Values greater than 1 denote over-representation of district i , and the opposite is true for values lower than 1. The data needed to compute (2) are from Samuels and Snyder (2001) and Snyder and Samuels (2004), as well as from national sources.

3.2 Cross-country panel data

We use historical country-level data from 1870 to 2000 on political institutions for a panel of 11 Latin America countries⁽⁹⁾. Our measure of democracy is the variable *polity 2* from the Polity IV Dataset: it ranges from -10 to +10 with higher values corresponding to better democratic institutions. We normalize the measure so that all values fall between 0 and 1.

Some of our cross-country regressions control for per-capita GDP, which we take from Maddison (2005) for all the countries but Chile. For Chile, we use data from Díaz et al. (2008).

3.3 Within country data

Our source for Latin American within country data is Bruhn and Gallego (2009). This source provides data on income per capita, the Gini index, temperature, rainfall, and on the type of colonial activities, as well as a landlocked dummy, for different regions within 14 Latin American countries⁽¹⁰⁾. We collected additional within-country information on political parties, electoral outcomes, and on transfers from the central government from several national sources and documents.

⁹ The countries included in this panel dataset are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Honduras, Peru, Uruguay and Venezuela.

¹⁰ The countries covered in this within country dataset are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Uruguay, and Venezuela.

4 Empirical evidence

This section presents the empirical tests of our theoretical predictions from Section 2. We first study the relationship between malapportionment and democratic consolidation. Then, we investigate whether malapportionment provides political influence to pre-democracy elites. Finally, we examine the correlation of malapportionment with other economic and political outcomes.

4.1 Malapportionment and democratic consolidation

In Section 2, we argue that legislative malapportionment can help democratic consolidation. If the groups that held political power pre-democracy are able to strategically engineer democratic institutions in a way that guarantees them more political influence than corresponds to their population share, they have fewer incentives to overthrow democratic regimes. Moreover, as also mentioned in Section 2, Dahl (1971) suggests that democratic consolidation may be more likely if the first step of democratic institutionalization is only later followed by full representation.

This section provides empirical evidence for a positive relationship between legislative malapportionment and democratic consolidation. Our empirical strategy closely follows Acemoglu, Johnson, Robinson, and Yared (2005 and 2007). The estimating equation is:

$$d_{it}^+ = \alpha d_{it-1} + \beta mal_{it-1} + \gamma y_{it-1} + \delta_i + \mu_t + \varepsilon_{it-1} \quad (3)$$

where d_{it} is the POLITY IV score of democracy normalized between 0 and 1 and $d_{it-1}^+ = \max\{d_{it}, d_{it-1}\}$, implying that Equation 3 only focuses on upward trends in the democracy score. Equation 3 includes the lagged dependent variable to capture persistence in democracy scores and the lag of the logarithm of legislative malapportionment (mal_{it-1}). Since an extensive literature dating back to Lipset (1959) claims that economic prosperity has a positive impact on democracy and democratic consolidation, and given that malapportionment is correlated with income⁽¹¹⁾, we also include the log of lagged income as a control in Equation 3⁽¹²⁾. Finally, we control for country and time fixed effects. The observations, going from 1870 to 2000, are taken over 5 year intervals and standard errors are clustered at the country level.

Column 1 of Table 3 reports OLS estimates of Equation 3. The estimate of the coefficient of interest β is positive and statistically significant, suggesting that higher legislative malapportionment promotes democratic consolidation for the Latin American countries included in

¹¹ Running panel data regressions in our sample of Latin American countries, controlling for countries and time fixed effects, we find that the lagged level of malapportionment Granger – causes income, but not the opposite. These results are available from the authors upon request.

¹² See Acemoglu et al. (2007) for a critical reexamination of the empirical evidence about the modernization hypothesis.

our sample. Moreover, the democracy score shows high persistence over time and income per capita is positively correlated with the democracy score⁽¹³⁾.

As a robustness check, Column 2 of Table 3 presents the estimates of Equation 3 using a GMM procedure, to address the potential biases that can arise when estimating a quasi-dynamic panel with country fixed effects. The results confirm the positive effect of malapportionment on democratic consolidation⁽¹⁴⁾. However, the size of the coefficient on lagged malapportionment increases in magnitude, suggesting that the results in Column 1 are biased due to the fact that they are estimated in a quasi-dynamic panel with country fixed effects. In the GMM regression, the lagged value of income is no longer correlated at a statistically significant level with the democracy score, which is in line with Acemoglu et al. (2007).

The effect of malapportionment on democratic consolidation is also economically significant. A one standard deviation increase in log malapportionment implies an increase of 0.73 standard deviations in the democracy index in the short-run. Taking into account that the democracy index is persistent over time, the long-run effect of malapportionment on democratic consolidation is even larger. In the long-run, a one standard deviation increase in log malapportionment is associated with a one standard deviation increase in the democracy index.

Overall, the results in this section are consistent with our hypothesis suggesting that malapportionment has a significant and economically relevant positive effect on democratic consolidation.

4.2 Malapportionment and political representation of pre-democracy elites

Our theoretical argument and the evidence we have provided so far suggest that legislative malapportionment may guarantee the pre-democracy elite a disproportionate level of political influence after transition to democracy. We test this argument directly using within country data for six Latin America countries. This data allows us to investigate whether regions that are overrepresented are more likely to be represented by political parties that are closest to the most recent authoritarian regime.

We identify these parties based on information from the Economist Intelligence Unit's country reports and other sources. For each state or region, we then compute the vote shares that these political parties received in the first lower house election after the transition to democracy. We collected data for 118 regions in six Latin America countries that have transitioned to democracy

¹³ This finding is not in line with Acemoglu et al. (2007). Using a sample much larger than ours, they find no statistically significant relation between income and improvement in the democracy score.

¹⁴ Regressions for downward trends in democracy that use $d_{it-1}^- = \min\{d_{it}, d_{it-1}\}$ as the dependent variable show no correlation between malapportionment and democracy. The results are available from the authors upon request.

since the 1980s and that have political groups close to the previous non-democratic regime (Bolivia, Brazil, Chile, Mexico, Paraguay, and Uruguay)⁽¹⁵⁾. The model we estimate is:

$$s_{ij} = \alpha + \beta rep_{ij} + \phi x_{ij} + \delta_j + \varepsilon_{it} \quad (4)$$

where for each country j , s_{ij} is the share of lower house votes going to the parties close to the pre-democracy regime in region i , rep_{ij} is the log of our measure of district i 's over or under-representation, x_{ij} is a set of climate controls (rainfall and temperature) and geography controls (elevation and a landlocked dummy), and the δ_j 's are a full set of country fixed effects.

The results in Columns 1 and 2 of Table 4 document that over-represented electoral districts were more likely to vote for representatives belonging to the political parties that were close to former non-democratic regimes in the first election after transition to democracy. Our estimates imply that a one-standard deviation increase in the log of overrepresentation in these regions is associated with between a seven and an 11 percent increase in the vote shares going to parties close to the pre-democracy regime (equivalent to between 29 and 46 percent of a standard deviation of the vote shares going to these parties). We interpret this as evidence that malapportionment provides a disproportionately high share of political power to pre-democracy elites.

Next, we conduct a robustness check in which we run regressions similar to Equation 4, but using information on elections that took place *during* non-democratic periods. This is the case of the 1978 elections in Brazil, the 1988 plebiscite in Chile, and the 1991 parliamentary elections in Mexico. For these elections, we compute the vote shares supporting the regime⁽¹⁶⁾. The results in Columns 3 and 4 in Table 4 show a positive correlation between both variables. Results using a country dummy are imprecisely estimated, but results using a random effects model imply the effect is positive and significant at a 1.5% level. The economic significance of these results is very similar

¹⁵ We consider the following years for the low chamber elections and the following parties to be closest to the former non-democratic regime:

- Bolivia, 1989, the A.D.N. party.
- Brazil, 1990, the P.D.S. party.
- Chile, 1989, the Alianza coalition.
- Mexico, 2000, P.R.I.
- Paraguay, 1996, the Colorado party.
- Uruguay, 1984, the Colorado party.

The case of Peru is also interesting, but we do not include it here because, since the 1991 reform, Peru has a lower chamber with only one nationwide electoral district and therefore it is not possible to compute the degree of over-representation for each region. This reform was implemented during the Fujimori dictatorship, and in the 1990 election the degree of over-representation was negatively correlated with the percentage of support for Cambio 90, the political group closest to Fujimori in the 1990 elections. Therefore, the 1991 Fujimori reform can actually also be explained with our theory.

¹⁶ For Brazil, we look at support for the ARENA party, for Chile at the SI option in the plebiscite, and for Mexico at support in favor of the PRI party.

to the results presented in columns 1 and 2 (equivalent to between 26 and 29% standard deviations of the support of the dictatorships). This exercise gives additional support to our hypothesis of a positive association between the share of seats granted to electoral districts in the democratic period and their past political support to authoritarian regimes.

4.3 Malapportionment and political and economic policy outcomes

This section uses within country data for 15 Latin America countries to study the possible effects of malapportionment on political and economic policy outcomes. We need to use *within* country data to study these channels since our theoretical argument suggests that malapportionment shifts the distribution of political power across regions within countries.

We first study whether malapportionment is correlated with political competition. We proxy political competition by using the Herfindahl-Hirschmann index of political concentration (HH index) based on the share of votes going to different political coalitions in different states. An increase in this index implies an increase in the degree of political concentration. The first two columns of Table 5 present the results of running regressions similar to Equation 4 but using the HH index as the dependent variable. Columns 1 and 2 include regression without and with controls, respectively. The results show a positive relationship between malapportionment and the degree of political concentration. However, the results in the regression with controls are only marginally statistically significant (p-value of 0.15). In terms of the economic significance of the results, a one standard deviation increase in over-representation leads to an increase of about 0.09 standard deviations of our measure of concentration.

To further study this mechanism and to relate it to the results in Table 4, we run regressions of the interaction of the pro-government share and the HH index on the same determinants. The idea here is to study whether political concentration in these areas is related to the political groups that are closer to former non-democratic regimes⁽¹⁷⁾. Columns 3 and 4 of Table 5 present the results without and with controls. The estimates in both columns are positive, statistically significant and economically relevant. A one standard deviation increase in over-representation increases the dependent variable by between 0.35 and 0.50 standard deviations, accordingly to the results of Columns 3 and 4, respectively. All in all, these results imply that the degree of political concentration, especially in parties that benefit from over-representation after transition to democracy, increases as over-representation increases, as suggested by our motivating theory.

¹⁷ Notice that the dependent variable can be interpreted as the probability that two random voters vote for the political groups that are closer to former non-democratic regimes because it is the probability that two people vote for the same party (the HH index) times the probability that a person votes for the political groups that are closer to former non-democratic regimes (the share of votes going to these groups).

Our theoretical discussion and the previous literature also suggest that malapportionment could affect the distribution of public transfers across regions. We estimate the relationship between malapportionment and transfers per capita with a model similar to Equation 4, where the dependent variable is the transfers per capita from the central government to region i . We use two alternative measures of transfers. “Total transfers” includes all transfers that the central government made to a region, including transfers to state and municipal governments, social transfers, direct expenditures and investment by the central government, as well as transfers to public universities, whenever available. The categories included vary from country to country, depending on availability. A more uniform variable is “transfers to sub-national government” which includes only transfers to state and/or municipal governments within a region.

The results in Columns 1 and 2 of Table 6 confirm the previous findings in the literature that over-representation translates into higher transfers per capita from the central government. In terms of economic significance, our results imply that a one standard deviation increase in malapportionment at the local level increases transfers per-capita by about 10 percent of a standard deviation.

Columns 3 and 4 of Table 6 check whether overrepresented areas are either more unequal or poorer than underrepresented areas. If this were true, then the higher transfers to these regions could be due to a welfare criterion in which poorer regions or poorer people receive more transfers. However, Columns 3 and 4 show that overrepresented areas are neither poorer nor more unequal than underrepresented areas. We thus interpret the results in Table 6 as providing additional evidence that stronger legislative representation translates into more political influence and higher economic benefits for overrepresented regions.

5 Conclusion

In this paper, we argue that pre-democracy elites can strategically create malapportionment in the electoral system during the transition to democracy in order to safeguard their economic interests in a newly established democracy. Our results show that higher levels of legislative malapportionment foster democratic consolidation, presumably because it makes pre-democratic elites feel less threatened by the policies that might be implemented during the new democratic regimes. Moreover, we find that, within a country, overrepresented electoral districts are more likely to vote for parties that are close to the former non-democratic regime.

In addition, we highlight two consequences of malapportionment for political and economic policy outcomes. First, malapportionment is associated with a decrease in political competition

particularly for parties close to former non-democratic regimes. Second, overrepresented districts receive larger transfers per capita from the central government, despite the fact that they are not poorer or more unequal. This contrasts with traditional models of redistributive political economy and highlights that larger legislative representation induces greater political influence.

In future research, we plan to investigate the effects of malapportionment on economic development. The decrease in political representation or miss-allocations of public transfers we document in this paper may have negative effects on regional development. The big challenge with identifying these effects though is to find a source of exogenous variation in malapportionment at the state level.

REFERENCES

- Acemoglu, Daron (2006)** “A Simple Model of Inefficient Institutions”, *Scandinavian Journal of Economics*, 108 (4): 515-546.
- Acemoglu, Daron, Maria Angelica Bautista, Pablo Querubin, and James Robinson (2008)** “Economic and Political Inequality in Development: The Case of Cundinamarca, Colombia”, in E. Helpman (ed.), *Institutions and Economic Performance*; Cambridge: Harvard University Press.
- Acemoglu, Daron, and Simon Johnson (2005)** “Unbundling Institutions”, *Journal of Political Economy*, 113 (5): 949-995.
- Acemoglu, Daron, Simon Johnson, and James Robinson (2001)** “The Colonial Origins of Comparative Development: An Empirical Investigation”, *American Economic Review*, 91 (5): 1369-1401.
- Acemoglu, Daron, Simon Johnson, and James Robinson (2002)** “Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution”, *The Quarterly Journal of Economics*, 117 (4): 1232-1294.
- Acemoglu, Daron, Simon Johnson, and James Robinson (2006)** “Institutions as the Fundamental Cause of Long-Run Growth”, in P. Aghion, and S. Durlauf (eds.), *Handbook of Economic Growth*; Amsterdam: Elsevier.
- Acemoglu, Daron, Simon Johnson, James Robinson, and Pierre Yared (2005)** “Income and Democracy”, *NBER Working Paper 11205*.
- Acemoglu, Daron, Simon Johnson, James Robinson, and Pierre Yared (2007)** “Reevaluating the Modernization Hypothesis”, *NBER Working Paper 13334*.
- Acemoglu, Daron, and James Robinson (2006)** *Economic Origins of Dictatorship and Democracy*; New York: Cambridge University Press.
- Acemoglu, Daron, and James Robinson (2008)** “Persistence of Power, Elite and Institutions”, *American Economic Review*, 98 (1): 267-293.
- Acemoglu, Daron, Davide Ticchi, and Andrea Vindigni (2006)** “Emergence and Persistence of Inefficient States”, *NBER Working Paper 12748*.
- Aghion, Philippe, Alberto Alesina, and Francesco Trebbi (2004)** “Endogenous Political Institutions”, *The Quarterly Journal of Economics*, 119 (2): 565-611.
- Aghion, Philippe, Leah Boustan, Caroline Hoxby, and Jerome Vandenbussche (2006)** “Exploiting States' Mistakes to Identify the Causal Impact of Higher Education on Growth”, Manuscript, Harvard University.
- Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg (2003)** “Fractionalization”, *Journal of Economic Growth*, 8 (2): 155-194.
- Ansolabehere, Stephen, Alan Gerber, and James Snyder (2002)** “Equal Votes, Equal Money: Court-Ordered Redistricting and Public Expenditures in the American States”, *The American Political Science Review*, 96 (4): 767-777.
- Arellano, Manuel, and Stephen R. Bond (1991)** “Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations”, *The Review of Economic Studies*, 58 (2): 277-297.

- Besley, Timothy, and Ian Preston (2007)** “Electoral Bias and Policy Choice: Theory and Evidence”, *The Quarterly Journal of Economics*, 122 (4): 1473-1510.
- Bruhn, Miriam, and Francisco Gallego (2009)** “Good, Bad and Ugly Colonial Activities: Studying Development Across the Americas”, *Documentos de Trabajo 334*, Instituto de Economía PUC Chile.
- Casper, Gerhard (1973)** “Apportionment and the Right to Vote: Standards of Judicial Scrutiny”, *The Supreme Court Review*, 1973: 1-32.
- Cox, Gary W., and Jonathan N. Katz (1999)** “The Reapportionment Revolution and Bias in U.S. Congressional Elections”, *American Journal of Political Science*, 43 (3): 812-841.
- Dahl, Robert (1971)** *Polyarchy: Opposition and Participation*; New Haven: Yale University Press.
- Dahl, Robert (1989)** *Democracy and its Critics*; New Haven: Yale University Press.
- Díaz, José, Rolf Lüders, and Gert Wagner (2008)** “La Republica en Cifras: Chile 1810–2000”, Economic History and Cliometrics Laboratory, Pontificia Universidad Católica de Chile.
- Engerman, Stanley L., and Kenneth L. Sokoloff (1997)** “Factor endowments, institutions, and differential paths of growth among new world economies”, in S. H. Haber (ed.), *How Latin America Fell Behind*; Stanford: Stanford University Press.
- Gallego, Francisco (2009)** “Historical Origins of Schooling: The Role of Democracy and Political Decentralization”, *The Review of Economics and Statistics*, forthcoming.
- Gibson, Edward L., Ernesto F. Calvo, and Tulia G. Falleti (2004)** “Reallocation Federalism: Territorial Overrepresentation and Public Spending in the Western Hemisphere” in E. L. Gibson (ed.), *Federalism and Democracy in Latin America*; Baltimore: The Johns Hopkins University Press.
- Hall, Robert E., and Charles I. Jones (1999)** “Why do Some Countries Produce So Much More Output per Worker than Others”, *The Quarterly Journal of Economics*, 114 (1): 83-116.
- Heston, Alan Robert Summers, and Bettina Atten (2006)** *Penn World Table Version 6.2.*, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.
- Horiuchi, Yusaku, and Jun Saito (2003)** “Reapportionment and Redistribution: Consequences of Electoral Reform in Japan”, *American Journal of Political Science*, 47 (4): 669-682.
- Knight, Brian (2004)** “Legislative Representation, Bargaining Power, and the Distribution of Federal Funds: Evidence from the U. S. Senate”, *NBER Working Paper 10385*.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (1999)** “The quality of Government”, *The Journal of Law, Economics, and Organization*, 15 (1): 222-279.
- Lipset, Seymour M. (1959)** “Some Social Requisites of Democracy: Economic Development and Political Legitimacy”, *American Political Science Review*, 53 (1): 69-105.
- Maddison, Angus (2005)** *The World Economy. Historical Statistics*; Paris: The OECD.
- McCubbins, Mathew, and Thomas Schwartz (1988)** “Congress, the Courts, and Public Policy: Consequences of the One Man, One Vote Rule”, *American Journal of Political Science*, 32 (2): 388-415.
- Mulligan, Casey B., Richard Gil, and Xavier Sala-i-Martin (2004)** “Do Democracies Have Different Public Policies than Nondemocracies?”, *Journal of Economic Perspectives*, 18 (1): 51-74.

North, Douglass C. (1990) *Institutions, Institutional Change, and Economic Performance*; New York: Cambridge University Press.

Samuels, David (2002) “Progressive Ambition, Federalism, and Pork – Barreling in Brazil”, in S. Morgenstern, and B. Nacif (eds), *Legislative Politics in Latin America*; New York: Cambridge University Press.

Samuels, David, and Richard Snyder (2001) “The Value of a Vote: Malapportionment in Comparative Perspective”, *British Journal of Political Science*, 31 (4): 651-671.

Snyder, Richard, and David Samuels (2004) “Legislative Malapportionment in Latin America: Historical and Comparative Perspectives”, in E. Gibson (ed.), *Federalism and Democracy in Latin America*; Baltimore: The Johns Hopkins University Press.

Stepan, Alfred (2000) “Brazil’s Decentralized Federalism: Bringing Government Closer to the Citizens?”, *Daedalus*, 129 (2): 93-110.

Taagepera, Rein, and Matthew S. Shugart (1989) *Seats and Votes: The Effects and Determinants of Electoral Systems*; New Haven: Yale University Press.

Ticchi, Davide, and Andrea Vindigni (2003) “Endogenous Constitutions”, *Seminar Paper 726*; Stockholm University: Institute for International Economic Studies.

Trebbi, Francesco, Philippe Aghion, and Alberto Alesina (2008) “Electoral Rules and Minority Representation in U.S. Cities”, *The Quarterly Journal of Economics*, 123 (1): 325-357.

Table 1. Most Malapportioned Countries and Transition to Democracy

| Country | Malapportionment (Lower Chamber) | Transition to democracy (Year) |
|-------------|-------------------------------------|-----------------------------------|
| Tanzania | 0.2619 | 2000 |
| South Korea | 0.2075 | 1987 |
| Ecuador | 0.2040 | 1979 |
| Kenya | 0.1946 | 2002 |
| Ghana | 0.1782 | 1996 |
| Zambia | 0.1725 | 1991 |
| Iceland | 0.1684 | 1944 |
| Bolivia | 0.1677 | 1982 |
| Malawi | 0.1659 | 1994 |
| Chile | 0.1622 | 1989 |

SOURCES: Samuels and Snyder (2001) for the measure of malapportionment and POLITY IV database for coding transition to the democracy. Transition to democracy is defined as the first year where the variable POLITY2 assumes a value greater than zero with no subsequent reversal to below zero. The year of transition to democracy in Iceland is the year in which the country became an independent Republic.

Table 2. Malapportionment and Transition to Democracy in Latin America

| Country | Transition to democracy | Malapportionment at transition to democracy | Malapportionment today (in 2000) |
|-----------|-------------------------|--|-------------------------------------|
| Argentina | 1983 | 0.15 (1985) | 0.14 |
| Bolivia | 1982 | 0.23 (1985) | 0.17 |
| Brazil | 1985 | 0.10 (1985) | 0.09 |
| Chile | 1989 | 0.15 (1990) | 0.15 |
| Colombia | 1957 | 0.15 (1960) | 0.13 |
| Ecuador | 1979 | 0.15 (1980) | 0.20 |
| Honduras | 1980 | 0.07 (1980) | 0.04 |
| Peru | 1993 | 0 (1995) | 0 |
| Uruguay | 1985 | 0.07 (1985) | 0.03 |
| Venezuela | 1958 | 0.06 (1958) | 0.07 |

SOURCES: Snyder and Samuels (2004) for the measure of malapportionment and POLITY IV database for coding transition to the democracy. Transition to democracy defined as the first year where the variable POLITY2 assumes a value greater than zero with no subsequent reversal to below zero.

Table 3. Malapportionment and Democratic Consolidation

| | Dependent variable: Polity 2 Measure of Democracy | |
|---|--|---------------------|
| | (1) | (2) |
| Democracy _{t-1} | 0.751*** (0.104) | 0.281* (0.172) |
| Log Malapportionment _{t-1} | 0.033* (0.016) | 0.260*** (0.089) |
| Log GDP per capita _{t-1} | 0.153*** (0.020) | 0.145 (0.152) |
| Observations | 103 | 103 |
| R-squared | 0.879 | - |
| Implied Cumulative Effect of Malapportionment | 0.12 [0.15] | 0.36 [0.02] |
| Estimation Method | OLS | GMM |
| AR (2) (p-value) | | 0.770 |
| Sargan test (p-value) | | 0.108 |

NOTES: Data covers 11 Latin American countries from 1870 to 2000, over 5 year intervals. The OLS regression in Column (1) includes country and year fixed effects and has the error term clustered at the country level. Specification in Column (2) includes year fixed effects. The instruments for income and malapportionment in the first differenced equation are the lags of these variables. In both columns, the implied cumulative effect of malapportionment is the coefficient estimate of malapportionment divided by 1 minus the coefficient on lag democracy. The p-value from a non-linear test of the significance of this coefficient is in square brackets. Robust standard errors in parenthesis. Significance levels: * 10% ** 5% ***1%

Table 4. Malapportionment and Political Representation of Pre-Democracy Elites

| | Dependent variable: | | | |
|-----------------|---|--------------------|--|--------------------|
| | Vote share for parties close to pre-democracy regimes | | Share of votes for pre-democracy regimes | |
| | (1) | (2) | (3) | (4) |
| Log(Seats/Pop) | 0.064** (0.026) | 0.099** (0.041) | 0.047* (0.026) | 0.053** (0.021) |
| Country dummies | Yes | Yes | Yes | No |
| Controls | No | Yes | Yes | Yes |
| Observations | 118 | 118 | 70 | 70 |
| R-squared | 0.47 | 0.56 | 0.60 | 0.45 |

NOTES: The sample in Columns 1 and 2 include regional data for Bolivia, Brazil, Chile, Mexico, Paraguay, and Uruguay. The vote share, as well as the measure of over- or under-presentation, is for the first election after transition to democracy in these countries. Columns 3 and 4 include data from Brazil, Chile, and Mexico. Robust standard errors in parenthesis. Significance levels: * 10% ** 5% ***1%.

Table 5. Overrepresentation and Political Competition

| | Dependent variable: | | | |
|----------------|--|------------------|---|--------------------|
| | Herfindahl-Hirschmann (HH) index of political concentration | | HH index times share of votes for parties close to former dictatorships | |
| | (1) | (2) | (3) | (4) |
| Log(Seats/Pop) | 0.016*** (0.007) | 0.006 (0.007) | 0.028** (0.013) | 0.040** (0.017) |
| Controls | No | Yes | No | Yes |
| Countries | 12 | 12 | 6 | 6 |
| Observations | 236 | 236 | 118 | 118 |
| R-squared | 0.74 | 0.76 | 0.44 | 0.53 |

OLS regressions with country fixed effects and robust standard errors in parenthesis. Regressions include the following region level controls: landlocked dummy, average yearly temperature and temperature squared, total yearly rainfall and rainfall squared, altitude and altitude squared (for sources see Bruhn & Gallego, 2008). Significance levels: * 10% ** 5% ***1%.

Table 6. Over-Representation and Transfers

| | Dependent variable: | | | |
|----------------|-------------------------------|--|------------------|-----------------------|
| | Total transfers per capita | Transfers per capita to sub- national governments | Log Gini index | Log GDP per capita |
| | (1) | (2) | (3) | (4) |
| Log(Seats/Pop) | 0.482*** (0.056) | 0.558*** (0.063) | 0.007 (0.014) | 0.011 (0.057) |
| Countries | 12 | 9 | 9 | 12 |
| Observations | 229 | 176 | 167 | 229 |
| R-squared | 0.99 | 0.99 | 0.75 | 0.50 |

NOTES: OLS regressions with country fixed effects and robust standard errors in parenthesis. Regressions include the following region level controls: landlocked dummy, average yearly temperature and temperature squared, total yearly rainfall and rainfall squared, altitude and altitude squared (for sources see Bruhn & Gallego, 2008). The variable “total transfers” includes all transfers that the central government made to a region, including transfers to state and municipal governments, social transfers, direct expenditures and investment by the central government, as well as transfers to public universities, whenever available. The categories included vary from country to country, depending on availability. A more uniform variable is “transfers to sub-national government” which includes only transfers to state and/or municipal governments within a region. It is missing for Chile, Ecuador, and Honduras because data on transfers to state or municipal governments were unavailable or because total transfers were not available broken down into sub-categories. Significance levels: * 10% ** 5% ***1%.