Why Don't We Tax the Rich?

Inequality, Legislative Malapportionment, and Personal Income Taxation around the World

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Abstract[*]

Personal income taxation remains relatively low in many developing countries despite recent democratic advancement and rapid economic growth; this is hard to reconcile with standard political economy models of taxation. This paper argues that the details of political institutions help to explain these low levels of personal income taxation. In particular, legislative malapportionment enables rich elites to have disproportionate political influence. Because over-represented districts tend to be dominated by parties aligned with the elite, these groups can block legislative attempts to introduce progressive taxes. Using a sample of more than 50 countries (including 17 across Latin America) between 1990 and 2007, this paper finds that i) countries with historically more unequal distributions of wealth and income systematically present higher levels of legislative malapportionment, and ii) higher levels of malapportionment are associated with lower shares of personal income taxes in GDP.
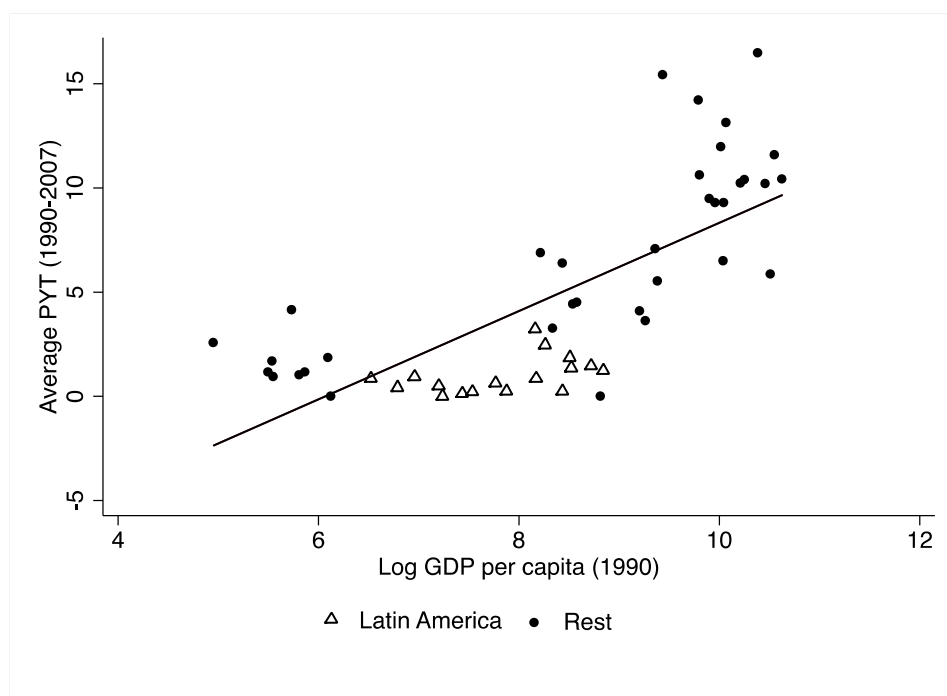
1. Introduction

While general tax collection has been on the rise in recent years across Latin America, personal income taxation remains below the international norm. For example, the average Latin American country collects 5 percentage points of GDP less than what would be expected given its level of economic development, which tends to be one of the determinants for implementing a tax that requires self-reporting and enforcement technologies. As shown in Figure 1, every Latin American country lies below a simple regression line relating personal income tax revenues and the level of development, measured by per capita GDP at the beginning of the period.[1] Given that the most standard economic determinant cannot explain this finding, could the answer lie in political factors?

Figure 1. Personal Income Taxes (PYT) and Development

Source: Authors' compilation based on data sources described in Appendix.

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[1] The tax data we use throughout the paper come from various sources: Inter-American Development Bank (IDB), Organization for Economic Co-operation and Development (OECD), Asian Development Bank (ADB) and Keen and Mansour (2009).

A natural starting point is to look at the role of the political regime. After a long history of democratic interruptions and the beginning of the third wave of democratization during the 1980s and 1990s, scholars and pundits alike expected that the transition to democracy would increase pressures for the mobilization of revenue drawn from taxes on income, which in principle should be more progressive than other forms of collection such as indirect taxes. According to the classic median voter model of redistributive politics (Meltzer and Richard, 1981), in a context of high inequality and democratic decision-making (as is the case in contemporary Latin America),[2] it is expected that a relatively poor median voter would demand relatively higher taxation on the wealthy in order to bring about income redistribution.[3] That a majority of citizens in the region perceive the income distribution to be unfair or very unfair—more than 60 percent in every country except Venezuela (Figure 1 in the Appendix)—and that they also tend to favor redistributive policies (Figure 2 in the Appendix) would initially seem to support the theoretical arguments that link democracy with greater income redistribution.
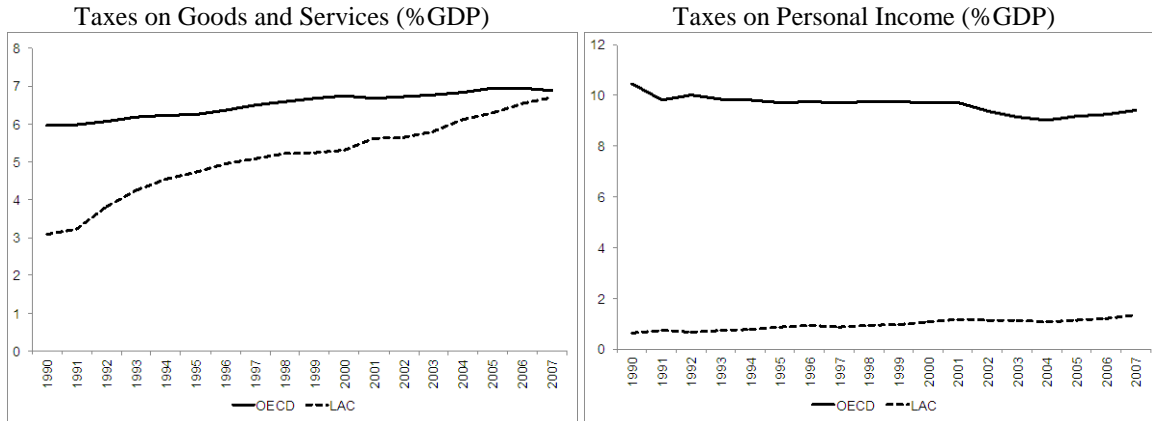
However, contrary to these expectations, the empirical evidence shows that democratization has not been accompanied by large increases in income taxation across the region (Wibbels and Arce, 2007; Profeta and Scabrosseti, 2010). On the contrary, indirect taxes, which do not necessarily fall more heavily on the rich, have gained even more momentum in spite of substantial increases in democratic scores across the region over time. For example, Figure 2 shows that, while how much average taxes on goods and services (GSS) have converged between Latin America and the OECD, personal income taxes have remained far apart.[4] The "inertia" of personal income taxation is even more striking if one considers earlier time periods: the share of personal income taxes in total tax revenue or GDP has changed very little over the last thirty years in developing countries in general (Bird and Zolt, 2005).

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[2] Latin America ranks at the top among world regions in terms of inequality, second only to Sub Saharan Africa (World Development Report, 2006).

[3] In the most classical version of this model (Meltzer and Richard, 1981) voters decide on the tax rate that would provide them with the highest level of utility given that the government redistributes what it collects and people adapt their effort in the labor market according to the tax rate. In equilibrium, the rate preferred by the median voter is chosen. The higher the difference between the median voter's income and the average income—that is, the higher the level of inequality—the higher the tax rate that will be chosen in equilibrium.

[4] For general overviews of patterns of taxation at different development stages, see Burgess and Stern (1993) and Gordon and Li (2009).

Figure 2. Evolution of Taxation across Regions

Taxes on Goods and Services (%GDP) — Taxes on Personal Income (%GDP)

Source: Author's compilation based on data sources described in Appendix.

Multiple hypotheses have been proposed regarding why these policy trends have persisted despite substantial political regime changes in the region. These explanations are based on an understanding that the assumptions behind the more stylized models linking inequality, democracy, and redistribution do not necessarily hold in reality.[5] One of these explanations relies on the fact that the choice rule in the median voter models is always simple majority, thus treating "democracy" as a homogenous political institution. However, democratic regimes come in different forms, with different constitutional arrangements and institutions, a fact that warrants a more detailed look at the specific characteristics that determine the transformation of preferences into policy decisions. In fact, certain details of political institutions may even bias political representation *against* the interests of a majority.

This paper illustrates an instance where the details of political institutions matter for economic outcomes. In particular, we show how *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 elites to preserve their economic interests in a democracy by introducing bias in political representation. Because over-represented districts tend to be dominated by parties aligned with the elite, at least across Latin America (Bruhn, Gallego and Onoratto, 2010), we argue that these groups are able to block attempts at introducing progressive taxes in the legislative arena and thus safeguard their economic interests.[6] As a consequence, we

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[5] See Machado (2008) for a review of some of these explanations.
[6] Of course, the elite can influence democratic decision-making by undertaking several other forms of collective action, such as lobbying, vote-buying, or threats of violence and the disruption of economic activity. In highlighting

expect legislative malapportionment to negatively affect the share of personal income taxes in GDP. Thus, this paper shows how legislative malapportionment enables rich elites to have a disproportionate influence on democratic politics relative to their numbers.

If the degree of malapportionment were a completely exogenous variable, while it might provide an additional explanation for the composition of government revenues, it might not help to advance alternative explanations for the puzzling lack of a positive relationship between higher inequality and personal income taxes. However, political institutions such as legislative malapportionment are endogenous to prevailing background conditions at the time of the constitutional convention, or during transitions to democracy. As such, this paper not only assesses the economic consequences of malapportionment, but also offers a political economy rationale for its emergence, which provides an additional explanation for the puzzling relationship between inequality and levels of fiscal redistribution. Moreover, the paper also specifies an additional channel behind the relationship between elites, political power, and economic outcomes (Acemoglu and Robinson, 2006 and 2008).

At many times in Latin America's twentieth-century, political leaders have undertaken institutional reforms to increase malapportionment for politically strategic reasons (Snyder and Samuels, 2004). Groups holding political power at one point in time have strong incentives to manipulate political institutions in order to protect their economic interests in the future. The incentives for manipulation are stronger, we argue, the higher the level of preference heterogeneity or polarization, that is, the larger the gap between different groups' ideal policies. One important source of heterogeneity is the level of asset and income inequality in society.[7]

While we have motivated this paper from the puzzling evidence coming from Latin America, the empirical regularity between malapportionment and personal income taxation seems to cross beyond its borders. As presented in Figure 3, the relationship between higher malapportionment (MAL) and lower personal income taxation (PYT) seems to hold across regions.

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an "institutionalized" (or de jure) form of participation, such *alternative political technologies* (see Scartascini and Tommasi, 2009) remain outside of the scope of this paper.

[7] Glaeser (2006) and Bértola (2011) summarize the existing evidence and the state of the discussion on the impact of inequality on political institutions.

Figure 3. Legislative Malapportionment and Personal Income Taxes (% of GDP)

Consequently, based on a panel dataset of more than 50 countries (including 17 in Latin America) between 1990 and 2007, this paper presents three main findings, one regarding the *origins* and the rest regarding the *consequences* of malapportionment. First, we show that economic disparities are a significant driver of political representation bias: levels of legislative malapportionment are significantly higher in countries characterized by more unequal distributions of wealth and income. Secondly, we provide empirical evidence showing that legislative malapportionment tends to be accompanied by relatively lower levels of personal income taxation in GDP. Finally, we show how legislative malapportionment conditions the positive relationship between economic development and fiscal reliance on income taxes: the higher the level of malapportionment, the weaker the effect of changes in per capita income on personal income taxation. Overall, our findings point out to the relevance of institutional choices in explaining why income taxation remains low in many developing countries, despite periods of high growth rates and political regime changes (e.g., democratization).

Our paper is related to several strands of recent research in political economy. By exploring the economic determinants of legislative malapportionment, our paper contributes to the emerging literature on the endogenous choice of constitutional features (Aghion, Alesina and Trebbi, 2004; Trebbi, Aghion and Alesian, 2008; Ticchi and Vindigni, 2003). Secondly, we contribute to the study of the economic consequences of democratic institutions. Previous work

on the subject has mostly focused on "macro" constitutional features such as differences between dictatorship and democracy (Perotti,1996; Boix, 2001; Mulligan, Gil and Sala-i-Martín, 2004), or variations within the democratic camp, such as basic differences between forms of government (Persson, Roland and Tabellini, 2000) and electoral rules (Lizzeri and Persico, 2001; Milesi-Ferretti, Perotti and Rostagno, 2002).[8] We extend this line of research by exploring the consequences of "micro" level institutions, such as legislative malapportionment, on tax structure. Thirdly, we draw on recent work specifically on the effects of malapportionment in Latin America. Bruhn, Gallego and Onoratto (2010) provide empirical evidence that over-represented areas are more likely to vote for parties aligned with the elite. We build from this paper in presenting legislative malapportionment as an institutional device that biases the policy process in favor of some economic actors at the expense of others. Fourth, it provides a specific institutional channel to explain how inequality affects taxation in developing countries, building on previous work that has tried to explain differences across the Americas (e.g., Sokoloff and Zolt, 2006). Finally, our paper speaks to a relatively recent research agenda on the political economy determinants of fiscal capacity (Besley and Persson, 2009 and 2011; Cárdenas, 2010; Cárdenas and Tuzemen, 2010). In this line of theoretical and empirical research, income inequality plays an important role in the development of fiscal capacity, understood as the state's ability to extract tax revenue from the public in general, and from broad tax bases such as income and consumption in particular (Besley and Persson, 2011, p. 6). According to these accounts, income inequality emerges as a key determinant of *under-investments* in the extractive role of the state: if there can be one of two groups in power, a more unequal income distribution cuts investments in fiscal capacity only when the "elite" has a hold on political power.[9] While Besley and Persson, as well as extensions of this work such as Cárdenas, assume implicitly that economic and political power go hand in hand, the specific mechanisms through which the distribution of economic power (inequality) translates into political power remain unexplored. We thus contribute to this emerging field by specifying an institutional channel (e.g., legislative malapportionment) that links (high) inequality to (low) fiscal capacity investments across democratic regimes.

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[8] See Persson and Tabellini (2003) for a well-known empirical application of work on this area.

[9] The intuition for this result is the following: elites invest less in fiscal capacity because the amount of resources that they can extract from citizens is small, since the latter's income is low as a result of income inequality (Cárdenas, 2010, p. 25). When "citizens" hold political power, these theories take us back to the Meltzer and Richard framework.

The paper is organized as follows. Section 2 reviews previous literature on malapportionment, highlights one of its main limitations and pushes forward a fresh perspective on the subject based on recent work. Section 3 presents the argument and the testable hypotheses that derive from it. Section 4 presents the empirical analysis, divided in two parts: a cross-national study of the economic determinants of legislative malapportionment, and a panel analysis of the taxation correlates of biased political representation. Section 5 concludes. In support of our argument we present historical evidence from Argentina and Chile showing that elites have been favored by the choice of electoral rules during democratic transitions.

2. Related Literature on the Origins and Effects of Legislative Malapportionment

Most of the theoretical and empirical work on legislative malapportionment originates from studies with a focus on the workings of federal systems. These studies share a common question: how does the organization of political representation condition the economic outcomes of federations?[10] Those who focus on legislative malapportionment argue that this feature of the electoral system is key to understanding the structure of political representation, and thus, the logic of the national policymaking process, the distribution of bargaining power between provinces or states within a federal system and in turn, policy outcomes (Beramendi and Díaz Cayeros, 2006).

A malapportioned chamber is characterized by the discrepancy between the shares of legislative seats and the shares of population held by geographical units (Samuels and Snyder, 2001). The introduction of malapportionment increases the weight of some districts, which gives them additional leverage in the policymaking process. As such they are better able to protect their specific interests, and also to distort public policy in their favor (Dragu and Rodden, 2009). For example, there is ample empirical evidence showing how malapportionment produces a bias in the allocation of public expenditures to the benefit of overrepresented territories, in a wide range of regional contexts: the United States, (Lee, 2000; Ansolabehere, Gerber and Snyder,

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[10] Excellent (and complementary) recent surveys of this literature include Beramendi (2007), Rodden (2006), Weingast (2006), and Wibbels (2006).

2002), Latin America (Gibson, Calvo and Falleti, 2004), Japan (Horiuchi and Saito, 2003; Hirano, 2006) and the European Union (Rodden, 2002), to cite a few examples.[11]

Legislative overrepresentation has usually been justified in the *upper* chambers of federal polities that represent territorial units on an equal basis, regardless of population. After all, many federal systems are characterized by large regional asymmetries between subnational units, and institutional devices such as strong bicameralism, a system of intergovernmental transfers, and high malapportionment could in principle function as *compensatory* mechanisms between otherwise unequal units, providing extra political leverage to small or poor states in the national policymaking process. Yet, while upper chamber malapportionment may be normatively justifiable and historically reasonable, as in some cases the states were the relevant political units before unification, there is no *a priori* reason for weighing the votes of citizens unequally in the "people's chamber." However, in a sample of 78 democracies, Samuels and Snyder (2001) show considerable variation in the level of legislative malapportionment in lower chambers, independently of whether countries have unitary or federal constitutions. Additionally, while there is a consensus in the literature regarding the positive relationship between overrepresentation and public expenditure bias, such allocation distortions do not always correct for regional asymmetries by reducing inter-regional inequalities, nor do fiscal transfers actually achieve inter-personal income redistribution. Indeed, the empirical evidence available shows much variation in this respect: while some federations enjoy highly progressive inter-regional redistribution schemes, in others intergovernmental grants achieve little redistribution (Rodden, 2008). Thus, to the extent that the level of malapportionment is not perfectly correlated with inequality, or some other objective indicator of relative need at the district level, then the bias in public spending generated by overrepresentation could actually be *regressive* and exacerbate pre-existing regional or inter-personal disparities.[12] In fact, it is important to note that only in a minority of federal countries are relatively poor districts overrepresented: some even over-represent the wealthy, and others simply display no pattern (Dragu and Rodden 2009).[13] Therefore, the traditional approach in the federalism literature of focusing exclusively on the

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[11] The evidence on the positive correlation between overrepresentation and fiscal spending bias is so strong some authors have dubbed the effect the "iron law of malapportionment" (Dragu and Rodden, 2009).

[12] This would be case if for example the districts that enjoy over-representation are smaller but not necessarily poorer.

[13] In Latin America, overrepresented areas are neither poorer nor more unequal than underrepresented districts, yet they receive larger transfers per capita from the central government (Dragu and Rodden, 2009; Bruhn et al., 2010).

socio-economic characteristics of electoral districts as justification for bias in political representation encounters difficulties when faced with the actual policy outcomes of legislative malapportionment.

However, some of these outcomes could be rationalized by incorporating into the analysis an often-neglected dimension: the political characteristics of overrepresented electoral districts, that is, the parties or groups that dominate in such electoral arenas. This is the approach taken by Bruhn, Gallego and Onoratto (2010) in their analysis of the institutional and policy consequences of legislative malapportionment in Latin America, and the one that we follow in building our own argument in the next section. The authors show that citizens in overrepresented districts are more likely to vote for parties close to pre-democracy ruling groups (e.g., the elite) and have systematically lower levels of political competition. Based on this fact, they use panel data for 11 Latin American countries to show that higher levels of malapportionment make democratic consolidation more likely to occur at the national level, and argue that this is because the bias in political representation created by malapportionment helps safeguard the interests of the groups that held power before the transition (which in turn reduces incentives for blocking the transition in the first place).

In building our argument (next section), we draw from the approach in Bruhn, Gallego and Onoratto (2010) and focus on the political features of electoral districts (e.g., which parties or groups dominate in overrepresented and underrepresented areas), rather than its socioeconomic characteristics that are often highlighted by the federalism perspective. However, we depart from Bruhn et al. in three main ways. First, we explore some background economic conditions that make malapportionment more likely to occur. Secondly, we go beyond Latin America and focus on a broader sample of cases. Finally, we look at the consequences of malapportionment in a different policy area: personal income taxation.[14]

3. Inequality, Biased Political Representation, and Taxation

Suppose a society where assets and income are distributed very unequally and which is politically organized through a non-democratic regime. There are two groups in this society: the elite, and the masses, and whoever is in power gets to decide economic policy (e.g., taxes). For

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[14] Thus, we also depart from the majority of analyses on the policy consequences of malapportionment that tend to focus exclusively on the territorial distribution of public spending and/or intergovernmental transfers instead of tax outcomes.

example, under dictatorship, an elite (the minority) holds political power and puts forwards its preferred economic policies: low taxation on the wealthy. While ideological reasons could play a role, the reason these two groups disagree about the political regime is basically *material*: each constitution has distinct redistributive consequences (Acemoglu and Robinson, 2006; Boix, 2003).

Now suppose that for some exogenous reason (e.g., war, economic shock), the regime has to democratize: the elite calls for elections in order to let citizens implement their optimal policies (e.g., taxes on the rich). While in the classical median voter framework this situation is one where the poor hold all political power and set their preferred tax rate, it is also possible to think of other scenarios. Following Acemoglu and Robinson (2008), the elite can build a democracy with biased political representation, where this group holds proportionally more political power than their population share. A transition to a democracy of this sort is more likely to occur whenever the elite has vested economic interests that are potentially threatened by the policies preferred by the masses in the new democratic regime, that is, in a context of preference polarization, meaning a bigger gap between the (tax) policy bliss points of the median voter and the elite.

Under what conditions is preference heterogeneity more likely to emerge? The level of asset or income inequality in society is an important predictor of how polarized this society will be: as median and average income diverge, the higher the incentives for the masses to vote on taxes targeted at the elite (e.g., personal income taxes) and thus, the more likely the elite will fear that the poor will "soak" their wealth in democracy. On the contrary, the lower the level of inequality, the more likely the preferences of citizens and the elite to converge on less confiscatory tax rates.

In sum, for an elite interested in protecting its economic interests under democracy, a context of high inequality provides the *motive* to bias political representation during the transition. While malapportionment could naturally arise from demographic shocks (e.g., migration or changes in the size of the overall population) over time, self-interested elites can also manipulate legislative apportionment in their favor.[15] By over-representing districts where the elite is dominant, and mechanically under-representing districts where the masses are a

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[15] For example, by refusing to periodically reapportion the number of seats attributed to electoral districts in response to these demographic changes.

majority, legislative malapportionment (sometimes even enshrined in the constitution) serves this purpose. Thus, reforms to increase malapportionment can arise for politically strategic reasons: groups holding political power at one point in time have strong incentives to manipulate political institutions in order to protect their economic interests in the future. Given the above, it therefore seems unlikely that malapportionment is exclusively the result of "natural" phenomena such as internal migration. Our first hypothesis, on the strategic origins of malapportionment, is thus:

H1. Higher levels of asset and income inequality should be associated with higher levels of legislative malapportionment.

In this way, we can view malapportionment as a device that the elite can employ to *bias political representation* after a transition to democracy. 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 (Samuels and Snyder, 2001). This is particularly true for Latin America, a region that on average holds the highest levels of legislative malapportionment in a sample of 78 democratic regimes. As documented in several case studies, and as we expand upon later, 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 (Snyder and Samuels, 2004). A similar story can be told in Chile during the Pinochet regime (1973-1990) and the crafting of the 1980 Constitution. Before Chile transitioned to democracy, the electoral system (along with other key political institutions) was redesigned to guarantee the over-representation of areas where conservative parties dominated (Londregan, 2000; Bruhn, Gallego and Onoratto, 2010). Therefore, even after a country formally transitions to democracy, economic policies can still be shaped by the elite's preferences since malapportionment increases the number of seats for parties aligned with the elite (Bruhn, Gallego and Onoratto, 2010), and thus offers an institutional veto point or leverage to protect its specific interests in the policymaking process.

A highly salient policy area where the material interests of all actors are confronted is over the design of *tax systems*, which have important redistributive consequences. By over-representing districts where elites are dominant, we argue that the legislative arena is the space

where elites can block redistributive attempts by the majority to increase personal income taxation. Thanks to over-representation, elites can exercise their veto power and keep personal income taxes at lower levels. Thus, our second hypothesis, on the policy consequences of malapportionment, can be summarized as follows:

H2. Higher levels of legislative malapportionment should be associated with lower shares of personal income taxation in GDP.

Finally, it is important to explore how legislative malapportionment interacts with other basic parameters of the economy that affect the evolution of tax structures. A natural candidate for consideration is the role of income. It is often assumed that as countries develop, governments are able to diversify and expand their tax bases as well as increase their administrative capabilities for tax collection, leading to higher shares of income taxation in the total tax mix. Thus, all else equal, it is often taken for granted that richer countries will *choose* to have greater fiscal capacity (Besley and Persson, 2011, p. 59).

However, there is nothing inevitable about this proposition, as it depends on the value of other (especially political) parameters that affect tax decisions. Thus, this simplistic view neglects the role of political institutions in shaping or conditioning the effects of the development cycle on tax structure. In particular, we argue that while economic development may provide countries with the *capacity* to raise taxes from the rich, this does not mean that countries will use this capacity to the fullest extent. Under some conditions, the *incentives* to invest in raising revenue from particular income groups may be diminished. We explore how the structure of political representation affects these investment decisions. If overrepresentation allows certain groups to impose their policy preferences (e.g., elites block reforms to increase higher personal income taxes) then political institutions can prevent the "normal" evolution of tax systems from taking place, as countries transition from one development stage to another. Thus, to account for context conditionality in the empirical analysis, we introduce a third and final hypothesis:

H3. The relationship between economic development and personal income taxation is conditional on the structure of political representation, as measured by levels of legislative malapportionment.

4. Evidence

This section presents the empirical tests of the tree hypotheses presented in Section 3. We first explore cross-nationally the relationship between the distribution of wealth and income and the degree of political representation bias in democracies. We then use time-series cross-sectional analysis to explore the economic consequences of legislative malapportionment by looking at the political determinants of personal income taxation.

4.1 From Inequality to Malapportionment

This sub-section presents empirical evidence using both: i) a simple OLS specification linking the current level of legislative malapportionment to asset and income inequality in previous periods, and ii) an instrumental variable (IV) approach to deal with potential endogeneity problems.

4.1.1. Legislative Malapportionment

A country *j*'s overall level of lower house MAL is computed as:

$$MAL = (1/2)\sum |s_i - v_i|$$

such that s_i denotes the share of seats of district *i* and v_i the share of population of district *i*. A score of *x*% in the MAL index means that *x*% of seats are allocated to districts that would not receive those seats in case of perfect apportionment. This measure provides an index of MAL at the country level and is available for 78 countries during one point in time in the 1990s (Samuels and Snyder, 2001). Given that the distribution of this variable is highly skewed to the right, MAL enters in logged values in the regressions below. While at the moment we lack panel data on levels of malapportionment for a large sample of countries, it is important to note that this institution offers a high degree of *persistence* or stability, especially in developing countries and recent democracies, such as those of Latin America (Snyder and Samuels, 2004; Bruhn et al., 2010).

4.1.2 Asset and Income Inequality

To measure asset inequality, we rely on an indicator that measures the distribution of agricultural property, which is calculated through the area of "family farms" as a percentage of the total area of holdings (*Family Farms*). According to Vanhannen (1997), family farms are defined as those

that provide employment for not more than four people, including family members. This criterion is not dependent on the size of farms. These are holdings that are mainly cultivated by the holder family itself. Therefore, a higher number on this index indicates less land inequality. The share of "family farms" in total landholding area, which is a figure available for many countries as far back as 1858, has been the preferred indicator of land inequality in much of the existing cross-national research (Vanhannen, 1997; Boix, 2003; Ansell and Samuels, 2010).

To measure income inequality in a more contemporary period, a Gini index is used, computed as the average of two data points: the observation closest to 1980 and the observation closest to 1990 (*Income Inequality*). When only one of the two years is available, only that year is included.[16]

4.1.3 Controls

To control for the effects of other variables, we included the two independent variables that Samuels and Snyder (2001) showed had a significant effect on the degree of legislative MAL in their study. They include a dummy variable for single-member district (SMD) systems, and a dummy variable for Latin American countries (LATAM). Finally, we also control for having a federal organization of the political system (FED), as these countries are more likely to show higher levels of MAL in the lower as well as the upper chamber.[17]

4.1.4 Results

Table 1 presents results from regressing the level of lower chamber legislative MAL (in logs) on our measures of asset and income inequality (in logs) and controls.[18] Before discussing the main findings, it is important to note from the outset that we use measures of asset and income inequality variables before the 1990s so that they can be viewed as predetermined at the point at which we measure legislative malapportionment (mid-1990s). While this does not guarantee that the independent variables are not correlated with the error term, it certainly makes this problem less likely.

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[16] Source: Persson and Tabellini (2003), based on Deninger and Squire (1996).

[17] The source for both SMD and FED is Samuels and Snyder (2001).

[18] For space considerations, we only report family farms coefficients at six points in time (results using the complete family farm data are available upon request).

Table 1. Economic Determinants of Legislative MAL (OLS estimates)

	1	2	3	4	5	6	7
Family Farms (1858)	-0.285**						
	(0.130)						
Family Farms (1868)		-0.311**					
		(0.135)					
Family Farms (1878)			-0.344**				
			(0.139)				
Family Farms (1958)				-0.410*			
				(0.203)			
Family Farms (1968)					-0.407**		
					(0.190)		
Family Farms (1978)						-0.468**	
						(0.200)	
Income Inequality (Gini)							0.970*
							(0.494)
FED	-0.0008	0.0416	0.187	-0.0351	-0.151	-0.109	-0.0365
	(0.264)	(0.266)	(0.247)	(0.264)	(0.272)	(0.260)	(0.287)
SMD	-0.448	-0.457	-0.210	0.282	0.637**	0.647***	0.343
	(0.350)	(0.358)	(0.300)	(0.298)	(0.242)	(0.236)	(0.245)
LATAM	0.199	0.0804	-0.0573	0.155	0.298	0.322	0.376
	(0.355)	(0.343)	(0.365)	(0.363)	(0.245)	(0.234)	(0.308)
							(0.495)
Constant	-2.230***	-2.164***	-2.049***	-1.648*	-1.743**	-1.512**	-6.826***
	(0.502)	(0.518)	(0.553)	(0.852)	(0.704)	(0.743)	(1.762)
Observations	29	28	31	42	52	51	48
R-squared	0.323	0.341	0.333	0.256	0.267	0.270	0.237

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In line with our theoretical expectations, in countries with *lower* levels of asset inequality (or higher shares of family farms in total agricultural landholding), the discrepancies between seats and populations are not large. Moreover, in the last column (7), we introduce a measure of *income inequality* and find that levels of legislative MAL are significantly higher in countries with more unequal income distributions. This last result is consistent with Horiuchi (2004) who focuses on a larger sample of countries, and Ticchi and Vindigni (2003) who show how income inequality is correlated with other types of electoral rules that, along with legislative

malapportionment, tend to bias political representation (e.g., majoritarian systems). Finally, it is also consistent with recent findings in Rossi (2011) that show how the original land distribution affects political power later on.

However, one wonders whether the results presented so far are subject to a reverse causality problem: that income inequality is an endogenous variable in general, and to the level of malapportionment in particular. To deal with this issue, we follow Easterly (2007) and use his measure of factor endowments as an instrument for income inequality: the exogenous suitability of land for different types of crops (wheat versus sugarcane). The "wheat-sugar ratio," defined as LWHEATSUGAR=log [(1+share of arable land suitable for wheat)/(1+share of arable land suitable for sugarcane)], captures the idea that some land endowments lent themselves to economic activities featuring economies of scale in the use of slave labor (e.g., sugar cane) and thus were historically associated with high inequality, while others lent themselves to commodities grown on family farms (e.g., wheat), which promoted the growth of a large middle class and therefore, low structural inequality (Engerman and Sokoloff, 1997).

With these preliminaries, the next step is to assess the effect of income inequality on malapportionment using the wheat–sugar ratio as an instrument. As shown in Table A.1 of the Appendix, the first-stage regression has reasonable explanatory power ($R^2 = 0.37$) and presents a highly significant relationship between the wheat–sugar endowment ratio and our measure of income inequality. In addition, the estimated IV coefficient indicates that a one standard deviation increase in the measure of income inequality is associated with more than two-thirds of a standard deviation change in the level legislative malapportionment, an economic impact that is twice as large as the OLS estimate reported in Table 1.

Case study evidence from Latin America helps to place the above cross-country regressions in historical context. As documented in Snyder and Samuels (2004), the period just before the democratic transition was a key institutional moment in which outgoing elites attempted to manipulate political institutions and bias political representation in their favor across a number of countries.[19] The most salient example is perhaps that of Chile, with the legacy of the 1980 Constitution left behind by Pinochet and the establishment of "undemocratic enclaves" that reduced the issue space for certain areas of policymaking during the 1990s

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[19] "In all three cases—Argentina, Brazil, and Chile—malapportionment seemed to increase the representation of less developed, more rural areas that tended to send conservative representatives to the national legislature" Snyder and Samuels (2004, p. 150).

(Siavelis, 2000).[20] Perhaps less well known is the story behind the design of the electoral map during the late 1980s to which we now turn.

A plebiscite to determine whether or not Pinochet would continue in power was held in October 1988. Even though Pinochet lost the referendum, less populated areas were much more likely to support the status quo than the metropolitan regions including Santiago (Figure A.3 in the Appendix). In fact, in the eight more densely populated districts belonging to the Metropolitan region, the percentage of "Yes" votes was only 36 percent, well below the national level of support for the military regime (44 percent). While the results of the plebiscite forced Pinochet to step down from office, the positive correlation between district size and opposition to the regime was taken into account by the outgoing elites when designing the electoral map for the upcoming democratic system (Siavelis, 2000; Rojas and Navia, 2005). Provided with information about electoral strongholds and sources of weak support from the referendum, the military junta re-drew the districts after the plebiscite and settled for an electoral system including 60 districts for Lower Chamber elections with a uniform district magnitude (M=2) in the law of 1989. Consequently, it has turned out to be that the vote share in favor of Pinochet during 1988 is a fairly good predictor of the level of malapportionment at the district level *after* the transition to democracy, when measured at two different time periods that correspond to the timing of the last pair of national censuses (Figure A.4 in the Appendix).[21] Far from unintended, the design of the electoral map reflected an insurance strategy followed by the military elite to secure representation of the authoritarian regime's political heirs (e.g., right-wing parties such as the Unión Demócrata Independiente and Renovación Nacional) in the newly democratizing system (Navia, 2003).[22]

Similar strategic concerns permeated the manipulation of electoral rules in Argentina, a federal democracy where electoral districts conform to provincial boundaries, during the twentieth century. Starting from moderate levels of malapportionment, Argentina's Congress has

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[20] Some of these features, like the "institutional senators" feature, were removed from the constitution in the reform of 2005.

[21] To measure malapportionment at the district level, we use the ratio between the share of seats and the share of population of each district. Values greater than one denote overrepresentation of district, and the opposite is true for values smaller than one.
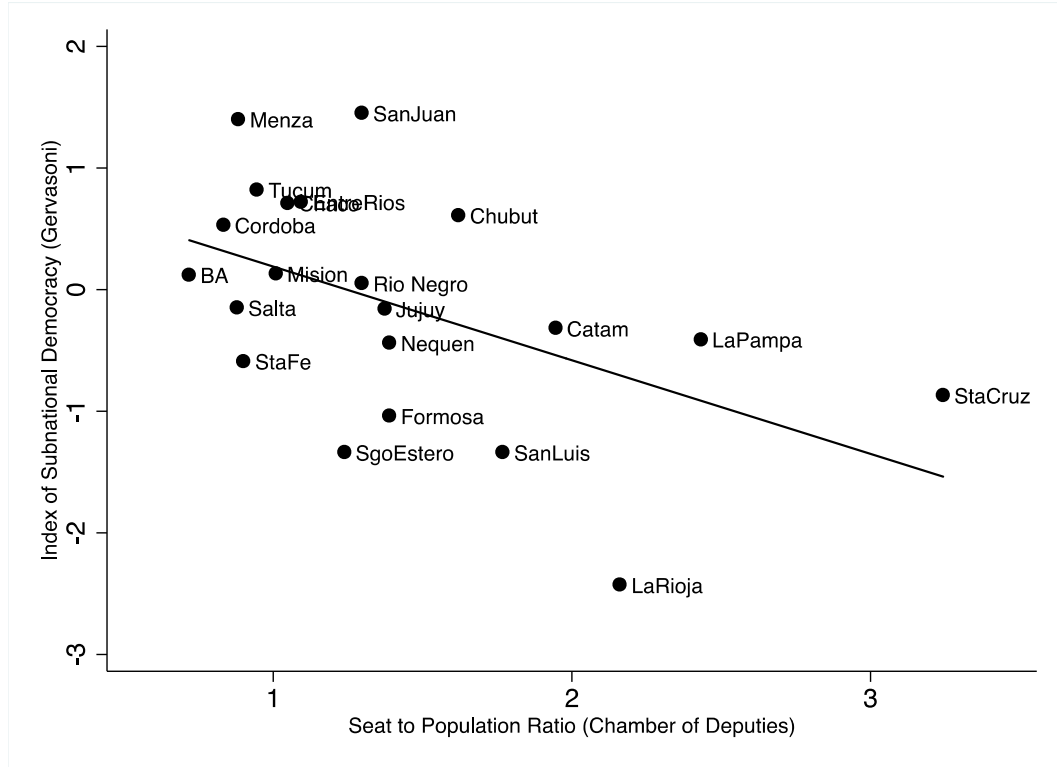
[22] Rojas and Navia (2005) show that after 1999, there is no longer a positive correlation between a district's population size and the electoral strength of the Concertación, the center-left coalition. See also Zucco (2007).

become one of the world's most malapportioned legislatures.[23] Ever since the creation of eight additional provinces out of formerly national territories during the presidency of Juan Domingo Perón (from 1951 to 1955), both democratic but mostly authoritarian rulers have manipulated malapportionment in the lower chamber for political purposes. For example, the military juntas of 1966-1973, and 1976-1983, raised the minimum number of deputies per province from 2 to 3, and from 3 to 5, respectively, regardless of population size. In a logic similar to that of Chile, the goal of the junta was to use malapportionment to over-represent conservative tendencies (characteristic of the underpopulated hinterlands dominated by regional bosses) at the expense of the country's urban core. As such, they gave additional representation at the national level to those provinces that were managed by a strong conservative (and undemocratic) provincial elite, which generated a strong negative correlation between malapportionment and the degree of democracy in the provinces today (Figure 4).[24] Again, we observe a pattern in which outgoing military rulers increased malapportionment just before the return of democracy in order to further their political goals (Figure A.5 in the Appendix).

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[23] Argentina's malapportionment at the beginning of the century was roughly equal to today's median level of malapportionment. Nowadays, according to Samuels and Snyder (2001), the Argentine Senate ranked highest on a scale of territorial overrepresentation among the world's upper chambers, and out of a total of 78 lower chambers, the Chamber of Deputies made it in to the top 20 list of most malapportioned legislative arenas.

[24] The index of subnational democracy compares levels of political competition in the provinces: lower scores are assigned to provinces characterized by fewer effective number of parties (e.g., 1), executive dominance over the legislature, etc. (Gervasoni, 2010).

Figure 4. Malapportionment and Democracy at the Subnational Level

In sum, case study evidence from a relatively unequal region of the world such as Latin America shows us how pre-democratic elites have manipulated political institutions in general, and legislative malapportionment in particular; in the hope of having the opportunity to veto reforms (or at least have a stronger voice in negotiations) in the legislative arena that would adversely affect their economic interests after the transition to democracy. Having shown that the normative ideal of "one person-one vote" is usually violated more in countries with larger asset and income disparities, the next section discusses the economic implications of legislative malapportionment through the lens of personal income taxation.

4.2 From Malapportionment to Personal Income Taxation

This subsection uses panel taxation data (1990-2007) to explore the economic policy consequences of legislative malapportionment.

4.2.1 Dependent Variable

Drawing on tax data from IDB, OECD, ADB, and Keen and Mansour (2009), we use central government revenue from personal taxes on income (PYT), as a percentage of GDP, to capture the ability of governments to extract revenue from wealthy social groups. The panel covers the period between 1990 and 2007.

4.2.2 Controls

Based on previous analysis on the size and composition of government revenue, the baseline specifications include the following controls (see Appendix for summary of data sources):[25]

- **GDP per capita**, in log (INCOME). Low levels of development tend to be one of the key constraints for collecting personal income taxes, which is a tax that requires self-reporting and enforcement technologies. Per capita income indicates the availability of resources to be taxed, as well as the existence of administrative capabilities for collecting taxes: at higher levels of per capita income, economies tend to be more monetized and less informal, making it easier for the government to collect taxes on income (Cheibub, 1998).

- **Fuel exports** as a percentage of exports (FUEL). In the presence of fuel exports (e.g., oil), government incentives for collecting private income from citizens may be reduced.

- **Trade** (exports and imports) as a percentage of GDP (TRADE). As a measure of the relative importance of foreign trade, the GDP share of imports and exports indicates the presence of a tax handle that may reduce incentives to collect other types of taxes.[26]

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[25] All our right-hand side variables are time-varying, except for ethnolinguistic fractionalization and MAL.

[26] From an administrative point of view, revenues collected at the border are among the least difficult to obtain. Because they have to pass through a few checkpoints to leave or enter a territory legally, imports and exports provide a base upon which governments may impose a tax with relative ease.

- **Population 65+** (OLD). As a driver of government spending (pensions), demographic composition may affect government's capacity to tax specific sectors of the population.

- **Income Inequality**, measured in terms of Gini coefficients constructed from gross (pre-fisc) income figures (INEQUALITY). As reviewed above, in the classic median voter model inequality introduces pressure to increase revenue from personal income taxes.

- **Ethno-linguistic fractionalization** (ELF). As a measure of polarization, we include an index of ethnic fractionalization containing information about the identity and size of ethnic groups and measuring the probability that two randomly chosen individuals will belong to different groups (Alesina et al. 2003). According to Besley and Persson (2011), ethnic heterogeneity should reduce incentives to invest in fiscal capacity.

- **Total central government tax revenue**, as a percentage of GDP (T.TAX).

- **Regional dummies** (when appropriate, in some specifications).

- Country and time **fixed effects** (when appropriate, in some specifications).

4.2.3 Results

Table 2 presents baseline results from two different estimation procedures. Columns 1 and 3 present results from using only *between* or cross-sectional variation in the data: an OLS regression of the mean value of the dependent variable on mean values of the independent variables (between estimator). Columns 2 and 4 presents results from an OLS regression that accounts for the complex error structure in the data: that is, an estimation including panel corrected standard errors (PCSE) that assumes an AR (1) error process.[27] While columns 1 and 2 cover the whole sample period (1990-2007), columns 3 and 4 restrict the sample to the 1990s only, the period for which the legislative MAL figures were created.[28]

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[27] To control for the passage of time in this estimation, we de-mean the dependent variable by *year*.

[28] Before discussing results, a word of caution is necessary given the potential endogeneity and simultaneity problems that affect the following estimations. To address these potential problems, in estimations (not shown) some of the controls (like income inequality) enter in lags. The basic results that we discuss next do not change after accounting for these issues (results available upon request).

Table 2. Time-Series Cross-Sectional Analysis of Personal Income Taxation

	1 btw. estimator	2 OLS PCSE	3 btw. estimator	4 OLS PCSE
INCOME	1.478***	0.653***	1.530***	0.886***
	(0.482)	(0.124)	(0.505)	(0.168)
MAL	-0.649*	-0.517***	-0.646*	-0.649***
	(0.347)	(0.175)	(0.377)	(0.187)
TRADE	0.00497	-0.00147	0.00364	0.00393
	(0.00869)	(0.00218)	(0.00963)	(0.00295)
OLD	-0.238*	-0.0302	-0.305**	-0.0677**
	(0.123)	(0.0189)	(0.133)	(0.0314)
FUEL	-0.00276	-0.00474	0.00279	0.0117*
	(0.0181)	(0.00585)	(0.0199)	(0.00629)
T.TAX	0.513***	0.332***	0.0689	0.423***
	(0.0499)	(0.0285)	(0.0575)	(0.0319)
INEQUALITY	0.0988*	0.0333**	0.0699	0.0416**
	(0.0571)	(0.0159)	(0.0573)	(0.0174)
ELF	3.303**	2.948***	3.349**	3.387***
	(1.553)	(0.527)	(1.594)	(0.633)
LATAM	-1.941	-3.638***	-1.703	-2.433***
	(1.154)	(0.501)	(1.197)	(0.549)
AFRICA	0.330	-2.308***	-0.0736	-1.332*
	(1.837)	(0.729)	(1.882)	(0.719)
Constant	-19.58***	-11.90***	-18.38***	-16.30***
	(5.043)	(1.786)	(5.039)	(2.008)
Observations	815	815	444	444
R-squared	0.92	0.67	0.92	0.797
Countries	52	52	50	50

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

As expected, the effect of income per capita on the share of personal income taxes in GDP is positive and statistically significant. Depending on the model at hand, the size of the coefficient implies that a one standard deviation in real per capita income is associated with an increase of up to about 2.4 percentage points in the share of income taxes in GDP. However, note that the level of legislative malapportionment pulls in the opposite direction from wealth: a one standard deviation change in the level of MAL leads to a reduction of about half a percentage point of GDP in the share of income taxes. Given that in Latin America during the sample period the mean share of personal income taxes in GDP is only 1 percent, the size of these coefficients is not negligible. This result is consistent with our theoretical expectation about the policy consequences of legislative malapportionment and confirms Hypothesis # 2.

Given the above patterns, Table 3 presents results from adding an interaction term between income per capita and the level of MAL for both the full sample (1 and 2) and restricted sample (3 and 4) using the same estimation methods as above. The question we want to answer here is if, in addition to dampening the levels of personal taxation, high malapportionment could also affect the rate at which personal income taxes grow with economic development. Finally, column 5 presents results from only using *within* or temporal variation in the data, that is, a regression including *country* fixed effects, as well as *year* fixed effects to control for the passage of time and the impact of jointly trending variables (such as is the case with per capita income, the share of old people, and the dependent variable).[29] In this last specification, we restrict the sample period to the 1990s, the period for which the legislative MAL figures were created.

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[29] Note that in column 5, the coefficient on MAL is missing because of collinearity with the country fixed effects. This is also the case for the other time-invariant variables in the dataset (e.g., ELF).

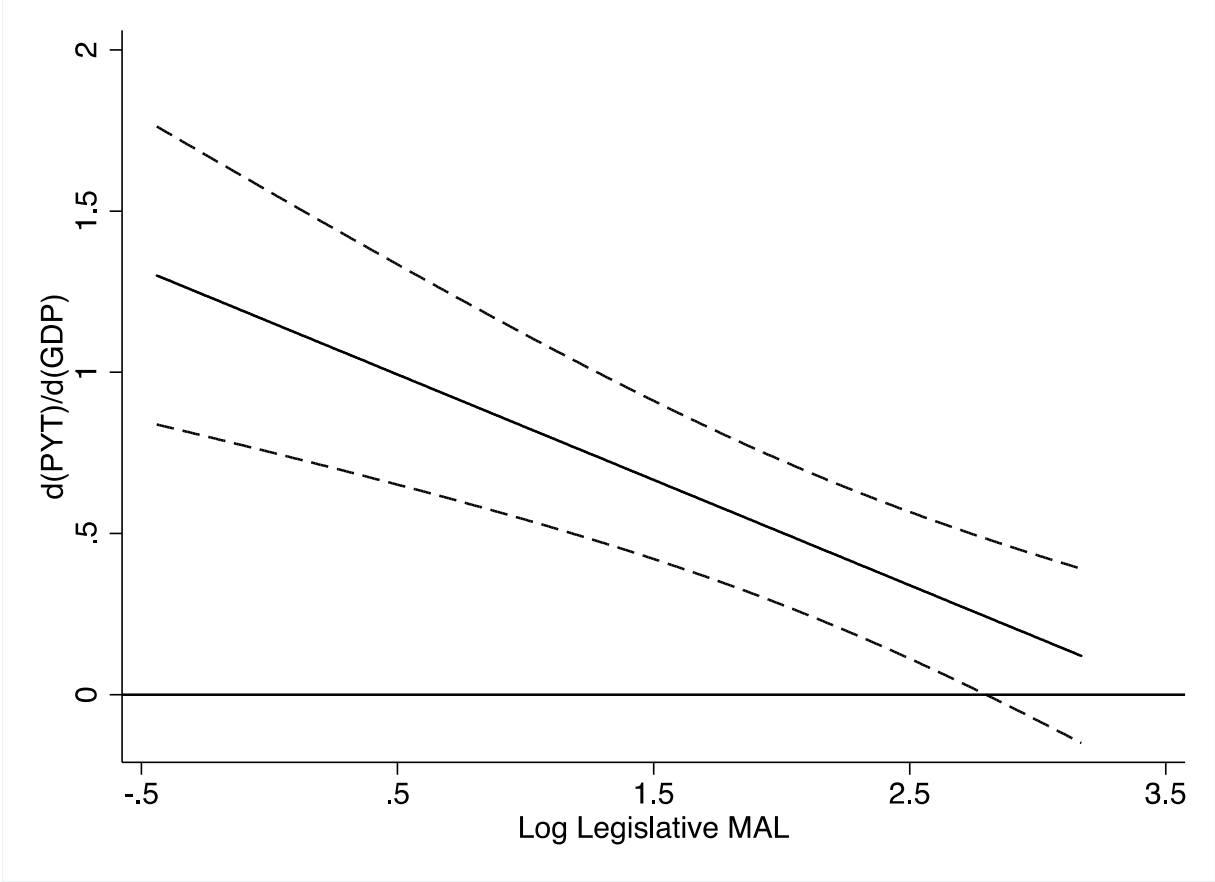**Table 3. Interaction Effects between GDP per Capita and Legislative MAL**

	1	2	3	4	5
	btw. estimator	OLS PCSE	btw. estimator	OLS PCSE	FE
INCOME	2.137***	1.196***	2.428***	1.687***	0.590**
	(0.607)	(0.204)	(0.647)	(0.228)	(0.274)
MAL	2.643	2.374***	3.749*	3.260***	
	(1.941)	(0.647)	(2.130)	(0.681)	
INCOME * MAL	-0.378*	-0.334***	-0.504**	-0.449***	-0.167*
	(0.219)	(0.0772)	(0.241)	(0.0825)	(0.0928)
TRADE	0.00406	-0.00147	0.00409	0.00453	-0.00112
	(0.00850)	(0.00222)	(0.00924)	(0.00297)	(0.00374)
OLD	-0.279**	-0.0321*	-0.354***	-0.0900***	-0.0563
	(0.122)	(0.0188)	(0.130)	(0.0339)	(0.0354)
FUEL	-0.00454	-0.00444	0.00300	0.0123**	0.00713
	(0.0177)	(0.00572)	(0.0191)	(0.00538)	(0.0113)
ELF	2.695*	2.520***	2.475	2.798***	
	(1.558)	(0.491)	(1.585)	(0.515)	
INEQUALITY	0.0616	0.0259	0.0467	0.0290*	0.00568
	(0.0598)	(0.0160)	(0.0561)	(0.0165)	(0.0126)
T.TAX	0.518***	0.335***	0.541***	0.437***	0.227***
	(0.0489)	(0.0281)	(0.0527)	(0.0296)	(0.0233)
LATAM	-1.746	-3.460***	-1.659	-2.081***	
	(1.133)	(0.504)	(1.148)	(0.497)	
AFRICA	-0.0257	-2.642***	-0.673	-1.627**	
	(1.806)	(0.680)	(1.828)	(0.670)	
Constant	-23.22***	-16.39***	-24.56***	-22.99***	3.105*
	(5.362)	(2.186)	(5.663)	(2.119)	(1.623)
Observations	815	815	444	444	444
R-squared	0.926	0.689	0.928	0.828	0.234
Countries	52	52	50	50	50

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In all specifications, the interaction term between the level of MAL (in logs) and income per capita is introduced to capture the notion that the effect of GDP on taxation is conditional on politico-institutional factors. Several interesting findings emerge from this table. First, and in line with Hypothesis #3, note that the coefficient on the interaction term is negative and statistically significant, suggesting that higher levels of legislative MAL tend to dampen the positive impact of income per capita on fiscal capacity. Using the coefficients from Model 2, Figure 4 displays the marginal effect of income per capita across the range of values of legislative MAL with 95% confidence intervals around these estimated effects.

Figure 4. Marginal Effect of INCOME, with 95% Confidence Interval

As before, the impact of GDP per capita on personal income taxes is always positive. However, as shown by Figure 4, the marginal effect of economic development on the share of income taxes in GDP *decreases* for each unit increase in the index of legislative MAL. We find this result consistent with our theoretical expectation that the higher the level of MAL, the more likely to observe a downward bias in the tax take drawn from personal income taxes. Secondly, it is important to note that the 95% confidence interval overlaps zero for high values of MAL, suggesting that within that range, the marginal effect of INCOME cannot be distinguished from zero statistically. This reinforces our point that the mechanical forces that push personal income taxation upwards (e.g. economic development) can be sometimes counter-acted by institutional factors that may pull in the exact opposite direction: legislative MAL is one example of such institution, given its association with additional political power held by the elites.

4.2.4 Robustness Checks

Table 4 presents results from introducing (one at a time) several additional political controls which previous studies have shown to have an impact on the extent of redistribution: the level of electoral participation (TURNOUT) the type of electoral rule, with single member district systems coded as 1 (SMD), whether the country has a presidential form of government (PRES), whether the political constitution is federal (FED), and finally, we control for the quality of the bureaucracy (BURQUAL) which proxy for the administrative institutions necessary for efficient implementation of an income tax. All specifications are OLS models with panel-corrected standard errors and an AR(1) error process to account for serial correlation.

Table 4. Time-Series Cross-Sectional Analysis of Personal Income Taxation (1990-2007)

	1	2	3	4	5	6	7	8	9	10
INCOME	1.499***	2.301***	0.614***	1.155***	0.598***	1.112***	0.598***	1.380***	0.598***	1.335***
	(0.191)	(0.359)	(0.124)	(0.214)	(0.130)	(0.211)	(0.130)	(0.231)	(0.130)	(0.205)
MAL	-0.516***	3.991***	-0.558***	2.311***	-0.529***	2.387***	-0.529***	2.985***	-0.529***	2.641***
	(0.160)	(1.219)	(0.173)	(0.700)	(0.176)	(0.670)	(0.176)	(0.774)	(0.176)	(0.672)
INCOME * MAL		-0.498***		-0.326***		-0.337***		-0.394***		-0.360***
		(0.123)		(0.0826)		(0.0792)		(0.0890)		(0.0794)
TRADE	0.00292	0.00421	-0.00157	-0.00166	-0.00119	-0.00116	-0.00317	-0.00290	-0.00317	-9.00e-05
	(0.00311)	(0.00374)	(0.00220)	(0.00224)	(0.00219)	(0.00221)	(0.00234)	(0.00240)	(0.00234)	(0.00239)
OLD	-0.178***	-0.199***	-0.0300	-0.0316*	-0.0327*	-0.0333*	-0.0312	-0.0370*	-0.0312	-0.0550**
	(0.0329)	(0.0373)	(0.0185)	(0.0184)	(0.0186)	(0.0183)	(0.0193)	(0.0196)	(0.0193)	(0.0224)
FUEL	-0.0254**	-0.0289***	-0.00894	-0.00959	-0.00892	-0.00855	-0.00373	-0.00465	-0.00373	-0.00206
	(0.0112)	(0.00923)	(0.00662)	(0.00651)	(0.00667)	(0.00656)	(0.00677)	(0.00635)	(0.00677)	(0.00493)
INEQUALITY	0.0574*	0.0320	0.0336**	0.0270*	0.0342**	0.0266	0.0321*	0.0263	0.0321*	0.0200
	(0.0318)	(0.0263)	(0.0163)	(0.0163)	(0.0161)	(0.0162)	(0.0174)	(0.0172)	(0.0174)	(0.0149)
T.TAX	0.495***	0.503***	0.332***	0.337***	0.336***	0.333***	0.348***	0.357***	0.348***	0.376***
	(0.0207)	(0.0199)	(0.0291)	(0.0287)	(0.0290)	(0.0289)	(0.0296)	(0.0285)	(0.0296)	(0.0275)
ELF	3.681***	2.746***	2.851***	2.541***	2.549***	1.967***	2.965***	2.622***	2.965***	2.342***
	(0.599)	(0.604)	(0.556)	(0.507)	(0.656)	(0.610)	(0.538)	(0.469)	(0.538)	(0.481)
TURNOUT	-0.0006	-0.005								
	(0.00838)	(0.00734)								
SMD			0.291	0.0201						
			(0.189)	(0.207)						
FED					0.481*	0.600**				
					(0.266)	(0.262)				
PRES							0.580**	-0.134		
							(0.290)	(0.320)		
BURQUAL									0.133	0.101
									(0.104)	(0.102)
LATAM	-1.646***	-1.504***	-3.595***	-3.541***	-3.623***	-3.531***	-3.967***	-3.175***	-2.940***	-2.756***
	(0.400)	(0.360)	(0.511)	(0.504)	(0.486)	(0.497)	(0.500)	(0.538)	(0.509)	(0.489)
AFRICA	0.417	-0.393	-2.424***	-2.742***	-2.156***	-2.564***	-1.808**	-2.047***	-1.681**	-2.126***
	(0.873)	(0.719)	(0.738)	(0.684)	(0.696)	(0.660)	(0.776)	(0.708)	(0.708)	(0.645)
Constant	-23.46***	-29.18***	-11.57***	-16.08***	-11.52***	-15.58***	-12.61***	-18.64***	-13.33***	-18.40***
	(2.743)	(4.017)	(1.787)	(2.231)	(1.824)	(2.261)	(1.863)	(2.380)	(1.795)	(2.169)
Observations	217	217	798	798	798	798	760	760	724	724
R-squared	0.888	0.895	0.662	0.678	0.669	0.673	0.680	0.709	0.743	0.763
Countries	51	51	51	51	51	51	47	47	50	50

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Consistent with previous findings, legislative MAL is not only associated with lower shares of personal income taxes in GDP per se (Hypothesis #2), but also tends to significantly dampen the positive impact of per capita wealth (hypothesis # 3).

5. Conclusion

This paper is motivated by the fact that personal income taxes remain relatively low in Latin America despite the democratic transition of the 1980s and 1990s and the region's level of economic development. We argue that institutional characteristics introduced by strategic politicians at the time of the transition can play a role in explaining this stylized fact. Legislative malapportionment introduces a bias into political representation that provides greater political influence to some groups at the expense of others in the policymaking process. Given that overrepresented electoral districts tend to be aligned with parties with conservative tendencies, malapportionment serves the economic interests of elite groups interested in keeping their contributions to the fisc as low as possible in democratic regimes. In line with this argument, our results show first that higher levels of malapportionment are associated with lower shares of personal income taxes in a sample of more than 50 countries (including 17 Latin American countries).

But far from being the exclusive result of demographic phenomena such as migration, malapportionment is the product of strategic calculations made by politicians and interest groups in order to safeguard their economic interests. Our results also show that these calculations stem from background economic conditions. In particular, we find that countries with more unequal distributions of wealth and income tend to systematically present higher levels of legislative malapportionment.

Our findings are consistent with historical evidence across the Americas linking inequality, political representation, and taxation. Sokoloff and Zolt (2006) provide descriptive historical evidence on the differences in the evolution of subnational and local tax structures between North and Latin America. According to the authors, these differences can be attributed to initial levels of economic inequality across these regions. Throughout time, these economic conditions were converted into political power differentials that in Latin America led elites to minimize their relative tax burdens by either controlling the legislative process and shape the design of tax structures or by simply engaging in unchecked and rampant tax evasion.

In a similar vein, Cárdenas (2010) argues that Latin America is trapped in a low fiscal capacity equilibrium as a result of the high concentration of economic and political power in the region. The main insight is that when the group making the decision to invest in fiscal capacity has much more income and political power than the rest of the population, there are fewer

incentives to make these investments in the first place. Yet, the specific mechanisms through which economic inequality translates into political power differentials and reproduces weak fiscal capacity remain obscure. In this paper, we highlight an institutional channel through which income inequality negatively affects fiscal capacity by arguing that legislative malapportionment is one (of many) instruments that, by introducing a bias in political representation and weighing the interests of some groups more than proportionally in the policy process, can lead to outcomes that are not necessarily in line with the preferences of a majority of citizens in democratic regimes. Thus, looking at specific features of democratic political institutions can go a long way in explaining why some countries are successful in pursuing progressive taxation while in others the scope for redistributive policies is much more limited.

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Appendix

Table A.1. Economic Determinants of MAL (2SLS)

Panel A: 2SLS	
Income Inequality (Gini)	2.390***
	(0.674)
FED	-0.170
	(0.354)
SMD	0.416
	(0.285)
Constant	-7.266***
	(2.473)
Panel B: First stage for Gini	
lwheatsugar	-0.667***
	(0.114)
FED	0.0756
	(0.0932)
SMD	-0.0609
	(0.0658)
Constant	3.728***
	(0.0381)
Observations	47
R-squared	0.369

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure A.1. Perceptions of Inequality (Latinobarometer 2007)

Do you think that the income distribution is...

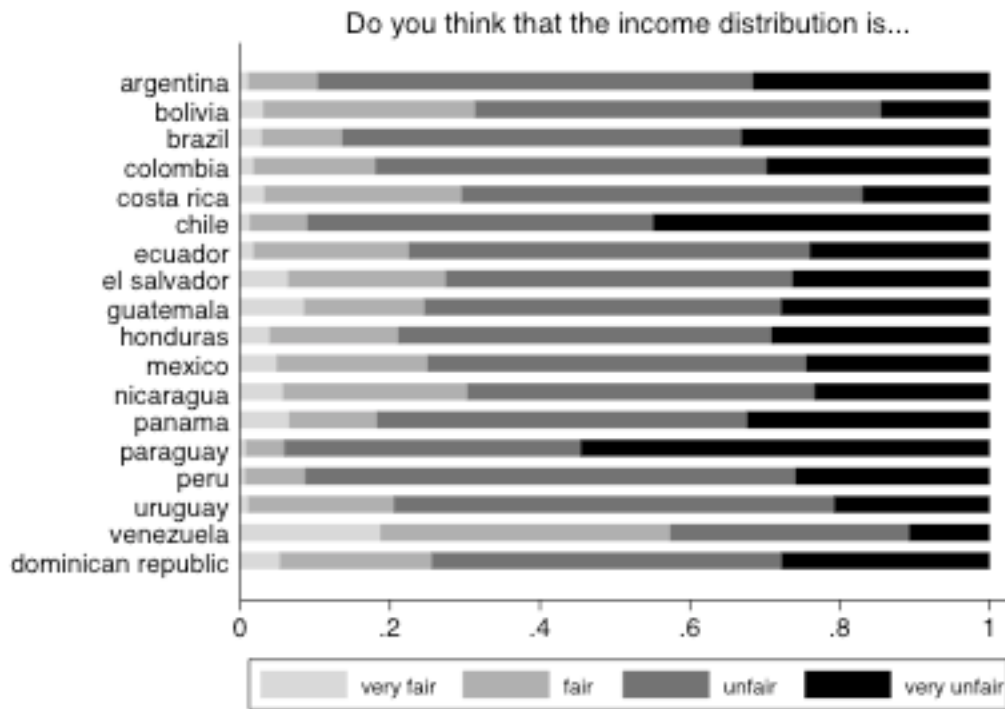(very fair, fair, unfair, very unfair)

39

**Figure A.2. Responses to the Question "Do you think the government should
implement policies to reduce income inequality between the rich and the poor?"
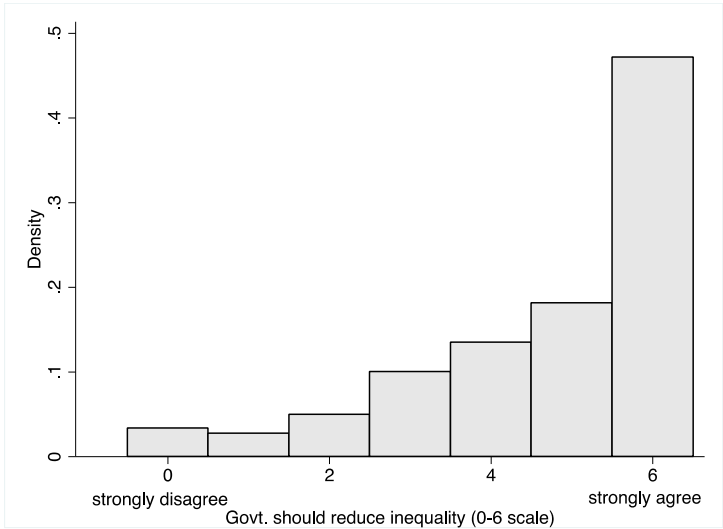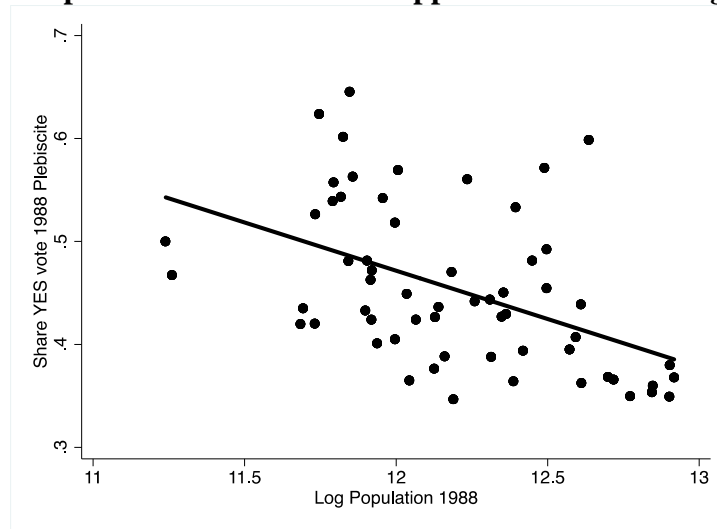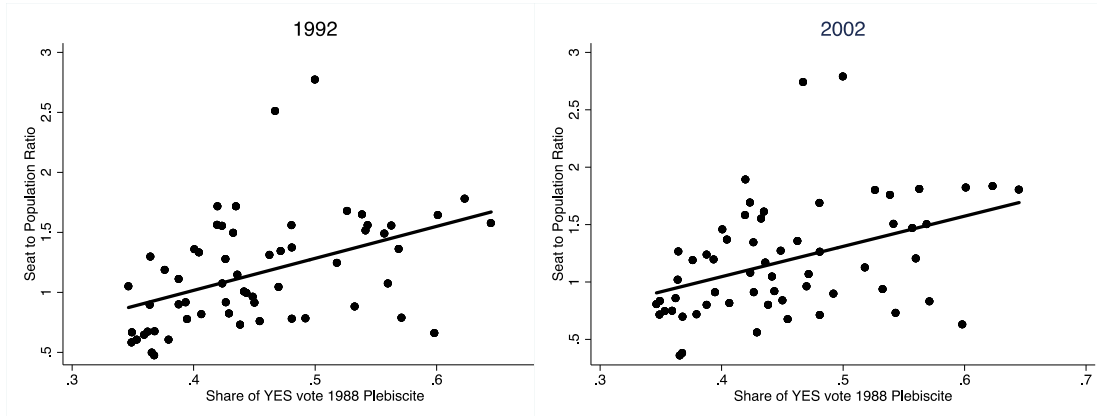(LAPOP 2008)**

Figure A.3. Population and Electoral Support for Pinochet Regime (1988)
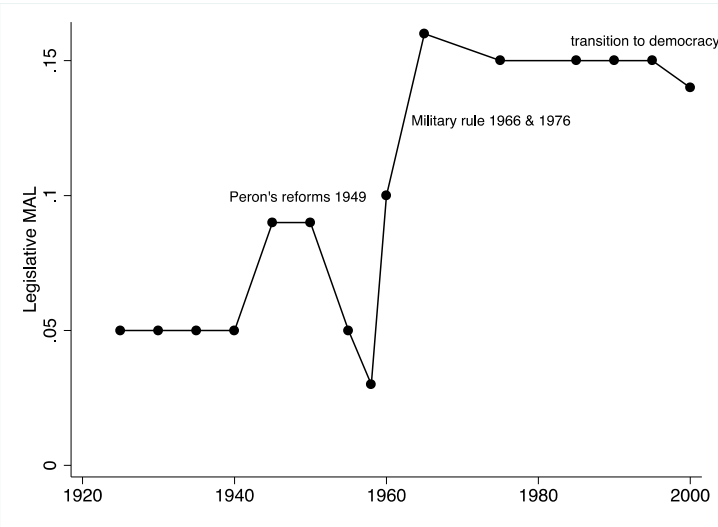

Source: Author's compilation based on data from Rojas and Navia (2005).

Figure A.4. Support for Pinochet and District-Level Legislative Malapportionment

Source: Author's compilation based on data from Rojas and Navia (2005).

Figure A.5. Evolution of Lower Chamber Malapportionment in Argentina

Source: Author's compilation based on Snyder and Samuels (2004).

Table A.2 Summary Statistics and Data Sources

Variable	Obs	Mean	Std. Dev.	Min	Max	Source
PYT	921	5.33	5.51	0.00	26.23	IDB, OECD, ADB, Keen and Mansour (2009)
INCOME	1062	8.32	1.58	4.82	10.64	World Development Indicators
MAL (log)	1044	1.60	0.90	-0.44	3.17	Samuels & Snyder (2001)
TRADE	1056	70.97	34.09	14.28	195.61	World Development Indicators
OLD	1044	9.51	5.28	2.04	20.91	World Development Indicators
FUEL	989	8.11	14.80	0.00	92.57	World Development Indicators
ELF	2393	0.43	0.26	0.00	0.93	Alesina et al (1999)
INEQUALITY	1821	45.04	7.74	20.49	71.66	SWIID*
T.TAX	2184	17.69	8.48	0.00	49.63	IDB, OECD
TURNOUT	289	68.02	15.98	21.01	96.33	IDEA
SMD	1123	0.34	0.473974	0	1	Samuels & Snyder (2001)
FED	1123	0.207	0.405683	0	1	Samuels & Snyder (2001)
PRES	1314	0.416	0.49313	0	1	Persson and Tabellini (2003)
BURQUAL	850	2.633	1.179666	0	4	ICGRC

*Solt, F. (2009) "Standardizing the World Income Inequality Database *Social Science Quarterly,*
90(2):231-242. SWIID Version 3.0, July 2010.